

### **PREFACE**

Water is essential for all life on earth. Scientific consensus suggests that our rapidly changing climate could undermine our ability to advance sustainable One Water management effectively. As climate risks continue to grow, the climate crisis remains, perhaps, the greatest threat to our collective future.

For over a decade, water managers have responded to increasing numbers of billion-dollar disasters that continue to break historical records for flood, drought, and heat. The capacity of communities to thrive is constantly challenged. Water shortages, excessive heat, and floods disrupt industry operations and daily life. Farmers can no longer rely on historical records for the upcoming season. Food insecurity is increasing around the globe. Climate change is compounding challenges around water equity, racial justice, and social and economic inclusion in developing water solutions. Our sector has fought tirelessly for healthier waterways since the Clean Water Act in the 1970s, but these too hang in a delicate balance. Humanity, animals, biodiversity, and ecosystems are all impacted by climate change and its inextricable ties to water. Significant investments for reliable and resilient infrastructure and services are a critical need moving forward.

The Intergovernmental Panel on Climate Change (IPCC)'s most recent report¹ confirms we are already locked into this changed climate. But it also shines a light on a powerful understanding: it is not too late to prevent further impacts if we act now, together.

It is time for the water sector to step up on climate action. This urgency cannot be understated. We must act as if our lives depend on it—because they do. To reach a sustainable, equitable water future, we must accelerate a holistic climate response for the ongoing and inevitable impacts of climate change on water, the communities we serve, and the ecosystems on which we depend. Alongside equitable adaptation and resilience measures, we must reach for decarbonization. Climate mitigation through water is critical to our success in protecting public and planetary health, now and in the future.

The One Water community is rising to this challenge. The US Water Alliance is proud to partner with over 35 institutions to imagine and pursue a better future. This report is the first sector-wide approach in the United States for addressing water's role in reducing greenhouse gas (GHG) emissions. Our work has just begun. Join us!

#### One Water, One Future.



Mami Hara CEO, US Water Alliance



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<sup>&</sup>quot;Climate stripes" reflected on the adjacent page and throughout this report represent global temperature data from the late 1800s to now. The stripes show significant overall warming of our planet. Additional details and location specific information are available at <a href="https://showyourstripes.info/s/globe">https://showyourstripes.info/s/globe</a> and <a href="https://www.reading.ac.uk/planet/climate-resources/climate-stripes">https://showyourstripes.info/s/globe</a> and <a href="https://www.reading.ac.uk/planet/climate-resources/climate-stripes">https://www.reading.ac.uk/planet/climate-resources/climate-stripes</a>.

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- Al Cho, Senior Vice President, Chief Strategy and Digital Officer, Xylem
- Michael McAfee, President and Chief Executive Officer, PolicyLink
- Art Umble, Director, Institute for Water Technology and Policy, Stantec
- Cindy Wallis-Lage, Executive Director, Sustainability and Resilience, Black & Veatch
- Dr. Jalonne L. White-Newsome, Chief Executive Officer and Founder, Empowering a Green Environment & Economy, LLC

Special gratitude goes to the **Imagination Team** for lending their time, expertise, and bold willingness to step up on climate action. Please see pages 8–9 for more about the team. The Alliance further acknowledges our international partners for their inspiration and insights during the International Water and Climate Mitigation Symposium as part of this initiative, as well as their ongoing guidance and peer support for the US water sector as we implement this vision:

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# INTRODUCTION

Times of upheaval can lead to moments of radical change. COVID-19 upended life across the United States, revealing and exacerbating deeply rooted inequities in our country. This comes at a time when our communities and planet face another radical change: a shift in climate that is challenging our very ways of life and the future viability of this planet. Science demonstrates we have less than a decade to act on climate before greenhouse gas (GHG) emissions warm the planet more than 1.5°C, setting off unprecedented, unpredictable, and irreversible impacts.<sup>2</sup> The water sector continues to be at the forefront of these impacts—most climate impacts are experienced as water stress. Floods, droughts, and severe storms are already playing out in communities across the nation and the globe. This is a crossroads moment in the United States. As we continue to recover from the current public health and economic crises, we must also consider our climate future.

Together, we can take this moment of disruption and turn it into a source of lasting transformation in how we view, value, and equitably manage one of Earth's most precious, undervalued resources: water. To truly advance water equity and help the sector recover stronger during this time of disruption, we can center water as a key pathway to address the climate crisis.

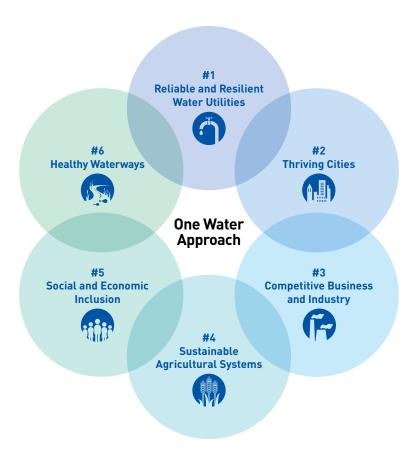
President Biden has pledged that the nation will reach Net Zero emissions no later than 2050.3 Net Zero is a federal priority at this time, but implementation will occur beyond this administration. All stakeholders can seed the leadership and local ingenuity needed over time to reduce emissions. Many US cities have already set more ambitious climate targets. GHG reduction efforts currently focus on big bets through the energy grid, transportation sector, and buildings. Most US states, however, are falling short of city and regional targets to close emissions gaps.4 Recent studies estimate that freshwater sources and water/ wastewater services account for at least 10 percent of global GHG emissions. 5 Moreover, emissions in parts of the water cycle come from infrastructure systems that are centralized, fixed, and can be influenced by policy, which means that rapid progress to reduce GHGs is possible.

The US water sector can—and must—step up to help meet the global water community's bold climate commitments in our "Race to Zero." In fact, it is imperative to support communities, the nation, and our sector. Water infrastructure and services will face increasing climate impacts in the coming decades. How severe those impacts are on water systems, operations, and sector finances will depend on the degree to which these targets are met. Emission targets are also critical to reduce the gravity of consequences for communities facing disparate environmental and climate challenges.

Best estimates for water's contribution of 10 percent of global GHG emissions include:

- Energy-intensive processes for purifying, supplying, and treating water and wastewater.
- Methane and nitrous oxide emissions from wastewater and fecal sludge management and discharge.
- GHG emissions from surface water bodies.
- Decomposition of organic material in reservoirs.
- Degradation and destruction of wetlands, in particular peatlands.
- Different flooding regimes for rice paddy irrigation.<sup>7</sup>

Additional energy and GHG emissions are associated with domestic and industrial use of water and wastewater. At the time of this publication, several international organizations were conducting further research. Updated numbers are expected in mid-2022.



In 2021, the US Water Alliance issued a sector-wide Imagination Challenge: Water's Role in the Race to Zero. In absence of a clear policy framework for decarbonization in the sector, voluntary actions are necessary to help the nation reduce emissions. Thus, the challenge sought a creative and collaborative space to better understand how we as a sector can step up on climate action and reduce water's GHG footprint across the nation.

The Alliance partnered with Black & Veatch; Empowering a Green Environment & Economy, LLC; PolicyLink; Stantec; and Xylem to assemble a national team with diverse representatives across the US water sector to tackle the challenge. Diverse input from affected stakeholders helped reach beyond technology and policy solutions to align interests for action and a common purpose.

This Imagination Team found themselves at a watershed moment of transformation, realizing that a Net Zero Water goal entails much more than a number. Our imagined climate future begins *now*, with emissions reductions *plus* the creation of an equitable and decarbonized water culture that fully implements a One Water approach. Our vision is detailed here. A second report will be released in mid-2022, with a recommended set of implementation pathways for various water stakeholders to enact this vision.

The report is organized in the following manner:

- Imagination Team—Features the team collectively working to advance climate mitigation through water.
- Our 2050 Vision—Unveils a Net Zero Plus vision statement to secure our climate future.
- Advancing a Net Zero Plus Culture—Presents seven elements of an aligned cultural transformation that will achieve Net Zero Plus.
- **Join Us**—Invites One Water leaders and entities to participate on this critical journey.
- **Commitments to Action**—Features examples of water stakeholders taking action.



### **IMAGINATION TEAM**

The Imagination Team formed in 2021 to better understand how the US water sector can step up on climate mitigation and help meet the global Race to Zero. This dynamic team includes representatives from over 35 water associations, utilities, academia, consulting firms, environmental organizations, equity leaders, rising One Water professionals, science advocacy organizations, and artists and cultural leaders working at the intersection of water, climate, and justice. These individuals shaped a shared vision for the future and are developing pathways for different water stakeholders to get there. We thank these individuals for boldly stepping up to this challenge.

This report does not solely represent the individuals listed herein or their organizations. Stakeholder convenings sought alignment around the shared vision and goals to meaningfully address the climate crisis in the absence of regulations or national governing frameworks. All content included reflects the Alliance's synthesis of diverse perspectives and priorities, rather than individual or institutional perspectives themselves.

Imagination Team members are listed alphabetically by organization:

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**PolicyLink** 







# **OUR 2050 VISION**

The US water sector will immediately **align** to achieve Net Zero GHG emissions in equitable ways that benefit all peoples and protect the planet by 2050.



Net Zero GHG emissions is a sector-wide goal to reduce the net total water-related emissions in the United States—including Scope 1, 2, and 3 emissions (direct, indirect, and value chain emissions) from water infrastructure, services, water resources, and ecosystems—to zero. A sector-wide goal means that the sector as a whole will achieve Net Zero emissions, though actions taken may be differentiated to achieve this goal equitably. In other words, the responsibility for emissions reductions and offsets will be shared and distributed to reflect the varying capacity and resources of different entities.

Net Zero Plus is the US water sector's vision for the world we want for 2050 plus a call for the cultural transformation we need to get there. We envision a world where all communities—small, rural, urban, and tribal—have and steward the resources they need to thrive in place, including clean air, equitable economies, healthy living ecosystems, and affordable and plentiful fresh water.

Alignment around Net Zero Plus will achieve a holistic climate response that works to proactively address the ongoing and inevitable impacts of climate change through a One Water approach, while also working to mitigate additional climate risks. Net Zero Plus aligns stakeholders to reach Net Zero GHG emissions by accelerating a cultural transformation for water equity and climate action across the US water sector.

We understand equity as just and fair inclusion—a condition in which everyone has an opportunity to participate and prosper. Water equity, then, occurs when all communities have access to safe, clean, affordable drinking water and wastewater services; share in the economic, social, and environmental benefits of water systems; are resilient in the face of floods, drought, and other climate risks; and have a role in decision-making processes related to water management in their communities.<sup>8</sup>

By **cultural transformation,** we mean the need to shift our collective behavior in the water sector, and in society at large, to prioritize and ensure a livable and living planet over the long term. We must shift from being *reactive* to climate impacts (acting often only after great harm has been done and when it is too late to prevent further damage) to *proactive action* to adapt, build resilience, and reduce GHG emissions through a One Water approach. Changing our behavior requires shifting our values, priorities, and systems. It is a process that will take time, but we must start immediately. The culture we cultivate in the water sector is critical to addressing the climate crisis, as it is shaping key management strategies and solutions in the absence of federal policy, regulations, and frameworks for water's role in climate mitigation.

The following document describes seven elements that will enact a cultural transformation to align the water sector to achieve Net Zero GHG emissions in ways that benefit all peoples and protect the planet. Meeting the sector-wide goal by 2050 means many stakeholders must achieve Net Zero in the coming decade. A companion document, Water's Net Zero Plus: Pathways for GHG Reductions Across the US Water Sector (expected mid-2022), sets key goals and milestones, describes strategic pathways for watersheds and utilities, and addresses challenges associated with this Net Zero Plus vision—such as costs of adopting new technologies, management strategies, behaviors, and models.

# ALIGNED FOR NET ZERO PLUS

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# ADVANCING A NET ZERO PLUS CULTURE

We recognize the many successes and innovations of water systems, processes, and institutions leading up to this point. We also recognize that collectively these are not the same systems, processes, and institutional arrangements that will get us to a Net Zero Plus future by 2050. Our water and climate challenges today, and projected for the future, bring the sector to another pinnacle. Once again, we must harness the ingenuity of water professionals and critical partners to meet the transformation needed at this moment.

The Imagination Team envisioned this future at a unique moment of possibility. The severe disruptions of the COVID-19 pandemic increased public understanding of the value of water. Meanwhile, the signing of the Infrastructure Investment and Jobs Act<sup>9</sup> into law provides a historic investment in water infrastructure. Public and political momentum around climate action is gaining significant ground. This context offers an opportunity for a real transformation in water as part of the climate solution.

Over the course of six months, the Imagination Team researched, learned from innovative utilities and water stakeholders advancing Net Zero goals across the globe, and engaged in a robust series of facilitated dialogues around what it will take to fully implement a One Water approach and reduce GHG emissions.

The team brought varying priorities and perspectives to this process, always striving for alignment. In the absence of regulatory and governance mandates—as with climate action in the United States—shared incentives and values can form the basis for alignment of action and investment. The team identified shared values, expressed as seven elements for an equitable and decarbonized water culture:

- 1. Act now
- 2. Lead from the heart
- 3. Invest for all peoples and the planet
- **4. G**ive respect and room for different knowledge and value systems as necessary partners
- **5.** Negate fossil fuels and process emissions
- **6.** Embrace watershed and water cycle thinking
- 7. Deliver water equity and environmental justice

Below, we describe each element, including why the current status quo is insufficient and what a new direction might look like. What follows is an ongoing and iterative process. We do not have all the answers, but invite each of you to begin this journey with us along the necessary pathway to Net Zero Plus.

#### Act now

Our planet is in peril, and we have very little time to turn things around before certain changes are locked in. At this point, delay in action is synonymous with denial—denial of the urgency and magnitude of the climate crisis, our role in creating it, and our responsibility to help address it. Climate change is already devastating communities. The damage being done to other species and our ecosystems is potentially unrepairable. Climate impacts weigh heavily on our water infrastructure and services, weakening our ability to uphold our core mission to protect public health and the environment.

Despite significant uptake of One Water solutions in the sector, too often these still shortchange the magnitude of climate investments needed or push climate-related decisions down the road. Certain changes are locked in; climate risks will persist, and we must adapt and build resilience. Like all sectors, we also share partial responsibility for the problem—at least 10 percent of global GHG emissions—and have little time to mitigate further impacts.

We act now: we will not wait for 2050. We must shift from thinking climate is something we can tackle later or another's responsibility to centering a One Water approach and Net Zero Plus goal as urgent priorities. The US water sector recognizes that inaction is an action; one that yields too high a cost to public health and the environment. We will immediately take steps to accelerate climate adaptation and mitigation efforts across all areas of our work. We will encourage water institutions to undertake climate risk assessments and develop tailored climate action plans. We will set interim milestones in the short term, including the pursuit of Net Zero emissions for many water stakeholders in the next few years. We will promote known climate actions, including water conservation and reuse, carbon sequestration, operations optimization, energy reduction, and alternative energy solutions throughout the sector and implement them in our own organizations. We will not shortchange needs around failing infrastructure, affordability, emerging contaminants, service equity, and other critical priorities in our sector. Instead, we will weave climate action into solutions to address these priorities holistically. In doing so, we will embody and practice principles of equity and environmental justice, prioritizing public health and environmental protection for all communities. We begin now, knowing that there is no time to wait.

#### **ELEMENT 2**

#### Lead from the heart

Water management typically relies heavily on engineering, financing, and technology, and as such, it often seems to come down to numbers and equations. We tend to stay in our lanes, beholden by resource constraints, elected officials, and ratepayers. And yet, talking to people in the sector about climate change quickly uncovers the passion and love for water, nature, and humanity that brought them to the work they do. Such passion drives energy, resources, and political will from various stakeholders to do more than what is legally required in a time of crisis. The heart is often pushed to the side in day-to-day operations, especially when serious problems are on the table, and yet, it might just be what is needed now to quide us into a different future.

We will embrace the deeper motivations of love and care for others and our planet and allow those motivations to drive innovation, restoration, collaboration, and investment. We will cultivate compassion for animals, plants, and other non-human life, recognizing their vulnerability to water's environment and climate issues, as well as our own grief and losses that come with species and biodiversity loss and climate impacts on human communities. This shift will allow us to better acknowledge and work with the emotional dimensions of living in a time of climate crisis, seeking to find solutions and repair harms—both for us as water managers and for the communities we serve. We will seek empathy with those we serve. True empathy will help us share decision-making power with those directly impacted by the climate crisis and our work.

Love comes with risk. We will accept the greater risks of working from love and support one another in this endeavor. This may change the way we do things and bring risk to professional alliances, restructuring of budgets, and new regulatory challenges. We will learn from those innovators already accepting these risks and work to advance our shared vision for a more just, sustainable world. We will lean into our passions without being divisive, connecting with others across the watershed and along our shared values. As we pursue sub-sectoral goals and infrastructure to collect, measure, and incent progress on actions to meet those goals, we hold ourselves accountable to these motivations. We will measure success not just by numbers and the outcome, but also by its inclusiveness and impact along the way.

### Invest for all peoples and the planet

As water professionals, we also face growing financial challenges with aging infrastructure, ratepayer affordability, emerging contaminants, scarce resources, and shifting regulations. It is no wonder we sometimes strive for efficient and early returns on investments (ROIs). Less carbon-intensive water management strategies, such as natural and distributed infrastructure, are becoming increasingly popular, especially on a small scale. The up-front development of large-scale natural infrastructure or distributed infrastructure, however, can entail high immediate costs and may require significant change to capital programs. Energy efficiency, process optimization, and energy generation in the sector are highly recognized as beneficial, but longer ROIs can make these options difficult for some utilities to finance up front. These financing complexities often prohibit the sector from choosing these approaches, even when they may be critical for sustainability and more cost-effective in the long run.

We will look beyond short-term results, financial gains, and stop-gap solutions. Instead, we will carry the One Water movement toward long-term, communitysustaining investments. This moment of the climate crisis and historic infusion of bipartisan federal funding can drive investment aligned with humanity's longerterm interests. We can use this moment as an opportunity to change the way we invest, focusing on life cycle benefits and sustained wellbeing of communities and our broader environment. We will ensure that climate investments in the water sector are not at odds with progress on affordability. We will seek to be active investors, taking lessons from environmental, social, and governmental (ESG) and impact investing. We will explore innovative incentives for decarbonization and carbon sequestration activities at water utilities, across watersheds, and the global water cycle. We will assist utilities in working with ratings agencies to account for equity and climate benefits in ratings criteria. Leaders will center the true value of water and equity in their decision-making. This can include repositioning capital programs' allocations to better serve intergenerational equity.

Together, we can prioritize widespread natural infrastructure and equitable urban green infrastructure investments to assist ecosystems' capacity to reduce nutrients at a scale large enough to impact global GHG emissions. We will model and invest in nutrient trading strategies alongside agriculture partners. Taking the long view, we understand that the cost of climate inaction is higher than acting now to invest in adaptation and mitigation strategies. We will accurately value both the costs and benefits of (tangible and intangible) long-term investments and work with funding authorities to evaluate and bolster utilities' financial stability to create an enabling environment for holistic Net Zero Plus investments. We will work to educate our investors and the public about these choices.



## **G**ive respect and room for different knowledge and value systems as necessary partners

Although One Water calls on us to dismantle silos, our legacy structures can lead to an overreliance on piecemeal technical solutions and specialized expertise in narrowly defined fields. Water is a highly developed and technical sector in the US. Water infrastructure and services were often built through a piecemeal approach to meet evolving needs and population growth: clean drinking water, sewer systems to carry away waste, and drainage for flood protection. Western scientific and engineering knowledge helped navigate significant public health crises of our time. At the same time, by prioritizing scientific and engineering expertise in practice, we have also systematically neglected other value systems and ways of knowing that may have essential perspectives for this time. When we treat water primarily as a commodity or see water infrastructure as separate from ecosystems, we overlook the interconnections of water as life for people, plants, animals, and the earth. As Einstein said, "you can't solve a problem on the same level of thinking that created it," and our water system is born from the same industrial mindset and worldview that has led us into the climate crisis.



We need a water culture with a broader lens of what and who drives decision-making processes and solutions. There is an opportunity to recognize the longer-term benefits realized from prioritizing equity, working across silos, and aligning our vision with partners that offer valuable lived experience and non-traditional expertise. Traditional Ecological Knowledge is being increasingly recognized by western scientists as key to understanding and grappling with complex natural systems and our roles as humans. Traditional Ecological Knowledge refers to beliefs, knowledge, and practices about the relationship between living beings and the physical environment by those directly dependent on local resources. 10 Information is passed down across generations through storytelling, songs, and other mechanisms. 11,12 Community members themselves, especially those who are directly dealing with environmental challenges every day, are also sources of expertise and new thinking that can help guide water leaders to equitable and culturally appropriate solutions. Disciplines that specialize in aspects of culture and human behavior—like art, design, anthropology, planning, and psychology—may be critical in developing creative and systemic solutions.

We will proactively and respectfully partner with those who have diverse perspectives and knowledges, including Traditional Ecological Knowledge holders, people in other sectors, and diverse communities to address the climate crisis and ensure equitable water stewardship in the future. We will seek reciprocity with all partners. We can also look to less industrialized countries that are experiencing climate impacts first and worst for new ideas and approaches. We will act in humility, listening to those at home and abroad who are most impacted, and work to bridge divides through shared values and processes. We will work to understand the impact of colonization on water and climate issues, shaping our actions so that we are in right relationship with each other and our natural world. We will cultivate respect for the knowledge of those previously and currently disenfranchised. We will internalize an understanding that water is life and seek connection and responsibility for the ecosystems with which we live. This means understanding that we are not separate from nature, learning from the land and our peers already embracing this notion, and acting with multiple generations in mind. 13 We will take responsibility for our role in ecological restoration and repair. We will create platforms and processes for dialogue and decisionmaking that enable equitable and respectful partnerships.

# Why understanding the impacts of colonization is important for water equity and climate action.

Western expansion and colonization of the United States rapidly expanded the development of land, and with it, the use of water and other resources. This expansion occurred at the expense of Indigenous peoples, who lived here for thousands of years, and ecosystems. Due to this ongoing legacy, colonization created the conditions for racial injustice and climate change to occur and thrive. Within a changing climate, water issues and inequities contribute to habitat loss, mass extinction of animals and plants, and widespread ecological destruction.

Addressing the impacts of colonization requires addressing the institutional racism in legal and political processes, infrastructure development, water rights and resource allocation, and water commodification and management. 14 The climate crisis exacerbates these issues. But we can work together to find methods and approaches to restore a symbiotic and sustainable relationship between all communities, water, and our surrounding environment. 15,16 By understanding and acknowledging our history, we can accelerate all three pillars of water equity and achieve an equitable water future. 17

#### **ELEMENT 5**

# Negate fossil fuels and process emissions

The water sector is largely powered by fossil fuels, as are our adjacent partners, including the energy, transportation, and planning sectors. Municipal water agencies are often one of the largest energy users in a community. Energy in our sector is viewed as an external input that supports the reliable and affordable operation of water infrastructure. With the low cost of power in many areas, it is difficult to justify the installation of co-generation facilities at wastewater utilities. Yet, less reliance on centralized electricity grids can strengthen resilience and reduce vulnerability to power outages during storms. Energy conservation and recovery are increasing but often come with a scarcity mindset that the sector must trade these efforts for other priorities. We cannot reach Net Zero while operating on fossil fuels, even as the sector scales up water conservation, water reuse, natural infrastructure, and environmental protection. Water's use of fossil fuels, as with other sectors, results in emissions that act as "negative externalities": an impact or cost of business that is absorbed by others. With unmitigated fossil fuel use, the cost is taken on by all who experience climate impacts.

Innovative technologies available today can reduce emissions from biological processes in wastewater treatment by altering operational conditions or treatment plant configurations. Yet, high capital costs stall pilot demonstrations and the widespread adoption of innovative treatments for gaseous streams. Process emissions challenges translate into significant continued  $\mathrm{CO}_2$ ,  $\mathrm{N}_2\mathrm{O}$ , and  $\mathrm{CH}_4$  emissions. We now know, however, that emissions—ours and other sectors'—directly impact our ability to fulfill our mission and increase the cost and difficulty of our work. There is no "out there" where our emissions go. Our global ecosystem is interconnected, and all our human systems depend on it.

We accept GHG mitigation as part of our job as water professionals, recognizing the interconnectedness of GHG goals with thriving ecosystems. We will adopt a circular economy approach, committing to sustainable reuse of all resources. We will serve community needs through stewardship and wise management of water in relation to other resources. This will help induce a cultural transformation that positions water managers as environmental stewards. We will take an active stance to phase out fossil fuels in our sector, leveraging water utilities' position as the largest power customers in many of our communities.

We will navigate multiple paths to clean air and clean energy. We will work within and outside our sector to improve air quality through a range of complementary approaches, including investments, research, and advocacy. We will accelerate Utilities of the Future, leveraging active renewables and energy generation programs. We will further invest in energy efficiency, generation, and recovery; beneficial biosolids reuse; nature-based systems and carbon sequestration, water efficiency and reuse; and nutrient materials and recovery. We will look to large corporations shifting away from fossil fuels and consider partnerships to generate biofuels. We will support policy and government investments that account for the negative externalities of various energy sources and rapidly increase the adoption of renewable energies and energy recovery in all sectors.

#### **ELEMENT 6**

# Embrace watershed and water cycle thinking

Water management in the US is significantly influenced by regulation and the availability of financial resources. The constraints posed by both can sometimes overshadow the achievement of holistic environmental protection. But this is a watershed moment that requires bold actions to address both the sources and impacts of climate change. We must eliminate the silos that separate wastewater from drinking water, the water sector from the energy sector, and elevate the vital connections between water, public health, and resilience. We need to build awareness about the consequences of inaction and establish a clear understanding—from the utility to the consumer—of the benefits of immediate investments

needed to achieve short-term and long-term decarbonization goals. To face the climate crisis, we need to employ a multi-sector, shared systems mindset and work together at the ecosystem level and across the water cycle.

We will adopt place-based approaches and shared responsibility within watersheds, as well as advance solutions across the global water cycle to reduce emissions and deliver multi-benefits back to the water sector. Net Zero Plus requires embracing multidimensional solutions that collectively reduce GHG emissions across watersheds: reducing energy use, increasing renewable energy and energy recovery, addressing existing emissions from increased nutrients in waterways, carbon sequestration opportunities, and accelerating strategic offsets that also provide valuable natural infrastructure benefits. We will work with the agriculture sector and others to reduce nutrients in waterways that release emissions from eutrophication. 18 We will embrace cross-sector strategies such as protecting and restoring forested land, marshes, and wetlands. Enhanced vegetation will provide cooler temperatures and bank stabilization, minimizing nutrient losses from land into waterways.

Some entities, institutions, or sub-sectors must achieve "net negative" emissions, becoming climate positive, 19 to help bridge the gap for those who are able to approach but not necessarily reach Net Zero. We must pursue the goal of emissions reductions across watersheds collectively, as it is only achievable through aligned but differentiated pathways. We will pursue an equitable distribution of emissions reduction responsibilities based on size, resources, and capacities. We will work together to create lots of "on-ramps" to Net Zero so communities, utilities of all sizes, and other partners can do their part. We will create clusters of innovation to get entities the resources they need and foster support between large, wellresourced, and smaller or under-resourced communities. We will address the urgent need to change the perception of public investment and not be afraid to take the risks necessary to decarbonize operations across the water cycle.

# **D**eliver water equity and environmental justice

Climate solutions in the water sector often respond to the impacts climate change has on water infrastructure and services, such as securing water supplies or mitigating flooding. These approaches alone cannot address underlying inequities that render some communities much more vulnerable to a changing climate or less able to adapt, in particular in situations where the needs of the largest water users are prioritized. For example, when water is overallocated to high volume users, such as big agriculture, small farmers and subsistence communities can struggle to secure sufficient water. Additionally, accountability for large polluters is too often set aside in policymaking. In these ways, we directly and indirectly accept "sacrifice zones," in which poor water and air quality and other inequities harm aggrieved communities.

The push for decarbonization in the water sector is spurred by the unnerving fact that we have fewer than eight years to limit warming to less than 1.5°C, which is the threshold for a viable future for humanity. People rightly feel a sense of urgency. We cannot, however, let our drive for decarbonization allow us to put equity issues on the back burner. Both are essential for a just and thriving planet and can be developed and achieved in tandem.

We will foster a culture that values equity, addresses systemic and institutional racism, and designs adaptation and mitigation solutions informed by all people's lived experiences. As we reshape decision-making structures and processes to include those who have historically been left out, we will consider the *Principles of Environmental Justice* and the *Jemez Principles*. We will embrace the principle of "nothing about us without us." We will embed the *Three Pillars of Water Equity* within decarbonization strategies. We will address industry-level issues, differentiating use among entities within a sector and shifting "use it or lose it" principles for water usage toward conservation.

We accept that achieving equity in some places, including rural and unincorporated communities, will require increased energy use and result in emissions to deliver water services. We will not sacrifice this necessity nor these communities but work to go beyond Net Zero in other places to achieve our collective goal. We will support necessary development and build climate-neutral water systems where possible. We will take a preventative approach, incentivizing the maintenance and renovation of water systems in vulnerable communities before systems fall apart and cause harm. We will listen to the voices of all people and communities who have been historically excluded from decision-making around water issues and have borne the brunt of discriminatory practices, including Black, Indigenous, and people of color; poor and rural communities; and refugees, including those displaced by climate impacts. As we consider climate adaptation and mitigation solutions, we will work to ensure displacement and other unintended consequences are not exacerbated. We will extend this commitment beyond our national boundaries to the global community and reject the continuation of "sacrifice zones" as part of the pathway to a better future.





"In 2050, I want a world where Indigenous peoples are thriving and mentoring the next generation of climate leaders for whom living in a respectful and sustainable way in relation to our sacred waters is a normalized part of our collective consciousness and global way of life."

—Janene Yazzie, Chief Executive Officer, Sixth World Solutions



"In 2050, we will have designed for equity and justice at the intersection of infrastructure, climate, water, transportation, housing, land use, health, and economic dignity. Communities historically unheard or undervalued will have power in environmental, health, and policy issues."

—Walt Walker, Water Equity Practice Leader, Greeley and Hansen



"In 2050, I hope my grandson—and all his generation—will enjoy beautiful days and clear rivers as we do now. Our generation needs to change course immediately and do all we can to ensure that hope has a chance of becoming reality."

—Erik Meyers, Vice President, Climate and Water Sustainability,
The Conservation Fund



"In 2050, I want people to see this moment as the turning point that reset our trajectory. What we are doing with this blueprint will no longer be unique, just a part of how everyone thinks going forward."

—Yvonne W. Forrest, Director, Houston Water

## JOIN US!

Net Zero Plus is a vision for our shared future and the cultural transformation needed to get there. This will not be an easy path, but it is essential. There is no time to waste. It is time for the water sector to get ALIGNED. What are you waiting for? Join us!

#### Share an Aspiration for 2050

To reach the future we want in 2050, we must first imagine it. Your voice matters in this vision. Close your eyes and take a deep breath. Transport yourself to 2050. Look around you. What do you see, smell, and feel? What do you know?

Share your aspirations or accomplishments for inclusion online in our <u>Net Zero Plus 2050 Photo Gallery</u>. Let this imagined future be a collective reminder to lead from the heart today.

We welcome photos of you or a meaningful water-climate-related photo. Please also include your name, affiliation (if any), and a brief "In 2050, I..." aspiration. All photos must be accompanied with copyright permission for our gallery. Please visit the link above for information on how to submit.

#### **Commit to Action**

Ready to step up? Reaching for a Net Zero Plus future begins now. It will take all of us working across the US water sector and holding each other accountable along the way. What can you and/or your organization contribute to this effort?

If you'd like to make a commitment to action, please submit it here. Commitments will be reviewed on a quarterly basis by a subset of the Imagination Team. Approved submissions included on the Net Zero Plus webpage will be joined by a growing chorus of One Water leaders and entities as we chart a path toward 2050.



# COMMITMENTS TO ACTION

At the time of this publication, many organizations have made commitments to climate action, reducing GHG emissions, the Race to Zero, or supporting the Net Zero Plus vision. Examples are listed below. Please visit the Net Zero Plus webpage for additional commitments and to submit your own.

#### **Arcadis**

Arcadis commits to achieving Net Zero across its global operations by 2035 and reinforcing sustainability at the heart of client solutions, business operations, and the communities of today, tomorrow, and the future. The Net Zero commitment will reduce Scope 1, 2, and 3 emissions in line with the Science Based Targets initiative supporting the Paris Agreement. This includes reduction of Scope 1 and 2 global greenhouse gas (GHG) emissions by 45 percent by 2025, from a 2019 base year, as well as a reduction of Scope 3 (GHG) business travel-related emissions by 35 percent by 2025, from a 2019 base year. As an interim step, Arcadis will reduce 50 percent of emissions caused by domestic and international flights by 2025. More here.

#### **Association of Metropolitan Water Agencies**

The Association of Metropolitan Water Agencies (AMWA) commits to elevating examples of member utilities working toward Net Zero goals for shared learning with others in the sector. AMWA also commits to partnering with other Imagination Team members to explore the impacts of elevating equity and elevating environmental justice. AMWA will research and identify policies for reducing Scope 3 emissions in its daily operations and employee travel. AMWA will continue to promote carbon offsets at its meetings.

#### Black & Veatch

At Black & Veatch, our mission, "Building a world of difference through innovation in sustainable infrastructure," defines why we exist. Sustainable infrastructure advances lives, lifts communities, protects the planet, and enables global prosperity. To help achieve this mission, through our "Accelerate Zero" blueprint, Black & Veatch is committed to reducing our Scope 1 and Scope 2 emissions by 40 percent by 2023 and will continue reducing our overall GHG emissions to achieve Net Zero (Scope 1, 2, 3) by 2025. In addition, we signed three United Nations pledges in 2020: the Global Compact, CEO Water Mandate, and Caring for Climate, and set clear commitments to chart a path to success. We know that sustainability is also about more than how we operate; it is about the work we do for our clients and how we impact the lives of our friends, families, neighbors, and the communities we serve. We are committed to partnering with our clients to achieve their sustainability goals, including reducing GHG emissions, improving water resource management, and achieving greater resilience in the face of climate change. Learn more here.

#### Brown and Caldwell

Our commitment to sustainable solutions and socially responsible operations began with our BC Green program in 2011. This commitment begins inside our own office walls, then translates to the work we do with clients, and finally extends to communities around the world. We're developing new ways of doing business, ranging from rethinking resource use like paper and office space to reducing travel. We are expanding the services we provide to clients and their communities, including investing in digital tools and systems to enable work to be done in more low-impact ways. Our efforts are organized around supporting our people, our clients, and our communities to drive toward a better environment.

#### Empowering a Green Environment & Economy, LLC

Our mission at Empowering a Green Environment & Economy, LLC (EGE<sup>2</sup>) is to *transform communities using people-centered solutions*. To achieve this mission, we remain committed to supporting efforts to educate current and emerging water leaders on how to shift institutional culture, expand accountability to advance equity and justice, and ensure all solutions presented to help the water sector reach Net Zero Plus will provide economic, social, and environmental benefits for all people, specifically low-income communities and communities of color.

#### Erin Genia Studio

Understanding that climate change is a result of the legacy of colonialism around the world and stems from an epistemic disconnection of humans from nature, Erin Genia studios will support Native American and tribally owned businesses and subcontractors and take steps in every part of studio-related processes to reduce or eliminate consumption of fossil fuels, and to choose materials, tools, and services that are sourced with respect and reciprocity for the living world.

#### Evoqua

Over the next two years, Evoqua plans to use the Science Based Targets initiative's (SBTi) methodology to evaluate our Scope 1, 2, and 3 emissions. The SBTi provides a framework for companies to set emission reduction targets that align with leading climate science and sector-relevant impacts. Currently, more than 2,000 businesses around the world are working with the SBTi.

Following the SBTi methodology will enable us to develop greenhouse gas emission reduction targets in line with the Paris Agreement's 1.5°C pathway. We view the development of reduction targets as an important next step on our journey to reaching our goal of Net Zero greenhouse gas emissions by 2050.

To address water risks related to climate change, Evoqua has adopted a goal of reusing more water than it withdraws from the source by 2035. As part of our path toward achieving this goal, we intend to create water management plans for our facilities to increase efficiency in our water usage, and implement additional water recycling and reuse initiatives, using our own technology.

#### **Houston Water**

The City of Houston commits to the Net Zero Plus vision through ongoing implementation of the Houston Climate Action Plan (2020), a science-based, community-driven strategy to reduce GHG emissions, meet the Paris Agreement goal of carbon neutrality by 2050, and lead a global energy transition. These efforts will be strengthened by simultaneous implementation of Resilient Houston (2020) and our continued focus on Complete Communities (2017), two strategies aligned with the Net Zero Plus vision.

#### **Jacobs**

At Jacobs, we are fully committed to limiting global warming to 1.5° Celsius, both in how we operate our business and in the climate action, decarbonization, and sustainability solutions we co-create with our clients. As a purpose-led company, we know we have a pivotal role to play in climate response and have made it a focal point of our 2022-2024 company strategy. We consider it not only good business but our duty to channel our expansive capabilities in integrated water management, clean energy, decarbonization, resilient infrastructure, ecosystem restoration, environmental justice, social equity, and health and wellbeing—for the benefit of people and our planet. Simply put, the legacy we want to create for future generations is one of betterment, and Jacobs is committed to pushing the limits of what is possible in the water sector by creating smart and sustainable solutions that leave no one behind.

#### **KC Water**

KC Water is working within the City of Kansas City, Missouri and with stakeholders to create a <u>Climate Protection and Resiliency Plan</u> to deliver a carbon-neutral, equity-focused, and resilient Kansas City by 2040.

#### Miami-Dade Water and Sewer Department

The Miami-Dade Water & Sewer Department (MD-WASD) is committed to the reduction of Green House Gas (GHG) emissions through prudent resilience policy including sustainability, energy efficiency, water use efficiency, and regulatory compliance. MD-WASD will reduce GHG emissions by 50 percent or more across its US building and plant portfolio in 10 years. In addition, MD-WASD will conduct a more comprehensive enterprise-wide GHG audit to more accurately inventory current GHG emissions.

As part of its energy policy commitment statement, MD-WASD is committed to achieving continual improvement of its energy systems, including energy efficiency, energy security, energy use and consumption by maintaining and improving an energy management system that reduces energy use, cost of energy, and greenhouse gas emissions. MD-WASD will reduce energy intensity by 25 percent over 10 years.

#### **Moonshot Missions**

Moonshot Missions commits to looking for opportunities to identify and facilitate the implementation of energy consumption reduction, resiliency, and green energy projects throughout the water sector, particularly for underserved environmental justice communities.

#### National Association of Clean Water Agencies

The National Association for Clean Water Agencies (NACWA) will ensure utilities demonstrating a strong commitment to the goal of Net Zero emissions are recognized through NACWA's National Environmental Achievement Awards Program and through the Utility of the Future Awards Program. NACWA will also consider making the push to Net Zero its own category for these awards.

#### **Pacific Institute**

Building on 35 years of innovative research and thought leadership, the Pacific Institute commits to significantly accelerating and scaling our reach and impact to address the mounting climate crisis. We have adopted a 2030 organizational goal to catalyze the transformation to water resilience in the face of climate change. We will simultaneously address the imperative that water systems—including the natural and built environments and their supporting social and governance structures adapt to climate change and reduce greenhouse gas emissions. Through rigorous research and analysis, we will identify effective water resilience strategies, including water efficiency and reuse and nature-based solutions, and ways to make these strategies accessible to all. We will co-produce tools and resources with organizations working directly with frontline communities. Finally, we will promote the uptake of this work through targeted outreach, partnerships, and policy change.

#### **PolicyLink**

Our mission at PolicyLink is to advance equity through policy changes that enable everyone, especially people of color, to be economically secure, live in healthy communities of opportunity, and benefit from a just society. Many within our target population—the nearly 100 million Americans who are living below 200 percent of the federal poverty level—are among the most vulnerable to, and often least prepared for, the impacts of climate change. With respect to ensuring their existing and future water security, we commit to continuing to build the Water Equity and Climate Resilience Caucus (WECR) as a national network of frontline water defenders and climate advocates to engage in federal policy that promotes water security and climate justice. To achieve this mission, we will (i) establish regional hubs over the next two years to more easily lift up what works locally and regionally; (ii) strengthen frontline leadership through training and networking opportunities; (iii) advance a national narrative campaign that advances the non-commodified, cultural importance of water; and (iv) connect the domestic fight for water security and climate resilience to the global discourse in recognition that we need global collective action to effectively address climate change.

#### **Quantified Ventures**

Quantified Ventures will reassess our 2021 carbon footprint calculations, updating information on emissions from staff travel and energy consumption from laptops, monitors, and cell phones. We will set GHG reduction targets according to these calculations, working towards Net Zero. We will pass an internal corporate resolution to hold ourselves accountable to these targets. We will partner with other key organizations to advance information, data, and strategies for Element #3 Invest for All People and the Planet across watersheds in the US.

#### **Rural Community Assistance Partnership**

The Rural Community Assistance Partnership (RCAP) will continue to provide virtual participation options wherever possible for trainings, technical assistance, and national convenings to reduce travel-related emissions below 2020 levels; RCAP will create a strategy for providing small utilities with their greenhouse gas (GHG) emissions data and information they need to make fully informed decisions; RCAP will create a strategy and tools for increasing energy and water use efficiency for small utilities, and increase the use of and access to renewable energy for small utilities.

#### Singer Studio

Singer Studio is committed to innovative design to minimize or eliminate GHG emissions from projects. Over the last decade, Singer Studio has designed and built several innovative water-based projects, including the Living Docks, South Cove Environmental Regeneration Project, Prototype Mangrove Planters, and Prototype Modular Artificial Reefs, all of which are living breathing projects designed for resiliency, ecological regeneration, and improved water quality. Each of these projects is intended as precedents for creating coastal resiliency through green-gray infrastructure, potentially reducing the need for carbon-intensive traditional 'gray' infrastructure. As a part of this effort, Singer Studio has developed concrete mix designs that contain 70 percent recycled content and reduce Portland Cement usage by 40 percent (Portland Cement being the primary GHG source of concrete). This innovative mix design has been deployed in both the studio's land-based projects and marine projects, and the Studio is committed to continuing the use of this lower-carbon alternative for future projects.

#### Sixth World Solutions

Sixth World Solutions takes a systems-based approach to develop socio-economic solutions for Indigenous Peoples, Nations, and communities. We center community leadership and rights-based approaches for regenerative, place-based solutions. Working on the intersections of water security, food sovereignty, and renewable energy development, we are guided by Indigenous principles of kinship, community, environmental responsibilities, traditional principles of leadership, and strategic planning modeled after seventh-generation philosophy. We are committed to working with an Indigenous conservation lens of "giving back more than we take" in all development projects, but particularly as they relate to the water sector. We will continue to advocate for the rights of Indigenous Peoples and will center Indigenous-led solutions that go beyond achieving Net Zero emissions by centering regenerative solutions that restore biological diversity across our shared watersheds and waterways. Our vision for the future is one that restores "Right Relationship" with all sacred life and life-giving elements. We commit to working with private and public partners at all levels of governance and community-building/nation-building to ensure that future development of water infrastructure respects the human right to water without compromising the rights of non-human life and future generations.

#### Stantec

Stantec is committed to achieving carbon neutrality by 2022 as a first step in achieving Net Zero operations by 2030 across its entire global footprint. We will set science-based emissions reduction targets, for all three scopes, in line with 1.5°C emissions scenarios. Stantec believes a Net Zero future is necessary to mitigate the worst consequences of climate change and achieve an equitable distribution of social, environmental, and economic benefits. To support Stantec's role in this future and guide our sustainability strategy, we adopted the UN Sustainable Development Goal (SDG) framework. We will continue to release an annualized statement as part of this, with adjustments, modifications, and upgrades, each year on Earth Day.

#### The Conservation Fund

The Conservation Fund shapes enduring solutions to conserve America's land and water resources for the benefit of current and future generations. Global climate change demands bold action to halt the increase in  $\mathrm{CO}_2$  emissions and mitigate harmful effects on people and nature already set in motion. To achieve Net Zero in the water sector, we commit to collaborating with federal, state, regional, tribal, and private partners on the permanent protection of up to five million acres of working forestland during the next 10 to 15 years. We project that forest conservation at this scale will store more than one billion metric tons of  $\mathrm{CO}_2$  and protect over 6,500 miles of rivers and streams.

In cities, we are committed to working with local and regional water utilities to protect source watersheds and reduce harmful urban runoff and flooding through greater integration of green, nature-based solutions with traditional gray infrastructure. We place a high priority on making such improvements in historically underserved communities, urban and rural, and will seek opportunities to partner with community leaders, public agencies, and businesses to provide sustainable, safe, and affordable water services for all.

In coastal areas, we will work with wildlife agencies and other stakeholders to implement nature-based projects that sustain marshes and coastal ecosystems while preserving sequestered carbon, minimizing erosion, and reducing the impact of sea level rise on communities, many of which are in lower-income rural and urban areas. At the watershed and landscape scales, we are committed to engaging with public, nonprofit, and private organizations in implementing effective Net Zero One Water projects.

#### **Union of Concerned Scientists**

The Union of Concerned Scientists (UCS) will continue to raise awareness around climate change impacts on water supplies—including the present drought—and encourage more climate-resilient actions in funding and policy discussions. Through research, UCS hopes to help redesign water systems to reduce the impacts of climate change while they keep providing essential services to all communities—including safe, clean, affordable drinking water. Lastly, UCS is committed to scoping and analyzing potential solutions to drinking water access problems.

#### **US Water Alliance**

The US Water Alliance commits to implementing the Net Zero Plus vision by providing national platforms for peer learning to advance the seven elements of cultural transformation and strategic pathways for GHG reductions. This will include a 10-city Utility GHG Reduction Cohort in 2022, with follow-on efforts over the next five years. We also commit to reducing GHG emissions from company travel. We will assess travel-related emissions and develop a policy to incentivize the reduction of all non-essential staff travel while offsetting priority travel beginning in 2023.

#### Water Environment Federation

The Water Environment Federation (WEF) seeks to achieve carbon-neutral conferences through optional carbon offsets, beginning with WEFTEC 2022. WEF has released position statements on climate change (2021), biosolids and carbon sequestration (2020), and the UN Sustainable Development Goals (SDGs; 2019). A UN Water Partner, WEF will support these positions through activities, including education at a dedicated SDG Theater at WEFTEC; support for UNLEASH, a global SDG Innovation Lab; and the ReNEW Water Project, a program to accelerate resource recovery at water resource recovery facilities (WRRFs) to fuel and grow a circular economy. ReNEW shares aggregate data on resource recovery from WRRFs in the United States for the past decade. The data will communicate the positive impact the water sector has on mitigating climate change by including estimates of carbon sequestration and greenhouse gas reduction as a result of water reuse, renewable energy generation, and the beneficial use of biosolids.

#### **Xvlem**

Xylem has committed to greenhouse gas (GHG) reductions, including Science-Based Targets aligned to limiting global temperature increase to 1.5°C above pre-industrial level, in line with the Paris Agreement, by 2030, and Net Zero greenhouse gas (GHG) emissions (Scope 1, 2 and 3) before 2050. Xylem is also committed to partnering with customers around the world to deploy high efficiency technologies that enable meaningful, early progress towards Net Zero. Read more here and here.

Xylem's signature 2025 sustainability goals also include:

- Save more than 16.5 billion cubic meters of water.
- Reduce over 3.5 billion cubic meters of non-revenue water.
- Treat 13 billion cubic meters of water for reuse.
- Prevent over seven billion cubic meters of polluted water from flooding communities or entering local waterways.
- Provide access to clean water and sanitation solutions for at least 20 million people living at the base of the global economic pyramid.
- Ensure 100 percent of employees have access to clean water and safe sanitation at work, at home and during natural disasters.
- Use 100 percent renewable energy at Xylem's major facilities.
- Use 100 percent process water recycling at Xylem's major facilities.
- Give one percent of Xylem employees' time and one percent of company profits to water-related causes and education.

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# ABOUT THE US WATER ALLIANCE

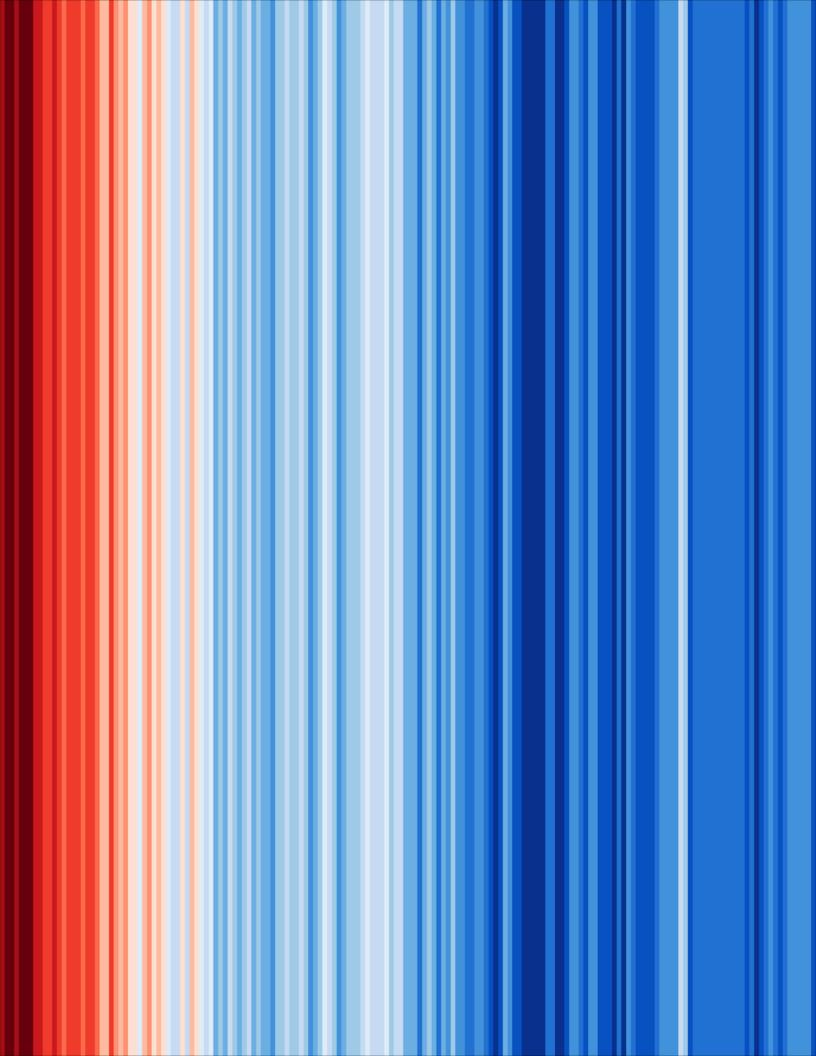
The US Water Alliance advances policies and programs to secure a sustainable water future for all. Our membership includes water providers, public officials, business leaders, agricultural interests, environmental organizations, community leaders, policy organizations, and more. A nationally recognized nonprofit organization, the US Water Alliance brings together diverse interests to identify and advance common-ground, achievable solutions to our nation's most pressing water challenges. We:

Educate the nation about the true value of water and the need for investment in water systems. Our innovative approaches to building public and political will, best-inclass communications tools, high-impact events, media coverage, and publications are educating and inspiring the nation about how water is essential and in need of investment.

Accelerate the adoption of One Water policies and programs that effectively manage water resources and advance a better quality of life for all. As an honest broker and action catalyst, we convene diverse interests to identify and advance practical, achievable solutions to our nation's most pressing water challenges. We do this through our strategic initiatives and One Water Hub, which offer high-quality opportunities for knowledge building and peer exchange. We develop forward-looking and inclusive water policies and programs, and we build coalitions that will change the face of water management for decades to come.

#### Celebrate what works in innovative water management.

We shine a light on groundbreaking work through storytelling, analysis of successful approaches, and special recognition programs that demonstrate how water leaders are building stronger communities and a stronger America.





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