



Technical Assistance Panel Report | April 20–21, 2023

# BUILDING RESILIENCE ECOSYSTEMS

A MODEL FOR DELIVERING CLIMATE RESILIENCE TO ALL COMMUNITIES



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ON THE COVER: *Interconnected Relations Mural: Envisioning a Clean Energy Future for the Boyle Heights Community*. This mural of community resilience was created by artists from the Mural Workforce Academy for the Boyle Heights Arts Conservatory, a community resilience hub in Los Angeles. The mural uses non-toxic, smog-eating paint to illustrate a vision of a thriving future for Boyle Heights. (Photo: Marianne Eppig)



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## About the Urban Land Institute

The Urban Land Institute is a global, member-driven organization comprising more than 45,000 real estate and urban development professionals dedicated to advancing the Institute's mission of shaping the future of the built environment for transformative impact in communities worldwide.

ULI's interdisciplinary membership represents all aspects of the industry, including developers, property owners, investors, architects, urban planners, public officials, real estate brokers, appraisers, attorneys, engineers, financiers, and academics. Established in 1936, the Institute has a presence in the Americas, Europe, and the Asia Pacific region, with members in 80 countries.

More information is available at [uli.org](http://uli.org). Follow ULI on [Twitter](#), [Facebook](#), [LinkedIn](#), and [Instagram](#).

## About ULI Los Angeles

As the preeminent, multidisciplinary real estate forum, ULI facilitates the open exchange of ideas, information, and experience among local, national, and international industry leaders and policymakers dedicated to creating better places. A district council of the Urban Land Institute, ULI Los Angeles is a nonprofit education and research institute with more than 1,900 members in the Greater Los Angeles area. As a nonpartisan organization, ULI has long been recognized as one of America's most respected and widely quoted sources of objective information on urban planning, growth, and development. The membership of ULI LA represents the entire spectrum of land use and real estate development disciplines. They include developers, builders, investors, architects, public officials, planners, real estate brokers, appraisers, attorneys, engineers, lenders, academics, and students. More information is available at [la.uli.org](http://la.uli.org).

## About the Urban Resilience Program

ULI's Urban Resilience program is focused on how buildings, cities, and communities can be more resilient to the impacts of climate change and other environmental vulnerabilities. The program works with ULI members to provide technical assistance, advance knowledge through research, and catalyze the adoption of transformative practices for real estate and land use policy. More information is available at [americas.uli.org/research/centers-initiatives/urban-resilience-program](http://americas.uli.org/research/centers-initiatives/urban-resilience-program).

## PANEL MEMBERS

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## About the Resilient Land Use Cohort

This Technical Assistance Panel (TAP) is part of a larger series of resilience technical assistance and learning opportunities called the Resilient Land Use Cohort (RLUC). RLUC is a network of ULI district councils, member experts, and community partners in five communities working together to identify strategies to be more resilient in the face of climate change and other vulnerabilities, including floods, extreme storms, drought, wildfire, and extreme heat, as well as the related social, environmental, and economic impacts.

RLUC provides on-the-ground technical assistance through ULI's flagship technical assistance models – Advisory Services Panels and Technical Assistance panels. These panels leverage ULI member expertise to advise on complex real estate and land use challenges related to climate resilience, addressing planning, zoning, land use, development strategy, housing, and infrastructure. ULI's Urban Resilience program convenes the cohort regularly to learn from national best practices and discuss peer communities' next steps advancing resilience through land use policies and development strategies. Funding for this engagement and the cohort is provided by the ULI Foundation with support from J.P. Morgan Chase & Co. More information is available at [americas.uli.org/resilient-land-use-cohort](https://americas.uli.org/resilient-land-use-cohort).

## About U.S. Green Building Council – Los Angeles

Founded in 2002, USGBC-LA is a 501(c)3 non-profit and member-based organization whose mission is to transform Southern California's built environment into a more sustainable, resilient, and equitable region for all. We lead by inspiring leaders throughout our communities to take action on climate change, public health, and environmental justice while educating, developing, and empowering a diverse talent pipeline through our training, mentorship, and direct-to-community programs. We connect by merging interdisciplinary perspectives and collaborations to create positive systemic change. We advocate through promoting innovative, impactful policy solutions addressing the most urgent environmental and social challenges of our time. More information is available at [usgbc-la.org](https://usgbc-la.org).



## Interviewees

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Thelma Briseno, Senior Director, Energy & Water Programs, Climate Resolve

Christopher Fenton, Associate / Sustainability Director / Project Architect, Gensler

Pamela Martinez, Climate Energy Resilience Program Manager, Climate Center

Carmelita Ramirez, Executive Director, Boyle Heights Arts Conservatory

Isaac Rosenberg, Co-Founder, Streetlight

Jordana Vasquez, Senior Manager, Climate Resilience & Equity, Resilient Cities Network

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Dana Weiss, Director of ESG, Verdani Partners

## ULI PROJECT STAFF

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From left to right: Lisa Davis, John Moore, Marianne Eppig, Aaron Gross, Isaac Rosenberg, Heather Rosenberg, Ben Stapleton, Marty Borko, Heidi Creighton, Ingrid Galvez, Beryl Sinclair, Fernanda Zuin.



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Highlighted elements of *Interconnected Relations Mural: Envisioning a Clean Energy Future for the Boyle Heights Community*.



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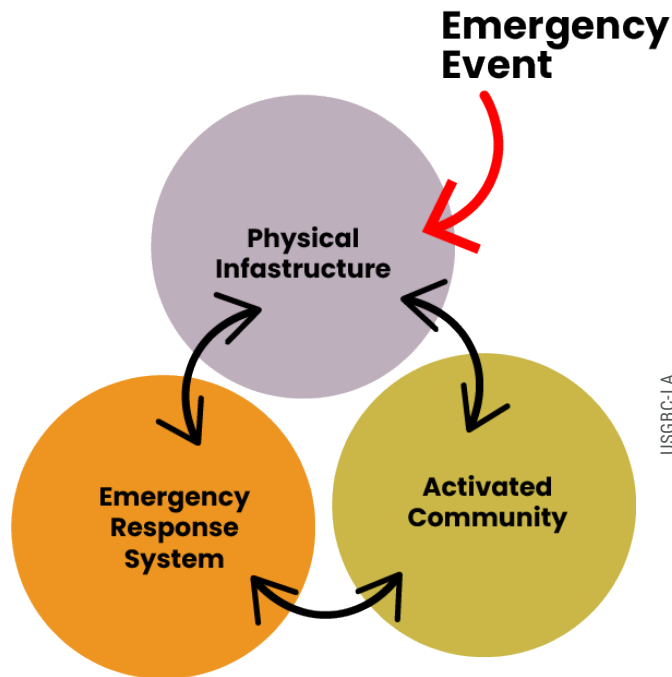


Technical assistance panel interviews with local stakeholders.

# EXECUTIVE SUMMARY

## PURPOSE

The purpose of this project is to assess how to best deliver resilience through real estate development and associated activities across communities, building upon the example of the Boyle Heights Arts Conservatory (BHAC), the first of its kind in Los Angeles. This project creates a plan and recommendations to catalyze and assist with the development of community-led resilience hubs and networks, making climate resilience accessible to all residents in Los Angeles and beyond. The need for additional and more robust community support and safety is critical due to the stressors and shocks instigated and amplified by climate change, such as extreme heat and flooding, and the pressing need for transformation in communities where environmental burdens such as air pollution and contamination are magnified due to historic injustices. The creation of resilience hubs and additional resilience resources will give residents places to organize and craft their ongoing response to localized issues related to climate change. A network of resilience hubs and resources will increase the capacity of communities to not only survive and recover reliably and equitably from disasters, but also to thrive.



During an emergency event, an emergency response system, physical infrastructure, and an activated community are all needed for resilience.



## PROCESS: THE TECHNICAL ASSISTANCE PANEL

USGBC-LA asked ULI Los Angeles to convene a Technical Assistance Panel (TAP) to develop a plan for creating a network of resilience hubs and resources throughout Los Angeles' most vulnerable neighborhoods. The participants of the two-day TAP workshop included real estate and land use professionals, planners, urban designers, and resilience experts. All panel members volunteered to participate in the TAP process and did not receive compensation for their work.

The original TAP intent, creating a "kit of parts" that would be a tool for developing resilience hubs in Los Angeles, evolved during the workshop into a concept for developing and scaling "resilience ecosystems" made up of resilience networks, hubs, and resources. The TAP evaluated the potential components of a resilience network, incorporating known resources such as existing resilience hubs, an operations manual, training content, and community engagement to develop a model for enhancing community resilience. The panel leveraged the experience of the team led by USGBC-LA in developing the Boyle Heights Resilience Hub in partnership with the Boyle Heights Arts Conservatory (BHAC) in Boyle Heights, a community located in East Los Angeles with ongoing environmental justice challenges. By re-investing in communities of higher risk and/or higher vulnerability, such as those with older building stock, lower incomes, and fewer community and public assets, we can help communities help themselves as well as augment limited public resources that are always stretched thin – especially in an emergency.



Panelists volunteered to participate in the TAP process.



Specifically, USGBC-LA posed the following questions for consideration by the TAP.

1. How do we position resilience as an amenity for tenants?
2. How do we position resilience as value-add for developers?
3. What physical improvements should be included by developers?
4. What physical improvements should be included in community planning?
5. What elements of community engagement are crucial to enable the success of a resilient hub?
6. What elements create a resilient hub?
7. What other communities should we prioritize for the development of hubs?
8. How do we make resilience accessible for everyone?
9. What types of training should be included in a resilience hub?

The panel's recommendations are presented in this report to inform ULI and USGBC-LA audiences, local governments, land use and real estate professionals, and local communities of their findings.



## Boyle Heights Arts Conservatory Resilience Hub

The community of Boyle Heights, located in East Los Angeles, is severely affected by climate impacts due to a history of redlining, white flight, community disinvestment, and other racist practices that have created disparities in the tree canopy, healthcare access, asthma rates, park access, and more. Cal-Adapt shows that in Boyle Heights, days above 95 degrees could more than triple to 30 from its historical baseline of 9 by 2050. Drought is also a serious regional concern, as Cal-Adapt projects an increase of 10 days in maximum dry spell by 2050 on top of an already serious 155-day historical baseline. In addition, the neighborhood of the Boyle Heights Arts Conservatory (BHAC) has minimal tree canopy coverage and a great amount of asphalt coverage according to the Tree People's Los Angeles County Tree Canopy Map Viewer. The challenging urban environment in Boyle Heights makes it an excellent location for a resilience hub.

The Boyle Heights Arts Conservatory (BHAC) advocates for the development of a new framework toward diversity in the creative arts, media, and technology fields—one that is socially and economically inclusive, and accurately reflects the City of Los Angeles in terms of ethnicity, gender, and age. Its facility is a natural gathering place and includes a built-in volunteer corps, pre-established leadership structures, indoor and often outdoor meeting space for gathering and shelter, and provides

gathering/distribution of information, supplies, and emotional support. In addition, the conservatory shares a space with a large venue that can be used for staging and operates a radio station with local programming relevant to the community. Because of its facilities, ongoing institutional strength, and historic importance within Boyle Heights, a low-income, largely Latino community surrounded by freeways and highly affected by climate impacts, the BHAC became an excellent candidate for a resilience hub as a trusted community resource. In partnership with USDN, Climate Resolve, and the City of Los Angeles, BHAC has become a model of a resilience hub, providing facilities and services during normal times, disruption, and recovery.

USGBC-LA and its partners have been providing physical improvements to the hub such as air quality monitors, first aid kits, water storage and filtration, resilient outdoor spaces, as well as collaborating with the implementation of a resilient power system that can stay online and adapt its programming in response to shocks like heatwaves and other disasters.

In addition to the physical infrastructure being installed at the hub, training has been delivered to community members on how they can best aid each other and take advantage of the hub's resources, so that the hub can be an even more effective part of Boyle Heights' resilience ecosystem. A calendar of resilience classes for community input and partnership building for the hub is in place.

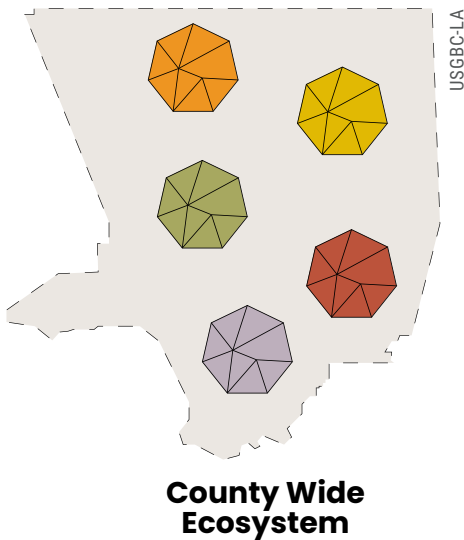
Another important milestone for the project is the implementation of an operations manual for the Hub. USGBC-LA worked in partnership with Climate Resolve, providing volunteers and youth to map assets and vulnerabilities around the hub, as well as assisting with research to develop a comprehensive operations manual for a multitude of disaster and disruption scenarios. The document will serve both as a reference for current staff, as well as a training resource for new staff.

As an example of community resilience, the Boyle Heights Resilience Hub is a model to other disadvantaged communities. Bi-weekly meetings with partners and the Chief Resilience Officer of the City of Los Angeles have been held in order to discuss progress as well as opportunities for future collaboration in other parts of the City leveraging the BHAC model for creating resilience hubs in underserved communities.

One of the important links to the BHAC resilience hub is the Restorative Care Village, a healthy campus that merges affordable housing with health care services. It was initiated by a community coalition built to address social determinants of health via a grant from the California Accountability Communities for Health Initiatives (CACHI). This precedent paves the way for community-based health care institutions to serve as critical components of resilience ecosystems.

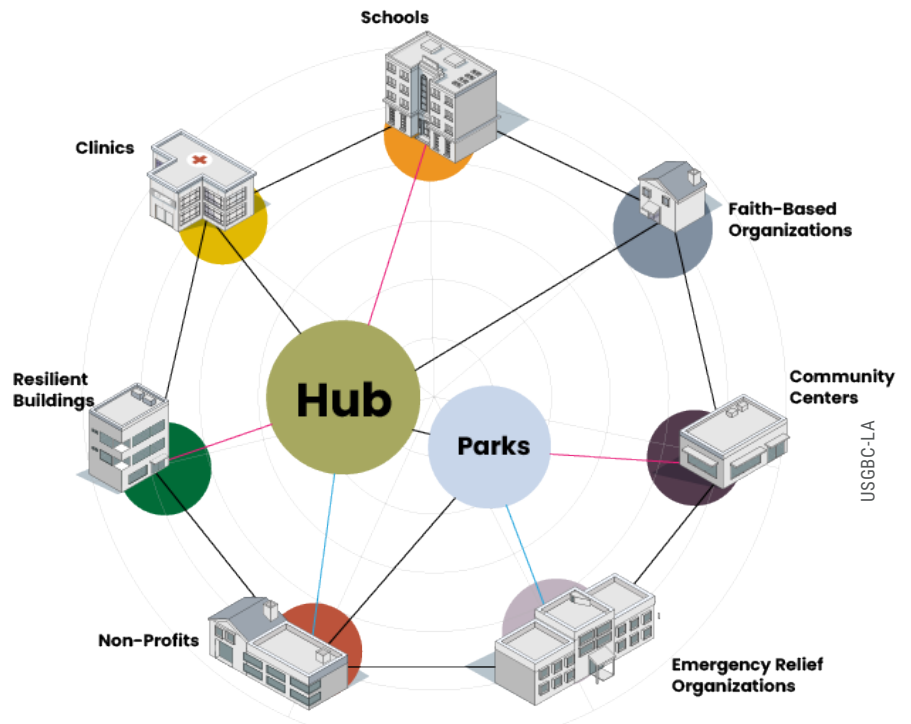
## KEY CONCLUSIONS

The panel developed a model for scaling community resilience through “resilience ecosystems” of resources, hubs, and networks. The ecosystems would consist of existing and proposed community resources, including physical facilities, services, communications, and community-led human networks that prepare communities for the impacts of climate change while enhancing social equity and environmental justice. Everyone has a contributing role to play in developing a robust resilience ecosystem, from developers to community planners, investors, public agencies, and most importantly, community residents.



**County Wide Ecosystem**

Visualization of resilience ecosystems within Los Angeles County.



Visualization of a resilience ecosystem as a network of organizations and physical spaces that can help the community respond to and recover from emergencies.



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## RECOVER AND REBUILD

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### DEFINITION OF RESILIENCE

The Urban Land Institute (ULI) defines resilience as “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.” In addition, as stated by the Urban Sustainability Directors Network (USDN), “resilient communities enjoy a high quality of life, reliable systems, and economic vitality, and they conserve resources for present and future generations.”

### WHAT IS A RESILIENCE HUB?

Resilience hubs perform a variety of functions within a community. Their key feature is that they are outfitted with hazard mitigation features to ensure continuous operations and to provide physical shelter and other resources during hazard events, although they can serve their community on a daily basis in other ways.

“Resilience hubs serve communities in three operating conditions: normal (more than 99% of the time), disruption, and recovery. Existing buildings and spaces, such as schools, parks, malls, or cultural centers, can serve as resilience hubs before, during, and after climate events or other disasters to strengthen communities by supporting residents and coordinating resources, programs, and services. These facilities can include spaces for child care, health care, access to healthy food, economic development, workforce training centers, and more. Investing in these spaces and helping ensure they are affordable and accessible for all communities, especially low-income and BIPOC communities, is a key resilience strategy.” *Guide to Developing Resilience Hubs* by the Urban Sustainability Directors Network.

To serve as a resilience hub, an existing community-serving facility will generally require a series of upgrades to ensure that it meets the daily needs identified by community members while also being able to provide critical services in the event of a disruption, such as:

- Access to electricity, heating, and cooling
- Shelter
- Tools and resources
- Water and food
- Information, communication infrastructure, and a trusted set of “hub managers” to streamline information sharing
- Logistical coordination with partner groups that provide aid and post-disruption support
- Access to basic health and medical supplies

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“Developing a Resilience Hub is an opportunity to create both a physical space and also a culture and relationships that support all residents and work to dismantle historic inequities and their root causes.”

–*Guide to Developing Resilience Hubs* by the Urban Sustainability Directors Network

# Resilience Hub

BASE  
OPTIONAL  
IDEAL

NORMAL FUNCTION	DURING DISRUPTION	RECOVERY FUNCTION
<b>Health &amp; Wellness</b>		
<ul style="list-style-type: none"> <li>• Fitness Opportunities</li> <li>• Showers + Restrooms</li> <li>• Health Screenings</li> </ul>		
<b>Medical</b>		
<ul style="list-style-type: none"> <li>• Mental Health Resources</li> <li>• First Aid Kits</li> <li>• Hospital Personnel Assigned to Site</li> <li>• Potassium Iodide Stockpile</li> <li>• Medical Professional on-site</li> </ul>	<ul style="list-style-type: none"> <li>• Mental Health Resources</li> <li>• Access to Basic First Aid and Medical Supplies</li> <li>• Distribution (Public Health Dept) of Mouth Pox-Event</li> </ul>	<ul style="list-style-type: none"> <li>• Mental Health Resources</li> <li>• Distribution (Public Health Dept) of Mouth Pox-Event</li> </ul>
<b>Food Services</b>		
<ul style="list-style-type: none"> <li>• Kitchen + Mail Prep Location</li> <li>• Storage Pantry</li> <li>• Children's Food Services</li> <li>• Community Gardens and Greenhouses</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Food Services/Meals Ready to Eat</li> <li>• Supplies for Making Food Onsite</li> </ul>	
<b>Child and Pet Care</b>		
<ul style="list-style-type: none"> <li>• Playground</li> <li>• Highchair Consideration</li> <li>• Before + After School Care</li> <li>• Dog Parks, Cat Cafes, Chicken Coops</li> <li>• Partnership with Shelter/Humane Society</li> </ul>	<ul style="list-style-type: none"> <li>• Child Care / Activities</li> <li>• Separate Space for Pets (Indoor and Outdoor)</li> <li>• Therapy Animals</li> </ul>	<ul style="list-style-type: none"> <li>• Child Care Post-Event Assist if Schools Closed</li> <li>• Therapy Animals Assigned to Individuals/Families</li> </ul>
<b>Water</b>		
<ul style="list-style-type: none"> <li>• Potable Water Station</li> <li>• Water Education</li> <li>• Water Reuse and Water Gardens</li> <li>• Onsite Water Filtration</li> <li>• Solar Hot Water</li> </ul>	<ul style="list-style-type: none"> <li>• Potable Water Filling Stations</li> <li>• Water Bottle Distribution</li> <li>• Ice Chests and Ice Distribution</li> <li>• Containers Provided for Water Collection</li> <li>• Onsite Water Filtration</li> <li>• Solar Hot Water</li> </ul>	
<b>Communications</b>		
<ul style="list-style-type: none"> <li>• Free Internet and WiFi/Computer Access</li> <li>• Monthly Meeting Location for Community</li> <li>• Radio and Media Access</li> <li>• Positive "Open Space" Programming</li> <li>• Translation Services</li> </ul>	<ul style="list-style-type: none"> <li>• Charging Stations</li> <li>• Door Knocking and Key/Safe Communications</li> <li>• Reverse 911</li> <li>• Translation Services and Support</li> <li>• Police and Fire Collaboration</li> <li>• CERT Leaders Assigned to Block/Neighborhood</li> <li>• Radio and Media Communication and Support</li> </ul>	<ul style="list-style-type: none"> <li>• Recovery Hub with Resources</li> </ul>
<b>Education</b>		
<ul style="list-style-type: none"> <li>• Flood Insurance - Why Buy Early?</li> <li>• CERT Training</li> <li>• Bible Service and Repair</li> <li>• Programming for Elderly, Veterans, Children, and Other Special Interest Groups</li> </ul>	<ul style="list-style-type: none"> <li>• How to Fill Out Your Insurance Forms Properly</li> <li>• Stay Out of Standing Water</li> </ul>	
<b>Transportation</b>		
<ul style="list-style-type: none"> <li>• EV Charging</li> <li>• Bike Coasters</li> <li>• Car/Bike/Scooter/Bike Share</li> <li>• Transit Accessible</li> </ul>	<ul style="list-style-type: none"> <li>• Shuttles to the Hub</li> <li>• Evacuation Meet-Up/Assistance</li> <li>• Shuttles to Shelter</li> </ul>	<ul style="list-style-type: none"> <li>• Shuttles to Supply + Service Centers</li> </ul>
<b>Accessibility</b>		
<ul style="list-style-type: none"> <li>• Accessible Elevator, Accessible Bathrooms, Gender Neutral, Hearing, Visual Impairment, EAPD-Line Assistance Enrollment</li> </ul>	<ul style="list-style-type: none"> <li>• Chair Stairs - Keep Accessible, Designated Rep</li> <li>• Assistance for Hearing + Visually Impaired for Recovery, Design Improvements</li> <li>• Backup Powers to Elevators</li> </ul>	
<b>Storage &amp; Resources</b>		
<ul style="list-style-type: none"> <li>• Dismantle Water</li> <li>• Supplies and Tool Storage for Community</li> <li>• Community Tool Library</li> <li>• Veteran Services and Programming</li> <li>• Water Storage Tanks</li> </ul>	<ul style="list-style-type: none"> <li>• Portable Water and Water Bottle Storage</li> <li>• Food Storage</li> <li>• Baby Formula and Diaper Storage, Distribution</li> <li>• Supplies and Tool Storage for Community</li> <li>• Check-out</li> <li>• Cots, Blankets and Bassinets</li> </ul>	<ul style="list-style-type: none"> <li>• Debris Removal and Assistance for Residents</li> </ul>
<b>Waste</b>		
<ul style="list-style-type: none"> <li>• Site Recycling, Bulk Recycling Pickup</li> <li>• Bulk Composting, Composting Toilets, Onsite Collection for Residents</li> </ul>	<ul style="list-style-type: none"> <li>• Site Trash Removal</li> </ul>	
<b>Energy</b>		
<ul style="list-style-type: none"> <li>• Weatherization</li> <li>• Solar PV and Battery Backup</li> <li>• Passive Cooling</li> <li>• Resident HRVs</li> <li>• Energy Storage</li> <li>• Distributed Generation/Microgrid</li> <li>• Community Solar</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel Storage and Supply</li> </ul>	
<b>Stormwater Management / Green Infrastructure</b>		
<ul style="list-style-type: none"> <li>• Shade Trees</li> <li>• Permeable Pavement</li> <li>• Bio-retention</li> <li>• Greenroofs</li> </ul>	<ul style="list-style-type: none"> <li>• Shade Trees</li> <li>• Stormwater Management</li> </ul>	
<b>Foodproofing and Flood Considerations</b>		
<ul style="list-style-type: none"> <li>• Shade Trees</li> <li>• Soil Walks and Engineered Flood Vents</li> <li>• Waterproofing Site</li> <li>• Erosion Control and Mechanical Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Backflow Prevention Devices</li> </ul>	

URBAN SUSTAINABILITY DIRECTORS NETWORK.

Base, optional, and ideal components of resilience hubs. *Guide to Developing Resilience Hubs.*

Each resilience hub has unique elements necessary for its successful operation during disruptions within a specific community. A resilience hub that works for one community may not work for another, therefore, each resilience hub must be tailored to support local demographics and distinct needs including social as well as environmental stressors and shocks.

### **WHAT ARE THE SERVICES AND PROGRAMS A HUB SHOULD PROVIDE?**

Similar to the establishment of the physical elements of an individual hub, the services and programs will respond to the needs of the specific community it serves. There are, however, common categories of needs during normal times, disruptions, and recovery in most cases, including:

- Physical facilities
- Social activities
- Operational ability
- Community awareness
- Engagement with a variety of constituents
- Flexibility
- Primary needs such as food or healthcare (during disasters)
- Proactive programming such as education and childcare (during normal times)

In preparation for disruption and subsequent recovery from an event, there is a need for resilience-related services, such as:

- Capacity building that supports the development of tomorrow's community leaders
- Partnerships with established partners such as FEMA, the Red Cross, Preparedness & Emergency Management, Community Emergency Response Team (CERT), and National Voluntary Organizations Active in Disasters (VOAD)
- Training and practice for disaster preparedness and emergency response
- Communications including connections to emergency response systems and the ability to communicate within and outside the service area year-round
- Emergency operations
- Assigning appropriate roles to community leaders and members
- Emergency kit development with handouts
- Recovery services such as insurance and legal support for the uninsured and insured





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The resilience ecosystem expands, supports, strengthens, and connects resources, knowledge, and people.

## DESIGNING A RESILIENCE ECOSYSTEM

Resilience ecosystems should expand, support, strengthen, connect, and add to the components of the community that enhance resilience. Many communities have some sort of emergency response system in place, but it could benefit from broader support and resources. For example, health care institutions, such as community clinics, should be included in the network as one among a variety of resources available, to minimize the impact on those institutions during a crisis and to provide physical and mental health services before and after disruptive events.

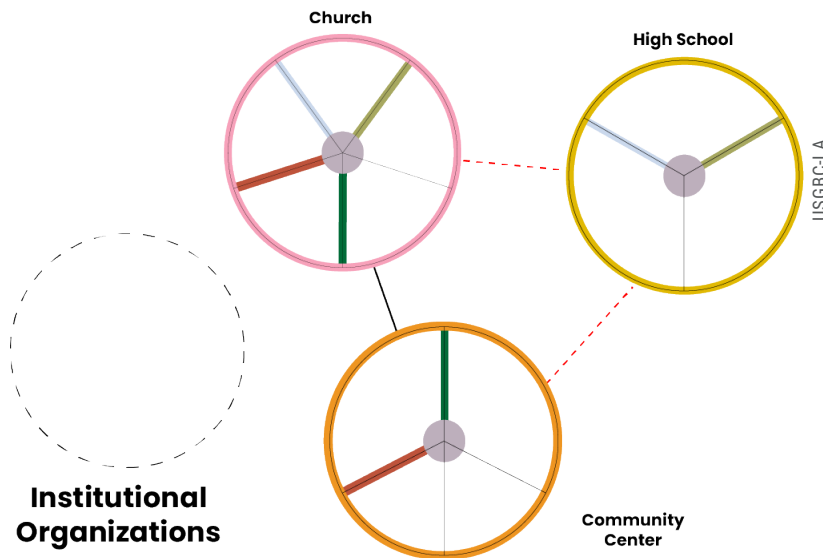
Resilience ecosystems should include physical, social, and information networks:

- Physical network:
  - Provide access to physical facilities with resilient features that are in familiar locations to the local community.
  - Locate resilience hubs at two-mile distances so they can be reached by walking. The goal is for everyone to be within a forty-minute walk of a safe space.
- Social network:
  - Build and support a network of relationships in communities that can respond during disasters, including community-based organizations, community members, and organizers.
  - Define roles for participants of the network such as community-based organizations and community ambassadors/community activists/organizers.
  - Participants need to be in service of the community, not “saviors.”
- Information network:
  - Identify the locations and people responsible for resources and knowledge, including trusted partners in [community action partnerships \(CAP\)](#), city council districts, and climate and emergency response offices.
  - Identify or establish a resilience convenor or knowledge sharer, such as a community-based organization, that maintains and activates the network serving the resilience ecosystem within their local community and that engages with public sector resilience offices.

- Develop a funding model that supports a trusted community partner as the resilience convenor.
- Local governments need to support resilience projects and create “train the trainer” programs.
- Utilize technology and social networks for rapid information sharing and alerts.



The resilience hub and spoke model.



Distributed resilience ecosystem model with a variety of resilience hubs and nodes.

## IMPLEMENTATION ACTION PLAN

Creating a resilience ecosystem requires an inclusive and coordinated effort to establish and/or connect and support all of its components: physical, social, and informational. The ecosystem will be people focused, respond to community needs, and led by people who have a commitment to serve. The following are the steps required to develop a resilience ecosystem.

### **Action 1: Determine potential locations and resources needed for future resilience ecosystems**

Community-led resilience hubs and nodes are best self-selected and support residents by providing safe spaces and coordinating resource distribution and services before, during, and after a disaster.

1. Identify communities with additional resilience needs:  
Layer hazard maps with vulnerable populations, illustrating where people bear the most significant burden of climate hazards. This kind of mapping supports equitable resource distribution.
2. Assess community readiness with community partners:  
In partnership with community leaders, analyze existing resources, the needs of the community, and the resulting gap. Determine the physical needs, resources, and services needed to mitigate those gaps through community engagement. This process should be community-driven.

### **Action 2: Create a coalition for the resilience ecosystem**

Creating a coalition allows the community to scale up resilience resources and strengthen the ecosystem network in a way that is flexible, adaptable, transparent, and fair. Community leadership is essential to the development of the resilience ecosystem, and a coalition model can help organize and connect the variety of leaders and partners involved.

1. Create a coalition for community resilience and preparedness that includes committed local partners. External partners may include volunteers trained for emergencies, such as [voluntary organizations active in disaster](#) (VOADs), the Red Cross, and the Salvation Army. The Red Cross can assist in building resilience coalitions and transferring them to the community to manage over time, as they have done with the Community Organization Active in a Disaster (COAD) in Sonoma County, California.



2. Develop a plan, inclusive of sustainable funding, to maintain the coalition over time, since disruption events are sporadic.
3. Engage local elected officials as well as city and county staff to get their support. Having a disaster map for the area and tailoring communications to their interests and values can help with securing their buy in.
4. Support community leadership and ownership of the coalition:
  - Sponsor community meetings to understand residents' priorities. Meetings should be inviting for community members and hosted in locations where they already go and at times when they are available. Communications should be in locally-spoken languages and the focus should be on what is important to the community.

## Community Engagement

"Resilience hubs are a tool to increase community adaptive capacity and enhance quality of life. Residents and local community-based organizations should be partners, and preferably the leaders, from the very beginning of the process to develop and manage a Resilience Hub. This requires local government leads and other partners to actively step back and shift power to community leaders and organizations. Building partnerships and trust is an ongoing process that requires transparent communication, continuous engagement and ensuring all voices are heard and valued. It is important to recruit new team members in partnership with the Hub's host community and prioritize recruiting partners from the service area to fill those roles.

The quality of collaboration with community partners can have a significant impact on the success of a Resilience Hub project. Effective collaboration requires commitment, skill, and a thoughtful approach. Deeper guidance on how local governments can most effectively collaborate with community partners is available in two recently developed guides:

- Community-Driven Climate Resilience Planning Framework developed by the National Association of Climate Resilience Planners (NACRP)
- Guide to Equitable, Community-Driven Climate Preparedness Planning developed by a group of USDN members and partners"

Source: *Guide to Developing Resilience Hubs* by the Urban Sustainability Directors Network (USDN)

- Utilize communication tools that engage and elicit the community's participation such as neighborhood meetings, surveys, signage, and social media.
  - Move at the speed of trust. Ensure a trusted partner is leading the engagement; the community must have confidence that the leader is a person that can be relied on to deliver.
5. Regional convening across resilience ecosystems:
- Through a convener, such as a public sector resilience office at the city or county, create a space to share resources, best practices, and success stories to support resilience ecosystems regionally and avoid unnecessary redundancies.
  - Convenings should connect the resilience ecosystems to allow for more effective resilience efforts regionally and successful programs locally.

### **Action 3: Support and scale up existing local resilience resources**

Before building anything new in communities, asset mapping existing resilience resources and supporting them will allow for a quicker, more affordable road to resilience for the community.

1. Add capacity to existing resilience hubs and nodes and identify areas where there is already planned investment in resilience resources and services. This increases the efficiency of scaling up resilience ecosystems.

## **Community Organizations Active In a Disaster (COAD) In Sonoma County, California**

Sonoma County Community Organizations Active in Disaster (COAD) is a collaborative network that builds the capacity and coordination of local organizations to both prepare for and respond to disasters in Sonoma County. They act as the liaison with County government and emergency responders through the County Emergency Operations Center (EOC). The Sonoma COAD acts as the sole entity to represent all community groups in the EOC, informing them of community resources and support in a disaster. The organization is committed to long-term recovery, making it a model for Los Angeles. For more information, visit [www.sonomacountycoad.org](http://www.sonomacountycoad.org).

2. Support the local community's asset mapping of existing resilience resources. External partners can provide a framework and/or templates for asset mapping, but the community should identify the physical, social, and informational assets for the resilience ecosystem. Questions to lead asset mapping could include: Where can people go during a disruption? Who is already working on resilience issues? What resources can various organizations provide?
3. Identify a strong community-based organization (CBO) within the area that can focus on supporting the resilience ecosystem. CBOs play a valued role in their communities and should be included in the planning process. The CBO does not have to be a resilience hub owner or emergency responder; they can serve as a community organizer and advocate, service and programming provider, and/or asset mapping leader. One benefit of having a CBO as a leader for the resilience ecosystem is that they can apply for grants as a 501-c3 nonprofit organization.

#### **Action 4: Plan physical spaces as resilience hubs and nodes**

The creation and retrofit of physical facilities as resilience hubs are the fundamental building blocks of a resilience ecosystem. Following are links to reports and tools on resilience strategies for buildings.

1. Assess the resilience of existing facilities and spaces. Utilize available tools and examine the need for retrofits. Resilient retrofit strategies exist for major hazards and may be implemented incrementally. Consider retrofits for multiple and simultaneous hazards. Further information is available at: [Resilient Retrofits](#).
2. Resilience strategies for new and existing facilities that respond to a variety of environmental threats are available at the following links and in the Appendix.
  - Energy (decarbonization):
    - [The ULI Blueprint for Green Real Estate](#)
    - [Renewable Energy Strategies for Real Estate](#)
    - [Decarbonizing the Built Environment](#)
  - Resilience to hazards:
    - [Neighborhood Resilience](#)
    - [Wildfire resilience](#)



[Drought resilience](#)

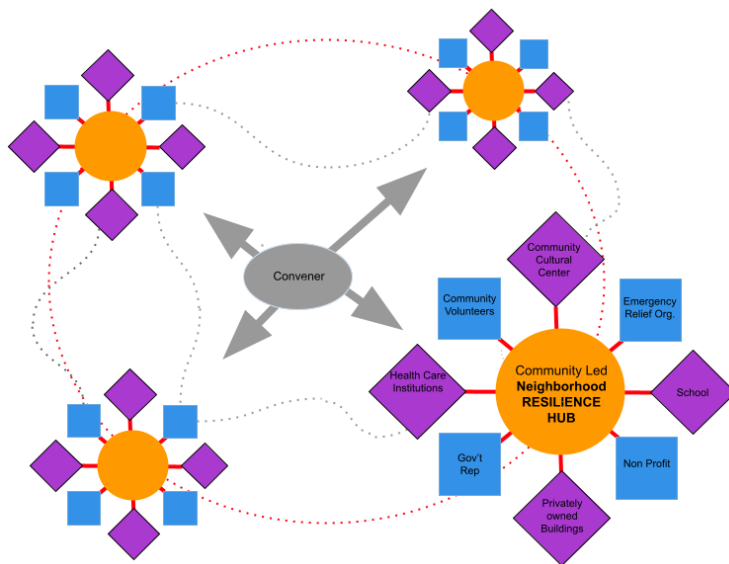
[Extreme heat resilience](#)

[Flood resilience](#)

### **Action 5: Identify funding options**

A range of funding options appropriate for different components of a resilience ecosystem are available, from both public and private sources.

1. The [California Strategic Growth Council](#) offers grants for resilience hubs, services, and programming.
2. Fannie Mae is working on creating a resilience mortgage.
3. Green mortgages provide incentives for green homes by offering mortgage points for sustainability/resilience elements and help with insurance.
4. Rebate, tax credit, and grant programs, such as the California [Earthquake Brace + Bolt](#) program, provide sources of funds for resilience/sustainability retrofits, energy efficiency, and solar panels. A future possibility may be a tax credit that goes to resilience maintenance similarly to the mechanism in the Mills Act that supports historic preservation.
5. Community foundations can create funds for resilience. They can pool public and philanthropic dollars and administer grants for resilience hubs, upgrades, programming, and services (many community foundations did this for COVID).
6. Local government revolving loan funds and/or grants for resilience hubs, upgrades, programming, and services could be made available for non-profit organizations such as community-based organizations (CBOs), Community Development Corporations (CDCs), and Community Organizations Active in Disaster (COADs).
7. Insurance premium reductions may be available as a result of resilience upgrades to buildings. For example, Alabama offers up to 50% insurance premium reduction for wind-fortified houses
8. A benefit to building developers and owners is a potentially higher valuation for resilient assets and a higher rental rate for more resilient buildings and reduced hazard risks.



Regional convening of resilience ecosystems.

### Action 6: Use public policies to support resilience ecosystems

The TAP developed the following policy recommendations to support the development and scaling of resilience ecosystems throughout the Los Angeles region.

1. Creating a resilience scorecard for real estate development. This strategy could be similar to LEED, through which achieving a certain amount of points could result in insurance benefits, financing benefits, permitting benefits, and tenant attraction and retention.
2. Establish resilience-oriented development (ROD) that includes density bonuses, permit expediting, and floor area ratio (FAR) exceptions.
3. Revise building and energy code requirements to support resilient real estate.
  - Expedite building permits in exchange for resilience upgrades for both new construction and renovations.
  - Develop resilient building code updates and energy efficiency code updates and requirements.
4. Expand affordable housing legislation to incentivize locating affordable housing developments near amenities related to resilience.
5. Leverage Inflation Reduction Act funding for resilience upgrades and residential energy efficiency and electrification.

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## CONCLUSION

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The emergence of resilience hubs, a community-led solution to environmental injustices and increasing adverse events related to climate change, is a starting point for the establishment of a more robust and connected community resilience model: the resilience ecosystem. The resilience ecosystem builds on lessons learned from the Boyle Heights Resilience Hub, recognizing that a diverse set of community relationships, information networks, services, and physical facilities are necessary to confront the considerable and varied hazards facing our cities and communities. Resilience ecosystems allow for effective and potent responses to disasters and ensure that all communities not only recover, but thrive.



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# RESOURCES

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## Boyle Heights Resilience Hub

"Resilience Hubs in Action: Boyle Heights Arts Conservatory." Climate Champions, November 26, 2022. <https://climatechampions.unfccc.int/resilience-hubs-in-action-boyle-heights-arts-conservatory/>.

"Case Study: Boyle Heights." NorCal Resilience Network, September 13, 2021. <https://norcalresilience.org/case-study-boyle-heights/>.

"Boyle Heights Community Resource." Climate Resolve, September 13, 2021. <https://www.climateresolve.org/boyle-heights-community-resources/>.

## California Accountability Communities for Health Initiatives (CACHI)

<https://www.cachi.org>

## California Earthquake Authority

Funds toward earthquake retrofits

<https://www.earthquakebracebolt.com/>

California Mitigation Residence Program

<https://www.californiar ResidentialMitigationProgram.com/How-to-Pay-for-a-Seismic-Retrofit/Other-Financial-Assistance-Options>

## California Governor's Office of Emergency Services

Community Emergency Response Team (CERT)

<https://www.caloes.ca.gov/office-of-the-director/operations/%20planning-preparedness-prevention/community-emergency-response-team/#:~:text=The%20Community%20Emergency%20Response%20%20Team,organization%2C%20and%20disaster%20medical%20operations>

## California Strategic Growth Council

<https://sgc.ca.gov/>

## Climate Resolve

<https://www.climateresolve.org/>

Climate Plans Los Angeles

<https://climateplans.la/>

Eclarino, Kristopher, Natalie Hernandez, Seth Jacobson, and Jonathan Parfrey. "Ready for Tomorrow? A Snapshot of Climate Preparedness Planning in Southern California." Climate Resolve, 2020.

<https://www.climateresolve.org/wp-content/uploads/2021/08/Ready-For-Tomorrow-SCE-Report-1.pdf>

### **Community Emergency Response Team (CERT) City of Los Angeles**

<https://www.cert-la.com>

### **County of Los Angeles**

"Our County: Los Angeles Countywide Sustainability Plan." County of Los Angeles, 2019. <https://ourcountyla.lacounty.gov/wp-content/uploads/2019/07/OurCounty-Final-Plan.pdf>

### **Health Innovation Community Partnership**

<https://www.hicpla.org>

### **Inflation Reduction Act**

Residential Energy Rebate Programs

<https://www.energy.ca.gov/programs-and-topics/programs/inflation-reduction-act-residential-energy-rebate-programs-california>

### **Los Angeles County Community Disaster Resilience**

<https://laresilience.org>

### **National Voluntary Organizations Active in Disaster (VOAD)**

<https://www.nvoad.org/>

### **Urban Land Institute (ULI)**

<https://uli.org>

Urban Resilience: Major Reports and Resources

<https://americas.uli.org/research/centers-initiatives/urban-resilience-program/about/reports/>

Williams-Eynon, August, and Lindsay Brugger. "Resilient Retrofits: Climate Upgrades for Existing Buildings." Urban Land Institute, April 18, 2022. <https://knowledge.uli.org/en/reports/research-reports/2022/resilient-retrofits>.

Gayle, Rebecca. "Enhancing Resilience through Neighborhood-Scale Strategie." Urban Land Institute, 2022. <https://knowledge.uli.org/-/media/files/research-reports/2022/neighborhood-resilience-final.pdf>.

Williams-Eynon, August, and Lindsay Brugger. "Social Spaces, Resilient Communities: Social Infrastructure as a Climate Strategy for Real Estate." Urban Land Institute, November 9, 2022. <https://knowledge.uli.org/reports/research-reports/2022/social-spaces-resilient-communities-social-infrastructure-as-a-climate-strategy-for-real-estate>.

### **Urban Sustainability Directors Network (USDN)**

<https://www.usdn.org/>

Resilience Hub Website

<http://resilience-hub.org/>

Baja, Kristin. "Guide to Developing Resistance Hubs." Urban Sustainability Directors Network, 2019.

[http://resilience-hub.org/wp-content/uploads/2019/10/USDN\\_ResilienceHubsGuidance-1.pdf](http://resilience-hub.org/wp-content/uploads/2019/10/USDN_ResilienceHubsGuidance-1.pdf).

### **U.S. Green Building Council (USGBC)**

<https://www.usgbc.org/>

LEED Pilot Credit: Social Equity within the Community

<https://www.usgbc.org/credits/se-community>

Resilient by Design

<https://www.usgbc.org/resources/resilient-design-usgbc-offers-sustainability-tools-enhanced-resilience>

### **U.S. Green Building Council – Los Angeles (USGBC-LA)**

<https://usgbc-la.org/>

### **U.S Resiliency Council**

<https://www.usrc.org>



### **Tools and certifications to assess climate resilience**

Heat Relief for LA

<https://www.climate4la.org/heat-relief-4-la/>

What will climate change cost you?

<https://riskfactor.com>

Building Environmental Justice Tool

<https://www.ejtoolkit.com>

Green Business Certification, Inc.

<https://www.gbci.org>

### **Additional Resource:**

Rosenberg, Heather, Nicole Erret, and Davif Eisenman. "Working with Disaster-Affected Communities to Envision Healthier Futures: A Trauma-Informed Approach to Post-Disaster Recovery Planning," International Journal of Environmental Research and Public Health, February 2, 2022. <https://ideas.repec.org/a/gam/jijerp/v19y2022i3p1723-d740931.html>.

## ABOUT THE PANEL



### **Heidi Creighton**

VP Sustainability – Skanska CDUS

Heidi Creighton is the National Head of Sustainability for Skanska USA Commercial Development. As a passionate advocate and pioneer in the green building industry, Heidi serves as a thought leader and strategic driver of all initiatives and policies related to sustainability, across the company's US portfolio. She is charged with identifying

solutions that improve asset performance, energy management, community engagement and user experience while furthering Skanska USA Commercial Development's Environmental, Social, and Governance (ESG) strategy. With a career spanning over 20 years, Heidi leverages her experience and holistic approach to sustainability by engaging with communities and occupants, to better understand user needs, thereby creating environments that benefit the health and well-being of all who occupy them. As a longtime environmental steward and subject-matter expert, Heidi holds many prestigious credentials which include Fellow of the American Institute of Architects, LEED Fellow, WELL Faculty and Fitwel Ambassador. Previously, Heidi served on the USGBC-LA Board of Directors from 2013 to 2019. Many of her efforts focused on leveraging education and innovation to drive forward regional sustainability efforts. Heidi also served on the American Institute of Architects (AIA) California Committee on the Environment (COTE) steering committee from 2020 to 2022 which was charged with elevating AIA California's position as a global leader addressing the challenges of advancing climate change and natural resource depletion. Heidi's most recent accolades include recognition by the World Architecture News (WAN) for the Female Frontiers Award for Social Change in 2022, USGBC-LA's 2021 Heart of the Chapter Award, as well as elevation to AIA's College of Fellows in 2021.



### **Aaron Gross**

Acting Chief Sustainability Officer

Los Angeles Department of Water and Power

With over 20 years of service to the City of Los Angeles, Aaron became Acting Chief Sustainability Officer for the Los Angeles Department of Water and Power (LADWP) in February, 2023 where he oversees Department's Office of Sustainability. In that role, he is charged with leading the

nation's largest municipal utility's internal and external efforts to promote sustainability and climate resilience. Aaron was most recently the City of LA's Chief Resilience Officer, based out of the Mayor's Office of Public Safety. Prior to that role, Aaron served LADWP as its Deputy Chief Sustainability Officer aiming to making LA a more efficient and

sustainable City. Prior to joining LADWP, he served as an International Trade Specialist and as Liaison to the Port of Los Angeles, in Mayor Eric Garcetti's Office of International Trade. Aaron has served in two LA Mayoral administrations, in three City Council offices, in the LA City Attorney's Office, and for the Port of Los Angeles in various capacities from field work, to legislative affairs, to land use planning. Aaron studied Political Science at the University of California, Santa Barbara and earned Master degrees in Non-Profit Management and Social Work from the University of Southern California.



**John Moore**

John Moore is an experienced professional in the sustainable real estate development industry. He has project managed and financed numerous commercial and residential projects on behalf of non-profits, governments and private sector entities. He previously served under two mayors as an Energy and Environmental Policy Analyst in local government. In this capacity he successfully built and managed citywide energy efficiency and renewable energy financing programs with funding from the Department of Energy. He has managed and developed commercial assets on behalf of private sector and non-profit entities for over a decade. He received a master's degree in Sustainable Real Estate Development from Tulane University. His numerous certifications in energy auditing and green building, as well as a state of California realtor and notary's license.

Moore has served on several notable community boards and task forces including a sustainability task force for the National Appraisal Institute, the United States Green Building Council, the SCAG Housing Fellowship program, as well as community sustainability engagement working groups via the Urban Land Institute. Currently he serves as the Director of Development for the Housing Authority of San Bernardino County.



**Evan Reis**

Executive Director, US Resiliency Council

Evan Reis is a Structural Engineer, Executive Director of the US Resiliency Council and Director of Science and Analytics at Safehub. He works with organizations to promote resilience and improve the performance of our nation's infrastructure in natural disasters. He is a national leader in seismic risk management, publishing more than 50 papers, and presenting to groups of building stakeholders around the country. Evan co-founded the USRC in 2011 to educate building stakeholders about the gap between sustainability and true resilient design.



### **Heather Rosenberg**

Heather Rosenberg is an Associate Principal at Arup in the Americas and leads the Resilience Impact and Social Equity (RISE!) team. An ecologist by training, Heather brings 20 years of experience leading sustainability and resilience projects in the built environment. Her systems-based approach integrates interdisciplinary teams to bring together technical expertise with stakeholder engagement

and a commitment to social equity. Her current work focuses on decarbonization and energy transition through a resilience lens. She works extensively with local governments, utilities, community choice aggregators and non-profits to better understand the resilience of the energy system, how buildings can play a role in local and grid-level resilience, and how to leverage investments to support frontline communities.

Before joining Arup, Heather was the founder and president of her own successful resilience strategy consulting practice, Fifth Road. She created the Building Resilience Network, a multi-stakeholder initiative designed to help public, private, and non-profit organizations weave physical, social and economic resilience into core operations. She is a USGBC Ginsberg Fellow and has served on multiple boards and committees.



### **Walker Wells**

Principal/Lecturer  
Raimi and Associates/UCLA

Walker is an industry-leading expert in sustainability, green building, and renewable energy. He has experience working with local governments, affordable housing developers, and school districts across the country to further sustainable development practices via technical assistance, charrettes

and workshops, and developing public policy. He also is a lecturer in green urbanism and green development at the Claremont Colleges and the UCLA Urban Planning Program.

Walker holds Bachelor's degrees in Sociology and Environmental Studies from the University of California Santa Barbara and a Master's of City and Regional from the California Polytechnic University San Luis Obispo.





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