



**HEALTHY AIR &
WATER COLORADO**

Report To The Community

2022-2023



Healthy Air & Water Colorado: What We Do

At Healthy Air and Water Colorado (HAWC), we are deeply committed to addressing and mitigating the effects of climate change to protect the health of all Coloradans. HAWC, a project of Healthier Colorado, is a non-profit and non-partisan organization that educates policymakers throughout the state about the impacts of climate change on health. We advocate for and help shape state and local policies that address these formidable threats in our communities. We believe that we must adapt to and mitigate the results of climate change so that all Coloradans, regardless of income, race, ethnicity, or geography, have the opportunity to lead healthy lives.

We focus on three interconnected areas.

Community health: The science is clear that increased pollution in our air and water and the ongoing consequences of climate change negatively impact our health—from lung and cardiovascular disease to reproductive health and premature death. Increased ozone alert days and hotter temperatures lead to unacceptable health outcomes for Coloradans with underlying health conditions such as chronic obstructive pulmonary disease (COPD), asthma, heart disease and diabetes. At HAWC, we advocate for policy and regulatory changes to curb the sources of climate change including air pollutants such as greenhouse gasses and methane emissions. We promote proactive changes to support energy efficient buildings and vehicles. We also advocate for policies that support Coloradans and their communities to adapt to the results of climate change.

Health justice: All Coloradans face risks of health impacts caused by climate change. However, communities of color and residents who are economically disadvantaged are more likely to suffer the health consequences of climate change and are less likely to have the resources to mitigate them. These inequities are unacceptable. Everyone in Colorado should have healthy air, clean water and protection from climate change. We are committed to public policy solutions that address communities that are traditionally marginalized and disproportionately harmed by climate change.

Awareness: According to the Centers for Disease Control and Prevention and the American Public Health Association, climate change is a public health crisis. We seek to make policymakers and members of the public aware of the connection between climate change and public health in order to underscore the imperative of addressing climate change. We want to ensure that policymakers and the public hear the perspectives of health experts, such as nurses, doctors, and researchers, in order to tackle the threat of climate change and identify actionable solutions.

Our Dedication to Mitigating Climate Impacts and Protecting Health

As the leading voice in Colorado that connects public health and climate change, HAWC and our members know first-hand that improving the environment and helping Coloradans adapt to climate change is complex work. While there is much more to be done, we are proud of our track record that demonstrates our commitment to this urgent agenda.

Over the years, HAWC has worked with both community leaders from impacted neighborhoods and state legislators to protect public health from toxic air pollution by advocating for the passage of HB20-1143, HB20-1265, HB21-1189 and HB22-1244. These bills increase fines on corporate polluters, strengthen monitoring of air toxins, and create the first statewide regulatory framework that limits toxic air pollutants.

Our collaborative work with environmental partners and the state of Colorado has led to implementation of the most stringent regulations in the country addressing methane emissions. Because of these efforts, Colorado is a leader in the country in protecting public health from these dangerous emissions.

We continue to support communities disproportionately impacted by air and water pollution and other climate impacts such as extreme heat. For example, in 2022, we were the leading voice in advocating for and passing HB22-1011 that provided expanded revenue and matching funds to local governments for forest management and wildfire mitigation efforts. These funds are critical for communities disproportionately affected by climate change.





The Climate Crisis in Denver

The facts are undeniable. Climate change is making areas of the country, including Denver, hotter. Much hotter. In 2021, Denver experienced its third hottest year on record. Unfortunately, 2021 was not an outlier. Sadly, nine out of the top ten hottest summers in Denver have occurred since 2000 and the city currently experiences an annual average of 44 days in which the temperature is 90 degrees or hotter.¹ Between 1872, the first year in which weather records were collected in Denver, and 2000, Denver averaged no days of 100+ degree heat. However, from 2000 until 2021, the city averaged three days of temperatures at or exceeding this level.²

Research indicates that extreme heat (when temperatures are above 90 degrees) can harm individuals' health. Extreme heat can lead to heat stroke and heat exhaustion and individuals are more likely to experience a variety of complications associated with asthma, heart disease, mental illness, mental health, diabetes and pregnancy. In fact, some estimates show that extreme heat is annually responsible for 1,300 deaths, 75,000 emergency room visits and 10,000 hospitalizations.^{3,4} Simply put, extreme heat is detrimental to our health.

The good news is that, in 2020, the city of Denver launched the Office of Climate Action, Sustainability, and Resiliency. That office is tasked with:

- Addressing the causes of climate change;
- Helping Denver adapt to the current effects of climate change;
- Building community resiliency to address future climate impacts; and
- Supporting those residents who are most vulnerable to climate change.

In addition, the office is responsible for investing approximately \$40 million annually from the Climate Protection Fund. This fund includes revenue collected from Denver

¹ 9News, June 8, 2021.

² The Denver Post, September 2021.

³ Environmental Protection Agency, "Climate Change Indicators: Heat-Related Deaths," 2020.

⁴ Jeremy Hess, et al. "Summertime Acute Heat Illness in US Emergency Departments from 2006 through 2010," *Environmental Health Perspectives*, November 2014.

voters' 2020 overwhelming approval of ballot initiative 2A which authorized an increase in Denver's local sales and use taxes by 0.25% to mitigate the causes of climate change. The Climate Protection Fund can be used to support:

- Job creation and workforce training in clean energy technology for under-resourced individuals;
- Investments in renewable energy such as solar power and battery storage;
- Energy efficiency of buildings and homes to reduce their carbon footprint and pollution;
- Programs and services that provide clean and sustainable transportation;
- Climate adaptation and resiliency programs that support vulnerable communities in preparing for a changing climate; and
- Neighborhood-based environmental justice programs.⁵

Resources from the Climate Protection Fund are intended to address the inequities that some populations in Denver experience related to climate change. The ordinance governing the fund states that 50% of the resources should be invested in the community with a "strong lens toward equity, race and social justice."⁶

Access to Cooling Survey

To learn more about these inequities and what Denver policymakers should do to address extreme heat, we wanted to learn from Denverites directly. As an organization passionately committed to environmental justice, we wanted to hear the perspectives and lived experience of residents of some of Denver's most marginalized communities whose voices are often lost in public policy discussions.

We took to the streets and surveyed residents of Denver in HAWC's first-ever Access to Cooling Survey. We also worked closely with Tepeyac Community Health Center, as a trusted health and community partner, in crafting the survey to ensure we were collecting pertinent health information.⁸ Jim Garcia, CEO of Tepeyac Community Health Center's shared, "We are keenly aware that climate change and the related factors adversely impacts our patients and their families. We also know that there are significant limitations with regard to our ability to influence the overall health and wellness of our patients and that we also have to pay close attention to the obvious social determinants of health, such as climate change." We used a heat vulnerability score and the Denver Neighborhood Equity Index Score to determine those Denver neighborhoods most vulnerable to climate change—Valverde, Sun Valley, Elyria Swansea, Westwood, Globeville and Northeast Park Hill.⁷ In September 2022, we contracted with Open Answer to conduct a door-to-door survey of 881 residents of these neighborhoods.⁸

⁵ More information on the Office of Climate Action, Sustainability and Resilience five-year plan for the Climate Protection Fund can be found in the [Climate Protection Fund Five-Year Plan](#).

⁶ Ibid.

⁷ The Heat Vulnerability Score is a composite score that measures at the census tract level the built environment; demographic variables; and health conditions that make individuals vulnerable to high heat. The Denver Neighborhood Equity Index combines socioeconomic, built environment access to care, morbidity and mortality indicators to identify underserved neighborhoods. These tools allow users to understand the extent to which areas in Denver are most vulnerable to the impacts of climate change.

⁸ Tepeyac Community Health Center is a non-profit community health center in Denver that has been providing affordable and accessible integrated care for nearly 30 years.

Open Answer is a sister organization of Healthier Colorado that specializes in community outreach and mobilization. Open Answer is mission-driven, focused on activating community voices so that nonprofits, funders, and elected officials can better understand the needs of communities. Tepeyac Community Health Center is a non-profit community health center in Denver that has been providing affordable and accessible integrated care for nearly 30 years.

The Importance of Lived Experience

We also know that lived experience cannot simply be distilled into graphs and charts. We also wanted to learn more about the personal experience of Denver's residents as they adapt to their warming city. Throughout this brief, we have included personal accounts about some Denverites' experience in coping with climate change. Their stories are imperative. We learned about:

- Unacceptable inequities in our community regarding access to cooling
- How cooling in homes would significantly improve residents' quality of life
- Ways to improve access to cooling in Denver's homes, neighborhoods and public spaces

Most importantly, we learned how policymakers can make a difference.

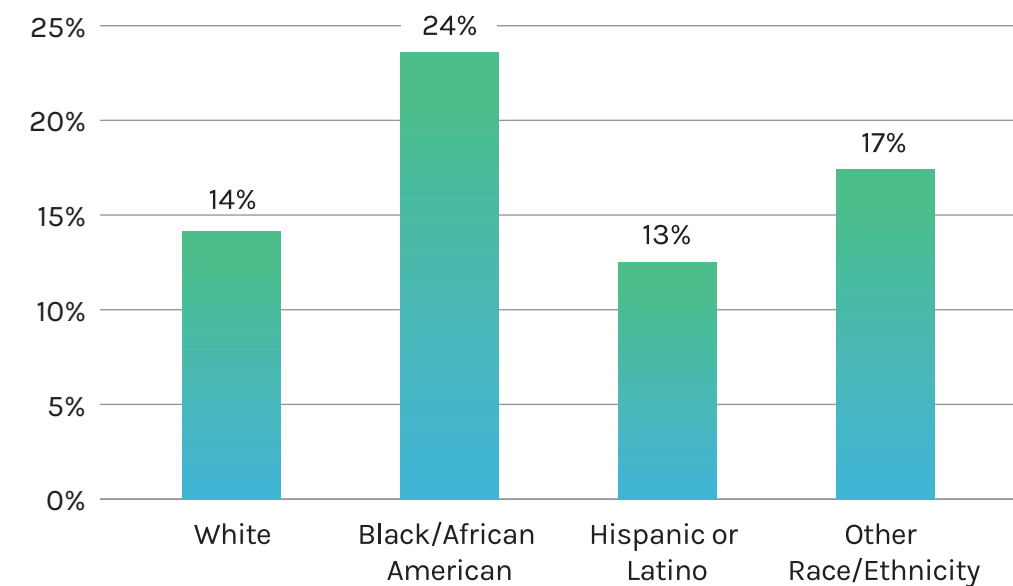
Read on. The results are critical.



Inequities in Denver Residents' Access to Cooling at Home

Our survey asked residents if they had access to cooling, defined as central air conditioning, a window air conditioning unit, a swamp cooler or a heat pump. As illustrated in Figure 1, the proportion of Black residents without access to cooling (24%) was close to double white residents (14%). Our data show that Black residents are much more likely to endure hot days without cooling, which makes them much more vulnerable to health conditions such as heat stroke, respiratory issues, and associated complications with a variety of chronic health conditions such as asthma and heart disease.

Figure 1. Proportion of Respondents Without Cooling by Race and Ethnicity, 2022

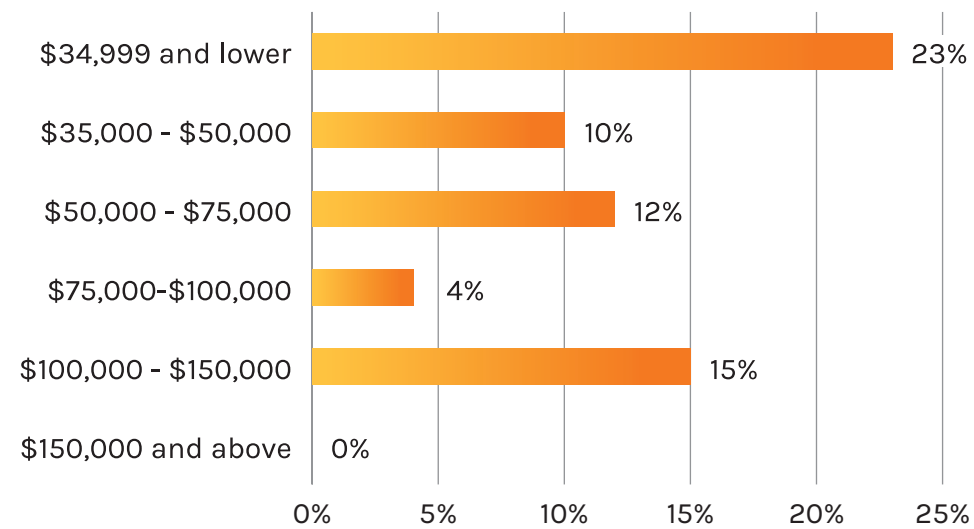


SOURCE: Access to Cooling Survey, Healthy Air and Water Colorado, 2022

Unfortunately, access to cooling can be unaffordable. It can be difficult for individuals with limited resources to both purchase cooling equipment, such as central air, a window air conditioning unit or swamp cooler, and also shoulder the increased energy costs associated with its regular operation.

To shed more light on inequities we also asked respondents about their income and compared those results to whether they have access to cooling. As summarized in Figure 2, among residents of Denver's most vulnerable neighborhoods, almost one quarter of individuals with annual incomes below \$35,000 did not have access to cooling. On the other end of the income spectrum, no residents with incomes of at least \$150,000 lacked access to cooling. This leaves lower income Denverites more vulnerable to the harmful health impacts of extreme heat.

Figure 2. Proportion of Respondents Without Access to Cooling, by Income, 2022



SOURCE: Access to Cooling Survey, Healthy Air and Water Colorado, 2022

⁹ State of Colorado, "Colorado Greenhouse Gas Pollution Reduction Roadmap," January 14, 2021.

¹⁰ CLASP, "3H 'Hybrid Heat Homes': An Incentive Program to Electrify Space Heating and Reduce Energy Bills in American Homes," May 26, 2021.

HAWC's Access to Cooling Survey also found that renters were less likely to have access to cooling compared to homeowners.

 **↑20%**


The rate of renters who have no cooling is nearly 20% HIGHER than homeowners

 **28%**

Homeowners are more likely to have central air conditioning or a heat pump (43%) compared to renters (28%).

 **57%**

Renters are more likely to have another type of cooling such as a swamp cooler, or window air conditioning unit (57%) compared to homeowners (44%).

 **70%**

Almost 70% of respondents to the survey indicated that improved cooling in their home would increase the quality of their lives. Among those, nearly one-third cited that their sleep would be better. Other benefits mentioned included improved mental health and focus and reduced stress and anxiety.

From the Community
Having cooling in my home would mean...

"We would all be able to relax comfortably. My roommate is unable to work due to the heat causing her computer to overheat immediately. It's unbearable."

"It would help kids focus better in school and sleep better at night too."

"Better sleep, cook more often, happier. Soon having surgery and using the kitchen more often would greatly improve health outcomes."



Expanding Access to Cooling in Denver's Homes: How Policymakers Can Take Action

Currently, energy use in buildings and homes is one of the top seven contributors to greenhouse gas emissions in Colorado.⁹ Policymakers in Denver are faced with the dual challenges of mitigating these dangerous emissions while helping keep residents and their homes cool in the summer. Below are ways that policymakers can take action.

Encourage use of energy efficient cooling systems.

To help keep residents healthy while limiting greenhouse gasses that are emitted from traditional cooling systems, the city should encourage use of highly energy efficient and clean cooling methods. Financial incentives and subsidies should be provided for both installation and operation of these systems. For example, heat pumps are up to four times more efficient compared to conventional heating and air conditioning systems.¹⁰ Because heat pumps can operate on electricity, when that electricity comes from renewable sources, heat pumps do not contribute to climate change.

From the Community
Common impacts experienced by Denver residents from extreme heat...

"heat stroke"
"fainting"
"nosebleeds"
"difficulty sleeping"
"challenges focusing"
"anxiety"

Provide financial incentives and subsidies for energy efficient cooling systems.

While high quality and energy efficient cooling methods can be expensive, public agencies can underwrite some of the costs. For example, in New York, public agencies are investing \$70 million in the development and production of 30,000 new heat pump units in New York City's public housing facilities. Energy efficient heat pumps in public housing can provide clean and high-quality cooling and heating for the city's economically disadvantaged population. As New York City Mayor Eric Adams noted, "We understand better than ever that our city's most pressing crises are interconnected, but the solutions can be too. I am so proud to be partnering with Governor Hochul to deliver top-of-the-line technology for New York City Housing Authority residents to heat and cool their homes while also reducing our carbon footprint and helping to protect New Yorkers from health issues like asthma."¹¹

In Denver, the Denver Department of Public Health and Environment and Denver's Office of Climate Action, Sustainability and Resiliency could use funds to help subsidize energy efficient cooling for landlords and residents in lower income areas where residents are more likely to be exposed to dangerous levels of heat. For example, part of the \$40 million collected from the Climate Protection Fund could be used to offset the costs of installing modular heat pumps.

¹¹ City of New York. "Mayor Adams, Governor Hochul Announce \$70 Million Initial Investment to Decarbonize NYCHA Buildings as Part of Clean Heat for All Challenge." August 2, 2022



Access to Cooling in Denver's Neighborhoods and Public Places

As communities across the country are warming and air quality worsens, trees and shade in neighborhoods, parks and other public places can help reduce ozone levels and thus improve air quality by reducing the air temperatures and absorbing pollutants.

However, the unequal distribution of trees, in cities such as Denver, can make neighborhoods with lower income residents more vulnerable to hot temperatures than neighborhoods of more affluent residents. Research shows that neighborhoods that were historically "redlined" have less tree canopy compared to those neighborhoods that were not.^{12,13}



A report conducted by American Forests, a non-profit organization focused on conservation, underscores such inequities. American Forests calculated how evenly a city's tree canopy is based on demographic data, such as income and race. Denver's Sun Valley neighborhood, where 88% of residents are people of color, has a tree canopy of only 3% in its surface area. According to American Forests, the average surface temperature in Sun Valley is 94 degrees. On the other hand, in Capitol Hill's census tracts, where 15% of residents are of color, the tree canopy comprises 10 - 17% of the surface area.^{14,15} Due to the difference in the tree canopy, Capitol Hill's surface temperature, which is 90 degrees, is four degrees lower than Sun Valley.

One way to increase the tree canopy and access to shade in communities is by planting more trees in public parks and neighborhoods. However, data from the Trust for Public Land shows that only 9% of Denver is designated parkland, compared to 19% in San Diego; 17% in Cincinnati; and 15% in Minneapolis.¹⁶ This results in Denver residents having fewer places to stay cool and increases their health risks.

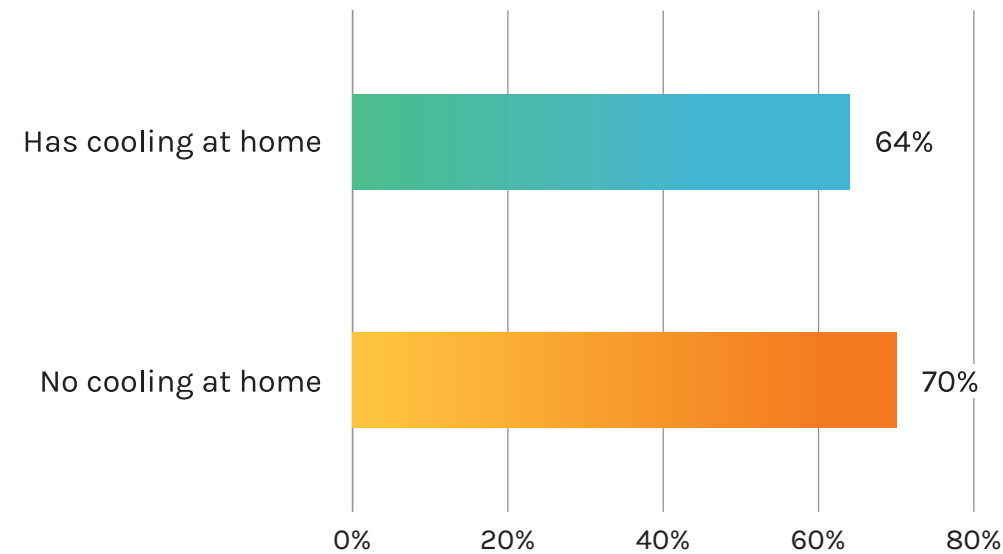
To learn more, in our survey of Denver residents, we asked respondents to what extent they think there are enough places to stay cool in their neighborhood. As shown in Figure 3, 70% of individuals who do not have a cooling system at home do not think that there are enough places to stay cool in the neighborhood. Even among Denverites who have a cooling system at home, 64% think that there are not enough places to stay cool.

¹² Redlining, established in the 1930s, was a racially discriminatory housing policy which limited access to homeownership and wealth creation among racial minorities. Many of the negative impacts attributable to redlining, including multigenerational unemployment and poverty, still exist today in areas that were previously redlined.
¹³ Lock, D.H., Hall B., Grove J.M. et al. "Residential Housing Segregation and Urban Tree Canopy in 37 US Cities," *npj Urban Sustain*, 1, 15 (2021)
¹⁴ American Forests, Tree Equity Score, 2023.
¹⁵ Olivia Prentzel, *Colorado Sun*, August 18, 2021
¹⁶ Trust for Public Land, 2023.



Expanding Cooling in Denver's Neighborhoods: How Policymakers Can Take Action

Figure 3. Proportion of Respondents Who Indicate that there are not Enough Places to Stay Cool in their Neighborhood, by Access to Cooling at Home



SOURCE: Access to Cooling Survey, Healthy Air and Water Colorado, 2022

Limited Trees and Shade. The most common concern cited by Denver residents is the limited trees and shade in their neighborhoods. They are troubled that there are very few trees on their blocks and the parks where they would like to go to relax on hot days. Some residents object to the fact that the city of Denver has cut down diseased trees, but never replanted them.

Lack of Access to Quality Parks with Amenities. Denverites are concerned about the lack of parks within walking distance of their home where they can cool down. Many residents noted that they wished parks would have more trees and shaded areas where they could relax during hot weather.

Limited Access to Public Pools: To cool off on hot days, Denver residents want to go to public swimming pools. However, a number of respondents indicated that there are not enough public pools to serve the community. When there are pools, they are often too far to walk to and not accessible for people without transportation. Denverites are bothered that public pools are frequently not open on weekend days and when open, they are filled with too many people trying to escape the heat.

Denver's voters are concerned about the lack of access to parks in their city. In 2018, they overwhelmingly passed an open space sales tax, equivalent to \$37 million of revenue annually, to acquire additional land for parks and improve existing parks, trails and open space. Denver policymakers should maximize this revenue to provide public places where residents can stay cool.

Invest in parks and public spaces in historically marginalized neighborhoods.



More resources, from Denver Climate Protection Fund or other funding sources, should be used to invest in more trees to equitably expand Denver's tree canopy, especially in areas where the canopy is sparse, temperatures are high and residents are vulnerable.



The city should use money from both revenue sources to invest in more in parks and public spaces in economically challenged and historically marginalized areas where Denverites can go to cool down.



Parks should include trees and shelters for shade where people can get relief from the heat. They should also have amenities like playgrounds, picnic areas and pools so residents can enjoy their time outside.

Increase accessibility to public swimming pools. Denver policymakers should increase the number of public swimming pools in the city. They should expand accessibility to existing pools by ensuring that, in the summer, they are open daily and have extended hours. While Denver has struggled to sufficiently staff pools, the city should consider workforce incentives to increase recruitment of employees.

At HAWC, we are eager to engage and partner with policymakers about how to protect the public's health as our climate changes. We anticipate that by learning more about the lived experience of Denver's residents, policymakers will address this pressing issue.

From the Community

My health is impacted by extreme heat...

"My daughter had a heat stroke when she was pregnant."

"I have definitely had heat stroke but try to avoid going to the hospital because it's too expensive."

"While I am a relatively healthy person, I have fainted three times in my home this summer. One of those times resulted in a fall that required stitches."

Next Steps: How Denver Residents Can Get Involved

Based on the results of our survey, Denver residents understand and are already experiencing the impacts of climate change. However, addressing these changes and their impact on health is one of the biggest and complex challenges that we face. To do this, at HAWC, we are passionate about engaging with community members about how to protect the public's health. There are many ways community members can collaborate with us to help create change.

Contact Denver's city council members and Denver's representatives and senators in the state legislature. Residents can let them know about their concerns regarding climate change. They can tell them about the importance of providing access to cooling in Denver's homes and public spaces—especially for Denver's most vulnerable residents.

Ask questions of Denver's city and state policymakers to learn more about where they stand on climate change and access to cooling. HAWC can help community members formulate pertinent questions to learn more about what commitments policymakers will make to address climate change and policies to help residents to adapt.

Stay informed about how policymakers actually vote on climate action policies. Talking about making change is easy, but actually making changes takes political will. HAWC can help residents understand what policymakers ultimately do and not just what they say. Community members can read our Legislative Scorecard in order to hold state policymakers accountable for climate change policies at the ballot box.

Addressing climate change and its effects on health are urgent priorities in Denver. We encourage policymakers and community members to join us in advocating for and shaping policies that help Denver's residents most vulnerable to these harmful impacts. Whether you are a policymaker or a community member, we would be delighted to collaborate with you to create the healthy future that Denver's residents deserve. Please contact us at info@healthiercolorado.org to learn more.

It's urgent.

It's imminent.

It's imperative.





**HEALTHY AIR &
WATER COLORADO**

303 East 17th Ave. Suite 405
Denver, CO. 80203

info@healthiercolorado.org

healthyairandwatercolorado.com