

2024

WATER UTILITY CLIMATE ALLIANCE ANNUAL REPORT

SUMMARY OF ACTIVITIES:

This report documents the Water Utility Climate Alliance's major accomplishments of 2024.



MESSAGE FROM THE STAFF CHAIR AND VICE CHAIR



We are pleased to present our 2024 WUCA Annual Report, which demonstrates our commitment and continued advancements towards climate resilience. As we convened for our General Manager's meeting in Florida on the heels of two major hurricanes, we were once again reminded that the impacts of climate change are here and now. The value and criticality of WUCA's work remains clear. From understanding and communicating the climate risks to infrastructure and our communities, continuing to develop peer-to-peer sharing and training opportunities, and taking action through design standards and retrofits, our collective and ongoing efforts keep us focused on our vision of climate-resilient water utilities supporting thriving communities.

Our efforts continue to be multi-pronged, recognizing that there is no one-size-fits-all solution to resilience. Since our founding, one of WUCA's key contributions has been to advance and interpret climate science for water resource managers to use in practice. This year, that work continued with the development of a guidance document on state-of-the-art climate modeling (i.e., CMIP6), and kicking off new work to leverage high resolution climate modeling from Department of Energy labs to produce intensity-duration-frequency (IDF) data that are essential to resilient infrastructure design practices. In addition to focusing on actionable science initiatives, we also advanced projects to aid utilities in making the case for climate-resilient infrastructure investments, and to develop guidance for implementing climate resilient design approaches. Furthermore, we leveraged the knowledge of our staff and peers to share information with each other and our networks on using climate information and making decisions under uncertainty, reducing greenhouse gas emissions at water utilities, and incorporating climate change into water demand forecasts. In June, we held another successful training in partnership with the US EPA, developed and hosted by Seattle Public Utilities, to build a shared awareness of best available climate science, scenario-based planning, and implementation.

Finally, this year marks the culmination of a multi-year project with the US Water Alliance to advance our Strategic Plan goal to incorporate equity into WUCA's work. Since 2022, WUCA has been working closely with the US Water Alliance to leverage our collective networks and expertise on the nexus of climate and water equity. This collaboration has culminated in a deeper understanding of emerging and leading practices to advance equity through climate action, which is reflected in a series of case studies, guiding principles and actions, and a tailored roadmap for WUCA to embed equity into our ongoing climate work.

With great pride in our progress, and commitment to continued collaboration and innovation, we are pleased to present this summary of our 2024 activities.

Alan Cohn

Staff Chair, WUCA
Senior Policy & Science Advisor
New York City Department of Environmental Protection

Julia Rockwell

Staff Vice-Chair, WUCA
Manager, Climate Adaptation & Watershed Protection
Philadelphia Water Department

ABOUT WUCA

WUCA comprises 12 of the nation's largest water providers, providing drinking water and other water services to over 50 million people across the nation. WUCA representatives include climate adaptation planners, water resource specialists, and other sustainability leaders. Executive leaders of the 12 member agencies help guide our work, which staff advance through our annual work plans. WUCA's power is through partnership -- we pool our member utility resources and collaborate with partners across the water utility, climate adaptation, academic, and public sectors to advance new and impactful work.

Formed in 2008, WUCA has worked for over a decade to ensure that water utilities and their communities will thrive in the face of emerging climate challenges. WUCA leverages our collective utility experiences to develop leading practices, science, planning and implementation-based resources, and trainings in climate change adaptation that are actionable, equitable, and serve as a model for others. Additionally, WUCA collaborates with Federal and other national partners to deliver trainings and resources, and provides input to Federal agencies on our needs as stakeholders for climate change services.

WUCA welcomes opportunities to connect with partners about our priorities, resources, and other topics. You can connect with WUCA [online](#).

WUCA MEMBER AGENCIES



INTRODUCTION

Each year the Water Utility Climate Alliance (WUCA) develops a list of projects that will meet priorities outlined in its current Strategic Plan. WUCA staff first develop draft project scopes and budget then together with leadership evaluate projects to determine how well each addresses:

- 01** The Alliance's current strategic priorities;
- 02** Value added to individual WUCA utilities; and
- 03** Staff time available to execute the project.

This process leads to formation of the annual work plan and budget presented to WUCA executives each year at the General Managers' Business Meeting. Project managers lead projects and facilitate project committees to implement and execute projects. This report documents WUCA's 2024 accomplishments and the next steps for key projects.



ADVANCING WATER EQUITY AND CLIMATE RESILIENCE

Project Managers: Kavita Heyn (Portland Water Bureau) and Elisia Langdon (New York City Department of Environmental Protection)

Committee: Alan Cohn, Amy Motzny, Ann Grodnik-Nagle, Erich Pacheco, Elise Guinee-Cooper, Julia Rockwell, Allison Lau, Ashley Ebrahimi, Heather Dalrymple, Marisa Flores Gonzalez, Denise McGlown, Stephanie Chiorean, Jenny McCarthy, Carlos Carrillo, Anjuli Corcovelos, and Joshua Randall

In 2021 WUCA developed a Strategic Plan for 2022 – 2026 that, for the first time, included an objective to “Incorporate consideration of equity into all WUCA’s work.” One of the first actions that WUCA committed to was to develop a partnership and project with the US Water Alliance, a national nonprofit organization that is a leading expert on water equity.

At the outset of the US Water Alliance and WUCA partnership in the summer of 2022, WUCA utility representatives attended a short training workshop led by the US Water Alliance and responded to a survey gauging individual-, utility-, and WUCA-level efforts to integrate equity into climate work. These findings informed the focus of the multi-year partnership and development of a series of resources for WUCA, its member utilities, and the broader water sector including:



A series of six case studies sharing Equitable Climate Solutions for Water and Wastewater Utilities (three are now available online with three more set for publication in early 2025);



A public-facing framework, *Advancing Equity Through Climate Action in the Water Sector*, with key guiding principles and actions outlined for advancing equity through climate action in the water sector; and



A roadmap for WUCA to use to embed equity and environmental justice into the coalition’s climate work.

Advancing Equity Through Climate Action in the Water Sector is designed to be a public-facing framework for the water sector that outlines a series of guiding principles, highlighting areas for embedding equity into climate action and water management. Each principle includes strategies offering clear pathways, with the hope that water utilities and other water entities can utilize the framework as a path to build on equitable action in the sector.

The WUCA *Equity Roadmap* is an internal-facing document that provides actionable recommendations for WUCA specifically to integrate equity and environmental justice into its climate work. This roadmap is grounded in the framework’s guiding principles and includes a series of recommended actions for WUCA to foster a more inclusive and equitable climate action agenda. These actions were identified through a review of best practices and conversations with WUCA Equity Committee Staff. Each guiding principle is linked to WUCA’s strategic planning and includes specific actions for future work plans and updates.

CMIP6 FREQUENTLY ASKED QUESTIONS WORKING GROUP

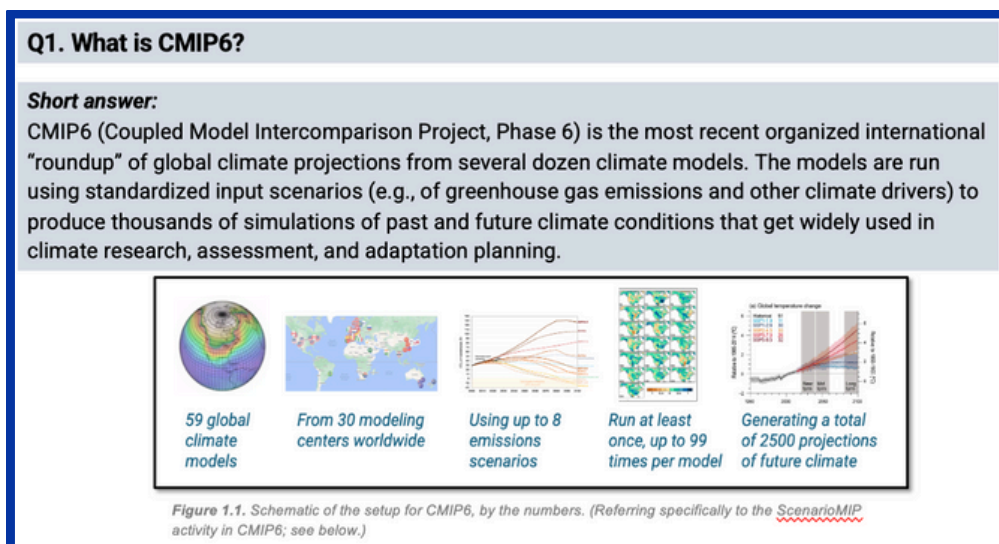
Project Managers: Keely Brooks (Southern Nevada Water Authority), Nolie Templeton (Central Arizona Project)

Working Group: Taylor Winchell (Denver Water – coordinated office hours), Helen Gerlach, Marisa Flores-Gonzalez, Young-Hoon Jin, Jerry Mead, Rakesh Gelda, Rajith Mukundan, Alan Cohn, Ben Beal, Kavita Heyn, Tsega Anbessi, Julia Rockwell, Ashley Ebrahimi, Amod Dhakal, Ayoub Ayoub, Tom Maher, Rolf Gersonde, Miles Mayhew, Tai Ovbiebo, Hui Wang

In 2024, the working group contracted with Aspen Global Change Institute (AGCI) and Lukas Climate Research and Consulting to create a Frequently Asked Questions (FAQ) document on the Coupled Model Intercomparison Project Phase 6 (CMIP6), which is a standardized set of simulations that researchers use to study past, present, and future climate scenarios. The goal of the FAQ is to provide a clear, comprehensive guide to help water resource managers or modelers in the United States, including those with little or no prior experience with climate model datasets, to use and interpret CMIP6 datasets. The working group drafted 13 initial questions and then refined them in collaboration with AGCI and Lukas. The responses to the questions incorporate feedback from the working group and subject-matter experts from universities, federal agencies, and the private sector.

As demonstrated in the example below, each question includes a “short answer” (1-2 paragraphs) and a “long answer” (2-5 pages) with relevant figures, further reading, and references. The project authors and subject matter experts also developed a set of slides to accompany the FAQ for easier sharing of the information.

The complete [CMIP6 FAQ](#) is now available on WUCA’s website in an easy-to-navigate and downloadable pdf format. The FAQ provides clear responses to the questions to help water managers navigate and interpret CMIP6 datasets with confidence.



WUCA CLIMATE RESILIENCE TRAINING AT SEATTLE PUBLIC UTILITIES (SPU)

Project Manager: Ann Grodnik-Nagle (Seattle Public Utilities)

Seattle Public Utilities hosted its first in-person WUCA Climate Resilience training workshop on June 4 and 5, 2024 at Wisteria Hall at the University of Washington Arboretum. This two-day workshop aimed to build a shared awareness of best available climate science, scenario-based planning, and implementation. This workshop is the eighth in a series of WUCA trainings held in regions across the country, following last year's regional training in the Delaware River basin.

The WUCA climate resilience workshops were originally developed as trainings to help water sector professionals use climate information in their planning work. While this overarching goal remains relevant, the water sector's understanding of climate change and adaptation has evolved, and many water utilities benefit from local and regional climate training and planning. This SPU-led training increased participants' collective understanding of both water sector and climate change planning challenges and provided tools and case studies on how to overcome these challenges and successfully adapt, even amid deep uncertainty.



A total of 50 participants, including Seattle Public Utilities water planning staff, consultants, and partners from Seattle City Light and Tacoma Water, took part. Kavita Heyn and Edward Campbell from Portland Water Bureau and Rosemary Menard from City of Santa Cruz provided case studies from their utility experiences. To keep costs down and to build relationships, SPU relied on local experts from the University of Washington Climate Impacts Group and Aspen Global Change Institute (AGCI) for climate impacts and modeling presentations. EPA's Creating Resilient Water Utilities (CRWU) initiative also contributed case studies and facilitator support to the workshop.

WUCA CLIMATE RESILIENCE TRAINING AT SEATTLE PUBLIC UTILITIES (SPU) (CONT.)

After the event, participants provided overwhelmingly positive feedback. Even though SPU has been incorporating climate science into water planning since the early 2000's, the content was relevant and new for many. Exemplary feedback included:

“Mixture of interactive exercises and presentations allowed hands-on application and broader exposure to science and case studies.”

“[The training] provided a very clear explanation of scenario planning and an exposure to the methodology. I also liked the case studies. I think it was well-paced, it ran for the right amount of time and provided breaks. Great getting to see SPU staff face-to-face: wish we had more of these kind of things in the hybrid work multiverse.”

“Great attendees with a wide array of expertise and experience which led to rich discussion (both in designated table exercises and informal side conversations).”

Given the success of WUCA's ongoing climate resilience trainings, SPU wants to reiterate its gratitude to WUCA for supporting this excellent event! Materials from all WUCA climate resilience trainings are available on WUCA's [website](#) under training and presentations. The training materials provide agendas and presentations on the various regional and national trainings WUCA has held; topics include introductions to climate modeling, downscaling methods, different planning approaches, and various case studies from peers.

GREENHOUSE GAS MITIGATION COMMITTEE AND INFLATION REDUCTION ACT (IRA) CLEAN ENERGY TAX CREDITS GUIDANCE

Project Managers: Heather Dalrymple (Austin Water) and Elise Guinee-Cooper (Portland Water Bureau)

Committee: Jane Atkinson, Brooks Bolsinger, Keely Brooks, Anjuli Corcovelos, Elizabeth Crosson, Kavita Heyn, Adrian Hightower, Jennifer McCarthy, Ashima Sukhdev, Nolie Templeton, Taylor Winchell

WUCA continued to provide a space for water utilities to connect with and learn from each other as they work to better understand and reduce their greenhouse gas (GHG) emissions. This initiative also helped WUCA meet its Strategic Plan objectives to mainstream GHG mitigation and enhance knowledge sharing across utilities. As part of its 2024 workplan, the committee identified speakers and topics for a GHG webinar series, developed new GHG-related case studies to add to WUCA's online document library, and contracted with AMWA to develop guidance materials for utilities applying for Inflation Reduction Act tax credits for decarbonization and GHG mitigation projects.

The target audience for the webinars included WUCA member utilities, the WUCA Network, and the US Water Alliance's GHG Committee. Webinar topics and presenters included various topics, such as low-embodied concrete initiative from the City of Austin, Texas; zero emission fleet transition initiatives from New York City Department of Environmental Protection and Metropolitan Water District of Southern California; and scope 3 inventories.

The committee also contracted with AMWA to develop guidance on how public drinking water utilities can benefit from the clean energy investment incentives that are part of the Inflation Reduction Act (IRA) of 2022. The IRA extends many clean energy tax credits to tax-exempt entities, including local governments and public utilities, through a mechanism called direct pay.

By May 1, 2025, the tax deadline for government entities completing their taxes for fiscal year 2024, the project will culminate in the dissemination of an overview of the eligible projects, guidance on how to claim credits, at least one utility case study, and an informational webinar for the AMWA and WUCA communities. The project will perform a deep dive on one program, the Investment Tax Credit (ITC) for Energy Property (26 U.S. Code §48), which is for investment in renewable energy projects that are placed in service before December 31, 2024. While the ITC will be applicable to entities completing their taxes for fiscal year 2024, lessons learned from the ITC can be applied to the Clean Electricity Investment Tax Credit (26 U.S. Code §48), which applies to projects completed in 2025 and onwards.

CLIMATE RESILIENT ENGINEERING DESIGN GUIDANCE FOR THE WATER SECTOR

Project Managers: Heather Dalrymple (Austin Water) and Ashley Ebrahimi (Philadelphia Water Department)

Committee: Tsega Anbessie, Keely Brooks, Alan Cohn, Ann Grodnik-Nagle, Elise Guinee Cooper, Kavita Heyn, Sami Korpelainen, Allison Lau, Miles Mayhew, Amy Motzny; Kate Carone and Nishant Parulekar from Portland Bureau of Environmental Services

Beginning in 2024 and continuing into 2025, WUCA established a committee to develop climate resilient design guidance strategies for a range of water utility engineering, infrastructure, and capital projects. A fundamental aspect of engineering professional liability standards is the obligation to design and construct infrastructure that withstands accelerating climate events, thereby preventing failure and protecting against damage or loss of life. Currently, there is no national design guidance addressing the diverse types of water utility projects under consideration for this initiative.

In 2024, WUCA established a partnership with the Portland Bureau of Environmental Services (BES), which contributed additional funding to the project and provided two staff members to actively serve on the committee. Throughout the year, the project committee convened monthly to address several key objectives. After thorough discussions, the committee decided to adopt a phased approach for the project, with current efforts as Phase 1.

Through several internal discussions with Portland BES and WUCA utility planners and design engineers, the committee identified a set of twenty potential engineering and infrastructure project types for consideration in Phase 1. In 2025, the project consultant will collaborate with the WUCA project committee to select 5 to 10 project types from this list to serve as the primary focus for the guidance. The committee also initiated a literature review to identify gaps in existing climate resilient design guidance, providing a foundation for the project consultant and ensuring efficient use of project funds. Currently, the committee is reviewing proposals submitted by four potential project consultants and plans to select a consultant after the interview process, with the chosen consultant set to begin in January 2025.

The committee aims to begin Phase 2 in 2026, which will focus on developing strategies for the successful integration of the climate resilient design guidance established in Phase 1 into water utility planning and design processes. The committee developed a draft project concept for Phase 2, and the committee will continue to refine the scope throughout 2025 while exploring potential partnership opportunities. Additionally, the committee has integrated climate mitigation, supply chain considerations, and an adaptive management perspective into the Phase 1 scope.

LEVERAGING CLIMATE MODELING TO PRODUCE FUTURE PRECIPITATION INTENSITY-DURATION-FREQUENCY (IDF) CURVES

Project Managers: Tsega Anbessie (Philadelphia Water Department) and Alan Cohn (New York City Department of Environmental Protection)

Committee: Julia Rockwell, Heather Dalrymple, Nolie Templeton, David Behar, Keely Brooks, and Ann Grodnik-Nagle

The Stormwater/Wastewater Committee in WUCA has started a project to fill a critical gap in understanding how precipitation in the urban Northeast will change in the future, with an emphasis on extreme storms at the sub-hourly scale. This project hopes to replicate similar work from San Francisco Public Utilities Commission (SFPUC) and ultimately plans to produce high resolution precipitation projections and Intensity-Frequency-Duration (IDF) curves for the New York and Philadelphia regions, by leveraging the latest precipitation modeling efforts at various national labs. This project will also explore other variables, such as changing wind speeds, to meet multisector climate data needs and plans to engage various stakeholders from the energy and transportation sectors.

The project team engaged the services of Pathways Climate Institute, who led the work in San Francisco, as a consultant for this project and executed a contract in July 2024. The project will be divided in two phases, with the first phase focused on engaging stakeholders, recruiting technical advisors, holding data exploration meetings with different modeling teams, coordinating with NOAA, and developing a preliminary approach to create IDF curves. The team held a kick-off meeting in July for the first phase of the project. The project team has assembled a list of stakeholders and project advisors and has started reaching out to regional stakeholders from the energy and transportation sectors. As part of the data exploration work, the committee has begun to engage with the Department of Energy (DOE) on the various state-of-the-art climate modeling efforts that DOE oversees to understand how these existing efforts can inform the project. The first phase of the project will wrap up in early 2025 with a report summarizing the work to be published on WUCA's website.

MAKING THE CASE FOR CLIMATE RESILIENT WATER INFRASTRUCTURE AND SUPPORTING STRATEGIES (IN PARTNERSHIP WITH THE WATER RESEARCH FOUNDATION)

Project Managers: Julia Rockwell (Philadelphia Water Department) and Ann Grodnik-Nagle (Seattle Public Utilities)

Committee: Heather Dalrymple, Alan Cohn, Kavita Heyn, Carlos Carrillo, Marisa Flores, Taylor Winchell, Keely Brooks, Jenny McCarthy, Nolie Templeton, Julie Padilla, Allison Lau, Ashley Ebrahimi

This project, operated in partnership with the Water Research Foundation, focuses on improving the tools available to water utilities to quantify and evaluate the costs and benefits of climate adaptation infrastructure and supporting strategies. The desired outcomes of this project are to:

01

Develop a comprehensive framework to maximize the effectiveness of water utilities' limited resources and ratepayer funds, ensure the long-term sustainability of water services, and promote climate-resilient, multi-beneficial solutions;

02

Advance quantitative approaches to promoting climate-resilient infrastructure and approaches in concert with competing utility objectives; and

03

Enhance utilities' ability to communicate with and engage stakeholders about climate adaptation investments and approaches.

After choosing in 2023 to partner with the Water Research Foundation (WRF) on this project to double WUCA's budget to \$100,000, WUCA and WRF released a request for proposals (RFP) for consultant support with a deadline for proposals in mid-November 2023. A project webpage is available [online](#). Ultimately, the team selected Corvias Infrastructure Solutions (CIS) as the primary consultant, with Radbridge Incorporated and Rochester Institute of Technology as sub-consultants. The project as proposed includes a landscape review, the development of a decision-support tool, development of case studies describing tool application, and dissemination of findings.

The project kicked off with a team meeting on July 15 to confirm goals, objectives, scope, and communication protocols. In August, the WRF Project Information Summary was drafted and finalized, and CIS submitted its first periodic report in September. The project will run through July 2025, and the WUCA project managers (Ann Grodnik-Nagle and Julia Rockwell), will serve as the liaisons between the WRF PAC and the WUCA project committee throughout the project's duration.

LONG-TERM WATER DEMAND FORECASTING WORKING GROUP

Project Manager: Keely Brooks (Southern Nevada Water Authority)

Committee: Carlos Carrillo, Tirusew Asefa, Seevani Bista, Taylor Winchell, Kavita Heyn, Sara Eatman, Viviane Baji, Joseph Woodrick, John Edgerly, Tom Maher, Elizabeth Garcia, Ryan Shepler, Ayoub Ayoub, Seth Shanahan, Ben Beal, Kent Sovocool, and Amod Dhakal

In 2024, WUCA reconvened the water demand working group to continue sharing information on how members are incorporating climate change into water demand forecasts.

The key question in 2024 was to understand how utilities were addressing the challenge of declining historical water demand trends while anticipating potential changing demands from climate change.

Oftentimes utilities forecast higher demands despite historical trends as a means of conservative planning, but this can have negative impacts on financial stability in a variety of ways – from financial ramifications of overbuilding to revenue shortfalls from lack of anticipated water sales. The working group met several times during 2024 and learned about several approaches:

- Some utilities are downsizing or resizing large infrastructure projects while using a modular approach that allows for future expansion if needed. This approach is primarily driven by water demand management staff, with growing support from operations, who face challenges from increasing water age in the distribution system due to low demand.
- To better communicate the financial ramifications of volatile demands, another utility now regularly presents water demand forecasts and financial forecasts to the Board.
- Another utility has switched from a single deterministic water demand forecast to a stochastic/probabilistic approach to better capture the uncertainty in demands that could lead to financial instability.
- One utility is conducting a detailed rate study and developing multiple alternatives. Criteria for rate alternatives include:
 - Support smooth and predictable rates;
 - Maintain financial position for forecasted CY27 debt issuance;
 - Retain system reliability;
 - Ensure lowest cost of capital for infrastructure maintenance;
 - Limit cost of current and future financing;
 - Decouple external impacts to focus on internal costs; and
 - Take a conservative approach to limit risk of downside miss.

The working group members shared how utilities are addressing declining demands and the uncertainties posed by climate change. By employing the strategies mentioned above, members are better positioned to balance conservative planning with financial stability.

WUCA ENGAGEMENT AND OUTREACH



In early 2024, WUCA's newly appointed Staff Chair and Staff Vice Chair took the opportunity to reach out to over 50 partners across the water sector, including national and international water sector associations, nonprofits, and federal agencies. The Alliance has met numerous times to discuss updates on developing actionable climate guidance and data with partners across the federal enterprise, including FEMA's resilience office, EPA's Creating Resilient Water Utilities (CRWU) initiative, and NOAA's Adaptation Sciences division.

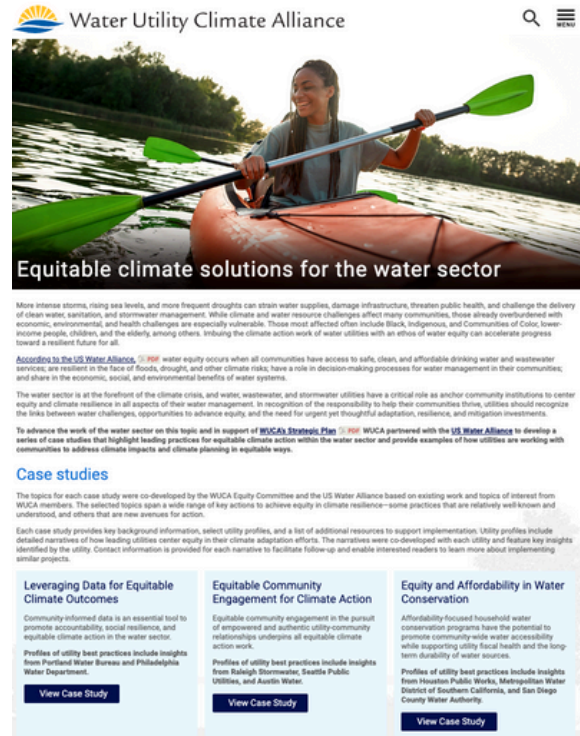
In spring, WUCA, along with partners from the Aspen Global Change Institute (AGCI) and EPA's Creating Resilient Water Utilities (CRWU) initiative, hosted a workshop at the National Adaptation Forum on leading practices in climate adaptation from the water sector. Participants learned about WUCA's leading practices adaptation framework that is organized around five essential climate action areas: Engage, Understand, Plan, Implement, and Sustain. WUCA staff and partners shared stories of leading practices from different action areas to help participants advance their own work using similar approaches. WUCA staff and partners also walked participants through examples of how an equity lens can be applied to the climate action areas, drawing on the three case studies in [Equitable Climate Solutions](#) and other work. During the session, attendees participated in engaging discussions on case study examples and explored how the leading practices can be re-visited so that they continue to inform and support ongoing and evolving adaptation work.

WUCA further continued its virtual climate learning exchanges with experts and partners in 2024. This year, speakers presented on a range of topics, including a session on making the case for climate adaptation measures through cost analyses and an international session featuring Sydney Water's Climate Adaptation Guidebook. WUCA's learning webinars continue to be an opportunity for experts to share knowledge and build networks with engaged climate adaptation leaders in the water sector.

WUCA WEBSITE

Project Managers: Keely Brooks and Ashleigh Thompson (Southern Nevada Water Authority). All WUCA members provide content, and SNWA website team implements.

Southern Nevada Water Authority (SNWA) continues to provide exceptional web support services to WUCA. WUCA staff provide SNWA updates on the latest projects and relevant news throughout the year. This includes updates to the WUCA landing page to better describe the full range of WUCA's work. SNWA posts the latest WUCA products, such as the Equitable Climate Solutions case studies and resources from WUCA's climate resilience trainings and workshops. Additionally, project management tracks and reports on monthly and annual website page visitations and key search terms to better understand the value of the website as a communication tool, and to understand ways to better meet WUCA's strategic goal to "Transfer Knowledge" to the broader water sector.



CONCLUSION



In 2025, WUCA will expand on the progress made through this year's projects, identify new opportunities, and remain responsive to emerging trends and needs. WUCA's projects will support the priorities of its membership by producing and sharing research and products of actionable value. WUCA looks forward to continuing to produce science and guidance for water utilities and to collaborate with partners across the water sector and government. WUCA's 2025 work plan and description of goals for the upcoming year are available for review on WUCA's website.