



# Environmental & Climate Resilience Framework



Energy, Equity &  
the Environment

# Table of Contents

| Section                                                  | Page |
|----------------------------------------------------------|------|
| <b>Introduction</b> .....                                | 3    |
| Framework Background and Context.....                    | 3    |
| Adaptation, Mitigation, and Resilience.....              | 3    |
| The Process.....                                         | 4    |
| <b>The Stressors and Shocks</b> .....                    | 5    |
| Overview.....                                            | 5    |
| Air Quality.....                                         | 6    |
| Biodiversity Loss.....                                   | 6    |
| Extreme Cold and Winter Weather.....                     | 7    |
| High Heat.....                                           | 7    |
| Water Conservation.....                                  | 8    |
| Wildfire.....                                            | 8    |
| <b>Resilience-Building Strategies and Projects</b> ..... | 9    |
| Overview.....                                            | 9    |
| Social Resilience.....                                   | 9    |
| Strategies and Projects.....                             | 9    |
| <b>Acknowledgements</b> .....                            | 12   |
| <b>Appendix</b> .....                                    | 13   |

# Introduction

## Framework Background and Context

The Environmental and Climate Resilience Framework builds off and complements the Sustainability Action Plan (SAP) and fills gaps from the Adams County Hazard Mitigation Plan. As mentioned in the SAP, intensifying climatic conditions and extreme weather are accelerating. The city must carefully plan and implement strategies to adapt and mitigate the impacts that residents will face from these conditions and weather as well as build resilience against already existing environmental stressors.

This framework directly addresses strategy seven from the Adaptation and Mitigation focus area in the Sustainability Action Plan, which states “...Resilient design can limit risks associated with these changes, so incorporating resilient solutions into future planning and policy could help to address present AQ issues and mitigate against future potential harms associated with the rise in extreme weather.” This framework identifies long-term environmental stressors and short-term climate shocks that are specific to Commerce City and includes strategies to build resilience against their impacts.

## Adaptation, Mitigation, and Resilience

As stated in the SAP, “**Adaptation** refers to the ways we adjust to anticipated future climatic shifts. Adaptation strategies and actions aim to improve our ability – as individuals and communities – to respond to negative effects of climate change either through reducing risks or taking advantage of new conditions.

**Mitigation**, on the other hand, involves reducing our GHG emissions to prevent worsening climate change and begin reversing the anthropogenic greenhouse effect in our atmosphere. This can be done through cutting sources of GHGs or building our capacity to absorb carbon in what we call “carbon sinks.” Carbon sinks remove carbon from the atmosphere and include trees and plants<sup>1</sup>.”

**Resilience** is the capacity to withstand or recover quickly from difficulties. Climate resilience in particular addresses the ability to effectively manage long-term stressors and short-term shocks related to environmental conditions and climate change.

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1. Commerce City, Sustainability Action Plan, Page 71

## The Process

This framework was developed through thoughtful gap analysis, workshops with city staff and the Environmental Policy and Innovation Commission (EPIC), and multiple feedback sessions from staff and residents. The gap analysis involved a review of the Adams County Hazard Mitigation Plan and the Sustainability Action Plan. Gaps identified were long-term stressors and short-term shocks faced in Commerce City that are not addressed in either plan.

Once the missing stressors and shocks were identified, workshops with city staff and the EPIC were held to brainstorm strategies that build resilience against the impacts of these stressors and shocks. Suggested strategies that did not build resilience or were duplicative of those found in the SAP were not included in this framework. However, strategies that were repetitive of those in the SAP can be found in the Appendix of this document. The final rendition of this framework was open for feedback from staff, the EPIC, and residents in Spring 2026.



# The Stressors and Shocks

## Overview

The list below is not exhaustive of all hazards in the city but rather fills the gaps not addressed in the Adams County Hazard Mitigation Plan and expands on some risks found in the Sustainability Action Plan. To view mitigation information for flood, tornado/wind damage, soil hazards, and winter weather, please see the [Adams County Hazard Mitigation Plan](#). For further information and strategies related to energy, recycling and waste diversion, water, transportation, community health, and biodiversity, trees, and food, please see the [Sustainability Action Plan](#).

The long-term environmental stressors and the short-term natural shocks identified for needing long-lasting resilience solutions include the following:



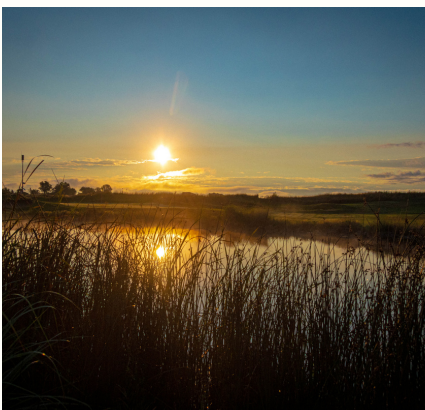
**Long-Term Stressor**  
Air Quality



**Long-Term Stressor**  
Biodiversity Loss



**Short-Term Shock**  
Extreme Cold & Winter  
Weather



**Long-Term Stressor**  
High Heat



**Long-Term Stressor**  
Water Conservation



**Short-Term Shock**  
Wildfire

# Air Quality



Poor air quality has an outsized impact on human health and wellbeing. It can lead to a number of health conditions such as respiratory, cardiovascular, and neurological diseases, among other burdens<sup>1</sup>. Commerce City specifically faces poor air quality given the composition of toxins in the city including heightened levels of , ozone, diesel particulate matter, carbon monoxide (CO), particulate matter 10 (PM 10), particulate matter 2.5 (PM 2.5), nitrogen oxides (NOx), volatile organic compounds (VOCs), and sulfur dioxide (SOx)<sup>2</sup>.

Outside air can often find its way into homes through foundational cracks, open windows and doors, and unsealed caulk. This combined with indoor air pollutants such as gas fueled stoves and fireplaces, candles, and cleaning supplies creates poor indoor air quality as well. For more information about air quality in Commerce City, refer to the [Sustainability Action Plan](#). The 2019 GHG Inventory is found on page 30.

Strategies listed in the next section identify actions to take in order to build resilience against human exposure to air pollutants and reduce the overall amount of toxins in the air.

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1. Sigsgaard, T., & Hoffmann, B. (2024). Assessing the health burden from air pollution. *Science*, 384(6691), 33-34.

2. [Commerce City, Sustainability Action Plan, page 16](#)

# Biodiversity Loss



Biodiversity plays a critical role in the function of ecosystems. It helps with pollination, seed dispersal, climate regulation, water purification, nutrient cycling, and the control of agricultural pests<sup>1</sup>. Living in the anthropocene is leading to rapid changes in the planet's environments and creating a threat to biodiversity and, therefore, the benefits provided by biodiversity. Direct threats to biodiversity include habitat loss as land gets developed, unsustainable resource use, invasive species overthrowing native plants, pollution, and climate change.

The city must do what is in its power to protect biodiversity across Commerce City. Strategies listed in the next section identify actions to take in order to build resilience against biodiversity loss.

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1. <https://www.amnh.org/research/center-for-biodiversity-conservation/what-is-biodiversity>

# Extreme Cold & Winter Weather



Climate change is showing an upward trend in warmer temperatures experienced throughout the year and less cold temperatures. However, warmer temperatures means that the air can hold more moisture. This can lead to heavier and more extreme snowfall and rainfall, which is why some areas see more snow and rain despite the effects of climate change<sup>1</sup>. Unpredictable changes to winter weather means the city should plan for the worst scenario instead of the best case scenario.

The city must do what is in its power to lessen the effects of extreme cold and winter weather. Strategies listed in the next section identify actions to take in order to build resilience against these impacts.

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1. <https://science.nasa.gov/kids/earth/how-is-cold-weather-changing/#:~:text=There%20is%20another%20way%20climate,where%20it%20rains%20and%20snows.>

# High Heat



Coloradans are increasingly experiencing high heat, with more frequent and hotter temperatures projected based on the best available climate modeling<sup>1</sup>. This poses significant impacts on human health. Some specific impacts from rising temperatures include increased health problems such as fatigue, cardiovascular and respiratory disease, and even death<sup>2</sup>. Increased heat also impacts the natural environment, including decreased precipitation and impaired air quality<sup>3</sup>. DICs are more impacted than others by these effects given their geographic location, tree canopy, and built environment and experience higher environmental and health burdens like pollution and climate change.

The city must do what is in its power to decrease the impacts brought on by high heat across Commerce City. Strategies listed in the next section identify actions to take in order to build resilience against high heat impacts on residents and infrastructure.

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1. Bolinger, R.A., J.J. Lukas, R.S. Schumacher, and P.E. Goble (2024): *Climate Change in Colorado*, 3rd edition. Colorado State University, <https://doi.org/10.25675/10217/237323>.

2. USGCRP (2016). *Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC. 312 pp. [dx.doi.org/10.7930/J0R49NQX](https://doi.org/10.7930/J0R49NQX).

3. Leal Filho, W., Icaza, L. E., Neht, A., Klavins, M., & Morgan, E. A. (2018). Coping with the impacts of urban heat islands. A literature based study on understanding urban heat vulnerability and the need for resilience in cities in a global climate change context. *Journal of Cleaner Production*, 171, 1140-1149.

# Water Conservation



Expanding urban redevelopment and growth in Commerce City, coupled with climate change, poses big challenges for water conservation. The western U.S. experiences record-breaking heat waves that fuel wildfires, bringing the consequences of severe drought into the public eye<sup>1</sup>. These conditions directly impact Front Range communities who share water with many of the western states. At the same time, the recreational, aesthetic, and environmental benefits afforded by urban waterways are valued.

The city must do what is in its power to conserve water in Commerce City to ensure a sustainable and quality future for generations to come. Strategies listed in the next section identify actions to take in order to build resilience for water conservation in the city.

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1. [Denver One Water Plan](#)

# Wildfire



Climate change promotes conditions, such as dry vegetation, on which wildfires depend<sup>1</sup>. Not only does wildfire hold potential for damaging property and causing financial strain, it has effects on public health. Smoke emissions from wildfires hold harmful compounds such as carbon monoxide, PM2.5, VOCs, and other greenhouse gases, which are harmful to breathe and impact the respiratory system. Wildfires can also impact local watersheds. Recent studies have noted increased levels of nitrogen, phosphorus, dissolved organic carbon, and water turbidity in lakes within wildfire-burnt watersheds<sup>2</sup>. In Commerce City specifically, the probability of future wildfire occurrence is occasional in limited geographic locations.

For more information about wildfires in Commerce City, refer to the [Adams County Hazard Mitigation Plan](#).

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1. Jones, M. W., Smith, A., Betts, R., Canadell, J. G., Prentice, I. C., & Le Quéré, C. (2020). Climate change increases the risk of wildfires.

2. Bolan, S., Sharma, S., Mukherjee, S., Isaza, D. F. G., Rodgers, E. M., Zhou, P., ... & Bolan, N. (2025). Wildfires under changing climate, and their environmental and health impacts. *Journal of soils and sediments*, 1-25.

# Resilience-Building Strategies and Projects

## Overview

The City of Commerce City is already working to increase the city's resilience to environmental and climate impacts through strategies in the Sustainability Action Plan and the Adams County Hazard Mitigation Plan. However, the stressors and shocks mentioned in the previous section need further attention for action on the local level through attainable projects city staff can implement. Strategies and projects listed on the following pages identify what the City can do in order to build resilience within the city boundary.

## Social Resilience

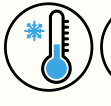
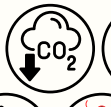


Increasing resilience against stressors and shocks is important – so is the need to build social resilience within the community. Social resilience is the ability that a community has to effectively mitigate disaster impacts and recover from shocks. The concept is more prominent to consider as shocks and stressors are felt more frequently around the world.<sup>1</sup> Studies show that communities with stronger social networks respond better during and recover more effectively from shocks.<sup>1</sup> Included below are strategies that consider actions to take in order to build social capital and community relationships.

1. Saja, A. A., Teo, M., Goonetilleke, A., & Ziyath, A. M. (2021). Assessing social resilience in disaster management. *International Journal of Disaster Risk Reduction*, 52, 101957.

| Strategy or Project                                                                                                                                      | Stressor/Shock |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Organize outreach and health clinics addressing air quality related health concerns                                                                      |                |
| Invest in Decarbonization efforts across the city. Partner with DRCOG to learn about best practices and stay informed on new programs.                   |                |
| Expand Air Quality monitoring stations to schools and community centers along with education materials for what to do when air quality is poor.          |                |
| Organize opportunities for residents, staff, and Council to learn about Commerce City's natural landscape and the importance of protecting those assets. |                |

| Strategy or Project                                                                                                                                                                                    | Stressor/Shock                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hold developers accountable for the establishment of newly planted landscape and trees. If plants die prior to 5 years of establishment, the developer must replace the plants.                        |    |
| Add additional open space properties to maintain habitat and increase natural areas.                                                                                                                   |                                                                                                                                                                          |
| Add infrastructure to support and sustain wildlife to use habitat i.e nesting boxes, raptor poles, water accesses.                                                                                     |                                                                                                                                                                          |
| Limit or eliminate the use of pesticides, herbicides, insecticides, and other chemical applications on city owned property to protect pollinators and wildlife. Find organic and natural alternatives. |                                                                                                                                                                          |
| Develop an open space management plan to assess current wildlife habitat and identify how to manage the open space.                                                                                    |                                                                                                                                                                         |
| Implement protections for birds due to collisions with buildings and windows.                                                                                                                          |                                                                                                                                                                        |
| Expand access to warming shelters for residents.                                                                                                                                                       |                                                                                   |
| Revisit SWAP activation policy and requirements/conditions for activation to ensure residents are protected from all conditions.                                                                       |                                                                                   |
| Invest in and expand access to climate sensitive infrastructure such as water fountains for drinking, splash pads, shade structures.                                                                   |                                                                                   |
| Promote greener buildings that require less artificial heating and cooling to minimize the use of energy that adds to the amount of carbon emissions in the atmosphere.                                |                                                                                                                                                                        |
| Increase access to water fountains for people and pets on city-owned property.                                                                                                                         |                                                                                   |

| Strategy or Project                                                                                                                                                                                                                           | Stressor/Shock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Create mobile cooling stations to deploy on high heat days.                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Promote green infrastructure such as green roofs, rain gardens and bioswales, urban forests and parks, wildlife corridors.                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                     |
| Limit new development that requires excessive water usage such as data centers.                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Align with state laws and best practices when it regards water usage.                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Develop water conservation programs for residents to utilize. Provide incentives for residents conserving water.                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Encourage xeriscape projects on City owned properties and promote xeriscaping with developers for new properties. Create a program that helps homeowners transition their lawn to xeric landscaping.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Require all new builds and remodels to install low-flow appliances that conserve water.                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Create a network of Resilience Hubs across the city as built in spaces for residents to go when concerning weather or hazard events happen that have low barriers to access.                                                                  |                                                                                                                                                                                                                                                                          |
| Expand educational access, workshops, and events for residents, staff, and Council to attend to learn about air quality, high heat, biodiversity loss, extreme cold and winter weather, water conservation, wildfires, and social resilience. |   <br>    |
| Smart growth: a strategy for urban developments that aims to create compact, walkable neighborhoods with a mix of housing – promoting more multi-family builds, jobs, and services.                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

Further strategies and projects that emphasize resilience building are found in the [Sustainability Action Plan](#) in the Appendix A. Actions Matrix. Specifically, see the following strategies: EO5, EO7, EO9, EO11, EO12, EE11, EE14, EE16, AM7, W1, W2, W3, W4, W5, W6, T5, T6, T9, T18, T21, T22, T23, CH3, B2, B5, and B13.

# Acknowledgements

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**Energy, Equity, and the Environment (E3) Division**

**City of Commerce City Staff**

**Environmental Policy and Innovation Commission (EPIC)**

**Residents**

# Appendix

Further strategies and projects that emphasize resilience building are found in the [Sustainability Action Plan](#) in the Appendix A and below.

**EO 5.** Support local workforce development programs for the green transition (e.g., mechanics for EVs, HVAC, etc.). Partner with Adams 12 school district, community colleges, and businesses.

**EO 7.** Create programs to support local businesses in their emissions reduction and sustainability work.

**EO 9.** Explore options for City incentive programs aimed at attracting new clean and efficiency industries, including building retrofits, etc.

**EO 12.** Publicize on City websites and outreach materials the benefits and importance of native species, urban forest canopy, and biodiversity and develop workshops to promote native landscaping and tree planting.

**EE 11.** Educate and offer incentives for businesses to replace combustion fuel appliances with electric ones.

**EE 14.** Develop program to disburse air purifiers and filters to low-income, impacted households within a certain radius around Suncor refinery (or other metric to be determined) and communities where AQ metrics exceed federal NAAQS standards.

**EE 16.** Advocate for changes to federal weatherization programs to support/fund projects for cooling in Commerce City.

**AM 7.** Collaborate with CDPHE, community residents, and local industry in order to build resilient spaces in the City that reduce the health impacts associated with air pollution and mitigate the negative impacts caused by climate change. Resilient design can limit risks associated with a shifting climate, so incorporating resilient solutions into future planning and policy could help to address present AQ issues and mitigate against future potential harms.

**W 1.** Work with SACWSD to develop program to help convert “street yards” into native plant gardens and sprinklers for “street yards” into drip lines for street trees.

**W 2.** Mandate that cool weather turf be restricted to 40% of backyards, or 500 square feet, whichever is smaller for new residential and commercial sites.

**W 3.** Work with SACWSD to provide incentives to existing residential and commercial sites to remove front yard lawns, then to xeriscape and/or replant with native species.

# Appendix (cont.)

**W 4.** Develop programs to incentivize the use of greywater systems.

**W 5.** Work with SACWSD to develop stricter regulations on golf course siting and water consumption, including requirements for no-mow areas and water reuse and low-water use landscape standards.

**W 6.** Work with HOAs and SACWSD to reduce residential lawn area, encourage rock and water-efficient landscaping, and install water conservation projects. This may include development of a rebate program on stormwater fees, new landscape standards, etc.

**T 5.** Explore options to reduce costs of public transportation for under-resourced populations and establish dedicated funding sources for expanding public transit and park-and-rides.

**T 6.** Promote existing, and explore additional, alternative transportation options, including the N Line, shuttle service, bicycling, shared micro-mobility, and rideshare options

**T 9.** Expand bicycle lane networks and add bicycle racks, lane barriers and restripe lane lines to increase visibility and protect bicyclists from motor vehicle traffic, including the large quantity of freight trucks.

**T 18.** Develop and implement electric vehicle charging infrastructure installation community-wide, including introducing requirements for new gas station developments to incorporate EV charging.

**T 21.** Develop an anti-idling resolution and work with the Adams 12 School District and private schools to establish and enforce no-idle zones around schools.

**T 22.** Install intelligent traffic signals to reduce wait times for vehicles during off-peak hours.

**T 23.** Explore train schedules to reduce wait times at crossings.

**CH 3.** On extreme heat days, waive fees at Eagle Point and Bison Ridge for all community members to provide a cooling space.

**B 2.** Develop and implement a plan to increase urban forest canopy to at least 20% across the entire City, particularly in low-income neighborhoods.

**B 5.** Develop programs and campaigns to encourage pollinator habitats and foster ladybug habitats.

**B 13.** Develop incentive & education programs to encourage use of natural weed killers & pesticides on residential properties.

