CITY OF BOULDER
CITY COUNCIL AGENDA ITEM

MEETING DATE: December 19, 2024

AGENDA TITLE

Climate Action Plan Update

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EXECUTIVE SUMMARY

The purpose of this report is to seek City Council's feedback on the proposed outline and framework for developing Boulder's next Climate Action Plan (CAP). The climate landscape has shifted dramatically in the past decade, marked by increasingly severe climate-related events that highlight the urgency of preparing for and managing local climate impacts. While earlier CAPs primarily focused on mitigating climate change by reducing emissions, the scale and immediacy of these impacts demand a greater emphasis on equity, resilience and adaptation. Local governments, including Boulder, now face a dual challenge: continuing to drive global climate mitigation efforts while also addressing the very real local consequences of a changing climate. Given the evolving nature of climate change, there is a need to refresh our community's action plans to guide efforts through 2030 and beyond.

While Boulder has made steady progress toward its ambitious climate goals, meeting the targets established by City Council to reduce carbon pollution is becoming increasingly challenging. These targets were based on the recommendations of the Intergovernmental Panel on Climate Change to limit the severity of climate change. The update to the CAP is intended to accelerate progress while advancing new or improved actions in response to our changing context.

This memo outlines a proposed approach for climate action moving forward that integrates mitigation, resilience, adaptation and equity into a cohesive framework. By continuing to pursue bold emissions reductions while strengthening community resilience, the city aims to address the urgent and interrelated challenges of climate change.

While science-based mitigation goals remain central, this update reflects an expanded focus on resilience and adapting to climate change, ensuring Boulder is prepared to manage escalating climate risks. The plan will continue to prioritize the most impactful actions and policy levers for the city to achieve its climate targets and goals but will also emphasize equity in both reducing emissions and building resilience, ensuring that the most vulnerable populations are prioritized. This update introduces new overarching goals focused on resilience and equity, placing them on equal footing with the city's mitigation goals. These new goals include:

- **Climate Resilience**: The City of Boulder takes proactive action to prepare for and respond to the impacts of climate change, both reducing risk to climate disasters and strengthening the community's ability to recover and adapt to changing conditions.
- **Climate Equity**: The City of Boulder recognizes that the impacts of climate change are not felt equally by all community members. Actions to prepare for and mitigate climate change impacts consider the community's most vulnerable members and focus on equitably distributing benefits and reducing burdens on those most impacted.

BOARD AND COMMISSION FEEDBACK

City staff presented to the Environmental Advisory Board (EAB) at their December 4, 2024 meeting. Overall, the board was supportive and complementary of the framework and proposed CAP update. The board made several suggestions that council may find helpful when considering their own feedback:

- Include a visual to show the hierarchy of the relationships between the Climate Action Plan and other foundational city plans such as the Sustainability Equity and Resilience (SER) framework, Boulder Valley Comprehensive Plan (BVCP), city-wide strategic plan and other department plans.
- Include recommendations related to density and land use. Recent data released from the Intragovernmental Panel on Climate Change (IPCC) should be evaluated critically to determine how external findings apply locally. Data on the implications for extra-boundary transportation, which could differ significantly from global or national contexts, should have particular focus. Consider the city's ability to influence the culture norms around density in favor of lessening climate impacts.
- Include financial risk in the list of climate change-related risks. The board was concerned about the equity implications financial risks have on community members as a result of increased climate disasters. Some community members may not be able to afford insurance and may have additional financial impacts related to the increase in climate disasters. The CAP update should include information about insurance risks for

individuals and businesses and a list of actions community members can take to reduce financial risks in preparation for disasters.
- Continue to hold large corporations accountable for their role in climate change.
- Support local businesses while driving emissions reductions locally so these businesses can remain in the community and be successful.

QUESTIONS FOR COUNCIL

1. Does City Council have any questions regarding the purpose, content or implementation of the update to the CAP?
2. What does a successful update to the CAP look like for council members?

BACKGROUND

Evolution of Boulder's Climate Action Planning

Boulder's Greenhouse Gas Emissions (GHG) Goals

The Boulder community adopted its first target to reduce greenhouse gas (GHG) emissions in 2006 and has kept pace with scientific findings to ensure emissions reduction targets align with the effort needed to mitigate the worst impacts of climate change. Boulder currently has the following community-wide GHG reduction targets:

- Reduce emissions by 70% by 2030 (against a 2018 baseline).
- Become a net-zero city by 2035.
- Become a carbon positive city by 2040.

DEFINITIONS

Net-Zero Emissions
As close to zero carbon emissions as possible. Any remaining emissions sources can be sequestered naturally through the biosphere.

Carbon Positive
Above and beyond net-zero emissions. A carbon positive community takes in, or sequesters, more carbon than it emits.

Boulder's approach to climate action focuses on driving systemic changes through a combination of strategies that include policy advocacy at the regional, state and federal levels; legal strategies to compel major actors like oil companies to take full responsibility for their actions; voluntary and regulatory strategies to enhance community resilience and build replicable models that can be scaled regionally and nationally to drive market transformation; and social and cultural efforts also at local, national and international levels.

Based on the most recent Greenhouse Gas Inventory, Boulder has cut community-wide carbon pollution by 24% since the 2018 baseline and 41% since the city began tracking emissions in 2005. These reductions reflect meaningful improvements in energy efficiency and fuel switching in buildings, increased walking, cycling, and transit usage and a growing shift to electric vehicles. These changes have happened in large part because of city leadership in land use

planning, advancing regulations and making infrastructure investments, along with actions taken by residents, businesses, nonprofits and other levels of government.

The city's last formal CAP, published in 2017, was the Climate Commitment, outlining a new and more ambitious set of goals and associated actions. It also introduced new areas of action, including consumption-based emissions reduction and natural systems integration, as integral parts of our climate action work. The Climate Commitment was also one of the first local climate action plans in the country to introduce equity as a guiding principle through a "Just Transition" toward a low-carbon future.

In June 2021, the city introduced an updated approach to climate action in a Study Session Memorandum, which established new science-based emissions reduction targets and recognized that Boulder's previous city-centric approach to climate action was no longer sufficient to address the global scale of the climate crisis. This approach emphasized achieving systemic change by collaborating with regional, national and global partners, as well as embedding equity into the city's climate strategies. Following the study session, in October 2021, council adopted a resolution endorsing the commitment to achieving new climate goals for the community, including aggressive and equitable climate mitigation and adaptation measures.

Building on the foundations introduced in 2021 and recognizing the accelerating pace of climate change, this CAP update further evolves Boulder's climate strategy.

Boulder's History of Climate Action

The City of Boulder has a long history of being a global leader in climate action and sustainability. For decades, the Boulder community has prioritized efforts to reduce carbon pollution, protect and enhance green spaces and enable residents to make healthy, sustainable choices. These efforts have led to significant environmental outcomes, including improved mobility, cost savings for residents, growth in the local green economy and international recognition of Boulder's leadership.

To understand Boulder's history and relationship with climate change and climate action, it is important to remember that Boulder hosts 11 national laboratories, many of which are directly or indirectly involved in climate monitoring and climate change science. This fact, combined with the long legacy of involvement in a wide range of environmental issues, makes it no surprise that Boulder was one of the first communities in the world to commit to ambitious climate action goals starting in the early 2000s. This commitment emerged in part because the U.S. federal government declined to sign the Kyoto Protocol, the first international agreement on emissions reduction, in the late 1990s. Since then, Boulder has taken an active role in leading by example and participating in regional, national and international "subnational government" efforts to elevate the urgency of actions to stabilize and reverse global warming.

For the first 20 years of this movement, the focus was almost exclusively on preventing climate change through reducing greenhouse gas emissions by cutting energy use and transitioning to renewable energy systems. Boulder has led the way in developing energy efficiency programs, renewable energy initiatives and driving the reform of the electric utility industry. These efforts have significantly reduced local and regional carbon emissions and inspired many other places worldwide to pursue similar strategies.

Addressing the Reality of a Changing Climate

Despite the efforts of Boulder and thousands of other communities worldwide, climate change impacts have become increasingly pronounced. Over the past several years, the city has experienced several severe climate-related events, highlighting the importance of climate adaptation measures. In 2013, Boulder experienced a historic flood caused by rainstorms that delivered the equivalent of a year's worth of precipitation in a single week. This event sparked debates within the scientific community about whether it was an indication that climate change impacts were already occurring, initiating a new branch of science around climate change attribution.

Between 2015 and 2020, the impacts of climate change became irrefutably evident. Colorado experienced its five largest wildfires in history during this period. In 2021, the Marshall Fire – an unprecedented wildfire in December – became the most destructive wildfire in state history, destroying more than 1,000 homes, killing two people and over 1,000 animals and causing more than $2 billion in damages.

Despite our best efforts at mitigation, changes to the climate are inevitable. Boulder is already witnessing a number of changes today, emphasizing the critical role of city efforts in growing community resilience – the capacity to resist, adapt to or transform disruptive changes. Climate resilience refers to actions taken to prepare for and respond to the impacts of climate change – both by reducing risk from climate change and enhancing resilience to withstand them. From historically high levels of hail and wind damage to other extreme weather events, including a tornado in Boulder County, there are many indications that climate change is now a major force that must be recognized and addressed as the community plans for its future. Together, these climate events highlight the need for immediate resilience measures and for continued planning to ensure the city's infrastructure and regulations are based on the expected future climate.

The CAP has been the guiding plan for local climate action since it was first adopted in 2006. Many strategies contribute to both climate mitigation and resilience. For example, building upgrades, such as the installation of electric heat pumps, improve energy efficiency and reduce carbon pollution while providing indoor cooling and air filtration. Planting trees and installing green infrastructure to reduce the impacts of extreme heat also sequesters carbon. Taking action to improve resilience and reduce risks from climate hazards can offer additional benefits, making Boulder a more livable city with a thriving economy and robust natural systems.

As highlighted later in this memo, these recent events have underscored the need to prioritize equity in the city's climate work. Climate change impacts do not affect everyone equally, making it critical to engage and prioritize disproportionately impacted communities when implementing climate adaptation measures. For example, improving cooling in buildings should focus on areas that house vulnerable populations. Additionally, developing actions that cut carbon pollution while advancing social equity—such as improving access to safe, efficient public transit — will ensure proposed solutions benefit all members of the community. This updated approach will feature a more iterative and dynamic format for conveying both emerging information on the evolving context of climate change and the adaptive actions required to address these changing circumstances.

From Local Examples to System-Changing Actions

In a 2021 memo to council on the city's climate action strategies, the Climate Initiatives Department summarized lessons learned from the preceding 20 years of climate action. Among these lessons was the recognition that serving as local examples of ambitious climate action won't, by itself, lead to the broader systemic changes necessary to stabilize the climate and address its underlying causes. A growing network of leading climate action communities has recognized that the local climate action movement must now work collectively to tackle foundational causes of climate destabilization. From confronting the misinformation and obstruction of the fossil fuel industry to creating new state and national policy frameworks that guide the development of low-carbon infrastructure, Boulder and its peer communities have realized that climate strategies must address more than local factors.

At the same time, as climate change impacts grow, local governments must now dedicate an increasing amount of attention and resources to preparing for, living through and recovering from these effects. This requires a whole-of-government approach in which nearly every city department plays an important role in enhancing both organizational and community resilience to disruptive change. This includes planning for, responding to and recovering from disruptive climate change that is now unavoidable.

This whole-of-government and whole-of-community approach recognizes that climate change impacts are not equitably distributed. As such, significant emphasis must be placed on supporting historically disadvantaged and underserved parts of our communities. The 2021 City Council memo introduced the added focus on resilience, adaptation to climate change and equity as essential, coequal elements of carbon management and mitigation efforts. In this CAP update, staff will outline major climate risks and summarize efforts across the city to address these risks in an inclusive and equitable manner.

In the sections that follow, staff will advance the 2021 framework with a new CAP update that integrates mitigation, adaptation and resilience, and equity. This revised structure acknowledges the evolving context of the community and includes the following components:

1. Climate Change Risks – A summary of major local climate change risks and current projections for how these risks will evolve over time.
2. Climate Resilience Actions – An overview of key city efforts to address each of the existing or emerging climate change risks.
3. Climate Mitigation and Stabilization – A description of ongoing and evolving work to eliminate climate-destabilizing emissions from energy systems and material consumption.
4. Climate Initiatives Strategic Plan – A summary of the specific actions by the Climate Initiatives Department to coordinate and implement the broader city and regional climate efforts.

ANALYSIS

A. Increasing Focus on Managing Local Climate Impacts

The Current and Projected Context of Climate Change

Much has changed since the last update to the CAP. Boulder has experienced several climate-related events with significant impacts, including infrastructure damage and economic disruption. A detailed understanding of anticipated future changes to the local climate is

necessary to prepare effectively for accelerating climate-related impacts. The updated CAP will include a new section summarizing climate projection for Boulder from multiple sources. Together, these projections provide an overview of the types of changes expected in the near to midterm future (2025-2050).

Additionally, given the many factors that now contribute to increasing uncertainty about the sources and accuracy of publicly available information, the Climate Initiatives Department plans to provide periodic updates on both current climate change conditions and projections. These regular updates will offer an accessible overview of key concepts, terminology and a summary of key scientific findings in both English and Spanish. The goal is to provide a shared foundational understanding of factors expected to profoundly influence our community for decades to come. Examples of these key findings are included below.

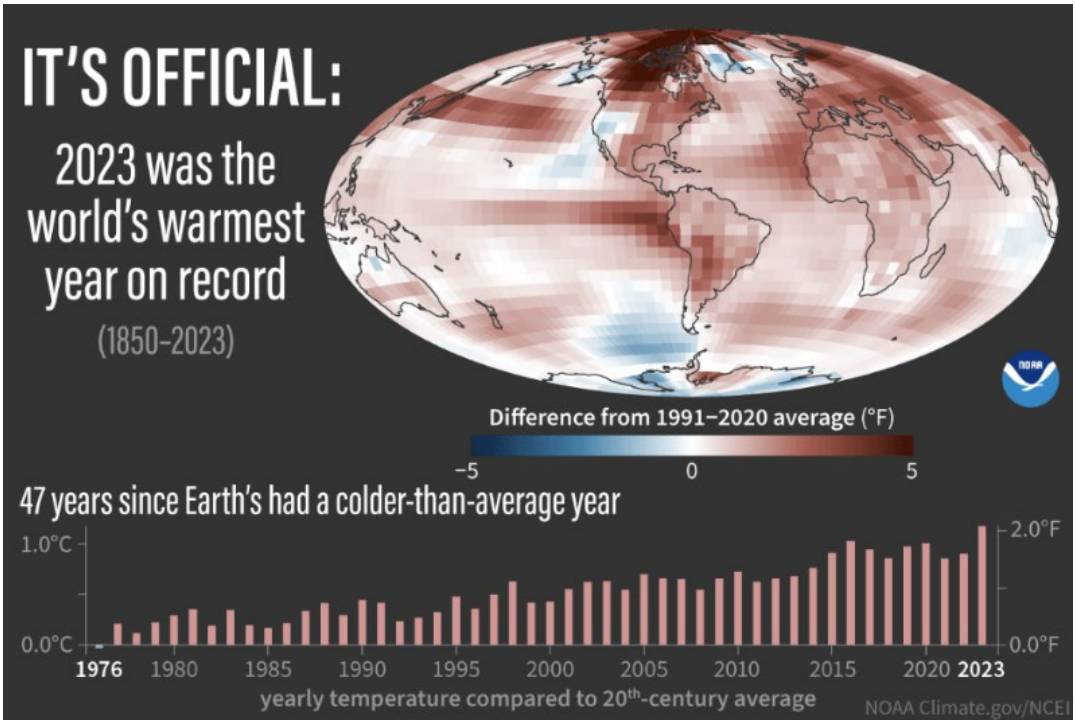

Figure 1: Hottest Years in Global Temperature

Climate Change - The Global Context

As Figure 1 illustrates, 2023 was officially the hottest year globally since temperature records began. In fact, all ten of the hottest years on record have occurred in the past decade.

Through a variety of methods, scientists can extend temperature records back over 100 years. This data clearly illustrates the dramatic temperature rise, dating to a period prior to the industrial revolution, as depicted in Figure 2.[1]

[1] From NOAA: https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far

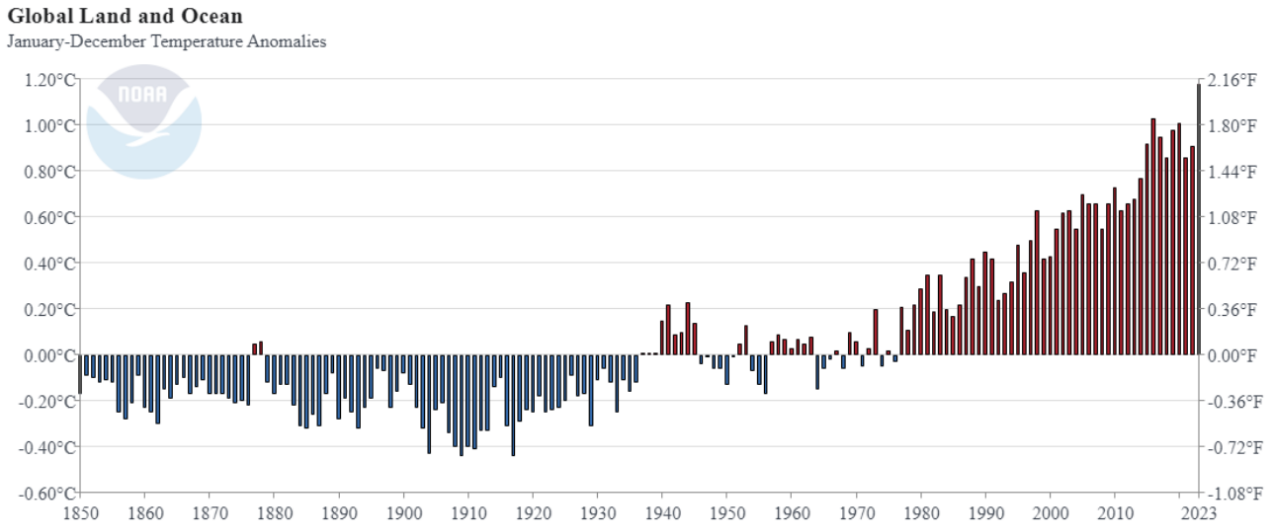

Figure 2: Global Land and Ocean Temperatures: 1850-2023[2]

Assessing Change at the Local Level

While global monitoring of climate change trends provides important insights about the overall trajectory of planetary changes, this information has, until recently, been too broad to be useful for local planning and projections. However, through various efforts, city staff have begun compiling both historical and future projection data to better prepare the city and broader community for ongoing changes.

Local Temperature Change

Through work conducted by scientists in our city's Open Space and Mountain Parks division, staff developed a similar timeline of local temperatures. As shown in Figure 3, clear periods of extreme heat and drought occurred during the Dust Bowl period and then again during the 1950s-1960s. However, the data reveals not just cyclic patterns but a clear trend toward hotter conditions. The past two decades show a pronounced pattern of sustained and increasing temperatures.

[2] From NOAA 2023 Global Climate Report: https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202313

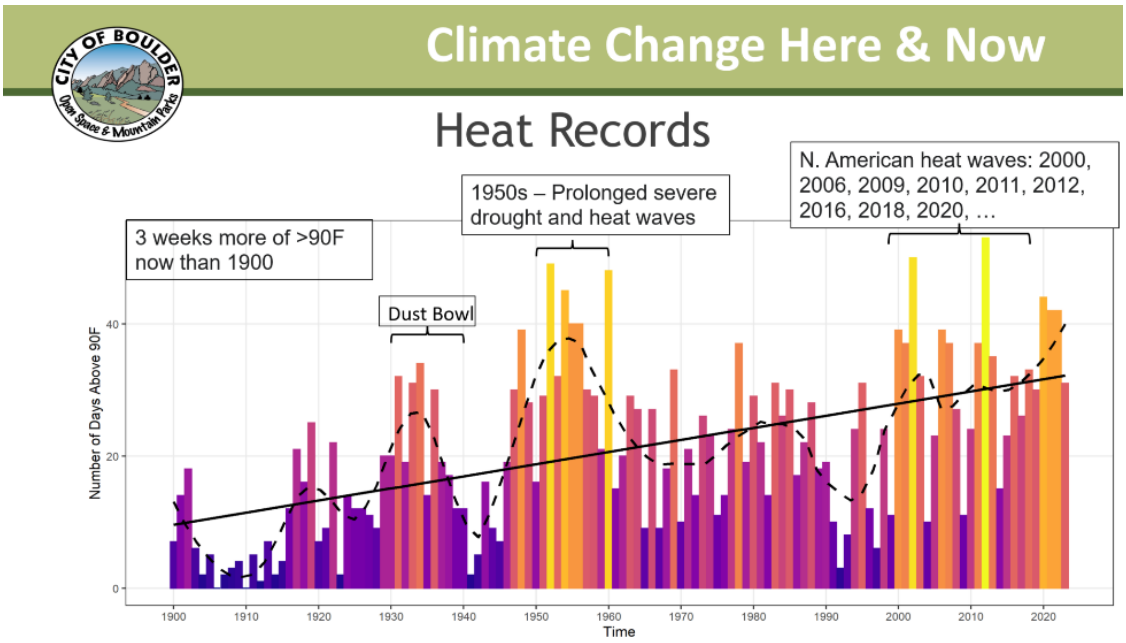

Figure 3: Historic Temperature Over 90 degrees F: 1900-2022—source: OSMP staff

Understanding an Unpredictable Future

Over the past two years, staff have collaborated with climate modeling specialists to "downscale" global climate models to account for local geographic and environmental conditions. Working in partnership with Boulder County and local experts, staff conducted a climate change analysis to assess both past changes and projections of climate risks for the typical climate modeling timeframes of 2030 and 2050. These projections use two scenarios of prospective climate change – a more conservative (less change) scenario, Representative Concentration Pathway (RCP) 4.5, and a more intensive climate change scenario, RCP 8.5.[3] These forecasts correspond to major local climate-related risks, which include:

- Wildfire
- Heat
- Flood
- Drought
- Extreme weather
- Air Quality

Resilience is not only about disaster preparedness and extreme events. It also involves addressing chronic stresses that weaken a city's fabric on a day-to-day or cyclical basis. By focusing on both shocks and stresses, Boulder becomes better equipped to respond to challenging events. Recent experiences highlight the connection between Boulder's natural environment, climate change-related conditions and the interconnected nature of major hazards and their increasing frequency. For example, Table 1 compares changes in three climate risks – two temperature-related and one wildfire-related – using historic[4], and current data and projections for 2030 and 2050.

[3] Representative Concentration Pathway (RCP) 4.5 and 8.5 are scenarios that stabilizes radiative forcing at 4.5 and 8.5 Watts per meter squared, respectively, in the year 2100.

[4] The "historic" data refers to the period between 1986-2005. The "Current" data are averages of the period between 2018-2021.

Table 1: Climate Change Risks - Historic and Current[5]

CLIMATE CHANGE RISK	Historic Frequency	Current Frequency
Days over 95 degrees F	5	10
Heat Wave Max for 3 Days	95 degrees F	97 degrees F
High Fire Risk Days Current	16	116

Table 2 takes those changes in frequency and projects them to 2030 and 2050, respectively, highlighting the range of projected increases in frequency for specific risk areas.[6]

Table 2: Projected Climate Change Risks - 2030 & 2050[7]

CLIMATE CHANGE RISK	Current Frequency	Projected Frequency 2030	Projected Frequency 2050
Days over 95 degrees F	10	25+	50+
Average Drought Days	60	150	170+
Extreme Precipitation Events	4	10	11+
Heat Wave Max for 3 Days	95 degrees F	100 degrees F	103 degrees F
High Fire Risk Days Current	116	180+	220+

The significance of the changes taking place associated with global warming are evident in both comparisons of historic periods (1986-2005) to current (2018-2021), and in the projected levels of change in these risk factors in 2030 and 2050. For example, days over 95 degrees F have already doubled and are projected to more than double again by 2030 (from 5 historically to over 25 by 2030). Average drought days are also projected to double by 2030 and may triple by 2050. Extreme precipitation events could more than double by 2030 and continue to increase. Fire dangers show the most dramatic increases. Boulder has already seen a more than 10-fold increase from 16 days historically to 116 days annually of high fire potential. Given the combination of increasing temperatures and drought conditions, the number of high-fire-risk days is expected to reach more than 200 days per year (more than two-thirds of a calendar year) before mid-century.

The analysis underscores the significance of climate change on community's well-being. However, there are many effective actions Boulder and surrounding communities can take to reduce local climate impacts and contribute to global stabilization efforts.

[5] Data for this table derived from climate change modeling and projections developed for the City and County by Resilient Analytics.

[6] Flood risks are modeled separately through work conducted by the city's Water Utilities department and will be integrated into the Risk Profile segment of the updated CAP to be completed in Spring of 2025.

[7] Data from Resilient Analytics modeling noted above.

Beware of Averages!

An important consideration in reviewing climate change information is to recognize and consider the differences between averages and extremes. Most global climate science focuses on global average temperatures as a primary metric and indicator of change. This historic Paris Climate Accords reached at the UN Convening of the Parties (COP) 21 in Paris in 2015 centered on a global agreement to keep temperature increases below a 1.5°C (2.7°F) increase. There are a number of ways in which this global metric is potentially confusing or misleading. First, this represents a global average. Temperatures in the polar regions have already reached an average increase of over 3°C (5.6°F). This is contributing to a host of alarming warming related impacts. Second, referring to averages obscures the critical factor of escalating extreme temperatures. In Boulder, for example, we are already seeing summer maximum temperatures peaking at well over 100°F, while our average summer temperatures are listed as less than 90°F. To protect our community from these impacts, we must manage for extremes even as we use averages to track trends.

The Role of Natural Infrastructure

In 2022, Boulder's Climate Initiatives Department coordinated participation in the NOAA-sponsored National Heat Watch program. With the help of over 70 community volunteers, the city mapped heat distribution on one of the hottest days of the year. This work revealed significant heat exposure differences across the community – up to 10°F – based on development levels, shade and surface permeability.

Subsequent heat analysis modeled the impact of interventions, such as enhanced urban forestry and plantings, demonstrating that focused actions can reduce maximum temperatures. These interventions particularly benefit vulnerable areas where residents face greater challenges due to age, accessibility, or resource availability.

To achieve these benefits, the Climate Initiatives and Utilities departments are exploring ways to manage water resources that support urban landscapes' climate-buffering capabilities. Parallel efforts include desertification risk assessments and land management strategies to enhance water retention and reduce aridification risks in surrounding areas.

A similar effort focuses on urban landscape design to reduce fire risks while maintaining shade and soil moisture for cooling. The Boulder Fire Department has been a leader in advocating for this multi-benefit approach.

The Role of Built Infrastructure

In addition to natural infrastructure, changes to planning and development can significantly reduce climate risks. For instance, increasing roof reflectivity and integrating landscape elements for shade and cooling can lower both outdoor water use and cooling loads.

In recently funded efforts to accelerate adoption of electrification and renewable cooling-based technologies, the integration of natural infrastructure and built infrastructure strategies can improve community thermal safety and sheltering options during periods of poor air quality or extreme weather.

These and other examples illustrate the many opportunities the city is already developing to manage local climate conditions in ways that can enhance community safety and well-being in the face of increasing climate risks and impacts. The updated CAP takes an honest and comprehensive view of Boulder's resilience challenges and opportunities. It outlines a path forward to address both acute shocks, like flooding or wildfires, and chronic stresses, such as affordable housing, regional planning and strong, community cohesion, which exacerbate those shocks over the long term. The next section details efforts to map climate risks against various city initiatives to better manage and mitigate these risks.

B. Collaborative Planning for Climate

Significant responsibility for advancing climate efforts rests with the Climate Initiatives Department, but every city department plays a critical role in ensuring an environmentally sustainable future.

Like the Racial Equity Plan, the CAP integrates with all departmental planning efforts and key citywide strategies. The CAP aligns with and is informed by the city's Sustainability, Equity and Resilience (SER) Framework, and is embedded in the Citywide Strategic Plan. It introduces broader policy objectives distilled into action-based documents, including the city's annual policy agenda, departmental plans, development standards and zoning policies. The CAP also informs budgeting and resourcing, including the city's annual capital improvement program and operating budget.

Since 2022, the city has implemented a citywide approach to budgeting focused on understanding investment outcomes aligned with the SER Framework. This shift toward outcome-based budgeting, or Budgeting for Resilience and Equity, enables all departments to make data-driven decisions, understand the impact of funding choices and allocate resources to support community and citywide goals, including climate-related strategies.

Recognizing that implementing climate projects, programs and policies extends beyond the Climate Initiatives Department, this CAP update lays the foundation for stronger collaboration across city departments. This includes building resilience to local climate impacts, from wildfire response to drought management and public health. The entire city organization, along with external partners, plays a crucial role in preparing for and responding to climate-related risks. This approach underscores that climate action is a shared responsibility, drawing on the expertise of each department. By coordinating planning processes, the updated CAP will define the specific roles of departments, staff and City Council, making the next version more actionable.

Cross-Departmental Mapping and Engagement

Most city departments have a long history of planning for future challenges, creating innovative solutions and undertaking resilience-building projects. From its 40-plus-year legacy of open space preservation to pioneering climate action goals, Boulder has supported progressive resilience activities for decades, even before recognizing them as such. To inventory these efforts, staff initiated a cross-departmental mapping exercise to document existing climate-related efforts citywide. This structured exercise captures each department's contributions to climate resilience for inclusion in the CAP Update. Using a framework based on the major

climate risks (e.g., extreme heat, poor air quality, drought, extreme storms and wildfire), staff will provide a high-level summary of key initiatives such as:

- Drought: Highlighting water supply and drought planning by the Utilities Department.
- Wildfire: Outlining the Community Wildfire Protection Plan led by the Fire Department.
- Extreme Heat: Using city facilities as cooling centers during extreme heat events.

Inspired by the City of Vancouver's Climate Change Adaptation Strategy (see Figure 4), this mapping process lays the groundwork for detailing the city's adaptation work into measurable strategies and actions for future CAP iterations.

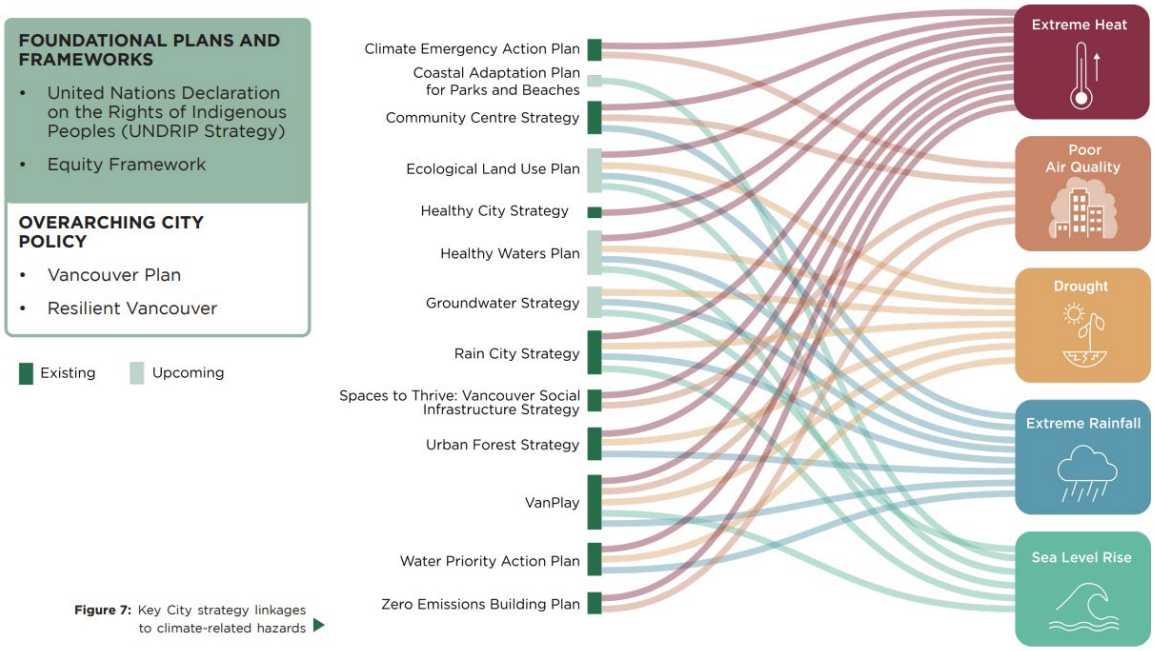

Figure 4. Example diagram from Vancouver's Climate Change Adaptation Strategy mapping existing city efforts with relevant climate risks.

Establishing an Overarching Resilience Goal

The CAP will establish a unified goal for citywide climate resilience. This goal will serve to elevate a shared vision and to unify diverse adaptation efforts across the city. The proposed goal states:

"The City of Boulder takes proactive action to prepare for and respond to the impacts of climate change, both reducing risk to climate disasters and strengthening the community's ability to recover and adapt to changing conditions."

Specific targets and metrics will be tied to individual risks and strategies. For example, enhancing tree canopy coverage in heat-vulnerable neighborhoods, tracked by the Climate Initiatives Department, will address extreme heat.

C. Equity and Justice as Central Design Elements
Equity and climate justice remain central to the CAP's goals, targets, and strategies. Staff propose adopting an overarching climate equity goal:

"Recognizing that impacts of climate change are not felt equally by all community members, actions to prepare for and mitigate climate change impacts must consider the community's most vulnerable members. These actions focus on equitably distributing benefits and reducing burdens to those most impacted by climate change."

Equity design principles presented in the June 2021 CAP update continue to guide strategic planning:

- Engage stakeholders early using culturally appropriate outreach methods to provide inclusive representation for all programs and policies – from concept to design, through implementation.
- The results of all programs and policies should result in an equitable distribution of benefits and burdens across the community.
- Institutional funding allocation should address historically advantaged groups and account for disadvantaged or historically excluded groups.
- Any burden that could be imposed on future generations should be assessed to ensure that no such burden is inflicted by the effort.

These design principles still hold true today. Staff continue to evolve and learn how the equity design principles are applied and refined. The development of Equity Action Plans and continued use of the Racial Equity Instrument help embed these principles in the city's work. This CAP update highlights the ongoing application of these principles and identifies areas for growth and refinement.

Examples of key efforts already underway:

- Extreme Heat Mapping: Identifying impacts on vulnerable populations and proposing adaptation strategies.
- Energy Efficiency and Electrification Retrofits**:** Partnering with Energy Outreach Colorado to provide free energy upgrades for income-qualified households.
- Mobile Home Repair Grants: Offering grants for repairs and upgrades to mobile and manufactured homes to repair climate-related damage, enhance community resilience and preserve manufactured and mobile homes as permanently affordable and naturally affordable housing for community members.
- Decarbonize DRCOG: Collaborating regionally to secure federal funding to improve 60,000 homes and businesses across the region, focusing on replacing fossil fuel appliances in low-income and disadvantaged communities.
- Climate Equity Fund: Supporting efforts of community-based organizations, neighborhoods groups and individuals through grants.
- Justice40 Target Development: Assessing current resource and financial investment distribution to historically underserved and marginalized communities to develop and adopt a Justice40 target ensuring at least 40% of benefits reach these populations.

D. Focus on Big Moves/Systems Change

As was highlighted in the June 2021 City Council Study Session, individual action alone will not achieve the scale of GHG reductions needed to avert catastrophic climate change. Systemic changes are needed, and the right choice must become the easiest and most obvious for everyone. While individual actions are important, systems play a pivotal role. This requires an acknowledgement that the real game-changing shifts happen at systemic levels through individual, small, localized levels of actions focused on the levers to systems change. This is where the power of local climate action emerges. It is both about pushing forward initiatives that can make a difference at scale, while also rooting it in something real and tangible.

While the city continues to support individual action through local programming and leads by example in municipal operations, its primary mitigation efforts now focus on four broad areas of systems change: piloting scalable innovation, policy advocacy, regional and national market transformation, and social and cultural change.

Examples of system-change efforts include:

- Electricity Grid Emissions: Boulder's initiative to form its own municipal utility sent a strong market signal to Xcel Energy and utilities nationwide that climate-minded communities demand faster progress in greening the electricity grid and are willing to fight for it. Legislative advocacy, such as the nation's first voter-initiated renewable energy standard and statewide greenhouse gas reduction requirements, coupled with regulatory advocacy at the Public Utilities Commission (PUC), has helped Boulder achieve dramatic reductions in electricity-generated emissions. By the end of this decade, Colorado will retire its last coal plant 40 years ahead of schedule. Statewide grid emissions are expected to exceed 2030 state mandates and approach being emissions-free by 2040.
- High Performing Buildings: Boulder introduced its first energy conservation-focused building codes in the early 1980s, which evolved into the nation's first Green Points Program in 1996. In 2017, Boulder became one of the first cities in the U.S. to require net-zero operational energy for new construction and mandate electric vehicle charging infrastructure. Much of what Boulder pioneered is now the basis of national building codes and Colorado's new state minimum code.
- Corporate Accountability: In 2018, Boulder joined Boulder County and San Miguel County in filing suit against ExxonMobil and Suncor, seeking damages and accountability for their role in climate change. Boulder's suit is among the first to prevail against motions to dismiss by the oil companies and continues to progress through the courts. The visibility of these lawsuits extends beyond holding big oil accountable for the harms they have caused, signaling to corporations that failing to disclose and address climate-related consequences carries financial and reputational risks. In recent years, there has been substantial movement in the market, including adoption of GHG inventory and disclosure protocols and diversification of investments away from fossil fuels.
- Heat Pump Adoption: Fossil gas appliances used for heating, water heating and cooking contribute significantly to GHG emissions and indoor and outdoor pollution. Buildings must transition to clean electric solutions, such as heat pumps; however, heat pumps currently hold a very small share of the market. Boulder has been a vanguard in driving early adoption of heat pumps through education, marketing, supportive incentive

programs, navigational support programs and community adoption. The city built on these experiences and helped form a regional coalition, which successfully secured a $200 million federal grant to the Denver Regional Council of Governments (DRCOG) to lead a regional market transformation effort. The city also convened a stakeholder group that successfully advocated for up to $400 million in utility clean heat investment. Combined with other federal and state incentives, nearly $1 billion will be invested in heat pump adoption, building efficiency and workforce development in the region over the next five years.

- National Urban Nature-Based Solutions Accelerator: Over the past three years, Boulder has partnered with the Center for Regenerative Solutions to develop a national urban nature-based solutions accelerator. This initiative brought together more than 30 cities and 50 non-governmental organizations to advance efforts in urban forestry, stormwater and green infrastructure, and urban organics management. Boulder has been part of two national cohorts involving over 30 cities and more than 50 non-governmental organizations in pioneering this national capacity and sector building initiative.

Leading cities are recognizing their role as consumption centers and the critical role they play in accelerating the transition to a circular economy. Boulder's work on materials management has expanded beyond traditional zero waste goals of diverting waste from the landfill to a broader set of actions aimed at shifting the system of consumption. Strategies to reduce the embodied emissions associated with the goods and services society uses, as well as reducing the overall materials consumed, are critical to stabilizing the climate and creating a more resilient economic system.

One of the most important findings from the roadmap work Boulder did with the consulting firm Metabolic was the true size of the embodied emissions associated with what is consumed in Boulder – meaning the emissions associated with the lifecycle of products, from production to disposal. Embodied emissions are not traditionally included in emissions inventories, however Metabolic found that their size is larger than all local sources of emissions combined. This means that even small changes in circularity and reduced consumption can have an enormous impact.

Examples of circular economy systems change efforts to date include:

- Building Material Waste: Since its adoption in 2020, Boulder's construction and demolition waste recycling ordinance has achieved a combined diversion of 85% (by weight) across all residential and commercial projects – more than the ordinance requirement of 75%. Equally important is the market development spurred by Boulder's policies and those of other regional communities. Over time, staff have emphasized and supported more hand deconstruction and prioritized reuse markets while continuing to evolve the program to drive more circularity. Boulder's successful case study of deconstructing the Alpine-Balsam hospital site and achieving 94% overall diversion (including the direct reuse of steel beams) continues to be shared nationally at conferences, in the press and with other cities.
- Plastics and Packaging: Following the adoption of Boulder's Disposable Bag Fee in 2011, staff advocated for state action to reduce single-use plastics and give municipalities more authority to regulate them. This led to Colorado's Plastic Pollution Reduction Act, which modeled Boulder's bag fee and introduced bans on plastic bags and polystyrene food containers while repealing preemption laws limiting further local regulation.

Additionally, city staff played a prominent role in passing the Colorado Producer Responsibility bill, which will shift some of the financial burden of recovering and recycling packaging materials onto producers. Staff continue to help shape this program, set to launch in 2026, which will provide no-cost recycling to all of Colorado.

As discussed, while there has been clear progress toward the community's climate mitigation goals, global efforts remain inadequate to stave off material and potentially irreversible changes in our climate. Mitigation efforts must continue, but the city must prioritize its resources toward community resilience. As the city looks to this next phase of climate action, readying the community for climate risks will be central. Even mitigation efforts will be prioritized based on their resilience and equity benefits. Efforts to modernize and decarbonize energy systems must provide equitable and reliable access to energy services while supporting community health and safety. Increased circularity and reduced consumption will aim to mitigate the effects of global supply chain disruption and economic stressors. A focus on protecting and adapting natural systems will be essential for preserving resources and mitigating the local effects of climate change.

Highlights of big moves that will be core to this next phase of city climate action include:

- Beyond Electricity Emissions: While the city will continue its legislative and regulatory advocacy to accelerate the move to zero-emission electricity, it will place increased emphasis on infrastructure resilience and accelerating the transition away from fossil gas.
- Energy Equity: Ensuring all residents and businesses have access to affordable, reliable energy solutions as the climate evolves and temperature extremes rise will be critical for supporting social and economic resilience. Advocacy, local policy and supportive programming will seek to reduce the energy cost burden for the most vulnerable while providing technology solutions to meet future energy demands.
- High Performing Buildings: The city will advance local policy, provide supportive programming and work through regional, state and national partnerships to advance codes and regulations, grow the workforce and transform markets. These efforts will ensure all buildings, both new and existing, can be resilient to future climate demands, provide healthy and safe spaces for occupants and remain pollution-free.
- Clean Mobility: The city will continue advancing local policy and programming to support mode-shift solutions that reduce the total vehicle miles traveled. Through education, local policy and state and federal advocacy, the city will support clean vehicle adoption (e.g., electric, hydrogen) to ensure necessary vehicle travel occurs in zero-emissions vehicles.
- Reducing Consumption: The city will continue education, partnerships, local policy and advocacy efforts to reduce the amount of material sent to landfills by preventing waste and diverting materials for proper recycling and composting. It will foster innovation and entrepreneurship while working with regional and state partners to maximize reuse and recycling.
- Embodied Carbon in the Built Environment: Through local policy, incentives and market and workforce development, the city will prioritize preserving embodied carbon in buildings. Local policies will continue enabling and expanding the preservation and reuse of existing structures and materials from deconstruction projects while fostering the use of responsibly sourced, low-embodied carbon materials.

- Equitable Circular Economy: Through local policy and supportive programming, the city will facilitate expanding markets for reusable and shareable goods, including building materials. It will use education and incentives to support small businesses in their transition away from single-use materials and help to create new workforce opportunities.
- Resilient Landscapes: The city will strengthen community resilience to climate disruption through regenerative ecosystems that support biodiversity, enhance vegetative and water management systems and reduce impacts of climate change. New tools and guides will support resilient landscape management strategies, while local policy and programming will facilitate a transition to resilient landscape practices across the community. Training, education, incentives, and resource access will build capacity among the city, partners, and community members.
- Urban Cooling: The city will conduct planning and analysis using heat and urban forestry data to develop templates for natural cooling designs. It will pilot models that integrate both built environment approaches and the use of natural infrastructure (urban forests and other vegetative plantings) to enhance resilience to extreme heat and other climate disruptions. Education, local policy, advocacy, partnerships and workforce and market development will expand capacity for large-scale implementation of both built environment and landscape-based cooling strategies.
- International Biodiversity Accelerator: In 2025, Boulder will co-sponsor the first international urban nature-based solutions accelerator, bringing together communities from Latin America, North America and Europe in a pilot effort to grow local community capacity to implement the Global Biodiversity Protection framework. Boulder's long history as a leader in this space will enable it to be part of an exclusive group of 30 communities internationally that will be participating in this initiative. This effort has already been endorsed by the UN Environment Program (UNEP) and the UN's "Decade on Ecosystems Restoration" and is expected to be expanded substantially in 2026 in the lead up to the next UN Convention on Biodiversity Meeting.

E. Climate Initiatives' Strategic Planning Efforts

As part of the process of coordinating the CAP Update, Climate Initiatives is refreshing its departmental strategic plan. This process includes updating the department's goals, key performance indicators (KPIs) and targets to reflect the latest thinking and align with citywide priorities. These updates aim to improve the tracking of progress, reporting on outcomes and ensuring transparency moving forward.

Updated Planning Framework

This updated plan builds on the June 2021, council study session memo, which presented objectives (or goals) and targets for each focus area, Energy Systems, Circular Economy and Nature-based Climate Solutions. For example, the "Energy Systems" focus area included objectives related to ensuring equitable energy access and establishing a renewable, resilient energy system. Targets provided outcomes to strive for, such as achieving 100% renewable electricity or eliminating operational carbon in existing building stock.

The updated framework introduces an additional strategy level to enhance focus and alignment. While goals represent broad vision statements that define desired outcomes in each focus area, strategies describe the high-level approaches to achieve those goals. This strategy layer clarifies

the priority actions and key “levers” required for success. By explicitly defining strategic approaches, the framework provides a clear path toward the department’s goals. Additionally, this new structure will guide the department’s annual work planning process, ensuring that each year’s initiatives are aligned with the overarching goals and strategies.

Strengthening Accountability with Measurable KPIs and Targets

To strengthen accountability, each updated target will be matched with measurable KPIs (or a set of KPIs). This approach allows for more precise tracking of progress, evaluation of effectiveness and adjustments as needed. By linking KPIs directly to specific goals and strategies, the department can more effectively measure impact and communicate results to stakeholders.

NEXT STEPS

A. Community Engagement and Communication

The Boulder community plays a key role in achieving the city’s climate goals. As the city develops and implements the CAP update, ongoing engagement and education will be key to ensuring the community remains informed and involved in actionable steps. This section explains how the city plans to educate and engage the community about its climate action efforts.

Communications Plan

Because this CAP update is a strategic refresh, building on the city’s previous climate action plans while reflecting current priorities and ongoing efforts, the focus will be on **educating** and **informing** the community about the updates. This includes communicating the city’s enhanced focus on science-based goals, managing local climate impacts and prioritizing equity in climate action.

The city communications team will use multiple channels and approaches to raise awareness and inform the community about the update process and engagement opportunities. The team will design messaging to reach a variety of audiences, particularly those historically excluded from planning processes, understanding that community members receive information in different ways.

The CAP communication strategy consists of two main phases: preparation and launch. Phase 1: Focuses on aligning messaging, developing audience-specific materials, and updating digital platforms to ensure effective communication. Phase 2: Emphasizes raising awareness and engaging the community through a digital campaign, partnerships with nonprofits and schools and educational initiatives. Together, these efforts aim to inform, inspire and involve the community in the CAP's goals and actions.

The communications efforts surrounding the CAP update will ensure that residents and key stakeholders are informed and educated about the plan. During and after adoption, continued engagement will focus on implementing specific strategies.

Ongoing Community Engagement during CAP Implementation

The city will engage with the community during the implementation phase to ensure strategies address local needs. Ongoing engagement will refine efforts for effectiveness and impact.

The project team will also consult with the city's language access program manager to determine the best approach for ensuring that community members with Limited English Proficiency and those who prefer to engage in a language other than English (e.g., Spanish) have the resources they need to participate in engagement sessions. Each engagement window will include a strategy for professional translation and interpretation. Strategies will be assessed and adjusted to expand access as needed, including intentional promotion and outreach and co-designing with the community to maximize resources and opportunities.

Efforts will focus on designing activities and conversations that appeal to all, while using additional methods to gather diverse perspectives. Staff will design inclusive approaches to reach historically excluded communities, continuously assessing gaps in representation and adjusting tactics as needed. Historically excluded communities include, but are not limited to, Black, Indigenous, and people of color; immigrants; undocumented individuals; low-income people; those living in subsidized or manufactured housing; people with disabilities; LGBTQIA+ individuals; unhoused people; older adults; and youth. Many individuals may hold multiple identities, and the city will acknowledge and respect this.

University students, renters, and commuters are also harder to reach, and specific tactics will be developed to gather their input. Beyond these harder-to-reach groups, staff are also working to identify effective tactics to involve the following categories:

Partner Agencies. This group includes local and regional partners essential to effective climate action, such as Boulder County, the Boulder Valley School District, the University of Colorado, the Colorado Department of Transportation and the Regional Transportation District, among others.

Advocacy Organizations. Many community groups are already self-organized around topics considered during this process. Staff will work with these organizations to understand their priorities and how the plan update can support community goals. The project team will also request local organizations' support in promoting engagement opportunities.

Business Community. In addition to consultations with local chambers, the project team will seek input from small, medium and large businesses to understand their changing needs.

Examples of ongoing engagement include:

1. **Healthy Buildings, Stronger Community Roadmap**
   The city is engaging with the community to develop the *Healthy Buildings, Stronger Community Roadmap*, which aims to guide the transition to electrified, energy-efficient buildings. Community input is crucial to identifying concerns and ensuring the roadmap reflects the needs of all stakeholders, particularly small businesses, tenants and under-resourced communities who may face higher costs or challenges upgrading their buildings. The city is collaborating with Arup to conduct the technical analysis and with Trestle to lead community engagement efforts, including targeted outreach to key audiences. Engagement strategies will include in-person and virtual sessions, surveys in multiple languages and focused discussions to ensure broad participation. Feedback collected will inform policies designed to ensure an equitable transition and strengthen the roadmap for the broader community.

2. **Cool Boulder**
Cool Boulder, an ongoing city-led campaign, collaborates with local organizations and community members to address the climate crisis and biodiversity loss through nature-based climate solutions. The campaign encourages active participation, with a strong emphasis on engaging underrepresented and historically marginalized groups. Focused on mobilizing residents to regenerate soils, plant trees and restore natural habitats, *Cool Boulder* aims to foster a sense of ownership and support for neighborhood sustainability. By collaborating directly with residents, local organizations and schools, the campaign raises awareness about the environmental and community resilience benefits of these efforts. This ensures that all residents, especially those from underserved communities, can contribute to and benefit from a more resilient Boulder.

3. **Boulder Valley Comprehensive Plan**
The current, major update to the Comprehensive Plan is the last update before reaching the city's adopted climate goal of climate neutrality by 2035. As part of this major planning effort, staff from multiple departments will work with community members and decision-makers to ensure the focus areas included in the update resonate with and reflect the diverse perspectives of the community. The update will address the city's biggest challenges and opportunities, including climate mitigation and resilience.

As a Council Priority project, community members can check progress on this effort, as well as other priority projects, on the City Council Priorities webpage.

B. Amendment to Adopted Goals and Launch the Updated CAP
Based on feedback from council, staff propose returning with an amended resolution in the second quarter of 2025 to reaffirm council's commitment to existing climate goals and targets and adopt new goals related to resilience and equity:

- **Climate Resilience**: The City of Boulder takes proactive action to prepare for and respond to the impacts of climate change, both reducing risk to climate disasters and strengthening the community's ability to recover and adapt to changing conditions.
- **Climate Equity**: The City of Boulder recognizes that the impacts of climate change are not felt equally by all community members. Actions to prepare for and mitigate climate change impacts consider the community's most vulnerable members and focus on equitably distributing benefits and reducing burdens to those most impacted.

In the second quarter of 2025 staff proposes a launch of the updated CAP and an accompanying education campaign.

ATTACHMENT
A - Climate Action Plan Proposed Outline

ATTACHMENT A
Climate Action Plan Proposed Outline

Section 1: Climate Change in Boulder

1. Boulder's Legacy of Climate Action

- Overview of the city's early CAP initiatives focused on GHG emissions reduction. Set the context for how the city has evolved its climate action approach over the years.
- Visual timeline illustrating showing major milestones in Boulder's climate action journey, such as emissions targets, key climate plans (ex: Climate Commitment) and significant programs, projects, or policy wins

2. The Changing Context of Climate Change

- Recent Shifts in Climate Impacts
  - Discuss the rapid changes in climate patterns over the past four to five years.
  - Emphasize the role of local governments in addressing climate-related risks and managing health and safety
- Local Context
  - Summary of projected climate change impacts across climate risks
    - Table with historical trends, projections and impacts for each climate risk including heat, wildfire, flooding, drought, extreme events and air quality

3. Evolving Boulder's Climate Action Approach

- Integration of Mitigation and Adaptation
  - Definitions of key terms (climate mitigation, climate adaptation)
  - Describe balance between GHG emissions reduction and building resilience to climate impacts
- Focus on Systems Change and Big Moves
  - Describe the city's shift from smaller, community-centric actions to large, systemic changes
- Identify a comprehensive set of principles, policies, and measures to evolve Boulder's approach to access oriented, resource efficient urban design
- Emphasize the role of consumption-based emissions
- Living Document Approach
  - Introduce the concept of a living document that evolves as new data and climate scenarios emerge

4. Equity in Climate Action

- Overview of disproportionate impacts and the importance of serving vulnerable populations and ensuring equitable access to resources
- Emphasize the importance of embedding equity across all city actions, including mitigation, adaptation and resilience
- Include a list of equity principles

Section 2: Adapting to a Changing Climate

1. Our Vision for a Resilient Future

- Define a high-level adaptation and resilience goal for Boulder
- How We're Tracking Progress
  - Describe specific targets and measurements for resilience tied to climate risks

    - Provide examples of the targets or measurements used to track progress toward increasing resilience

2. **Addressing Disproportionate Impacts**
    - Explain how climate risks disproportionately affect communities based on socioeconomic and physiological factors (e.g., housing and disability status)
    - Provide specific examples of disproportionate impacts by climate risk
3. **Mapping Our Climate Adaptation Efforts**
    - Describe the varied nature of climate impacts and highlight major efforts across the city to increase climate resilience
    - Provide a high-level summary of existing efforts (plans, policies, programs) and visually connect each of them to the climate risks they address
4. **Summary of City Actions to Build Resilience**
    - Include brief descriptions of each of the existing efforts

Section 3: Reducing Our Contribution to Climate Change

1. **Overview of Current Emissions**
    - Emphasize the importance and impact of personal decisions and consumption Sources of Emissions in Boulder
        - Provide an overview of geographic inventory
        - Include a chart illustrating emissions by sector
    - How Does Consumption Impact Emissions?
        - Summarize the Consumption-Based Emissions Inventory (CBEI) and Metabolic Study findings Highlight consumption-based emissions
2. **Pathways to Reduce Emissions**
    - Introduce our GHG reduction targets
3. Include a wedge diagram (or similar visual) summarizing projected emissions reductions by pathway **Boulder's Big Moves**
    - Provide a brief explanation of Boulder's Big Moves— transformative strategies designed to achieve significant emissions reductions.
    - For each big move:
        - Overview of actions
        - Explanation of why it's a key lever for reducing emissions
        - Equity focus

Section 4: City of Boulder Climate Initiatives Plan

Outline goals, strategies, targets, and key performance indicators (KPIs) for tracking progress in each focus area