UNIVERSITY
OF
CALIFORNIA
HEALTH

Introba

Climate Resilience Planning Process

2023 Progress Report, Health Sector Climate Pledge

Contents

Acknowledgements

Many UC Health staff and student fellow contributors have played a crucial role in advancing climate resilience for UC health centers and the communities they serve. The collective knowledge and dedication reflected in this report showcase UC Health's collaborative approach to addressing climate resilience challenges. In particular, a core team contributed invaluable time and knowledge to shape the content of this report. These core report contributors include:

1 Executive Summary

Climate action has never been more important than it is today to providers of healthcare. Addressing climate change is not merely a response to the environmental challenge, but a global imperative to protect our collective health and well-being. Climate change effects are intensifying around the world, including in California, where persistent drought, wildfires, extreme heat, weather events, and rising sea levels are affecting human health, livelihoods, learning and infrastructure. And while climate change affects everyone, marginalized and vulnerable groups are bearing a disproportionate burden of climate impacts. Climate hazards are also impacting healthcare operations and key assets, posing further risks to the health of the communities we serve.

Fortifying our climate resilience is a prudent direction with a high expected return on investment. Prioritizing climate resilience will not only lead to better health outcomes, but also help save resources, create and protect jobs, and promote better social equity outcomes.

University of California (UC) Health recognizes the imperative to act on climate change through responsible mitigation, adaptation, and the incorporation of social equity principles. We are committed to delivering exceptional clinical care to all those we serve, educating future generations of health professionals, and conducting research that improves the health and quality of life for all Californians. Being prepared for future climate extremes and hazards will enable us to continue serving our patient populations and help protect human health, safety and well-being, while also limiting operational disruptions and mitigating damage and cost of remediation.

UC Health is working towards more equitable and resilient healthcare services under the guidance of multiple UC-wide initiatives, including:

- As a signatory to the White House and Department of Health and Human Services' Health Sector Climate Pledge alongside more than 130 other organizations representing 900 hospitals

- As a participating member of the global Healthcare Without Harm initiative with more than 350 other healthcare institutions worldwide

- Through the UC Sustainable Practices Policy, which establishes goals in 13 areas of sustainable practice from green buildings, clean energy, and human health and well-being

- Alongside the UC [Framework for Incorporating Environmental & Climate Justice into Climate Action](#)

- In alignment with the UC's Justice, Equity, Diversity and Inclusivity-based Climate Resilience Planning Initiative and [Framework](#) and

- Through the UC Health centers' system-wide initiative to integrate climate resilience into the Hazard Vulnerability Assessment (HVA) tool for emergency management

The table on the following page charts a roadmap for UC Health center achievements to-date and steps for continuing to move toward UC goals and directives for equity-centered climate resilience in the coming years. The roadmap is framed around the four elements of the Health Sector Climate Pledge, which provide a firm foundation for real action.

In addition to these efforts, UC Health is also making significant progress toward reducing organizational greenhouse gas emissions and assessing its scope 3 emissions. However, this report focuses on the resilience planning aspect of the Health Sector Climate Pledge. The emissions reduction and scope 3 assessment objectives under the Pledge are being addressed as part of separate planning processes that UC has undertaken to 1) decarbonize its campus and health facilities by 2045, and 2) produce an inventory of its scope 3 emissions by the end of 2024.

Roadmap for University of California Climate Resilience: 2023 and Beyond

Resilience Planning Element	Achievements To-date	Next Steps	Timeline
Element 1: Prospective Risk Assessment *Proactive consideration of climate hazards in risk and vulnerability assessment, rather than relying on historic patterns.*	System-wide initiative to integrate equity and climate considerations into HVA tool and using real climate events to validate tool updates	Continue to refine the HVA tool and complete climate-informed assessments	Immediate (2024)
	Used climate data to complete a holistic assessment of climate hazard impacts to people, assets and services across health centers	Consider the incorporation of updated HVA assessment findings in Emergency Management and Continuity of Operations planning	Medium-term (2025+)
Element 2: Health Equity & Community Engagement *Anticipating community needs and developing community partnerships to identify and protect at-risk populations served.*	Used diverse health equity-based workshops, surveys and other approaches to engage students, staff, patients and faculty to guide resilient action planning	Carry out more in-depth staff/faculty/student engagement, including workshops with key groups (UC San Diego Health, UC Davis Health, UC San Francisco Health)	Immediate (2024)
	Laid the groundwork for partnerships and capacity building within the broader community to center resilience around equity and health determinants	Expand on existing engagement efforts with wider (broader community) and deeper (impact/vulnerability/hazard-specific) engagement approaches	Medium-term (2025+)
Element 3: Assessment and Remediation of Vulnerabilities in Infrastructure and Operations *Addressing physical infrastructure and operational vulnerabilities*	Led cross-departmental workshops to better understand climate impacts and vulnerabilities across UC campuses	Refine, expand and deepen vulnerability assessment results to include other climate hazards and results from expanded engagement	Immediate (2024)
	Carried out community-based mapping and engagement to better understand key areas of vulnerability and strength	Incorporate findings from community engagement to identify and refine resilience strategies to address key vulnerabilities	Medium-term (2025+)
Element 4: Collaboration Between Healthcare Organizations *Build partnerships across organizations to better protect key vulnerable populations*	Strengthened partnerships with City and County governments and health providers to better serve the broader region	Continue ongoing collaboration through existing relationships	Immediate (2024)
		Build on relationships and collaboration with healthcare organizations and stakeholders to kick-start implementation	Medium-term (2025+)
Element 5: Interdisciplinary Planning, Oversight, and Evaluation *Taking a multi-disciplinary approach to climate resilience planning from within the healthcare organization*	Established interdisciplinary planning partnerships across UC departments through working groups, task forces, and ongoing coordination with leadership	Based on community engagement and assessment of vulnerabilities, identify adaptation strategies and actions to incorporate into a climate resilience plan and emergency management response as appropriate	Immediate / Medium-term (2025+)
		Support campus efforts to update their Climate Action Plans with climate resilience considerations	Medium-term (2025+)

UC Health centers are making significant strides to holistically address climate change impacts on their infrastructure, operations, and the communities they serve, using an approach that is deeply rooted in health equity. The next step is to continue working together to deepen stakeholder and community engagement and develop strategies to address key vulnerabilities and risks. UC Health recognizes that climate resilience planning remains an ongoing process as impacts, needs and priorities evolve, which will be strengthened through interdepartmental and cross-sectoral collaboration across the UC System.

2 Introduction

"Ultimately, climate change solutions are health equity solutions because they protect the most vulnerable among us."
–HHS Assistant Secretary for Health Admiral Rachel Levine

2.1 Commitment to Climate Action

Climate action has never been more important than today. Addressing climate change is not merely a response to the environmental challenge, but a global imperative to protect our collective health and well-being.

The impacts of climate change are widespread and intensifying throughout the world, including in California, as evident in extreme weather events, such as frequent extreme heat, persistent droughts, raging wildfires, rising sea levels, and disruptions to ecosystems. These climate hazards are causing a wide range of impacts on human physical and mental health, livelihoods, well-being and day-to-day life; however, not everyone is being impacted equally. Marginalized and vulnerable groups are bearing a disproportionate burden of climate impacts. The climate hazards are also impacting healthcare operations and key assets, posing further risks to the health of the communities we serve.

Two equally important pathways for climate action include mitigation (reduction of greenhouse gas emissions) and adaptation (increasing our resilience to adapt and respond to climate hazards). Both of these aspects of climate action need to incorporate considerations of climate justice and social equity to ensure that the burden of climate impacts and zero-carbon transition are not carried disproportionally among the underrepresented or disadvantaged communities and that marginalized groups are considered, engaged and supported. Prioritizing equity in climate action planning (both through their processes and outcomes) is especially crucial for healthcare organizations because climate change acts as a risk multiplier, further exacerbating existing health inequities and impacting social and environmental determinants of health. At the same time, acting on climate change is an opportunity to develop solutions that provide multiple co-benefits and address existing challenges that the various communities are facing today.

"A climate-resilient health system is able to anticipate, respond to, cope with, recover from, and adapt to climate-related shocks and stress, so as to bring sustained improvements in population health, despite an unstable climate" ([WHO, 2015](#)). Without planning for climate resilience, health systems, including University of California Health ("UC Health"), risk not only being unable to continue to provide improvements in population health but also face the possibility of not being able to provide key health services in times of greatest community need.

UC Health recognizes the imperative to act on climate change through mitigation, adaptation and incorporating social equity principles. It is committed to continuing to be a leader in climate

action, upholding the University of California's goals and meeting national emissions reduction targets. UC Health is committed to delivering exceptional clinical care, especially to underserved populations, educating future generations of health professionals, and conducting research that improves the health and quality of life for all Californians. Better preparedness for future climate extremes and hazards will protect human health, safety and well-being and help avoid damage and cost of remediation. Prioritizing climate resilience will not only lead to better health outcomes, but also help save resources, create and protect jobs, and promote better social equity outcomes.

2.2 Climate Objectives

2.2.1 Health Sector Climate Pledge

On Earth Day 2022 (April 22nd, 2022), the White House and the Department of Health and Human Services (HHS) launched the Health Sector Climate Pledge, a voluntary commitment to climate resilience and emissions reduction. The purpose of the pledge is to highlight the leadership of healthcare sector organizations in proactively addressing their greenhouse gas emissions and becoming more resilient to the health threats associated with climate change in service of communities at disproportionate risk of climate-related harm.

UC Health signed the pledge on May 27th, 2022, alongside numerous other US health sector organizations. As of November 16, 2023, the Pledge has garnered support from over 130 organizations, encompassing 900 hospitals. Signatories extend

beyond hospitals to include health centers, suppliers, insurance companies, group purchasing organizations, pharmaceutical companies, and others. Federal systems are working to meet goals similar to those of private sector organizations. Together, over 1,150 federal and private sector hospitals – representing over 15% of U.S. hospitals – have made climate commitments.

By signing the pledge, UC Health committed to:

- At minimum, reduce organizational emissions by 50% by 2030 (from a baseline no earlier than 2008) and achieve net-zero by 2050, publicly accounting for progress on this goal every year.

- Designate an executive-level lead for their work on reducing emissions by 2023 or within six months of signing the pledge and conduct an inventory of Scope 3 (supply chain) emissions by the end of 2024.

- Develop and release a climate resilience plan for continuous operations by the end of 2023 or within six months of signing the pledge, anticipating the needs of groups in their community that experience disproportionate risk of climate-related harm.

While HHS expects that signing organizations proactively share their progress with the public, the signatories are not legally obligated to report on their progress to HHS and HHS will not impose any penalties related to this initiative.

2.2.2 Resilience Planning Elements

The HHS Office of Climate Change and Health Equity (OCCHE) develops and distributes resources that can assist the health sector organizations that have signed onto the pledge in climate resilience planning. In particular, the [Climate Resilience Plan Elements for Healthcare Organizations](#) resource provides high-level guidance on the essential elements of climate resilience planning for healthcare facilities and systems. This document also seeks to clarify how climate resilience planning differs from (or builds upon) traditional hazard and vulnerability assessment and emergency preparedness activities in healthcare.

The OCCHE guidance identifies the following five elements of resilience planning:

- **Element 1:** Prospective risk assessment

- **Element 2:** Health equity and community engagement

- **Element 3:** Assessment and remediation of vulnerabilities in infrastructure and operations

- **Element 4:** Collaboration between healthcare organizations

- **Element 5:** Interdisciplinary planning, oversight, and evaluation

2.3 About This Report

To demonstrate UC Health's fulfillment of the third component of the Health Sector Climate Pledge, this report highlights the work conducted to date across the UC Health system to develop comprehensive and equity-focused climate resilience plans. It features examples from individual Health Centers and is structured around the five resilience planning elements outlined above. This report also identifies a plan of action for the next steps in UC Health's resilience planning journey.

While UC Health is also making significant progress toward reducing organizational greenhouse gas emissions and assessing scope 3 emissions, this report focuses on the resilience planning aspect of the Health Sector Climate Pledge. The emissions reduction objectives under the pledge are being addressed as part of a separate planning process UC has undertaken to decarbonize its campus and health facilities by 2045. Reporting on UC's progress toward greenhouse gas emissions reduction goals is conducted annually as part of the [Sustainability Annual Report](). Reporting on UC Health's progress in inventorying scope 3 greenhouse gas emissions is anticipated to be completed by the end of 2024.

3 Overview of Climate Action Goals & Initiatives Across the University of California

3.1 Climate Action Directives and Goals

Climate goals and action at the University of California ("UC") are guided by several directives and strategies, ranging from national-level pledges to UC-specific policies and including both healthcare-specific programs and frameworks that apply throughout the UC system. There are many synergies in the approaches and goals for resilience planning as outlined within these guiding documents, some of which are illustrated below.

Health Sector Climate Pledge (US Department of Health and Human Services)

The Health Sector Climate Pledge is a nationwide voluntary commitment to climate resilience and emissions reduction. For more details see section 2.2 of this report.

Health Care Climate Challenge and Health Care Climate Council membership criteria (Health Care Without Harm)

Spearheaded by Health Care Without Harm, the Health Care Climate Council is a leadership body of U.S.-based health systems committed to protecting their patients and employees from the health impacts of climate change and becoming anchors for resilient communities. A related initiative, the Health Care Climate Challenge, mobilizes over 350 healthcare institutions around the globe (including UC Health) to protect public health from climate change. Both initiatives are based on three pillars of climate action:

- **Mitigation**: Establishing a baseline greenhouse gas (GHG) emissions inventory and setting and publicly releasing a goal to be net zero by 2050 with an interim milestone to reduce emissions by 50% by 2030.

- **Resilience:** Incorporating climate risks into emergency preparedness planning and developing a climate resilience plan for continuous operations, including soliciting input and addressing the needs of community groups that experience disproportionate risk.

- **Leadership:** Establishing leadership support, advocating publicly, and implementing employee engagement programs for climate action.

The membership criteria for the Health Care Climate Council also incorporate a commitment to integrating equity and justice values in the organization's climate work.

Through the Health Care Climate Challenge, UC Health is participating in and reporting to the UNFCCC Race to Zero, a global campaign to build momentum for a shift to a decarbonized economy.

Sustainable Practices Policy (University of California)

This UC-wide policy establishes goals in 13 areas of sustainable practices: green building; clean energy; climate action; transportation; sustainable operations; zero waste; procurement; food service; water; healthcare; performance assessment; health and well-being; and diversity, equity, inclusion and justice.

The Policy establishes a goal for each UC location to prepare and adopt an updated climate action plan prior to 2026, with immediate implementation. It also provides direction for climate action planning to follow the *Framework for Incorporating Environmental & Climate Justice into Climate Action*, as well as integrate adaptation and resilience consideration.

3.2 UC Health Climate Initiatives

Stemming from the commitments, goals and directions highlighted above, UC is taking action on its commitments through a broad variety of climate initiatives. An overview of key climate resilience initiatives being implemented across the UC Health system throughout 2021-2023 is provided below. Note that this list is not exhaustive and does not include UC's initiatives taking place outside of the UC Health system.

Framework for Incorporating Environmental & Climate Justice into Climate Action

This framework is a guide to help staff and leaders across the UC system promote equity, diversity, inclusion, and justice in climate action. It lays out the foundational framework and general ideology required to incorporate environmental and climate justice into campus climate actions and provides examples of best practices, recommendations for evaluating the impact of climate actions in addressing equity, and other key resources.

JEDI-centered Climate Resilience Planning Initiative

In this project, seven UC campuses and five UC Health centers are collaboratively taking steps toward increased climate resilience through a justice, equity, diversity and inclusion lens (JEDI). Under the guidance of climate resilience experts, the 12 locations are beginning to explore their unique climate resilience priorities based on their needs, vulnerability to climate impacts and projected future climate hazards that each campus may face.

In 2021, a comprehensive *Framework for JEDI-Centered Climate Resilience Planning* was developed, outlining eight key steps (see image below). In this phase, participating UC locations established their core planning teams, began identifying vulnerable populations and key stakeholders, and carried out the first set of workshops to start determining potential climate change vulnerabilities. UC Health centers are building on the process outlined in the Framework by leaning on resilience planning frameworks and guidance from the World Health Organization (WHO) and OCCHE, which offer comprehensive health-specific resilience considerations.

Framework for JEDI-Centered Climate Resilience Planning
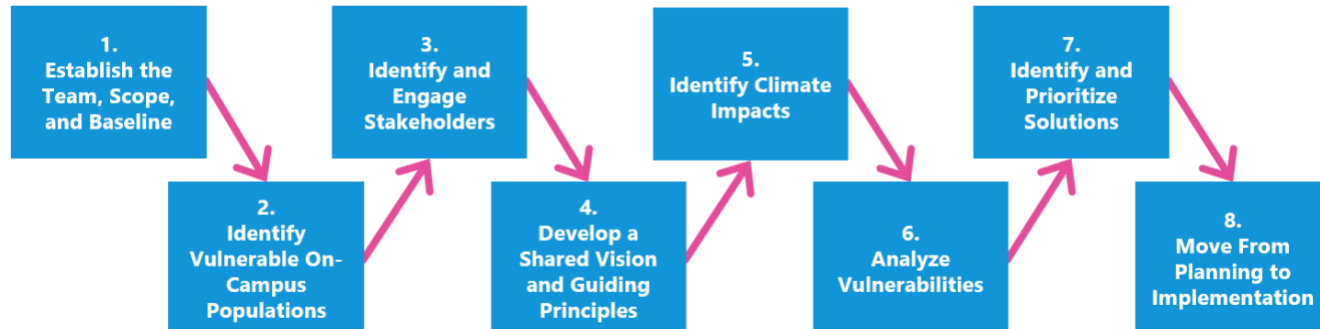
In 2022-2023, climate change trends and projections for each UC location were analyzed to prepare climate change hazard overviews. Based on this information, the locations began determining the potential impacts of climate hazards on three aspects of UC campuses and UC Health locations:

- **people** (including staff, students, faculty, patients, visitors, etc.)

- **assets** (physical, natural, cultural)

- **services** (education, clinical, research, recreation, etc.).

A key focus of this phase is community and stakeholder engagement to help locations understand which population groups within the location's community could be disproportionately affected and how to inform strategies that address their needs effectively. UC Health centers are expanding their considerations beyond just the health centers to consider the impacts on the broader communities they serve and involve them in the resilience planning process. Actively involving all relevant parties will foster collaboration, gather diverse perspectives, and ensure inclusivity in the decision-making process. The goal of this phase is for each UC location to develop a comprehensive, equity-centered vulnerability assessment that will guide prioritizing resilience strategies.

Work under this initiative in 2024-2025 will be iterative and will focus on identifying equity-centered actions to address the highest climate impacts and vulnerabilities for each campus and health center location.

Hazard Vulnerability Assessment (HVA) Tool Update

UC Health centers are aligned in their approach to climate resilience planning, with a system-wide initiative currently underway to integrate climate resilience and equity into UC's existing HVA tool. The HVA tool is well-established and used by healthcare organizations nationwide to systematically identify and assess hazards that are most likely to impact the facilities and their surrounding communities. Its completion is required by several emergency management protocols, including the Centers for Medicare and Medicaid Services

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Emergency Preparedness Rule. The HVA tool used by the UC Health system considers the present risks from a range of potential hazards including environmental (such as flooding, storms or wildfires) but does not take into account equity considerations nor the influence climate change will have in exacerbating hazards.

The UC Health system HVA update initiative aims to expand the range of climate hazards assessed and incorporate considerations of future climate (looking at current risk, risk in 2050 and risk in 2080). The updated HVAs will be completed at each UC Health center by drawing upon statistical data from sources that include the US Census and the Center for Disease Control to measure the level of threat of a specific hazard and the consequences on the potentially socially vulnerable population. The updated HVA tool's evaluation categories will include a community social vulnerability index and an estimate of the existing level of preparedness to better assess climate and other hazards' impact on vulnerable and marginalized communities. A snapshot of a draft version of the updated HVA tool is provided in the Appendix.

Select UC Health centers are beginning to examine the possibility of factoring climate impacts on communities in their planning efforts from a research and data perspective. Once the updated HVA tool is finalized and applied, the results of the assessment are intended to be used to evaluate the existing Emergency Operations Plans and Continuity-of-Operations Plans to identify opportunities to enhance the UC Health centers' preparedness to respond to climate change hazards.

The updated HVA process is being complemented by engagement with staff, patients and students to inform the completion of a broader climate vulnerability assessment tool, which was developed as part of the *Framework for JEDI-Centered Climate Resilience Planning*. Outcomes from both of these vulnerability assessment efforts will inform the development of a climate resilience plan for each UC Health center — the plans are anticipated to be completed in 2024.

Transforming UC Health Systems to Reduce Impact of Climate on Vulnerable Populations

This UC Health initiative was funded through a California Climate Action Innovation and Entrepreneurship grant and commenced in 2023 to accelerate greenhouse gas emissions reductions and health system climate resilience planning. The project has three objectives:

1. Reduce direct GHG emissions by transitioning to a portable system for nitrous oxide.

2. Create dynamic sustainability data reporting for UC Health.

3. Develop health system climate resilience plans and best practice toolkits.

The third objective aims to incorporate climate resilience into the current health system emergency response plan that prepares the UC Health system and the surrounding communities for short- and long-term health needs during adverse climate events. To inform climate resilience planning, a multidisciplinary team was established, bringing together UC Health clinicians, sustainability officers, energy managers, and emergency managers as well as respective regional Departments of Public Health (DPH), community clinic doctors, nurses, first responders, single-room occupancy hotels, skilled nursing

facilities personnel, and others. The areas of consideration for climate resilience and emergency responses include buildings and infrastructure, housing, landscape and green space, energy systems, transportation, and food and water access.

Based on initial workshops, each UC Health center selected a high-priority resilience topic for the communities they serve – these topics will be the basis for the development a toolkit which will address key climate and health hazards and serve as a resource for partners in the region. The aim is for these toolkits to be aligned with local public health priorities and with the community climate emergency action plans, and to outline shared action planning processes and plans between UC Health, public health emergency managers, and surrounding communities.

Timeline of UC Health resilience planning steps, initiatives, and commitments

Resilience planning steps	2021	2022	2023	2024	2025	2026+
Initiation, background & framework	▓	▓				
Identification of vulnerabilities & engagement		▓	▓	░		
Action planning and climate resilience plan				░	░	
Integration into climate action plans				░	░	
Implementation						░
Initiatives						
JEDI-centered Climate Resilience Planning Initiative	▓	▓	▓	░	░	
Hazard Vulnerability Assessment (HVA) Tool Update			▓	░		
Transforming UC Health Systems to Reduce Impact of Climate on Vulnerable Populations			▓	░		
Commitments						
Health Sector Climate Pledge – climate resilience plan for continuous operations			End of 2023			
University of California Sustainable Practices Policy – updated climate action plan					Prior to 2026	

4 Achievements To-Date: Climate Resilience Planning Progress Across UC Health Centers

UC Health centers have taken important steps in achieving UC goals and directives for climate resilience, including commitments under the Health Sector Climate Pledge. While the overall approach is consistent across the UC Health System, each UC Health center has its own unique strategy for walking through these steps, integrating with related initiatives, and placing focus and time at slightly different stages of the process (for a UC San Diego Health example, see Figure 1). Throughout this process, UC Health centers are sharing lessons learned with each other, to build capacity and create efficiencies. Key themes in the planning process and initial findings across the UC Health centers are described in the following sections.
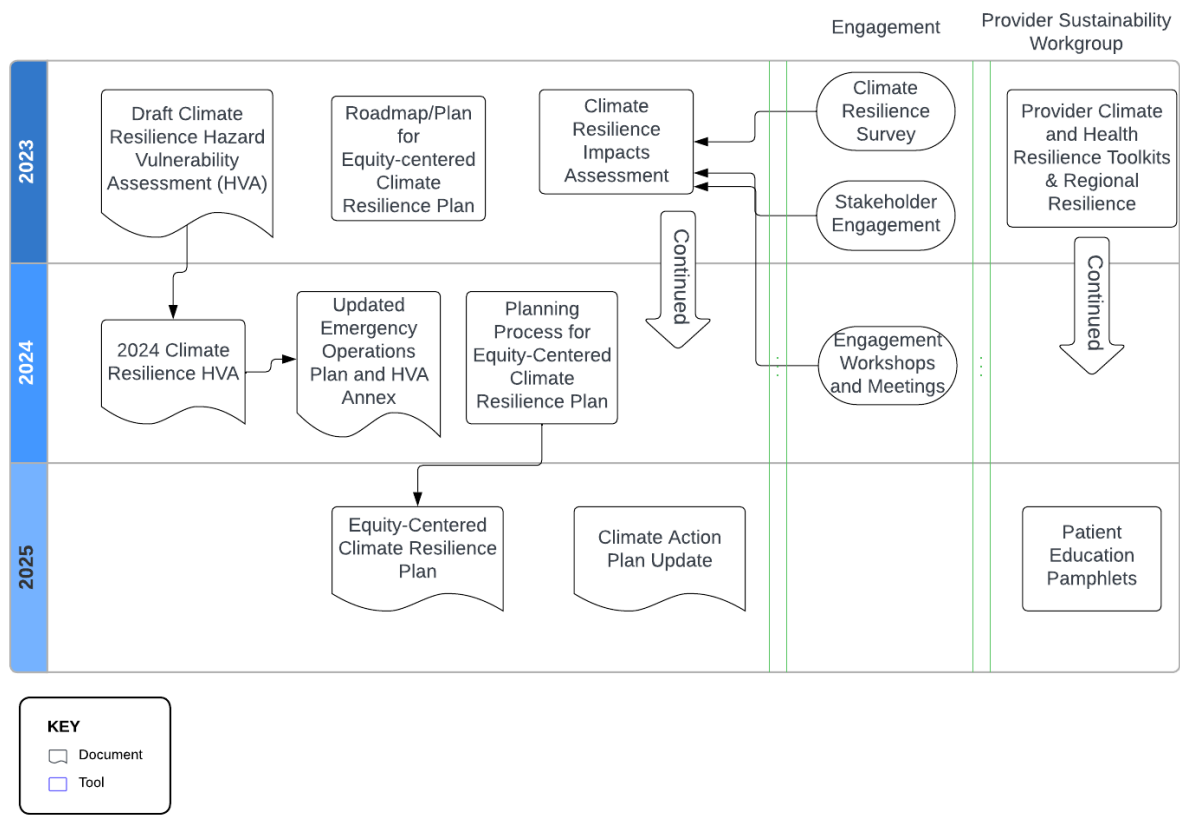

Figure 1. An example of the resilience planning process at UC San Diego Health. The roadmap outlines UC San Diego Health's process for resilience planning efforts in 2023 and into the future. For a full version of the roadmap, see Appendix.

UC Health Center achievements to-date are summarized in the following sections, grouped according to the OCCHE's five elements for resilience for achieving the White House Health Sector Climate Pledge.

4.1 Element 1: Prospective Risk Assessment

OCCHE Guidance: In the setting of climate change, health sector resilience requires consideration of prospective risks of climate-sensitive hazards, rather than relying exclusively on historical patterns for risk or hazard vulnerability assessment.

UC Health centers are taking a dual approach of **updating their HVA** to integrate climate projections and hazards and **completing a more detailed climate vulnerability assessment**, using a tool developed through the JEDI-centered Climate Resilience Planning project. The two tools and their outcomes provide complementary benefits.

The strengths of the updated HVA tool include its systematic assessment and established methods of integrating its outcomes into emergency response and business continuity planning. It provides a clear overview of the potential magnitude of climate hazards on the overall UC Health centers' systems and illustrates how risk levels are expected to change with climate change. To complement this, the climate vulnerability assessment tool focuses on identifying potential impacts from each climate hazard, aiming to provide a more in-depth insight into the aspects of the UC Health centers (their assets, services, and people) that are most vulnerable to that specific impact. In concert, these two tools are enabling UC Health centers to better prioritize future engagement with vulnerable groups, emergency response planning, and long-term operations and planning decisions.

As part of the UC system-wide JEDI-centered Climate Resilience Planning project, each UC Health center has received a tailored, high-level climate hazard overview, outlining which climate-related hazards are relevant for the center's main site currently, and how the hazard exposure is projected to change by the 2050s and the 2080s. The climate hazard overviews are one of the information sources informing UC Health centers' climate vulnerability assessments.

UC Health Spotlight

UC San Diego Health's Leadership in the HVA Tool Update Process

UC San Diego Health led the way in creating a climate-resilient, forward-looking HVA tool (see Appendix for a larger image). The updated tool will consider prospective risks from climate hazards, instead of relying on historical patterns, and include a comprehensive list of climate hazards. Building on the established HVA framework, this tool will also allow for a systematic consideration of the level of preparedness to specific climate impacts (incorporating social vulnerability and community impact), to better assess the level of risk currently, in the 2050s and the 2080s. The HVA update process has generated a lot of interest among UC Health centers and is now being considered at the system level.

UC San Diego Health has begun to validate the HVA results with relevant local data on climate events, using experiences from tropical storms in June and August of 2023 to ground-truth HVA assumptions. Future iterations of the HVA update could include tracking climate event impact data on service delivery indicators (e.g., emergency department inpatients and staffing) through the UC Health Epic electronic medical records system for performance tracking.

EVENT	CURRENT PROBABILITY	FORECAST PROBABILITY (2050)	FORECAST PROBABILITY (2080)	PHYSICAL IMPACT	SYSTEM DEPENDENT MENTAL HEALTH IMPACT	PROPERTY IMPACT	CONTINUITY OF OPERATIONS	WARNING TIME	DURATION	SOCIAL VULNERABILITY COMMUNITY IMPACT	SYSTEM PREPAREDNESS	CURRENT RISK	RISK 2050	RISK 2080	CDC SVI RATING	CURRENT % COUNTY POPULATION AT RISK	YEAR 2050 % COUNTY POPULATION AT RISK	YEAR 2080 % COUNTY POPULATION AT RISK
Earthquake	3	4	5	5	5	5	5	5	1	4	2	48.00%	64.00%	60.00%	99.70%	47.86%	53.61%	79.75%
Drought	3	4	5	5	5	2	4	1	5	4	2	42.00%	56.00%	70.00%	89.60%	37.63%	50.18%	62.72%
Temperature Extremes (<32°, 100°>)	4	4	5	5	5	2	2	1	5	4	2	52.00%	52.00%	65.00%	97.90%	50.91%	50.91%	63.64%
Wildfire	5	5	5	5	4	5	3	4	5	3	2	77.50%	77.50%	77.50%	100.00%	77.50%	77.50%	77.50%
Wildfire Smoke	3	3	4	5	5	2	2	4	5	5	3	46.50%	46.50%	62.00%	100.00%	46.50%	46.50%	62.00%
Wildfire Ash	3	3	4	5	5	2	2	4	5	5	2	45.00%	45.00%	60.00%	100.00%	45.00%	45.00%	60.00%
Wildfire Air Quality	3	3	4	5	5	2	2	2	5	5	4	45.00%	45.00%	60.00%	100.00%	45.00%	45.00%	60.00%
Gusty or Santa Ana Winds	4	4	5	2	1	4	3	2	3	5	4	48.00%	48.00%	60.00%	45.50%	21.84%	21.84%	27.30%
												0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
Average Score Rating	3.50	3.75	4.63	4.63	4.38	3.00	2.88	2.88	4.25	4.38	2.63	50.75%	54.38%	67.06%		41.36%	44.53%	54.77%

Figure 2. UC San Diego Health's effort to update the HVA tool to incorporate climate and equity considerations generated a lot of interest from both internal and external partners. The image shows a draft version of the updated HVA tool.

Findings to-date from UC Health center's hazard and risk assessments have indicated that extreme heat, drought, wildfire and wildfire smoke are the most broadly experienced hazards across health center locations (see Table 1).

Table 1. The summary table below shows which climate hazards have been identified as priorities for the UC Health centers through their preliminary climate vulnerability assessments.

	Extreme heat	Wildfire & Wildfire Smoke	Drought	Flooding	Other (e.g., epidemics, power outages, water quality)
UC Davis Health	▉	▉	▉		
UC Irvine Health	▉		▉		▉
UCLA Health	▉	▉		▉	
UC San Diego Health	▉	▉			▉
UC San Francisco Health	▉	▉	▉	▉	▉

UC San Francisco Health also considered intense rainfall flooding as a key hazard, and UC Irvine Health identified a power outage during a flood event as a critical risk.

UC San Diego Health also considered the compounding impact that future climate can have in elevating the risk of other non-climate hazards, like earthquakes and epidemics, and expects new climate-related hazards to become an issue in the future including water quality issues, tornadoes, insect infestations, and vector-borne disease. They also considered how climate impacts on broader regional systems (roadways, power grid) could affect service delivery at the health center.

UC San Diego Health and UC Davis Health both found water quality hazard as a surprise, which was highlighted by the major tropical storm that created water quality issues last year.

4.2 Element 2: Health Equity and Community Engagement

OCCHE Guidance: Healthcare organizations are important contributors to community climate resilience and are uniquely positioned to identify and protect the at-risk populations they serve. Climate resilience planning includes anticipating community needs and developing community partnerships to increase protection for at-risk populations.

UC Health centers have used a **range of approaches for community and internal engagement**, reaching wide audiences while also allowing for in-depth, topical discussions. Some UC Health centers have focused more on engaging clinicians, staff, and patients (e.g., UC San Diego Health, UC San Francisco Health, UC Davis Health), while others have started with broader community engagement (UC Irvine Health, UCLA Health) to understand the climate implications for public health and healthcare service demand needs.

UC Health Spotlight

UC Irvine Health's Comprehensive and In-depth Equity-centered Community Engagement

In their dedicated efforts toward community-driven resilience planning, UC Irvine Health took practical and inclusive steps to engage with and understand their communities. UC Irvine Health partnered with the UC Irvine campus to establish an integrated and committed team. Together they led a systematic identification of at-risk populations through stakeholder mapping, which covered on-campus and clinical groups and external organizations. They then carried out a range of activities, including presentations, tabling, surveys, and workshops, tailored for both internal (students, staff, patients, and faculty) and external stakeholders like community-based organizations.

UC Irvine Health staff and student fellows truly immersed themselves into the community, attending community events like art exhibit openings and holding informal events such as beach bonfires to facilitate climate conversations, make connections, and build relationships. In addition to survey respondents, they engaged with close to 600 individuals through these diverse engagement efforts. UC Irvine Health further welcomed community-based organizations to participate in their Vulnerability Assessment Workshop, which was attended by over 30 representatives from 10 organizations.

UC Irvine Health's outreach involved meaningful conversations to glean the specific needs, impacts, and challenges these stakeholders face due to climate change impacts. To ensure a thorough understanding, UC Irvine Health went beyond surface-level engagement, delving into the complexities of retrieving spatial variables for resilience mapping. They focused on variables that directly impact people's ability to recover from disasters or expose them to climate threats, such as racial and ethnic minority status, household characteristics, income levels, and access to transportation. UC Irvine Health integrated these variables with existing environmental justice indices, such as CalEnviroScreen, to identify environmental injustices faced by marginalized populations during climate events.

Their engagement extended beyond the typical organizations engaged in climate resilience planning and reached out to justice-related organizations, attending community events, and co-creating mapping tools for their partners. By fostering meaningful relationships, they are not only addressing immediate needs but also laying the foundation for enduring partnerships that go beyond the boundaries of the current initiative.

Many UC Health centers initiated their engagement efforts with stakeholder mapping to identify key stakeholders, prioritize engagement efforts, and align with organizational objectives. As the next step, several UC Health centers conducted student and staff surveys to gather initial insights on how climate change is impacting people, assets and services and where key vulnerabilities exist. In some cases (e.g., UC San Diego Health) the surveys also identified stakeholders who were interested in further, deeper conversations and workshops. Across the UC Health system, the workshops have focused on different stakeholder groups (e.g., clinicians, facilities, patients) to gather deeper input on climate impacts and vulnerabilities, based on stakeholders' lived and learned experiences and expertise.

Each UC Health center has woven in a **health equity-centered approach**, being very intentional about encouraging engagement with individuals with diverse backgrounds (e.g., racial diversity) and those who may be particularly exposed to climate impacts (e.g., outdoor workers), as well as leading engagement in a way that supports accessibility and informed participation (e.g., department or stakeholder-tailored sessions, closed captioning for online workshops, using multiple options for participation). UC Health centers structured engagement sessions in a way that encouraged all participants to pay special attention to identifying impacts on those most susceptible or exposed to climate change hazards. In many cases, the UC

Health centers' staff working in health equity, diversity, inclusion, and justice offices informed the design of engagement activities and helped identify invitees.

Each UC Health center has been very intentional about being inclusive and comprehensive about who is invited to the engagement sessions and how to foster meaningful, supportive and long-term relationships with the broader community. The UC Health centers have been careful to ensure engagement outcomes deeply inform their climate vulnerability assessments.

UC Health Spotlight

UCLA Health's Commitment to Integrating Environmental Justice, Health Equity, Diversity, and Inclusion into Climate Resilience Planning

Health equity is at the core of UCLA Health's planning process, including the proposed climate resilience and environmental justice task forces (see page 29). Health equity will serve as the lens through which multidisciplinary team members will engage in assessments and planning. Additionally, the Office of Community and other divisions across the health system will actively participate in creating both the engagement and accountability components of UCLA Health's resilience plan.

UCLA Health intends to create a Climate and Environmental Resiliency Plan that incorporates both the standard frameworks for resilience planning in healthcare organizations and addresses the domain of community and population health, in a social drivers of health context. Since climate change impacts and environmental harms are social drivers of health, the intent is for UCLA Health's Equity Centered Climate Resiliency Plan to establish a precision health framework for assessing, addressing, screening for, and intervening in clinical care settings to address climate and environmental health harms, particularly in marginalized communities. The Plan will reflect a present and ongoing commitment to holistically and equitably assess and address climate impacts and environmental harms in operations and clinical services.

Pending approval from senior leadership of an overall framework and plan structure, UCLA Health will establish Climate Resiliency Task Forces in 2024 which will be responsible for developing applicable elements of the resiliency plan, including implementation and key performance indicators. The Task Forces will consider the role and commitment of UCLA Health in addressing climate impacts on human health and well-being and advancing environmental justice. Each Task Force will consider and conduct climate vulnerability assessments which examine climate impacts through the lens of the applicable subject matter. For example, Operations and Facilities Task Force will consider, assess, and address how to create and maintain an equitable and robust supply chain in the face of various climate harms. This framework will be used to evaluate the resilience of UCLA Health operations, infrastructure, and clinical care in an iterative manner by examining the intersections of human health, equity, justice, environmental and climate change impacts, while fostering an understanding and approach to climate change as a distinct and progressively impactful social determinant of health.

4.3 Element 3: Assessment and Remediation of Vulnerabilities in Infrastructure and Operations

OCCHE Guidance: Climate resilience in healthcare includes addressing physical infrastructure and operational vulnerabilities.

All UC Health centers are beginning to **explore the specific vulnerabilities in the health system infrastructure and operations**. For example, UC San Diego Health used a survey-based approach to inform the vulnerability assessment, focusing on how climate could affect staff and clinicians' ability to deliver quality healthcare services.

The workshops also brought to light key staff, patient and community needs arising from climate hazard impacts, many of which were directly related to the operations and services provided by UC San Francisco Health. These needs included areas such as healthcare, transportation, childcare, additional PPE and supplies, financial support, mental health assistance, access to food and shelter, and enhanced communication.

UC Irvine Health focused its vulnerability assessment at the community scale, seeking to understand how a changing climate could affect community health (especially those most vulnerable) and how increasing healthcare needs can be met by existing healthcare centers and services. They used a dual approach, drawing on engagement outcomes and completing asset mapping of the community where they serve the most disadvantaged populations (see Figure 4).

UC Health Spotlight

UC San Francisco Health's Focus on Engaging Staff to Identify Key Infrastructure and Operational Vulnerabilities

UC San Francisco Health has been working in close collaboration with the UC San Francisco campus team to comprehensively assess climate vulnerability. Together, they hosted a series of internal stakeholder workshops to gather diverse perspectives on climate vulnerability within key realms: people, assets, clinical services, and non-clinical services. The collaborative effort brought together departments such as clinical, hospitality, nutrition and food services, sustainability, procurement, planning, police, facilities, community relations, enterprise emergency management, and the UC Center for Climate, Health, and Equity. To encourage broad participation and internal buy-in, UC San Francisco Health and the campus jointly hosted multiple workshops, taking into account the constraints of various departmental schedules.

This inclusive approach encouraged wide-reaching climate awareness and process buy-in and allowed for careful consideration of a wide spectrum of infrastructure and operational vulnerabilities. In the workshops focused on assets, participants discussed the impacts on and vulnerabilities of buildings, utilities and infrastructure, research assets, open spaces and natural areas, and transportation and fleet. Notably, the results highlighted the variations in the vulnerability of different asset groups to distinct climate hazards. For example, buildings were identified as most susceptible to rainstorms and coastal flooding, while mechanical and electrical equipment could face increased vulnerability to extreme heat and coastal flooding.

Wildfire & Wildfire Smoke

Wildfire — The year is 2055 and California is experiencing widespread wildfires that are moving closer to your region. Though the fires aren't expected to reach the campus(es), it may reach neighbourhoods where learners and staff live, and could block supply chains along a major route in and out of the County.

Wildfire Smoke — It is the end of August in 2055. The wildfire season across the state has burned over 2.5 million acres. In the region, air quality alerts indicating unhealthy levels of PM2.5 (originating from these fires) have been triggered five times this summer, sometimes lasting for several days, for a total of 45 days over the last three months. Coinciding hot temperatures have increased the concentration of ground-level ozone to unhealthy levels, further decreasing the air quality.

	Impacts	Key Impacted Assets	(Bike Locker) Parking Lot
Buildings (inc. mechanical systems)	Air Flow/Filters; Building Type; Other; Overflow Space/Capacity	Campus hospital and buildings; Elevators; Building ventilation and filtration systems; Parnassus Hospital	
Utilities and Infrastructure (incl. IT systems and Central Utility Plant)	Safety/wellbeing; Equipment/Systems; Communication; Other	Backup power generation; IT assets; Refrigeration for food service and medication; Mission Bay Campus; Mt. Zion campus	Share information with all parties; participate more in PG&E demand response program
Research Assets	Specimens/Samples; Labs; Other	Laboratories; Refrigeration for research purposes	
Open Space and Natural Areas	Safety/wellbeing; Environment	Mt. Sutro nature reserve; campus green spaces	
Transportation and Fleet	Fleet; Parking	Gas and diesel vehicles have filters	
(People)	Staff cannot work properly; Other		
(Services)			

Figure 3. UC San Francisco Health is working on resilience planning in close collaboration with the UC San Francisco campus, which conducted a series of interactive online workshops to gather detailed input on potential impacts of climate hazards from a range of participants. The image shows a snapshot of the online participation tool used in the workshops.

UC Health Spotlight

UC Irvine Health's Community Asset Mapping to Pinpoint Priority Areas

UC Irvine Health is undertaking a comprehensive asset mapping initiative, focusing on the communities where they serve the most disadvantaged populations in the county. This mapping exercise centered around three key themes: physical, natural, and social. Leveraging public datasets, UC Irvine Health gathered data for the physical and natural themes, providing a foundation for understanding the tangible and environmental assets of the community which can lessen the impacts of climate hazards on community members.

However, recognizing the limitations of existing public datasets in capturing the social fabric of the community, UC Irvine Health will be employing a participatory and iterative approach for the social theme. This will involve engagement with the community, aiming to understand and document key community elements such as public art, sacred grounds, local food assets, historical buildings, landmarks, and community gathering spaces. Unlike physical and natural assets, these elements hold a cultural and social significance that public datasets might overlook, yet they can provide important protective functions during climate hazard events. Recognizing the community as a key source of information, future workshops will be structured to allow community members to actively contribute to and shape a map that represents the nuanced social and cultural richness of their community. This strengths-based asset mapping approach will integrate both quantitative and qualitative insights, ensuring a holistic understanding of the community's strengths and resources.

Figure 4. UC Irvine Health developed community asset maps, outlining both protective and vulnerable assets and overlaying them with climate hazard information. The image shows an example of a preliminary map shared during a community event overlaying surface temperatures, bus stop locations and cooling center locations, illustrating the heat island effect in this disadvantaged community and the temperatures endured by those dependent on public transportation.

While each UC Health center tailored their approach to vulnerability assessment, alignment in the overall approach made it possible to summarize themes across the UC Health system. Key vulnerabilities identified for people, assets and services from assessment to date include:

Impact Category	Key Vulnerabilities Identified
People / Community Health	• *Heat, wildfire smoke:* People working outdoors, especially those of lower income, unable to take time off during dangerous conditions. Found economic determinants to be the most impactful to vulnerability, especially as it relates to access to housing with air conditioning. (UC Irvine Health) • Heat: Employees overheating during work, especially for those with pre-existing health conditions. (UC San Diego Health, UC San Francisco Health) • Extreme weather events: Staffing is a major concern, including disruption to commutes, increased stress and burnout. (UC San Diego Health, UC San Francisco Health) • Wildfire: Road closures and decreased staffing affecting the capacity of emergency responders to help. (UC San Diego Health)
Assets / Infrastructure	• *Heat:* Impacts on air conditioning, electricity and computer systems, which would have cascading impacts on medical equipment and medication storage (which rely on these systems to stay cool and functioning). Decreased computer functioning can impact patient care by delaying the time to get necessary information for treatment. (UC San Diego Health, UC San Francisco Health) • Heat, power outage: Energy systems without backup options can be affected during outages, resulting from increased demand, utility shutdown protocols due to high wind or fire risk, or direct damage to utilities' infrastructure. (UC Irvine Health, UC San Diego Health, UC San Francisco Health) • Power outage: To be prepared for projected climate conditions and power outages, some offsite facilities need increased cooling capacity and backup power systems. (UC Irvine Health) • Wildfire: Destroyed or damaged property. (UC San Diego Health)
Services / Operations	• *Heat, drought:* Inconsistent operation and geographic coverage of cooling centers in the region, drinking water quality. (UC Irvine Health) • Heat, flooding: Overcrowding if patients cannot be released into unsafe environments. (UC San Francisco Health) • Heat: Outdoor tents for medical overflow are particularly vulnerable. (UC San Diego Health, UC San Francisco Health) • Extreme weather events: The emergency department is at risk of surges from extreme events due to heat-related illnesses, exacerbated existing chronic illnesses (such as cardiovascular disease or asthma), and premature delivery. (UC Irvine Health, UC San Diego Health, UC San Francisco Health) • Wildfire: Road closures causing supply chain disruptions, including lab operations if samples need to travel to an off-site lab. (UC San Diego Health)

4.4 Element 4: Collaboration Between Healthcare Organizations

OCCHE Guidance: To fully understand and anticipate community needs and develop partnerships to increase the protection of the most vulnerable populations, collaboration between healthcare organizations is essential.

UC Health centers are working in close collaboration to share tools and knowledge to accelerate each other's climate resilience planning efforts. The climate vulnerability assessment for each UC Health center has taken into account their satellite healthcare sites and community outreach programs.

Many UC Health centers found that their **preexisting relationships can be leveraged to join forces on climate resilience planning**. For example, UC San Francisco Health has worked closely with the City of San Francisco for many years on the topic of emergency preparedness in the region, collaborated with other Bay Area hospitals to share assets during surge events, and is looking at opportunities to strengthen these partnerships. The HVA update initiative represents another notable example of system-wide collaboration for climate resilience planning.

UC Health Spotlight

UC San Diego Health's Collaborative Approach to Resilience Planning Builds Collective Capacity

UC San Diego Health's Sustainability department and Emergency Management teams have worked closely together with other UC Health centers to develop a climate-resilient, forward-looking HVA tool (see page 19). Regular meetings between the teams have fostered a dynamic exchange of ideas and generated opportunities for skill development and stakeholder engagement.

Early in the process, UC San Diego Health distributed a climate resilience survey to 24 departments, seeking insights into potential climate impacts and priorities. Resilience leads are collaborating with Human Resources to gather patient and staff demographic data at the UC San Diego Health level. This information is being used to ensure that engagement initiatives are representative of the population and to understand the key types of environmental risk factors affecting staff and patients, using tools such as the CalEnviroScreen, Healthy Places Index, and the CDC's Climate Vulnerability Index. To support outreach efforts for at-risk patients before, during and after climate events, the UC San Diego Health Medical Director of Sustainability and a medical student fellow are developing climate and health engagement toolkits for physicians and patients.

Externally, UC San Diego Health has also established valuable partnerships and collaborations. For example, they are working with the San Diego Department of Public Health to align with equity planning initiatives. This collaboration seeks to identify regional populations at greater risk from climate impacts using mapping, CalEnviroScreen and Environmental Justice screening tools. Additionally, UC San Diego Health is leading action on climate and health resilience with the San Diego Healthcare Disaster Coalition and sharing lessons learned through the HVA tool update process.

Documenting their iterative and collaborative resilience planning process, UC San Diego Health is not only learning from their experiences but also contributing to the collective knowledge base. This includes insights into funding opportunities that can support other UC Health centers in their resilience efforts. Looking ahead, UC San Diego Health is excited to share their valuable insights beyond the UC Health system, extending knowledge to other health centers across the nation and interested agencies.

4.5 Element 5: Interdisciplinary Planning, Oversight, and Evaluation

OCCHE Guidance: Climate resilience planning requires a multi-disciplinary approach from within the healthcare organization.

UC Health centers are taking an **integrated approach to climate assessment and resilience planning**. In many cases, resilience planning initiatives are led jointly by sustainability and emergency management departments, with guidance from health equity, diversity and inclusion offices, and with engagement of other key departments across the organization such as administrators and executives, clinical services, pharmacy, food and nutrition, IT, waste management, and facility services.

The **interdisciplinary planning partnerships** have proven to be fruitful and valuable and will set UC Health centers up for successful action planning and implementation. Each UC Health center has also been reporting on the progress to the Chief Operating Officers to ensure organizational alignment, oversight and commitment.

In 2024, many UC Health centers will begin turning their attention to action planning. This phase will be focused on addressing the climate resilience priorities as identified through the two tools and identifying actions with assigned implementation timelines, budget and resources, responsibilities, and integration with existing initiatives. The action planning process will provide an opportunity to establish measurable performance indicators to monitor and evaluate the progress.

UC Health Spotlight

UCLA Health's Approach to Interdisciplinary Resilience Planning and Accountability

UCLA Health is taking a holistic approach to its resilience planning that aims to address every facet of its operations, from supply chain and infrastructure to patient care, population health, emergency preparedness and community engagement. Their unique and deliberate approach involves establishing task forces comprised of experts in key areas to conduct a thorough risk and vulnerability assessment.

UCLA Health began by establishing a robust Working Group and Task Force framework to ensure comprehensive stakeholder engagement. Currently, UCLA Health is in the process of presenting an overview of their proposed planning framework and structure to executive leadership for approval.

Following senior leadership approval, the task forces, consisting of subject matter experts throughout the health system, will begin conducting vulnerability assessments specific to their respective domains. These climate resilience and environmental justice task forces will play a pivotal role in designing strategies to address, prevent, intervene in, plan for, and treat the impacts of climate-related challenges. The proposed task forces are Operations and infrastructure, Patient care, Workforce development, and Community engagement and accountability.

5 Path Forward: Next Steps for UC Health Climate Resilience Planning

Resilience planning efforts at UC Health are an iterative process and UC Health centers will be continuing their efforts on each of the five resilience planning elements. The table below identifies key next steps that UC Health will be pursuing in the new year (2024) as well as over the following years (2025-2028). It includes examples of UC Health center-specific immediate next steps. As a result of the iterative approach, the next steps will be adapted as the work progresses.

Resilience Planning Element	Next Steps	Timeline Immediate – 2024 Medium-term – 2025-28	Examples of UC Health Center-Specific Immediate Next Steps
Element 1: Prospective Risk Assessment	Continue to refine the HVA tool and complete climate-informed assessments	Immediate	UCLA Health – Pending leadership approval, task forces conduct risk assessments and design means of addressing, preventing, intervening in, planning for, and treating climate harms.
	Consider the incorporation of updated HVA assessment findings in Emergency Management and Continuity of Operations planning	Medium-term	
Element 2: Health Equity & Community Engagement	Carry out more in-depth staff/faculty/student engagement, including workshops with key groups (UC San Diego Health, UC Davis Health, UC San Francisco Health)	Immediate	UC Davis Health – Climate action fellows host at least two stakeholder engagement sessions during the 2023-24 academic year. UCLA Health – Task forces inform vulnerability assessment with an equity lens.
	Expand on existing engagement efforts with wider (broader community) and deeper (impact/vulnerability/hazard-specific) engagement approaches	Medium-term	
Element 3: Assessment and Remediation of Vulnerabilities in Infrastructure and Operations	Refine, expand and deepen vulnerability assessment results to include other climate hazards and results from expanded engagement	Immediate	UC Irvine Health – Conduct internal focus group engagement sessions to assess the vulnerability of faculty and staff. Continue engaging community members from marginalized groups.
	Incorporate findings from community engagement to identify and refine resilience strategies to address key vulnerabilities	Medium-term	

Resilience Planning Element	Next Steps	Timeline Immediate – 2024 Medium-term – 2025-28	Examples of UC Health Center-Specific Immediate Next Steps
Element 4: Collaboration Between Healthcare Organizations	Continue ongoing collaboration through existing relationships	Immediate	UCSF Health – Meet with the San Francisco Department of Public Health to explore opportunities for reciprocal collaboration on climate resilience
	Build on relationships and collaboration with healthcare organizations and stakeholders to kick-start implementation	Medium-term	
Element 5: Interdisciplinary Planning, Oversight, and Evaluation	Based on the community engagement and assessment of vulnerabilities, identify adaptation strategies and actions to incorporate into a climate resilience plan and emergency management response as appropriate	Immediate / Medium-term	UC San Diego Health – Investigate a process or framework for capturing data on climate hazards and impacts as part of the Epic health record.
	Support campus efforts to update their Climate Action Plans with climate resilience considerations	Medium-term	

6 Conclusion

The University of California is leading a system-wide initiative for equity-centered climate resilience planning. This report summarizes key aspects of UC Health centers' accelerated and concerted efforts to holistically address climate change impacts on their infrastructure, operations and the communities they serve, using an approach that is deeply rooted in health equity. Jointly, these initiatives showcase UC Health's commitment to delivering exceptional clinical care, especially to underserved populations, even in light of the challenges brought on by global climate change.

Since signing the Health Sector Climate Pledge in 2022, UC Health centers have made significant achievements in leading in-depth, thoughtful engagement, leveraging existing programs and initiatives for climate action, and taking a deeper dive to understand climate vulnerabilities to facilities, staff, and patient communities.

The next step is to continue working together to deepen stakeholder and community engagement and develop strategies to address key vulnerabilities and risks. UC Health recognizes that climate resilience planning remains an ongoing process as impacts, needs and priorities evolve, which will be strengthened through interdepartmental and cross-sectoral collaboration.
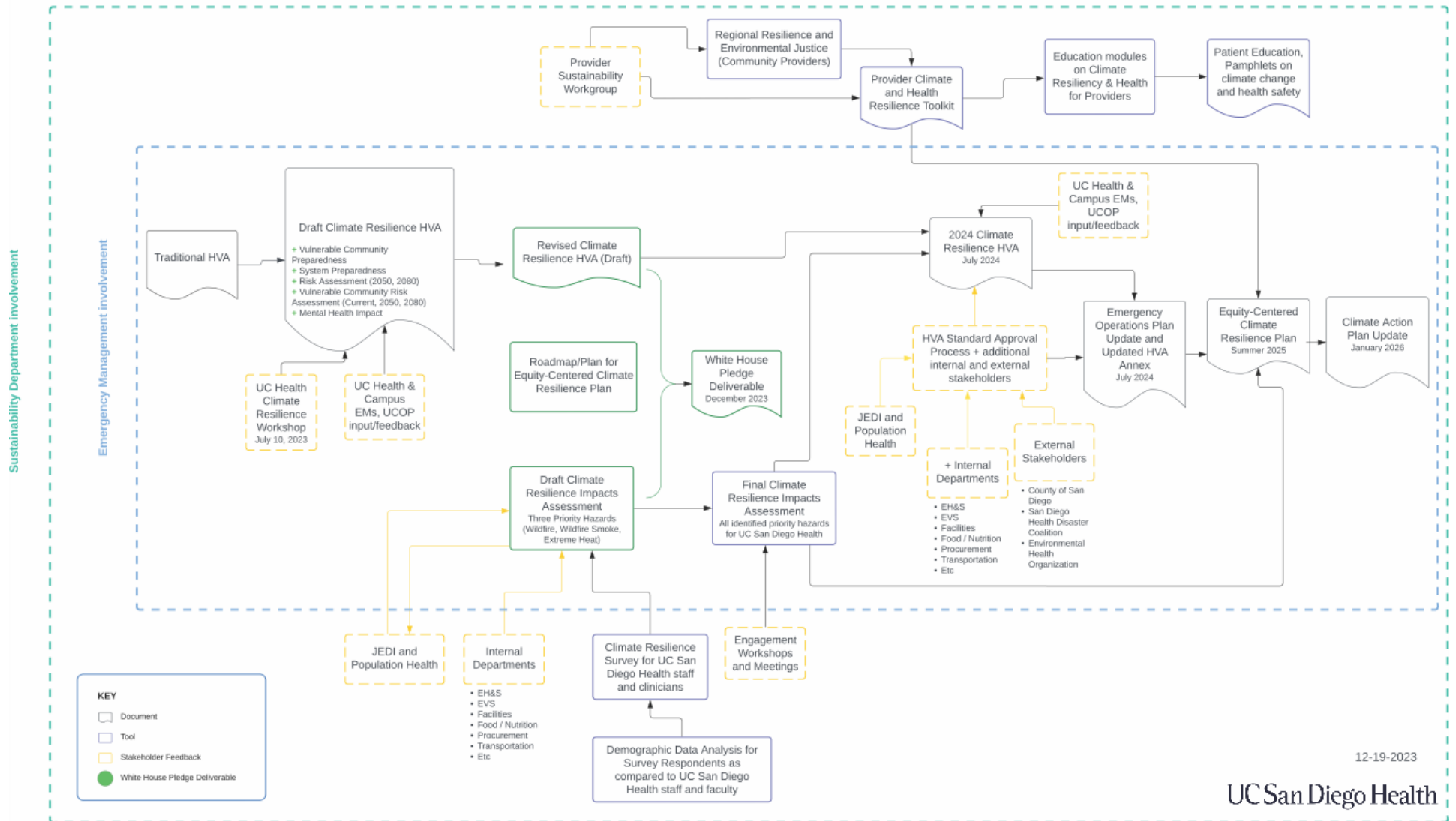
7 Appendices
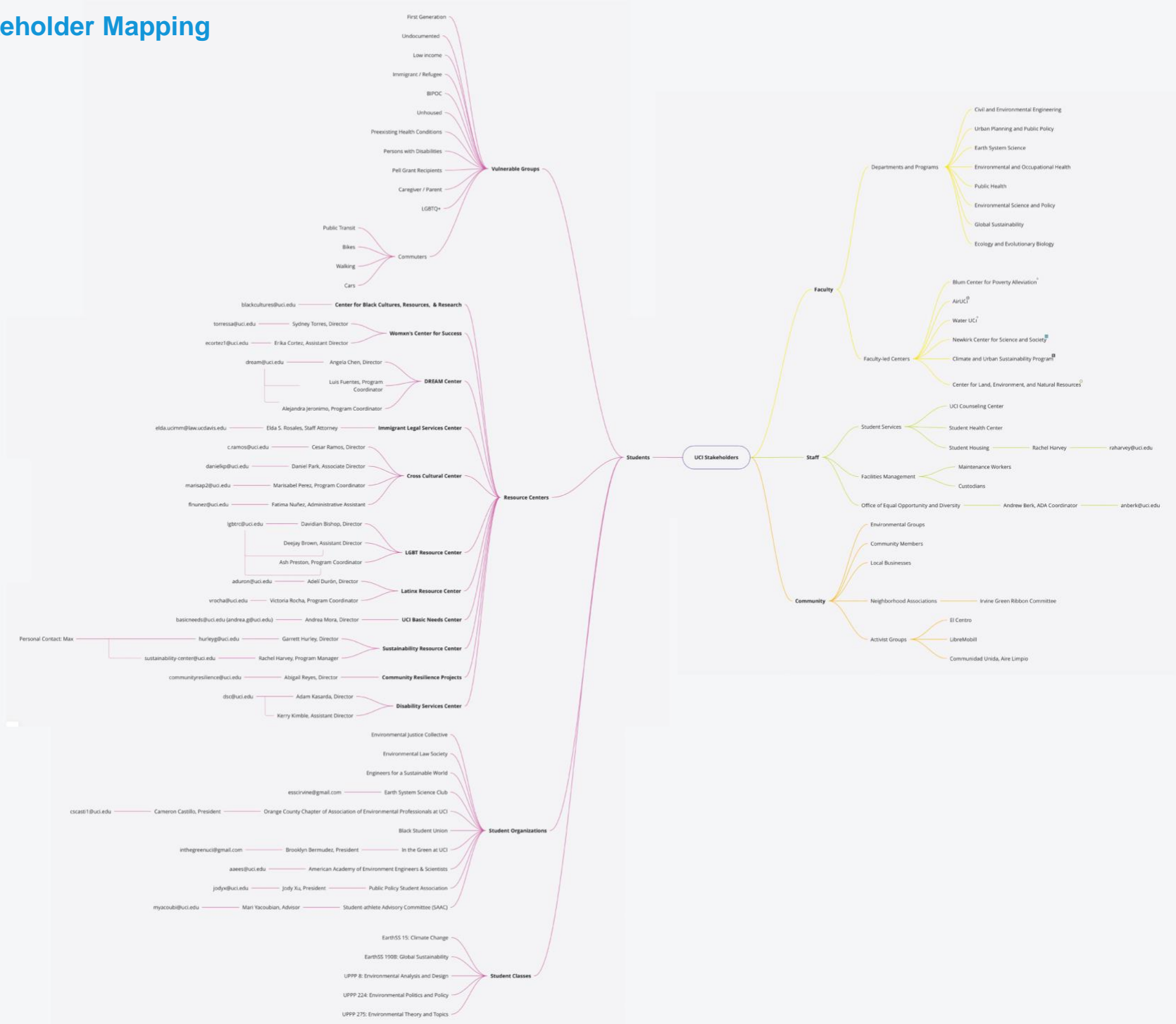
7.1 UC Health Updated HVA Tool

EVENT	CURRENT PROBABILITY	FORECAST PROBABILITY	FORECAST PROBABILITY	PHYSICAL IMPACT	SYSTEM DEPENDENT MENTAL HEALTH IMPACT	PROPERTY IMPACT	CONTINUITY OF OPERATIONS	WARNING TIME	DURATION	SOCIAL VULNERABILITY COMMUNITY IMPACT	SYSTEM PREPAREDNESS	CURRENT RISK	RISK 2050	RISK 2080	CDC SVI RATING	CURRENT % COUNTY POPULATION AT RISK	YEAR 2050 % COUNTY POPULATION AT RISK	YEAR 2080 % COUNTY POPULATION AT RISK
Earthquake	3	4	5	5	5	5	5	5	1	4	2	48.00%	64.00%	80.00%	99.70%	47.86%	63.81%	79.76%
Drought	3	4	5	5	5	2	4	1	5	4	2	42.00%	56.00%	70.00%	89.60%	37.63%	50.18%	62.72%
Temperature Extremes (<32°, 100°>)	4	4	5	5	5	2	2	1	5	4	2	52.00%	52.00%	65.00%	97.90%	50.91%	50.91%	63.64%
Wildfire	5	5	5	5	4	5	3	4	5	3	2	77.50%	77.50%	77.50%	100.00%	77.50%	77.50%	77.50%
Wildfire Smoke	3	3	4	5	5	2	2	4	5	5	3	46.50%	46.50%	62.00%	100.00%	46.50%	46.50%	62.00%
Wildfire Ash	3	3	4	5	5	2	2	4	5	5	2	45.00%	45.00%	60.00%	100.00%	45.00%	45.00%	60.00%
Wildfire Air Quality	3	3	4	5	5	2	2	2	5	5	4	45.00%	45.00%	60.00%	100.00%	45.00%	45.00%	60.00%
Gusty or Santa Ana Winds	4	4	5	2	1	4	3	2	3	5	4	48.00%	48.00%	60.00%	45.50%	21.84%	21.84%	27.30%
												0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
Average Score Rating	3.50	3.75	4.63	4.63	4.38	3.00	2.88	2.88	4.25	4.38	2.63	50.75%	54.38%	67.06%		41.36%	44.53%	54.77%

Scoring legend (probability columns):
- CURRENT PROBABILITY (Current likelihood this will occur.): 5 = Almost Certain; 4 = Highly Likely; 3 = Possible; 2 = Unlikely; 1 = Rare or not previously considered
- FORECAST PROBABILITY (Likelihood this will occur by 2050): 5 = Almost Certain (probable by that year); 4 = Highly Likely (forecast by that year); 3 = Possible (forecast by that year); 2 = Unlikely (forecast by that year); 1 = Rare (forecast by that year)
- FORECAST PROBABILITY (Likelihood this will occur by 2080): 5 = Almost Certain (probable by that year); 4 = Highly Likely (forecast by that year); 3 = Possible (forecast by that year); 2 = Unlikely (forecast by that year); 1 = Rare (forecast by that year)

BREADTH OF IMPACT:
- PHYSICAL IMPACT (Possibility of death or injury at facility by event.): 5 = 10 or more deaths; 4 = 5 -9 deaths; 3 = Injuries result in permanent disability or less than 5 deaths; 2 = Injuries do not result in permanent disability; 1 = Injuries treatable with first aid
- SYSTEM DEPENDENT MENTAL HEALTH IMPACT (Within 30 days of start of event, number of persons who request or require mental health services.): 5 => 75 persons; 4 = 50 - 74 persons; 3 = 20-49 persons; 2 = 5-19 persons; 1 =>5 persons
- PROPERTY IMPACT (Amount of hospital infrastructure potentially damaged by event.): 5 = Total Loss or <$250M; 4 = >50% or $100M - $250M; 3 = 25-50% or $51M - $100M; 2 = 10-25% or $11M - $50M; 1 = <10% or <$10m
- CONTINUITY OF OPERATIONS (Complete interruption / shutdown of facility to carry out any essential function.): 5 = >30days; 4 = 7 - 30 days; 3 = 3 - 7 days; 2 = 1 - 3 days; 1 = 24 hours or less
- WARNING TIME (Event anticipation time): 5= < 1 hour; 4 = < 24 hours; 3 = 1-3 days; 2 = 3 - 7 days; 1 = >7 days
- DURATION (Time event may continue): 5 = > 30 days; 4 = 7 - 30 days; 3 = 3 - 7days; 2 = 1 - 3 days; 1 = 24 hours or less

PREPAREDNESS:
- SOCIAL VULNERABILITY COMMUNITY IMPACT (Socially Vulnerable Community preparedness.): 5 = Event not previously considered; 4 = Event identified and/or JEDI preparedness documentation started; 3 = JEDI preparedness documentation completed; 2 = JEDI Event Annex exercised and/or evaluated; 1 = JEDI Mitigation for Event Commenced
- SYSTEM PREPAREDNESS (Staff trained, equipped, and drilled for event.): 5 = Event not previously considered; 4 = Event identified and/or staff not trained; 3 = Event staff trained, no equipment; 2 = Most staff trained, some equipment; 1 = Event staff identified, trained, properly equipped and drilled.

Relative Threat legend (Risk columns): 80% - 100% = Very High; 60% - 79% = High; 40% - 59% = Moderate; 20% - 39% = Low; > 19% = Very Low

7.2 UC San Diego Health – Climate Resilience Planning Roadmap

UC San Diego Health Climate Resilience Roadmap

7.3 UCI Stakeholder Mapping

UCI Stakeholders

Students

Vulnerable Groups
- First Generation
- Undocumented
- Low income
- Immigrant / Refugee
- BIPOC
- Unhoused
- Preexisting Health Conditions
- Persons with Disabilities
- Pell Grant Recipients
- Caregiver / Parent
- LGBTQ+

Commuters
- Public Transit
- Bikes
- Walking
- Cars

Resource Centers
- **Center for Black Cultures, Resources, & Research** — blackcultures@uci.edu
- **Womxn's Center for Success**
  - Sydney Torres, Director — torresa@uci.edu
  - Erika Cortez, Assistant Director — ecortez1@uci.edu
- **DREAM Center** — dream@uci.edu
  - Angela Chen, Director
  - Luis Fuentes, Program Coordinator
  - Alejandra Jeronimo, Program Coordinator
- **Immigrant Legal Services Center**
  - Elda S. Rosales, Staff Attorney — elda.ucimm@law.ucdavis.edu
- **Cross Cultural Center**
  - Cesar Ramos, Director — c.ramos@uci.edu
  - Daniel Park, Associate Director — danielxp@uci.edu
  - Marisabel Perez, Program Coordinator — marisap2@uci.edu
  - Fatima Nuñez, Administrative Assistant — finunez@uci.edu
- **LGBT Resource Center** — lgbtrc@uci.edu
  - Davidian Bishop, Director
  - Deejay Brown, Assistant Director
  - Ash Preston, Program Coordinator
- **Latinx Resource Center**
  - Adelí Durón, Director — aduron@uci.edu
  - Victoria Rocha, Program Coordinator — vrocha@uci.edu
- **UCI Basic Needs Center**
  - Andrea Mora, Director — basicneeds@uci.edu (andrea.g@uci.edu)
- **Sustainability Resource Center**
  - Garrett Hurley, Director — hurleyg@uci.edu — Personal Contact: Max
  - Rachel Harvey, Program Manager — sustainability-center@uci.edu
- **Community Resilience Projects**
  - Abigail Reyes, Director — communityresilience@uci.edu
- **Disability Services Center** — dsc@uci.edu
  - Adam Kasarda, Director
  - Kerry Kimble, Assistant Director

Student Organizations
- Environmental Justice Collective
- Environmental Law Society
- Engineers for a Sustainable World
- Earth System Science Club — esscirvine@gmail.com
- Orange County Chapter of Association of Environmental Professionals at UCI — Cameron Castillo, President — cscast1@uci.edu
- Black Student Union
- In the Green at UCI — Brooklyn Bermudez, President — inthegreenuci@gmail.com
- American Academy of Environment Engineers & Scientists — aaees@uci.edu
- Public Policy Student Association — Jody Xu, President — jodyx@uci.edu
- Student-athlete Advisory Committee (SAAC) — Mari Yacoubian, Advisor — myacoubi@uci.edu

Student Classes
- EarthSS 15: Climate Change
- EarthSS 190B: Global Sustainability
- UPPP 8: Environmental Analysis and Design
- UPPP 224: Environmental Politics and Policy
- UPPP 275: Environmental Theory and Topics

Faculty

Departments and Programs
- Civil and Environmental Engineering
- Urban Planning and Public Policy
- Earth System Science
- Environmental and Occupational Health
- Public Health
- Environmental Science and Policy
- Global Sustainability
- Ecology and Evolutionary Biology

Faculty-led Centers
- Blum Center for Poverty Alleviation
- AirUCI
- Water UCI
- Newkirk Center for Science and Society
- Climate and Urban Sustainability Program
- Center for Land, Environment, and Natural Resources

Staff

Student Services
- UCI Counseling Center
- Student Health Center
- Student Housing — Rachel Harvey — raharvey@uci.edu

Facilities Management
- Maintenance Workers
- Custodians

Office of Equal Opportunity and Diversity
- Andrew Berk, ADA Coordinator — anberk@uci.edu

Community
- Environmental Groups
- Community Members
- Local Businesses

Neighborhood Associations
- Irvine Green Ribbon Committee

Activist Groups
- El Centro
- LibreMobili
- Communidad Unida, Aire Limpio