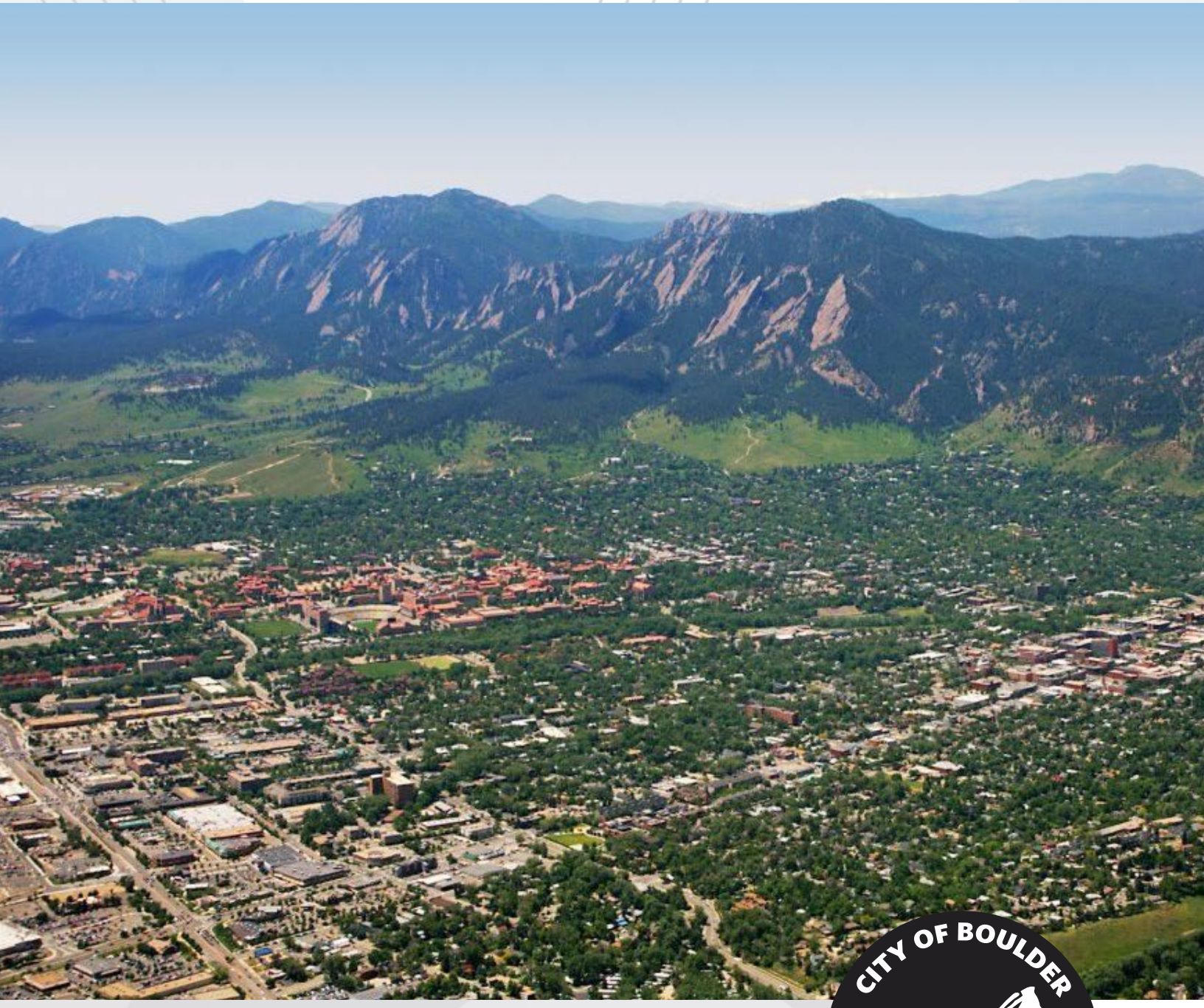
2021



BOULDER

Facilities Master Plan

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A special thanks to our entire facilities staff who work tirelessly to provide services to our community and to all members of City of Boulder departments who provided input and guidance throughout the project.

OUR BUILT FUTURE

Executive Summary

Boulder has evolved and grown over time to meet the changing needs of the community and the challenges of a complex world. In many ways the city has adapted to these changes in a reactive manner, making discrete decisions as specific facility needs and challenges arise. Until now, there have not been the tools or opportunities to look at things in a more holistic and pro-active manner. This plan gives the city a strategic investment and implementation plan to meet the challenges in the most fiscally responsible way.

WE HAVE AN AGING PORTFOLIO.

The City of Boulder currently has 1,870,326 gross square feet (GSF) spread across 76 buildings, with an average building age of 47 years. Seven of these buildings are over 95 years old and ten are over 60 years old. There are 41 buildings between 30 to 60 years old and the remaining 18 buildings are under 30 years old. Typically, the cost of owning, operating, and maintaining escalates significantly in buildings aged 25 – 30 years old. (*Note: This excludes the three utility plants as detailed in the document).*

WE HAVE A CLIMATE EMERGENCY.

The city's Climate Action Plan calls for an 80% reduction in emissions in city buildings by 2030. Currently, city buildings are inefficient and consume too much energy. To meet climate goals, becoming more energy efficient and eliminating fossil fuels from city buildings is necessary. This conversion requires deep energy retrofits - like-for-like replacement of aging infrastructure will not close the gap.

WE'VE NEGLECTED OUR BUILDINGS.

Reactive maintenance costs are skyrocketing, and this approach will do nothing to address deferred renewal needs in buildings, much less move the needle toward city climate goals. Better preventative care and proactive measures will keep buildings healthy and working properly.

OUR GUIDING PRINCIPLES ARE NOT BEING MET IN OUR BUILDINGS.

Many of the city's buildings are hard to find, uninviting for customers, do not provide supportive or healthy work environments, nor do they accommodate people of varying needs well. As part of the analysis behind this master plan, key performance indicators were measured for each of the six guiding principles, shedding light on critical aspirations and shortcomings.

STATUS QUO IS NOT AN OPTION.

Costs to maintain this portfolio of buildings will soon spiral out of control. The city currently has an annual $8.2 million unfunded liability gap to maintain an industry standard of 10% Facility Condition Index (FCI). By maintaining current funding levels, the status quo would result in more than 30% of the total value of the city facilities that will be due or overdue for replacement by 2030, representing a $17 million gap by 2030.

OUR PLAN IS THE MOST FISCALLY CONSTRAINED APPROACH, OVER TIME.

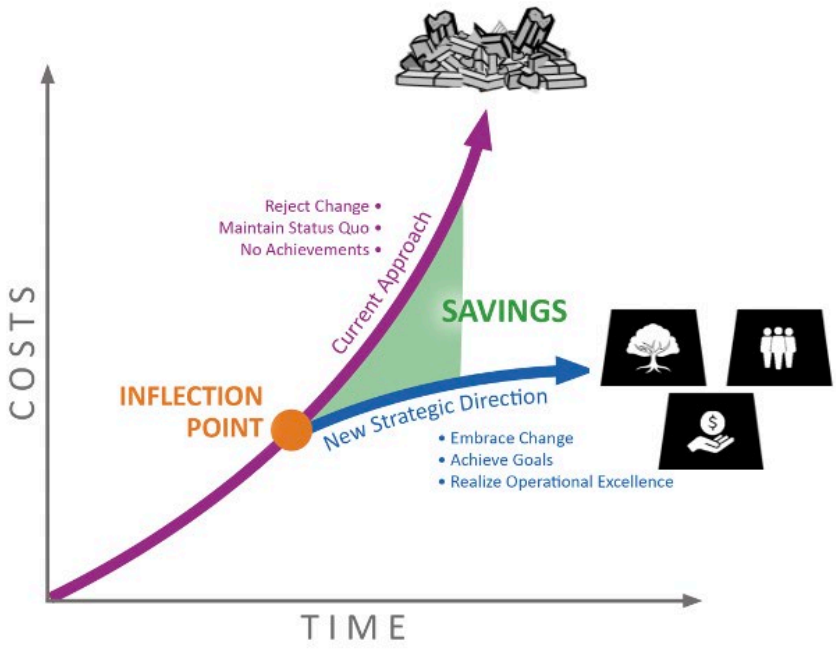
This plan presents an approach to simplifying the city's building portfolio and determining when and where to make strategic investments – large and small. The most aggressive action now will lead to the shortest length of time before there is a return on investment (ROI).

WE ARE AT AN INFLECTION POINT AND TIME IS OF THE ESSENCE.

There is an opportunity to shift towards a new direction that will result in buildings that truly meet both the city's climate goals and the needs of the community in a fiscally responsible way. This is an inflection point – a key moment to take a set of strategic actions that will reduce risk; improve the city's financial situation, rather than letting costs spiral; and meet key goals across each of the guiding principles. This call to action will require upfront capital funding to achieve long-term financial sustainability. This is a moment to create a new legacy.

WE NEED TO INVEST IN OUR FUTURE.

Over the next decade, city infrastructure will require large investments no matter what path is taken. Buildings are nearing end-of-life and are becoming exponentially more costly to maintain, while not achieving the city's goals.



Going forward, some facilities will require extensive rehabilitation, while other properties should be repurposed where continued upkeep is fiscally unwise. In some cases, constructing new facilities will be required to best serve the community for the next century.

WE CAN BUILD A NEW LEGACY.

This plan identifies a decision-making framework that will lead to a more sustainable future, building on the foundation of the three pillars of facility asset management – environmental sustainability, financial stewardship, and social responsibility. An opportunity is in front of us to point in a new direction towards change that will enable the city to meet climate goals, provide a more productive and collaborative work environment, and serve the community much better in the future.

KEY DECISION POINT

Over the next few decades, the city will need to invest hundreds of millions of dollars in building infrastructure. The current inflection point represents an opportunity to make strategic decisions to start investing those millions differently to achieve city-wide goals.

In either direction – the city will spend relatively the same amounts of money. What is achieved with those dollars could be dramatically different depending on the path that is chosen. This master plan recommends a new strategic direction, the blue path, that achieves the most with the money spent.

Purpose of the Plan

MASTER PLANS

Department master plans link mission, goals, and investment strategies to the annual budgeting process. They demonstrate conformance with and advancement of the goals and policies in the Boulder Valley Comprehensive Plan (BVCP). The first ever comprehensive Facilities Master Plan (FMP) looks across these plans and builds upon the engagement done by individual departments to look holistically at facility needs.

Boulder's Facilities Master Plan (FMP) sets the framework for responsible decision-making and will facilitate ongoing stewardship of City of Boulder buildings and property in an efficient and effective manner that best serves the community, maximizes efficient provision of services, minimizes impact on the environment, and manages risk. The FMP provides a data-driven investment and implementation strategy for city buildings to ensure financial, environmental, and social sustainability - which are the three pillars of Facility Asset Management.

This plan creates a common vision for city facilities that will guide replacement of aging infrastructure; inform the evolution of spaces that support community and staff in the delivery of essential services, adapt to a changing environment; and operate and maintain efficiently. This plan sets the standard for excellence in facilities operations, capital and operations fiscal transparency, reduction of deferred equipment replacement, and movement toward achieving the facilities goals of each city department.

This plan describes the current state of facilities (at a portfolio level) and the current if existing practices are continued. The plan identifies needs and challenges related to city facilities and the opportunities to transform city buildings over the next decade. Lastly, the plan describes an implementation approach that redirects forecasted funding to achieve city-wide vision and goals. The city will have a long-term strategy for funding all facilities and evaluate the future disposition of facilities on an ongoing basis.

> ***"We shape our buildings and afterwards our buildings shape us."***
>
> Winston Churchill

A HOLISTIC APPROACH

The newly created Facilities Department is in the unique position to create a holistic view of the city's entire portfolio of buildings, providing a context for discrete decision-making. Based on this view, the department can compare the value and importance of decisions ranging from equipment replacement/renewal and small remodels to deep energy retrofits, and large-scale capital projects such as new libraries, fire stations and city offices.

Individual department master plans identify priorities for buildings and other infrastructure but provide a focused view and may miss opportunities to leverage and consolidate both facilities and funding. The Facilities Master Plan encompasses the facility needs for all departments "under one roof" and is the comprehensive plan used to analyze these needs and goals across all city functions as well as describes strategies to address shortcomings.

UNDER ONE ROOF

Related Plans and Policies

The Boulder Valley Comprehensive Plan (BVCP) and the City's Sustainability and Resilience Framework are key governing documents from which the guiding principles of this master plan are derived. Other key polices and plans have been considered, including the racial equity plan and Department Master Plans.

The FMP's guiding principles are derived from long-standing community values and represent a clear vision of Boulder's community and its commitment to:

- Sustainability as a unifying framework to meet environmental, economic, and social goals
- A welcoming, inclusive, and diverse community
- Culture of creativity and innovation
- Strong city and county cooperation
- Our unique community identity and sense of place
- Compact, contiguous development and infill that supports evolution to a more sustainable urban form
- Great neighborhoods and public spaces
- Environmental stewardship and climate action
- A vibrant economy based on Boulder's quality of life and economic strengths
- An all-mode transportation system to make getting around without a car easy and accessible to everyone
- Physical health, safety, and well-being

The FMP is Informed by City-Wide Goals

SUSTAINABILITY AND RESILIENCE FRAMEWORK

Boulder has a long history of planning today for the challenges of tomorrow, creating innovative solutions, and undertaking successful resilience-building activities and projects. From its 40+ year legacy of open space preservation, to pioneering commitments to climate action goals, the community has supported some of the most progressive resilience activities in the country for decades, even before they were seen as building Boulder's resilience. In order to mobilize the resources and community support necessary to significantly increase social, economic, and ecological resilience, we must have a compelling vision of the future that allows us to adapt and thrive in the face of disruption. **Our facilities provide one avenue to help meet city sustainability and resilience goals.** Tapping into the community's forward-thinking civic and planning culture, the goal is to use our facilities to help weave resilience into the day-to-day life and functions of community and government.

Buildings are fundamental to society's resilience. They provide shelter and protection in a crisis moment and comfort and security through recovery. In North America and Europe, according to the "National Human Activity Pattern Survey" 90% of our time is spent indoors. "If we are lucky enough to live to 80, we will have spent 72 years inside!" And these buildings we spend all our time in represent the largest consumer of material of all industries on Earth. For those reasons, "healthy Buildings represent, without exaggeration, one of the greatest health – and business – opportunities ever."

CLIMATE INITIATIVES

In 2016, the city adopted a climate commitment and then declared a climate emergency on July 23, 2019. The following goals guide the city's actions to address the crisis:

- Reduce emissions 70% by 2030 against a 2018 baseline
- Become a net zero city by 2035
- Become a carbon positive city by 2040
- Allocate necessary time and resources to address the impacts of climate change in an equitable manner
- Strengthen community capacity to survive and thrive

RACIAL EQUITY PLAN

Boulder City Council voted unanimously to adopt the city's first-ever Racial Equity Plan. To close the gaps, there is a focus on communities of color to support those unjustly burdened by racial inequity. Focusing on equity so that everyone is valued, respected, and heard offers many benefits. The City of Boulder is committed to leading with our values to address changing employee perceptions and behaviors first, and then rippling outward, extending the impact into the community. **Our facilities must celebrate this commitment to equity and support city staff in dismantling structures that perpetuate systemic inequity in our community and government.**

BUILT ON A SOLID FOUNDATION

THREE PILLARS

GUIDING PRINCIPLES

Guiding Principles

The following pages detail the six guiding principles that serve as the foundation of this plan.

Key Performance Indicators

To evaluate the status of existing facilities, the Facilities Master Plan created a scoring system to rank buildings based on how well each one meets the six guiding principles. A series of key performance indicators under each guiding principle were identified and then the facilities were given a score based on how well it compared to its peers. Scores generally range from 1 to 5, where 1 is the worst possible score and 5 is the best, relative to a group of similar facilities.

These facility scores will guide the city as it prioritizes buildings for renovation and help move them from needing "Deep Retrofits" or "Targeted Improvements" to a "Maintain Well" status.

BVCP Policy Section	Boulder's Sustainability & Resilience Framework	Boulder's Facility Guiding Principles
Sec. 1 – Intergovernmental Cooperation & Growth Management	Livable Community; Good Governance	Resilient; Sustainable
Sec. 2 – Built Environment	Livable Community; Environmentally Sustainable Community	Resilient; Experiential; Sustainable; Functional; Accessible; Economical
Sec. 3 – Natural Environment	Environmentally Sustainable Community	Resilient; Sustainable
Sec. 4 – Energy, Climate, and Waste	Environmentally Sustainable Community	Sustainable, Economical
Sec. 5 – Economy	Economically Vital Community	Resilient; Sustainable; Economical
Sec. 6 – Transportation	Accessible & Connected Community	Accessible
Sec. 7 – Housing	Livable Community	Resilient; Accessible
Sec. 8 – Community Wellbeing & Safety	Healthy & Socially Thriving Community; Safe Community	Resilient; Accessible; Experiential
Sec. 9 – Agriculture & Food	Environmentally Sustainable Community	Sustainable
Sec. 10 – Local Government & Community Engagement	Good Governance	Functional; Accessible

GUIDING PRINCIPLE:

Resilient

Resilience is the ability to anticipate, adapt and flourish in the face of change. To be considered resilient, buildings must be able to withstand intense natural and man-made disasters. The Urban Land Institute defines resilience as "the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events." Hazard mitigation is further defined by FEMA as "any sustained action taken to reduce or eliminate long term risk to human life and property from a hazard event."

CHALLENGES

The two most common natural hazard events that Boulder faces are floods and wildland fires, and flooding potential is high across the city. Major fires typically occur in the Foothills west of the city, and the city's wildland interface area west of Broadway. A rising challenge with climate change will be the impact of rising temperatures, weather extremes and impacts on air quality.

Not only are facilities susceptible to direct physical damage caused by natural and man-made hazard events, but the services housed within facilities may be heavily impacted or even incapacitated by a flood or fire. It is critical to have city facilities that can structurally withstand hazard events and continue to provide critical services during emergencies.

GOALS

These natural hazard events are likely to occur more frequently and with greater intensity due to climate change. Therefore, it is important for the city to improve each facility's resiliency score and locate future buildings outside the city's highest hazard zones. When facilities are in locations that face a moderate risk, buildings should be designer to resist damage from hazard events, maintain their operation, quickly recover to full service and be easy to repair.

KEY PERFORMANCE INDICATORS

KPI 1: Flood Vulnerability – Assesses a facility's proximity to the 100-year floodplain. Could the facility be surrounded by potential flood waters making access into or out of the facility extremely difficult, if not impossible, during a flood event?

KPI 2: Wildfire Vulnerability – Assesses a facility's proximity to a fire zone (i.e., West of Broadway) and the challenges that might be faced by the facility during a wildfire event.

KPI 3: Disaster Readiness – Is the facility disaster response ready or does it require further study and investment?

KPI 4: Community Shelter – Has the facility been identified as, and can it serve as, a community shelter?

KPI 5: "Essential" building – Has the facility been identified as an "essential" building?

INDUSTRY AND COMMUNITY RESOURCES

- Resilient Design Institute
- US Army Corps of Engineers
- Optimizing Community Infrastructure
- International Wellbeing Institute: Prevention and Preparedness, Resilience and Recovery

GUIDING PRINCIPLE:

Sustainable

A sustainable facility is one that conserves natural resources including energy, carbon, and water.

CHALLENGES

Current city facilities are plagued by inefficient, and mostly outdated equipment and systems. Furthermore, the wide variety of different building systems makes the city's facilities portfolio difficult and costly to maintain. Most use natural gas for fuel and are difficult or very costly to retrofit for renewable energy sources. Most city facilities are aging, their exterior envelopes are not up to current standards, and their heating, ventilating and air conditioning (HVAC) and lighting systems do not meet the high-performance standards necessary to achieve the city's climate commitment.

GOALS

New city facilities should be high-performing, energy efficient buildings that maximize the use of low carbon fuel sources, i.e., they will quickly transition from natural gas to 100% electric. They should help "green up" the city's supply with an increased focus on resilient, distributed energy resources fueled by renewable energy. To reduce waste, city facilities should use recycled content and renewable sources by tapping into the circular materials economy for future remodels and new construction. Buildings should be deconstructed, and construction materials recycled to the greatest extent possible to avoid sending building materials to the landfill. Buildings should limit negative impacts on air quality and be built to meet the city's climate commitment goal. Facilities should be efficient in their use of water.

KEY PERFORMANCE INDICATORS

KPI 1: Mechanical, Electrical, and Plumbing (MEP) Deferral Backlog (%) – The proportion of the deferred maintenance backlog which can be attributed to mechanical, electrical, and plumbing systems within a facility.

KPI 2: Building Energy Use Intensity (EUI) – An industry benchmark standard for measuring the relative energy usage within a facility by gross floor area.

KPI 3: Carbon Footprint – The calculated carbon emissions a facility produces from its energy and utility usage, measured in metric tons per year.

KPI 4: Transportations Emissions Reductions – Considers a buildings location to provide increased multi-modal access and number of services at one location as factors positively impacting carbon emissions reductions from automobiles.

The focus of the FMP is on operational carbon (i.e., the carbon emitted from operating and maintaining facilities) since embedded carbon, although important, is difficult to quantify.

INDUSTRY AND COMMUNITY RESOURCES

- USGBC LEED
- Green Globes Building Certification
- ILFI's Living Building Challenge
- ILFI's Net Zero Energy Building Certification (NZEB)
- GBCI's The Sustainable SITES Initiative
- IWBI's WELL Building Standard

GUIDING PRINCIPLE:

Accessible and Equitable

Accessible design is centered around making our buildings easy to use for all ages, abilities, and ethnicities. Equitable design aims to remove the barriers that create undue effort and separation in our communities. It enables everyone to participate equally, confidently, and independently in everyday activities.

CHALLENGES

Many of the city's facilities are not accessible via public transit and services are dispersed across many buildings. Due to the age of our buildings, they are not accessible to people with physical disabilities and many lack accommodations that would make them more accessible to people with cultural or language differences. Many buildings are difficult to identify as city facilities as they lack a central location or civic architectural style that communicates the city's broader values. It is often difficult for customers to locate parking areas and the buildings generally lack effective internal and external wayfinding.

GOALS

Buildings that are accessible and equitable will accommodate people of all types, whether they vary by age, gender, race, language, religion, physical ability, and mental ability. Accessible and equitable buildings and sites will welcome all members of the community and encourage their greater involvement in civic activities.

KEY PERFORMANCE INDICATORS

KPI 1: ADA Compliance – Assesses whether a building is fully compliant to today's standards or somewhat compliant based on previous standards. If non-compliant, an audit is required to assess whether a facility can be upgraded or whether it would be cost prohibitive to do so.

KPI 2: Inclusivity – Considers whether a facility "serves all people"? Is it all inclusive and welcoming?

KPI 3: Accessibility – Can the facility be accessed by multi-modal means? How limited are the options to arrive at, and access, the facility?

INDUSTRY AND COMMUNITY RESOURCES

- Federal ADA Standards for Accessible Design
- The Principles of Inclusive Design by the Commission for Architecture and the Built Environment
- Center for Inclusive Design and Environmental Access
- Design for All Foundation
- Institute for Human Centered Design
- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
- National Endowment for the Arts

GUIDING PRINCIPLE:

Experiential

Well-designed, healthy civic spaces and building environments improve civic pride, connect residents, promote productive work, encourage social interaction, create enjoyment and express our values as a community.

CHALLENGES

Many of the city's existing facilities are difficult to find, hard to navigate, lack inspirational exterior architecture and public spaces, and are plagued with unhealthy, inefficient, and sterile interior work environments for city staff and their customers.

KEY PERFORMANCE INDICATORS

KPI 1: Facility Experience for the Community – Assesses whether the facility, in its current state, is a good experience for the community and its customers to use and experience.

KPI 2: Facility Experience for Staff – As above, is the facility, in its current state, a good experience for staff.

GOALS

High quality design is important at both the campus (exterior) and building (interior) scale. It benefits the city's customers by improving community engagement, reducing frustration, improving civic pride, and reducing multiple single occupant vehicle (SOV) trips. It benefits city staff by supporting workplace equity, wellness, productivity, efficiency, and collaboration, both within and between departments. It also has the added benefit of reducing turnover since staff feels appreciated and valued by city leadership.

INDUSTRY AND COMMUNITY RESOURCES

- Community Cultural Plan
- Historic Preservation Plan
- 2021 Racial Equity Plan
- Customer Experience Principles

GUIDING PRINCIPLE:

Economical

The city must invest resources wisely on behalf of residents. Policy makers balance numerous city priorities including public safety, resident services, and environmental goals. Facilities investments must further the goals of the city and efficiently meet the needs of residents and staff.

CHALLENGES

The city faces several key economic and fiscal challenges related to facilities:

- Many of the current city facilities require substantial capital investment over the next decade to remain functional.
- Even with substantial investments, some of the facilities may remain inefficient to operate and fail to meet other key city goals related to climate and accessibility.
- Many current facilities are costly to operate and maintain.
- Past facilities investment has been uneven, overly complicated, and inequitable.

KEY PERFORMANCE INDICATORS (KPI)

KPI 1: Capital Needs per Square Foot – a relative measure of deferred maintenance and 5-year capital needs forecasted for a facility.

KPI 2: Operating Costs per Square Foot – a relative measure of the cost to operate and maintain a facility.

KPI 3: The Facility Condition Index (FCI) – an industry standard risk metric comparing the amount of deferral relative to the current replacement value of an asset.

GOALS

The city will have a framework for making facilities investments that balances the guiding principles of the Facilities Master Plan. Using the decision-making framework, the city will make transparent choices about the future of individual facilities ranging from selling the asset, to substantial renovations.

INDUSTRY AND COMMUNITY RESOURCES

- United States General Services Administration – High Performance Green Buildings
- City of Boulder Capital Improvement Program

GUIDING PRINCIPLE:

Functional

Functional is defined as the way in which something works or operates. A functional facility must effectively house the uses within it, accommodate change in uses over time (adaptable), be easy to operate and maintain (efficient), and be safe and secure for all users.

CHALLENGES

Many of the city's facilities are inefficient and have had frequent modifications made to their interior layout and/or use. Some buildings were built with completely different uses in mind and now struggle to adapt effectively to meet current needs. Furthermore, many building systems are outdated, are difficult to maintain and operate, and have unique parts that need special skills or equipment to repair. Some buildings even lack appropriate physical and electronic security features to protect occupants during emergency situations or active shooter events.

GOALS

City facilities should be durable and built to last over 30, 50 and preferably 100 years. To be functional for a long period of time they must also be adaptable to changes in use and trends in workplace culture. Purpose-built buildings should be easy to operate and effectively house their intended use. All city facilities should be maintained well to avoid reaching a low Facility Condition Index (FCI) or a low score in any guiding principle category. City facilities must also be secure and safe for both staff and visitors.

KEY PERFORMANCE INDICATORS

KPI 1: Maintenance and Operability of Facility – Assesses whether a facility is easy to operate and maintain. This measures several criteria including age of facility, redundancy, access to materials, frequency of failure, and the intrusive nature of maintenance.

KPI 2: Facility Adaptability – Assesses how easily adaptable a facility is from its current form, considering the costs and functional challenges associated with adaptive renewal.

KPI 3: Facility Security – Considers how secure a facility is in its current state from a physical, preventative, and technological standpoint.

INDUSTRY AND COMMUNITY RESOURCES

- International Facility Management Association (IFMA)
- Functional Performance Test (FPT)
- ASHRAE Standards and Guidelines

Outreach and Engagement

As described, the FMP spans all city departments in one way or another, as opposed to most master plans that are specific to a department's services in the community. Five years of engagement with a variety of stakeholders has informed the development of this first FMP. Over the course of this time, while the COVID-19 pandemic interrupted the planning process, it also informed the future.

The FMP's approach to engagement with the community and staff is two-pronged. First, community input as it relates to buildings is provided through individual master plans and those findings are adopted into this master plan. This FMP does not look to re-engage around facilities already surveyed through other activities. Second, input from the community and staff has been solicited and incorporated into the findings and guiding principles as it relates to city buildings in general, and more specifically office buildings that commonly fall short of representation elsewhere. Much of this engagement looks at centralization or consolidation of customer services in buildings, along with staff work and collaboration that happens across many departments within one or many buildings.

In late 2015 the city purchased the Alpine-Balsam site and was in a planning process concerning the East Bookend of the Civic Area. During a Vision Planning process for these two areas between 2016 to 2019, engagement with the community was focused on city buildings to better understand community perception around customer service out of city buildings generally, and community sentiment and preference for what a new civic campus should and could look like.

This resulted in a City Facilities Vision Plan which was an early iteration and insight into the qualitative goals and values for city buildings. As part of this work, staff at all levels were also engaged through open houses, workshops, and surveys.

Over the past five years as planning work progressed on Alpine-Balsam, continued engagements with departments has occurred.

FMP ENGAGEMENT ACTIVITIES

Facilities Directed Engagement

City Facilities Vision Planning
- Community Engagement in 2016
- All-staff open house – 2016
- Director Charette – 2017

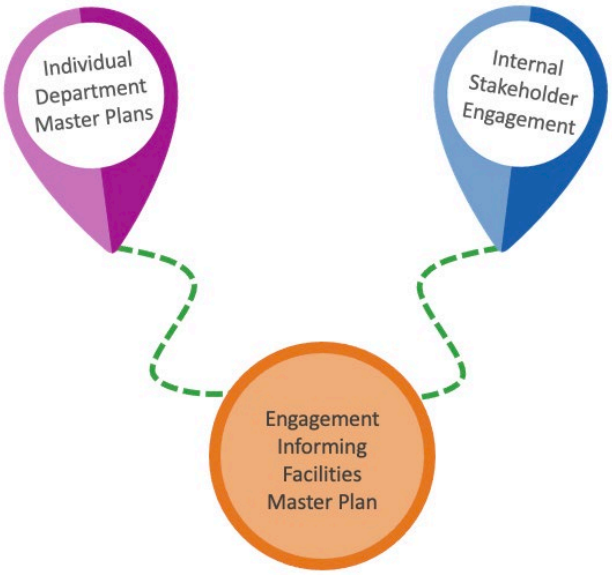
Development of Guiding Principles
- Staff work session – 2019
- Director/ Leadership Team Meetings – 2019-2020

Consolidation Opportunities
- Customer Survey 2019
- Director and Staff Engagement 2016 - 2020
- On-going Department meetings

Workplace Transformation and COVID Response
- All staff outreach – 2020
- Director Focus Group Meetings – 2020
- Workplace Transformation Outreach and Survey
- Learning Labs at Park Central and the Municipal Building

Department Master Planning Engagement
- Informed by completed and on-going Department Master Plans
- On-going and annual outreach with Departments in developing specific projects
  - Open Space and Mountain Parks
  - Parks and Recreation
  - Police
  - Fire
  - And others

In early 2020, the Facilities Department was poised to begin more specific design work on Pavilion Renovation and development of a new Western City Campus, tying multiple buildings together. The COVID-19 pandemic put a delay in this work as the Facilities Department reacted to more immediate needs to close many buildings and focus to keep those that remained open, safe. During that time, a side investigation into hybrid work as a result of what the world was learning about our ability to work remotely unfolded (see page 60).

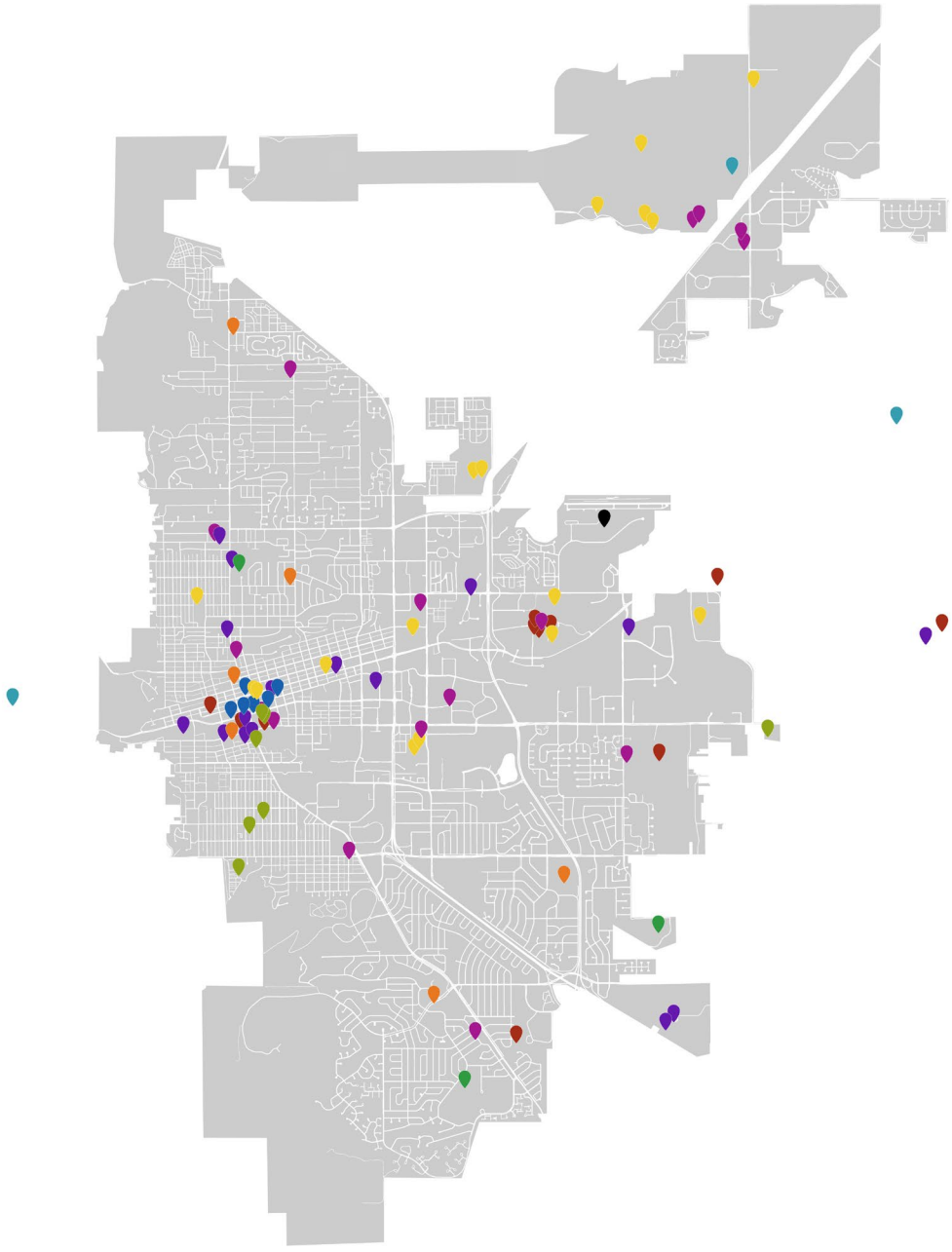


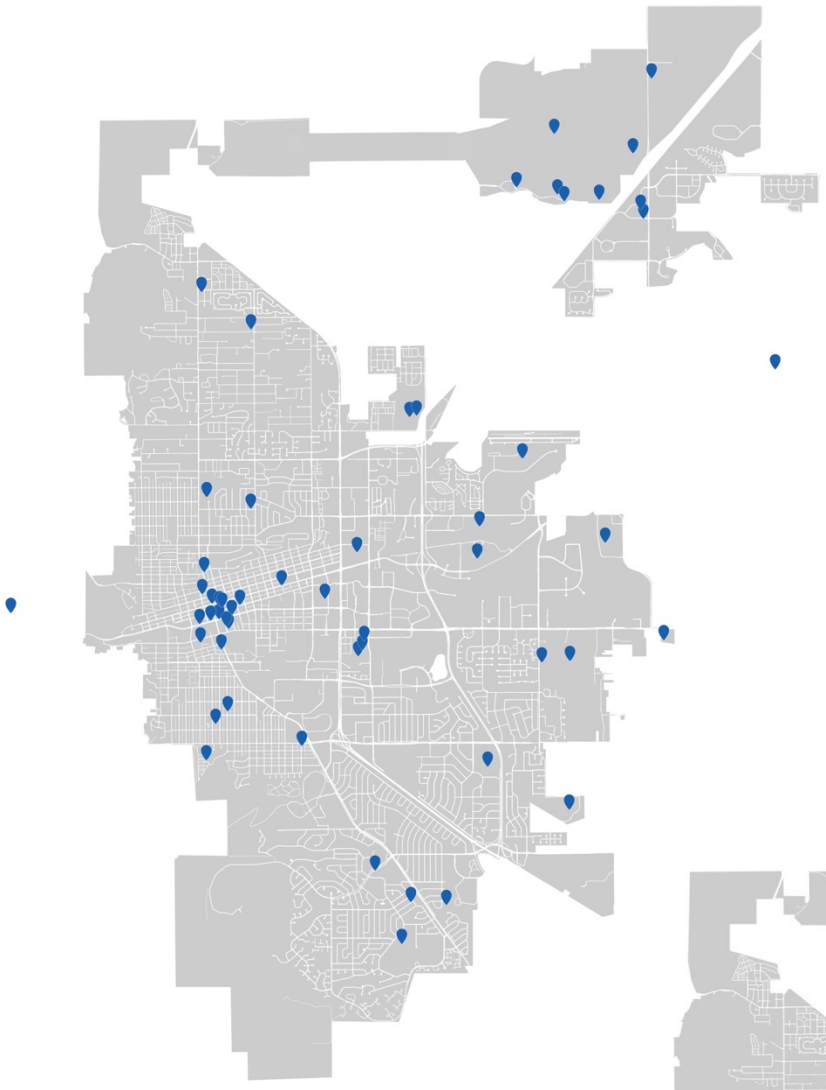
Over the course of 2020 and into 2021, extensive engagement with departments has taken place to understand both how city staff work, and customer services have changed in ways that should be continued as things begin to return to normal. While staff are only just starting to come back together in a more hybrid world, the past year and engagement with staff and community have shaped and impacted much about how we imagine our buildings both now and well into the future.

WHERE WE ARE TODAY

Building Portfolio

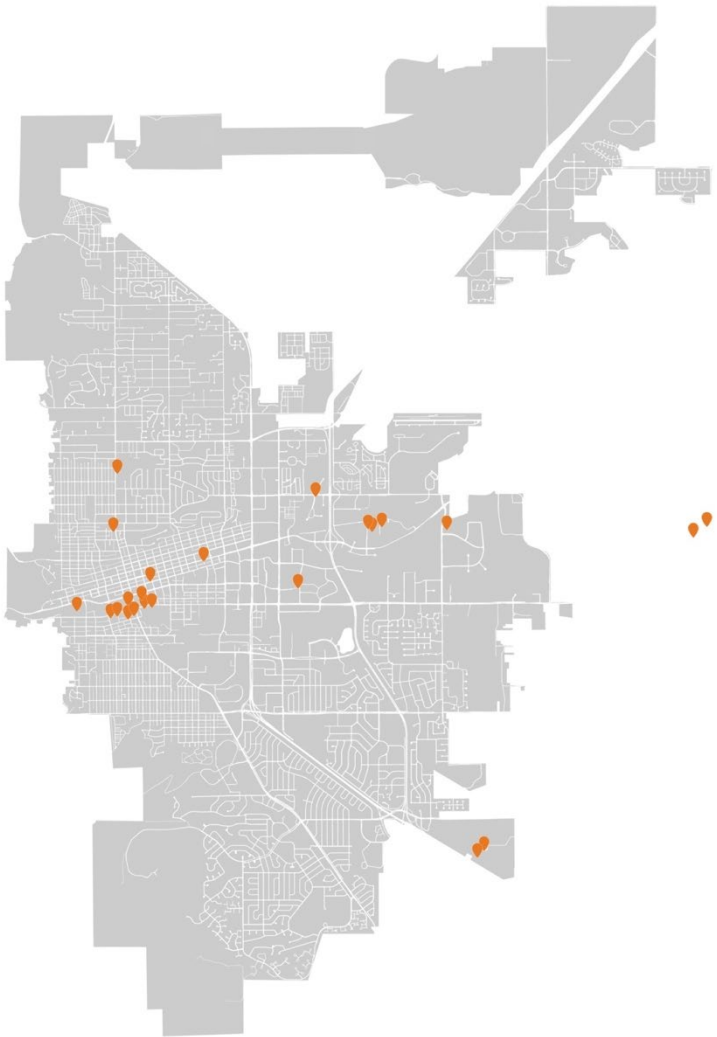
This master plan covers 75 buildings, totaling more than 1.8 million square feet with a current replacement value (CRV) of $577 million dollars. City buildings include libraries, fire stations, recreation centers, office buildings, the public safety building, and others. There are three Utilities buildings that have been excluded from this analysis as the scale of them from a financial and energy perspective too heavily weights the analysis of rest of the building portfolio. These facilities do show up on the map below and an assessment of those buildings will be conducted in alignment with this master plan. For a complete list of buildings, refer to Appendix B.





PURPOSEFULLY DECENTRALIZED BUILDINGS

These buildings are intentionally spread throughout the city, designed to deliver specific services. They have unique characteristics, qualities, form, systems, and infrastructure to support the delivery of needed and desired services to the community.



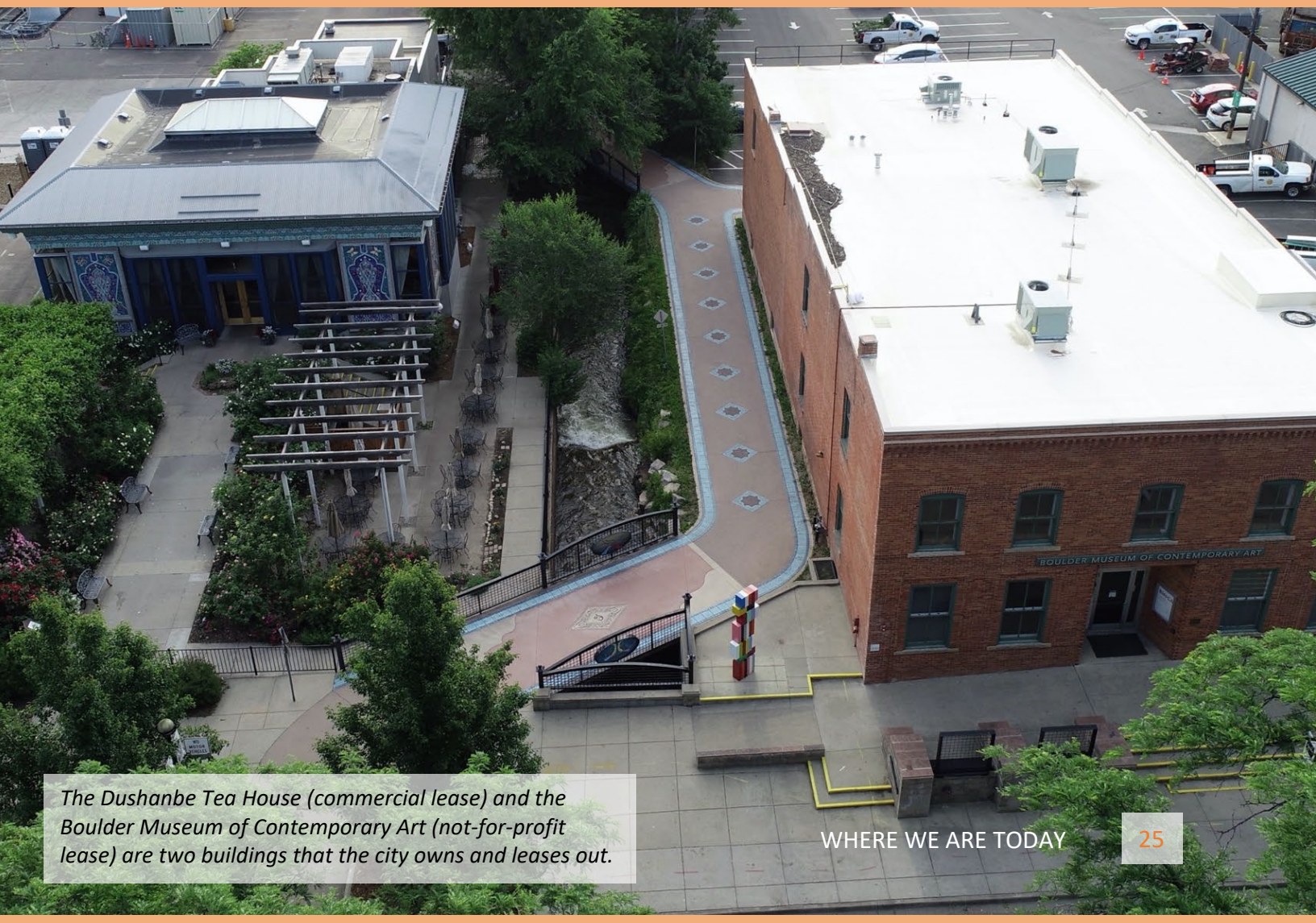
DISBURSED BUILDINGS: NOT BY DESIGN

Roughly 25% of the city's buildings were acquired more opportunistically as services and programs grew over time. Today, the Boulder community visits over twenty different facilities to receive city services and interact with city government including, but not limited to, attending city council, board, or other public meetings; obtaining permits and licenses; and paying bills. It is a confusing array of places the community must navigate.

CITY LEASES

The city is both landlord and tenant. There are a number of buildings that the city currently leases out in full, or in part, to businesses and non-profits. Most buildings leased to non-profits are at a rent of $1 per year, while commercial tenants pay rent in line with current market conditions. The management of these leases has been inconsistent across city departments and a deliberate approach to property management for these buildings is needed. While lease management is not a focus area of the FMP, its importance has been recognized and the Facilities Department has requested a Real Estate Manager position to manage leases and partner with other city departments and tenants to adopt common lease language and terms, for both commercial and non-profit leases.

The city has also leased space (primarily office space) in the past to accommodate staff needed to delivery core services and programs to the city. A transition to hybrid work is helping to alleviate direct pressure on ebb and flow of staff office space needs and in 2020 the city vacated a lease costing roughly $1 million annually by moving to hybrid work. Broadly, it is not optimal for the city to lease space. Since the city is a long-term tenant, the upfront costs and on-going rental costs associated with leasing space versus building or renovating an owned building pays back within less than ten years and in many cases closer to five. Owned buildings can be and are used as collateral to support a myriad of needs and major projects across the city.



The Dushanbe Tea House (commercial lease) and the Boulder Museum of Contemporary Art (not-for-profit lease) are two buildings that the city owns and leases out.

Core Service Delivery

> *The people who manage your building have a greater impact on your health than your doctor*
>
> *Healthy Buildings by Joseph G. Allen and John D. Macomber*

In 2020, the city created a new citywide Facilities Department. Formerly, the Facilities and Asset Management (FAM) Division was housed under the Public Works Department. This move represented the increasingly important role that facilities play in both the daily lives of Boulder residents, visitors, and staff, and in the ability to make a significant contribution to the city's Climate Action Plan goals. It also recognizes the significant assets and new initiatives managed by facilities staff.

The newly formed Facilities Department is the "steward" of city buildings. Core services provided by the department include:

- Capital planning, design, and construction services
- Asset management and capital renewal planning
- Energy management
- Preventative and reactive maintenance in buildings and on grounds
- Security access and monitoring of buildings
- Custodial services across all city buildings

Facilities staff contend with aging infrastructure in a wide variety of buildings from libraries to recreation centers, to city offices. While a few of these buildings are energy efficient, most are not.

The focus of the newly established Facilities Department is to pursue consolidation opportunities, while maintaining and operating the city's existing buildings. The Facilities Department works cross-departmentally to further the goals and vision of other work groups that identify needed service changes, existing facility deficits, new partnerships and expanding community services.

RECENT ACCOMPLISHMENTS

Brenton Building Renovation • City Building Portfolio Data Collection and Database Development • Workplace Transformation and COVID-19 Response • Alpine Balsam and Hospital Deconstruction • North Boulder Branch Library • Fire Station 3 Replacement • Radio Towers to Support Upgraded Radio Infrastructure.

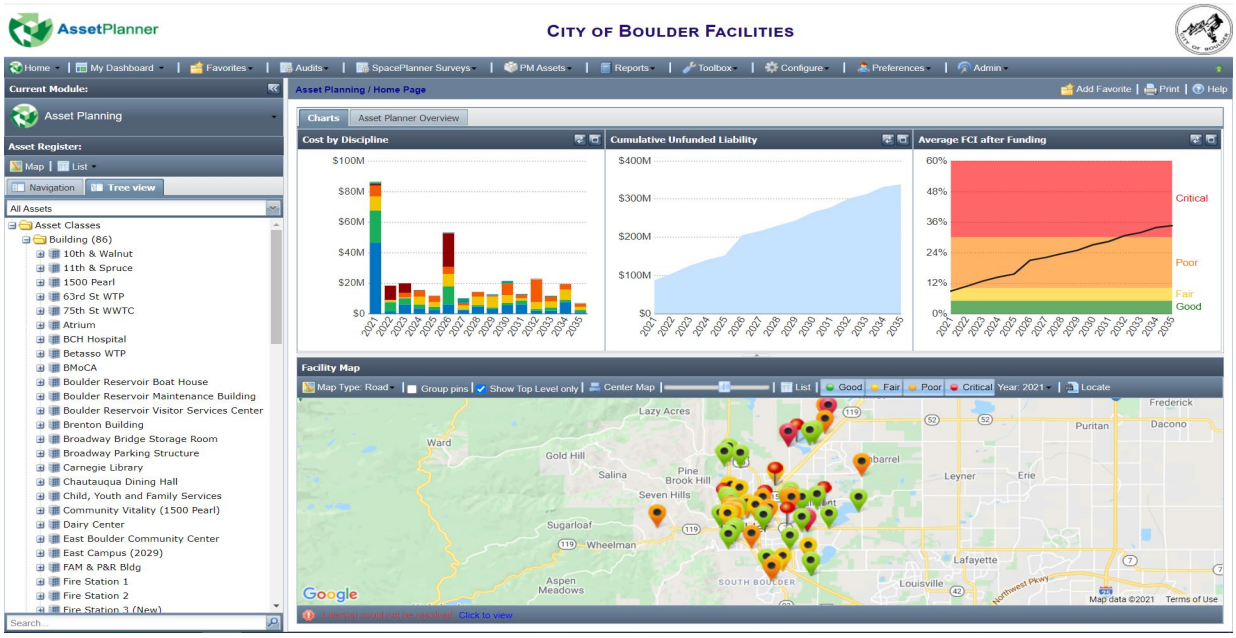
Building Portfolio Analysis

In 2020, the Facilities Department performed a capital planning study to help quantify facility capital needs in alignment with industry standards. The process was both collaborative and iterative, providing ample opportunity for facilities staff and key departmental stakeholders to provide feedback based on institutional knowledge, recent capital projects, and validate the life cycle templates. This resulted in accurate life cycle profiles for each city building, estimating major renewal timelines and costs for major building systems and elements.

The analysis that follows is on 75 buildings (refer to Appendix B for the specific list of buildings included in the data set). Three utility plants have been excluded from this analysis because their scale, energy use and funding structure are highly inconsistent with all the other buildings. Recommendations from this master plan do pertain to these buildings, however, specific assessment of these buildings and impacts on the portfolio will be conducted separately. All financial data is presented in current year dollars, however, it should be noted that when not including the effects of inflation (or financing costs), the date of return on investment (ROI) for modeled investments may be artificially pushed out when compared with a "status quo" scenario.

ASSETPLANNER® SOFTWARE

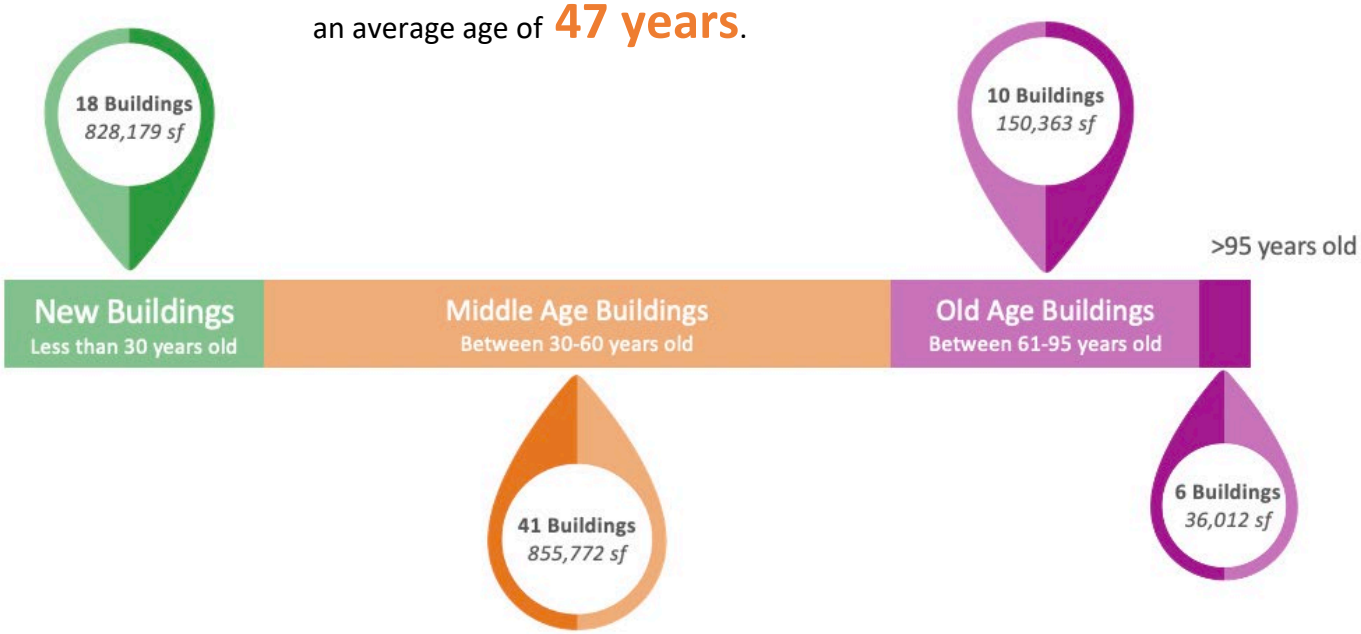
AssetPlanner® is a live data repository which acts as the system of record for data and information related to city facilities. The established asset register allows the city to group buildings by department, or any other category, and perform graphical analysis on facilities. This data driven, software-enabled approach enables better informed decision making in capital and operational planning associated with the building's portfolio.



Building Life Cycles

Over **half** of the facilities were built prior to the 1970's.

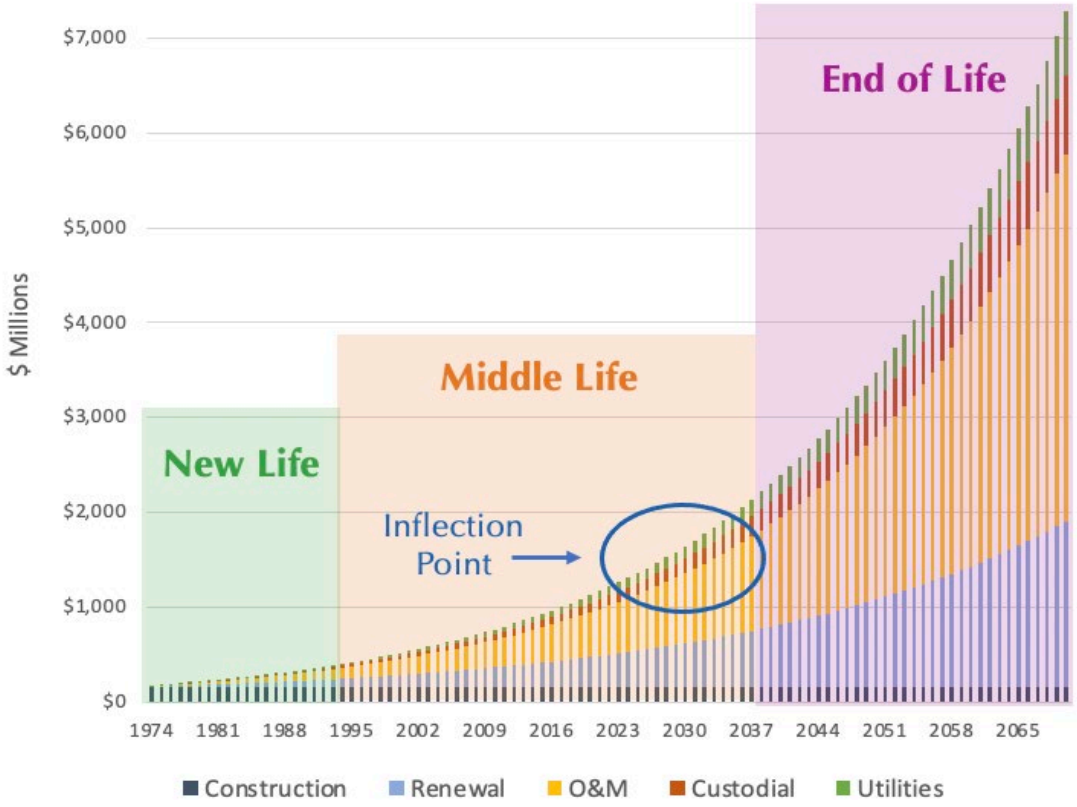
The City of Boulder building portfolio has an average age of **47 years**.



Buildings progress through a life cycle starting out new and in excellent working condition with little repair required for the first 10-15 years. The better the preventative care and proactive measures to keep buildings healthy and working properly, the more likely they can be expected to continue to perform well and require less reactive and more costly repair.

Many buildings in the city's portfolio are already, or will soon become, increasingly expensive to operate and maintain compared to the total value of the building. This represents a critical point in deciding to either put good money towards diminishing returns or choose a new course and put that money to work on something new.

TOTAL COST OF OWNERSHIP OF CITY BUILDING PORTFOLIO



New Life *(Brenton Building, Boulder Reservoir Building)*

When a building is new, capital renewal needs are minimal to none, and the building performs predictably and linearly. Operations and maintenance (O&M) are proactive and preventative versus reactive, and utility costs are efficient.

Middle Life

Capital renewal on systems starts coming due and buildings perform more randomly and less predictably. O&M becomes increasingly reactive and utility costs are less efficient if the building is not routinely kept balanced. Buildings that are designed to last are high performing and, most importantly, are funded at appropriate levels. Well-built buildings will enter middle life 10-15 years later and costs can be kept under control for longer periods.

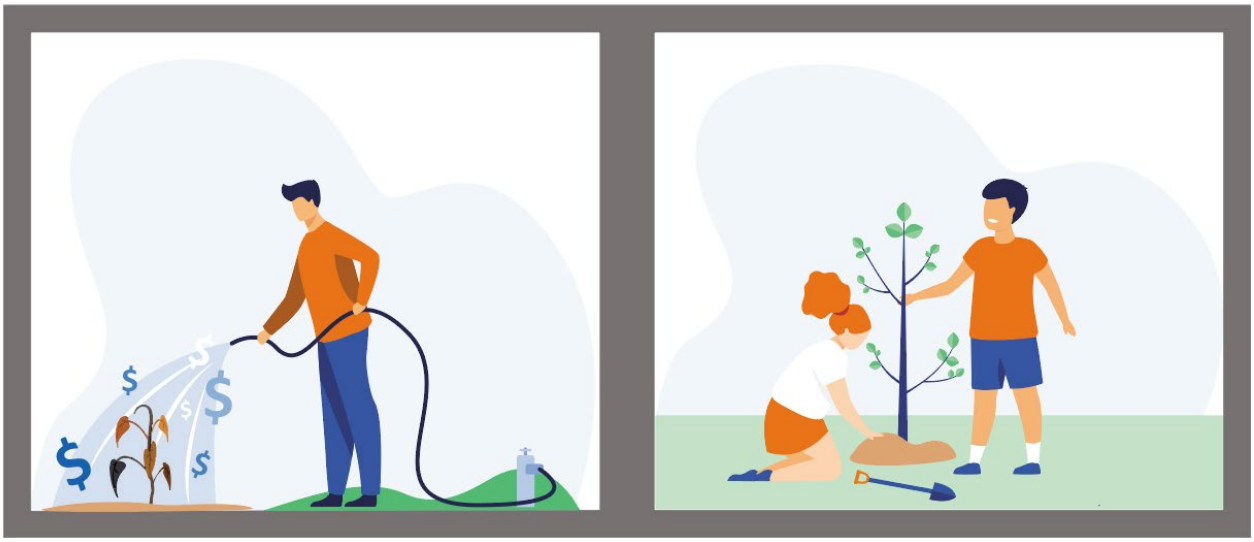
Inflection Point *(Municipal Building, Fleet Building)*

At 25-30 years in a typical building, or at 50-60 years for a well-designed, well-maintained, high-performing building, the cost of owning, operating, and maintaining aging infrastructure escalates significantly. Equally, the performance of the building and systems deteriorates. At this point, it is critical to determine whether continued investment in the current state of the building is worthwhile or, if either, a significant (deep) retrofit should be made, or the asset should be repurposed entirely.

End of Life

Without a deep retrofit and appropriate maintenance, as the buildings approach their life expectancy, capital renewal needs escalate, building performance deteriorates, and O&M becomes reactive and less efficient rapidly. At this point, the asset no longer performs and should be repurposed, disposed of, or deconstructed.

GOOD MONEY AFTER BAD



The idiom “to throw good money after bad” refers to a situation in which someone appears to be wasting money on a losing proposition. The temptation to continue spending money on a losing proposition or an asset that is beyond its useful life can be considerable, especially when there has been a lot of time and money invested in it.

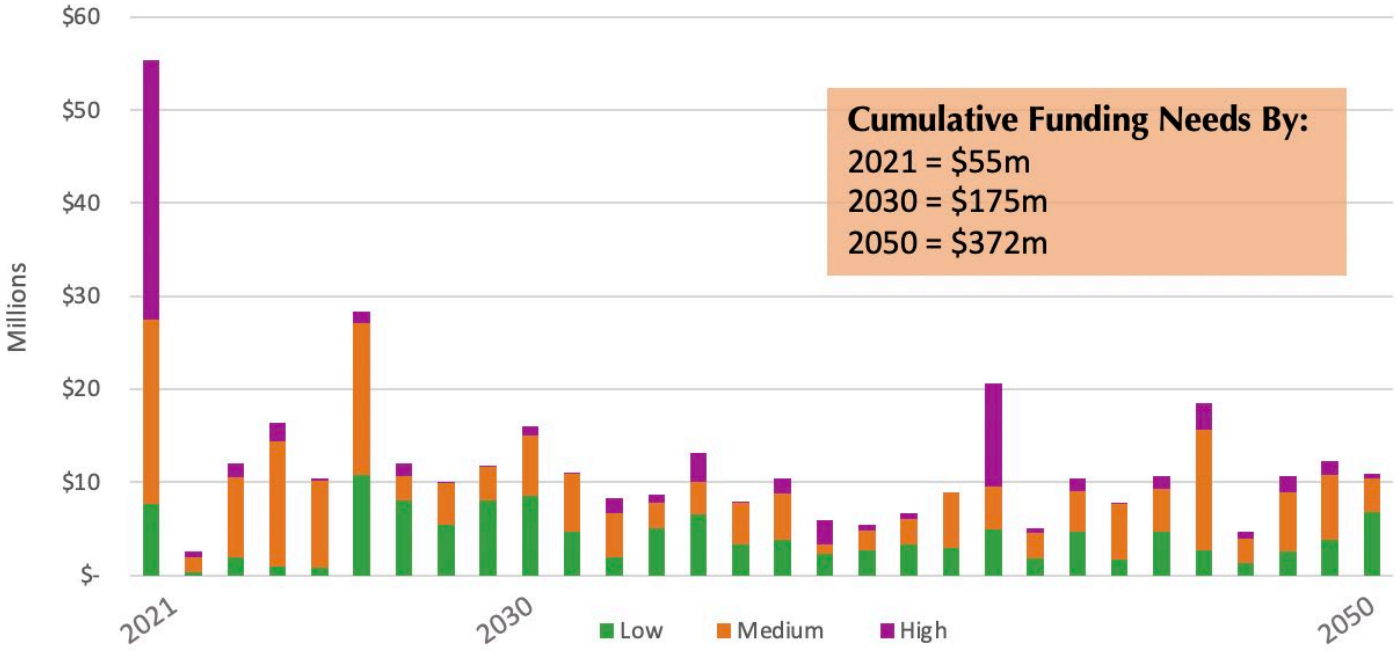
Equipment Renewal and Replacement Forecasting

Assuming a building is designed to last one-hundred years, some components, such as a roof or mechanical unity, will require numerous replacements over the total lifespan of the building. Each component has a unique life cycle that may be extended with preventative care or reduced when neglected. Different building components will need to undergo replacement at various times during the life of a facility.

With all the city's buildings now modelled in a database, the deferred systems replacements and maintenance backlog can be quantified.

The chart below depicts all the deferred equipment and systems replacements, and renewal needs that have built up, until 2021. It then provides a 30-year forecast of capital renewal needs for the city's facilities that will come due and will compound on top of what has already been deferred if not addressed.

CAPITAL ANNUAL RENEWAL NEEDS FORCAST BY PRIORITY



The present level of the deferred equipment and systems renewal for the city's portfolio is estimated to be **$55 million** and will continue to accumulate to **$175 million** by 2030 at current funding levels.

Facilities Condition Index

What is the Facilities Condition Index (FCI)?

A key industry standard - and a measurement of building health, FCI – is the ratio of the cost of remedying capital deficiencies (typically deferred maintenance) to the current replacement value (CRV), or the total amount of expenditure in current dollars that would be required to replace the facilities to its optimal condition. As an FCI rating increases, facilities will experience an increased failure risk to components; increased maintenance and operating costs; and negative impacts on building occupants.

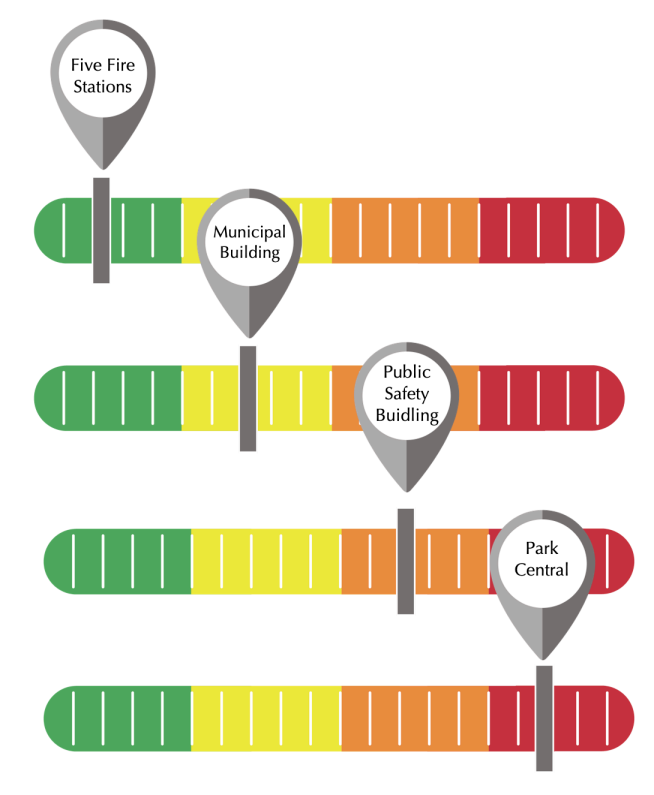
The FCI provides a consistent measurement of condition for a single building, group of buildings, or a total portfolio. FCI is used by the U.S. Government Accounting Standards Board (GASB) as standard practice for Facility Condition Assessments (FCA) and Building Evaluation Reports (BER) for federal facilities.

As an FCI rating increases, facilities will experience:

- Increased failure risk to components
- Increased maintenance and operating costs of facilities
- Negative impacts on building occupants

The FCI is calculated and represented by various benchmark & color-coded indicators as follows:

- A "**Good**" FCI rating is achieved when the unfunded liability for the asset(s) is less than 5% of the current asset(s) replacement value.
- A **"Fair"** FCI rating is achieved when the unfunded liability for the asset(s) is between 5% and 10% of the current asset(s) replacement value.
- A **"Poor"** FCI rating is achieved when the unfunded liability for the asset(s) is between 10% and 30% of the current asset(s) replacement value.
- A **"Critical"** FCI rating is achieved when the unfunded liability for the asset(s) is greater than 30% of the current asset(s) replacement value.



What FCI Looks Like

Critical Condition

In the critical category are buildings that have experienced structural failures or have mechanical systems in sever decline. Pumps, belts, motors, electronics commonly break down and when they do, effected areas must be shut down and maintenance staff is diverted from other tasks to address what is now a critical issue. Ordering of replacement parts can be challenging with old equipment as they are no longer stocked and, in many cases, parts must be custom made. This increases time effected areas are shut down and unavailable for staff or the public to use.

Structural Failure

Mechanical Systems Decline

Good Condition

Buildings with relatively new equipment, recently renovated have a good condition or FCI. Mechanical units such as these seen here employ predictive maintenance in that they are self-protecting, which means if something is going wrong, they shut down and send a proactive alert before a malfunction actually damages the unit. This means is that maintenance staff can address the “call for help” from the unit long before it breaks and avoid additional collateral damage from the things breaking down.

New Mechanical Equipment

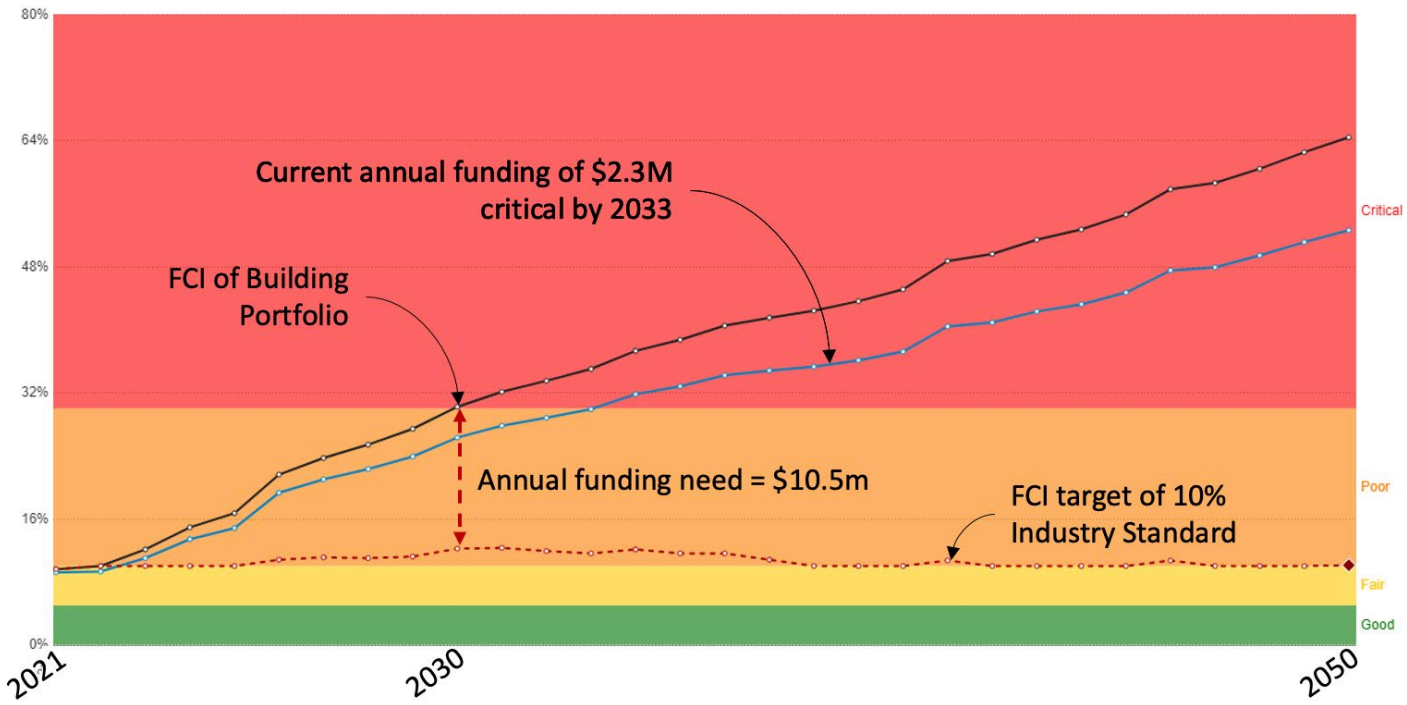
City Building Portfolio FCI

The city has current deferred replacement needs at $55 million, against a CRV of **$577 million**. This puts the condition of the city's portfolio in **"fair"** condition (9.6%) overall based on industry standards.

With the average age of city buildings at 47 years and capital needs continuing to increase, it is anticipated the portfolio will migrate to the **"critical"** range by 2033 based on the results of the capital planning study. This is predicated on the current **$2.3 million** of annual funding for deferred maintenance and capital renewal. To maintain the portfolio in the **"fair"** range, with an asset sustainability target of **10%**, the city will need to invest approximately **$10.5 million** each year in capital renewal.

The city's building portfolio has been kept in decent condition so far for a few reasons. Over the years, the city has made sporadic investments in buildings through bonds and other sources to make targeted improvements. This has resulted in uneven investment in buildings – some get fixed, others are neglected – but the portfolio as a whole benefits and FCI for the whole portfolio stays low. The other things masking the critical needs of our infrastructure is that we essentially subsize our capital renewal needs with our operations and maintenance budget – which is running at two times the industry standard.

CUMULATIVE FCI FOR PORTFOLIO



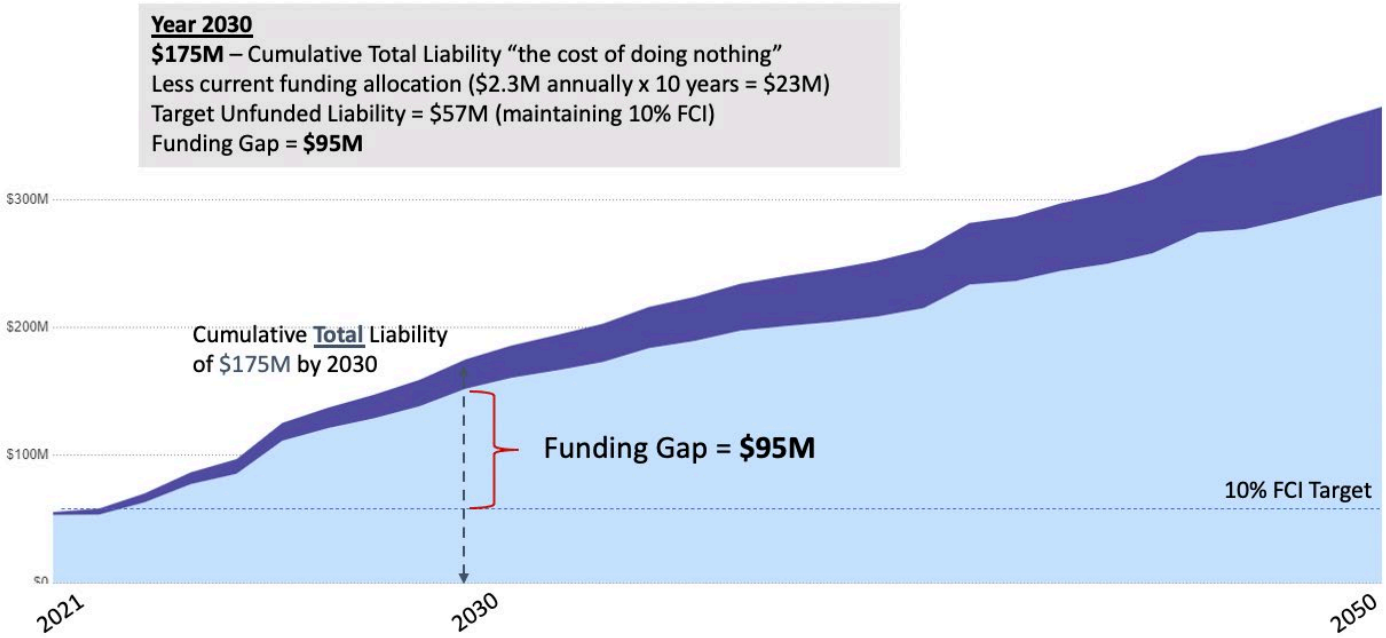
Asset Sustainability Target

It is recommended that the City of Boulder establish an "Asset Sustainability Target" for funding using the FCI metric. Many organizations have begun using **10%**, or lower, as an appropriate FCI level for their portfolios, stating that it is acceptable to carry a deferred backlog of up to **10% of the replacement value of the asset**. If the deferred backlog can remain at less than 10%, then the assets will be continually "**sustained**" at an acceptable level of risk, preserving the initial capital investment and minimizing impacts to end users and staff. The financial analysis that follows is measured against this target and recommendations for using this target are further elaborated on in the following section.

Unfunded Liability

The chart below provides a graphical outline of the cumulative renewal costs. The current total unfunded liability is **$55 million** and is projected to grow to **$175 million** by **2030** and **$372 million** by **2050.** Overlaying recent averages for annual funding, and projecting them over time, it is estimated that the City of Boulder is currently contributing around **0.5% of CRV** towards capital renewal. This contribution reduces the total liability to an unfunded liability of **$307 million** in **2050**.

CUMULATIVE UNFUNDED LIABILITY

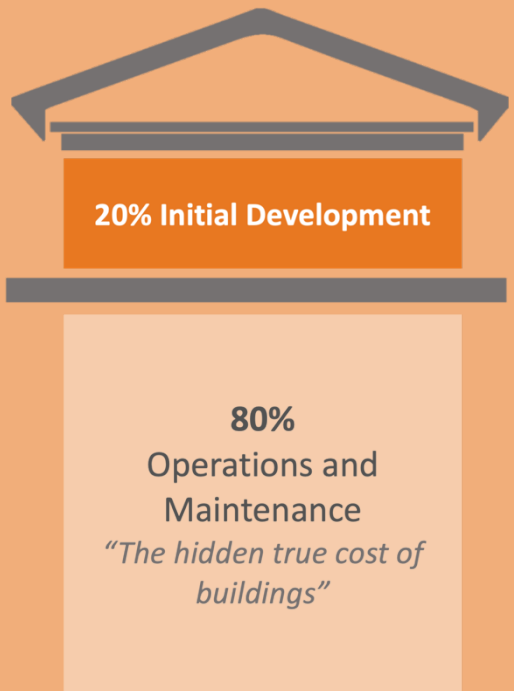


Cumulative Unfunded Liability for Portfolio

Total Cost of Ownership (TCO)

The total cost of ownership (TCO) is an analysis used and endorsed by ISO standards (ISO 55001: Asset Management). TCO considers the whole lifecycle of an asset and must account for all costs related to ownership and operation of a building, including the four key stages of the asset lifecycle:

1) **Planning**: This stage establishes requirements and confirms alignment to the vision, ensuring that any ongoing development adds value to the organization.
2) **Acquisition**: This stage includes any acquisition costs such as procuring land or an existing asset, in addition to the costs associated with building new. Optimized decision making can only be made once the cost and requirements are defined.
3) **Operation & Maintenance**: This stage is critical in controlling the total cost of ownership of a building, where a robust asset management framework is essential for reducing risk, increasing resilience, managing the bottom line, and maintaining the performance of an asset.
4) **Disposal:** When an asset reaches its end of useful life, it can become a risk to the city and a financial cost where good money follows bad money, and the asset continues to underperform. Robust planning and exit strategies are required to optimize transition and disposal.



30-Year Building Total Costs of Ownership

In cities and municipalities, some buildings form the civic center and heartbeat of the community. Therefore, at end of useful life, adaptive renewal strategies are considered (vs. disposal) to modernize aging infrastructure and realign to the current day needs of the city. However, in other cases, it's important to mitigate against these increasing risks, and the escalating total cost of ownership, by planning for "new" buildings and consolidated functional uses.

Most industry studies suggest that over a 30-year period the cost to operate and maintain a building accounts for up to 80% of the lifecycle costs of that asset. Whereas the cost of development (inclusive of planning, design, acquisition, financing, and construction) only accounts for up to 20% of the lifecycle costs. Over time, as assets continue to be operated through multiple lifecycles, the "**hidden**" cost to operate and maintain buildings only increases in proportionality, as does the risk of failure, redundancy of parts and equipment, and the quality of services that the building provides.

Adopting a robust asset management framework which is anchored by TCO allows for good financial stewardship of city assets. The benefits of this approach will save money, drive efficiencies, increase the useful service life of assets, prioritize decision making for capital investments, provide transparency and thought leadership while breaking down organizational silos.

Facility Renewal Funding

How Much is Required?

> ***It has become clear that institutions have failed in the stewardship of their facilities assets. Erosion of its buildings and supporting infrastructure undermines every aspect of an institution's ability to function effectively. To restore those facilities... Massive increases in the amount now spent on repair and renovation will be necessary.***

Financial Planning Guidelines for Facility Renewal and Adaptation, a joint study by SCUP, NACUBO, and APPA

Industry standards suggest that **2% of the current replacement value** should be allocated to annual renewal, assuming proper preventative maintenance practices are followed. In addition, special funds should be allocated to reduce the backlog of deferred maintenance for those facilities with an abnormally high backlog. Excluding special funds, the renewal funding for City of Boulder would translate to **$10.5 million** annually based on a current replacement value of **$577 million**. Currently, the city dedicates **$2.3 million** annually to facility renewal and supplements these funds on a project-by-project basis or with department specific funds.

HOW MUCH FUNDING IS REQUIRED TO MAINTAIN BUILDING INFRASTRUCTURE?

Various sources of funding are required to build, maintain, and operate a facility:

1. Capital funding to design and construct the asset.
2. Renewal funding for replacement of worn-out components and systems, updates from code changes etc.
3. Operation and Maintenance funding for repairs, custodial, utilities, and preservation of capital investments.

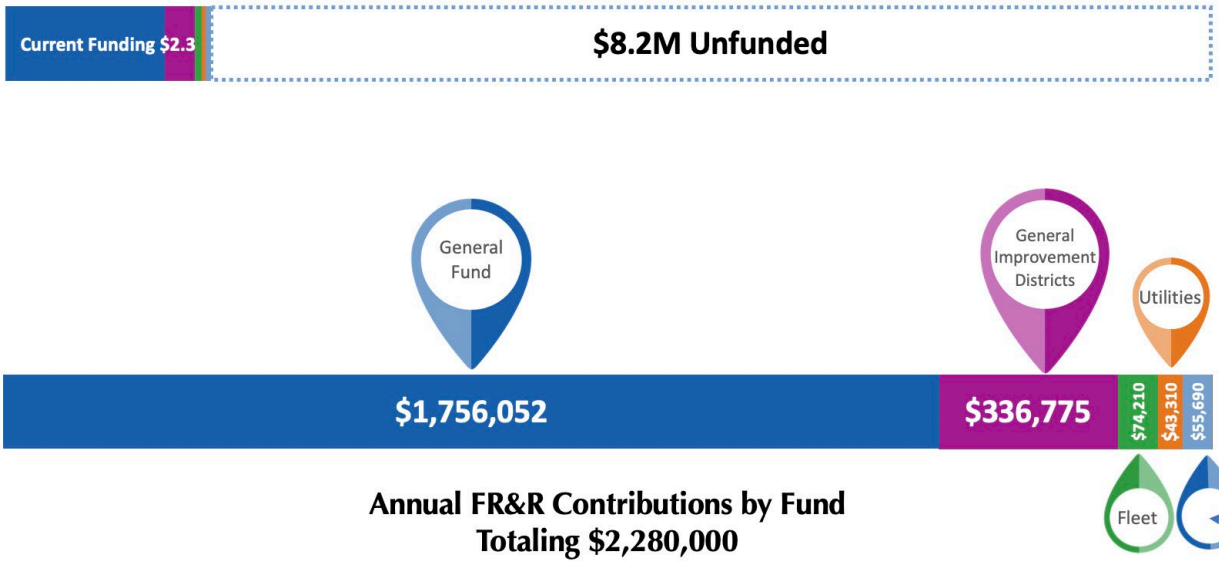
Many guidelines for facility renewal have been established by professional organizations and asset management specialists. The American Public Works Association has published maintenance and repair guidelines for facilities. A minimum of **2%** of the current replacement value of those facilities is required to adequately maintain them.

Another set of guidelines for funding of assets is based on facility subsystem life cycle evaluations (stipulated as follows):

- 1.5% to 2.5% of the replacement value is required for sufficient "capital renewal" on an ongoing basis to keep the facilities in good condition for their present use.
- PLUS 0.5% to 1.5% of the replacement value is required to sufficiently address "plant adaptation" funds on an ongoing basis to alter the facilities for changes in use as well as codes and standards.
- PLUS, sufficient "catch-up maintenance" funds over a short period to bring the facilities to a reliable operating condition by offsetting the effects of deferred maintenance.

Current Funding Approach in Buildings

Currently, the city has used a variety of funding sources for facilities construction and maintenance. Below are described the most consequential sources along with their funding mechanism, typical uses, and restrictions:



Annual FR&R Contributions by Fund Totaling $2,280,000

The Facilities Renovation & Replacement (FR&R) fund receives approximately $2.3 million annually in transfers from several different funds. The largest share is contributed directly by the general fund, while specific departments also make annual transfers into the fund (e.g., the police department budgets $25,000 each year towards the fund). The size of the fund is inadequate to fund all renovations for general building and has not grown in the past decade. Individual department contributions to the fund are not related to the expense generated by the department.

General Fund contributions. For special projects and specific facilities initiatives, City Council has occasionally set aside money for a particular facilities project.

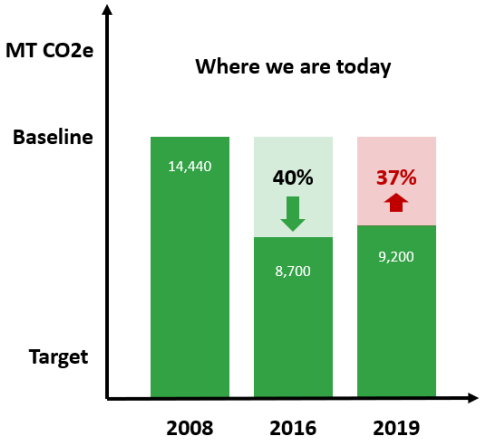
Bonding and other financing mechanisms. The city uses bonding and other forms of financing (such as certificates of participation) to fund major projects. Bonds require voter approval and as such are often targeted at a wide variety of projects impacting many aspects of city services and the Capital Improvement Program.

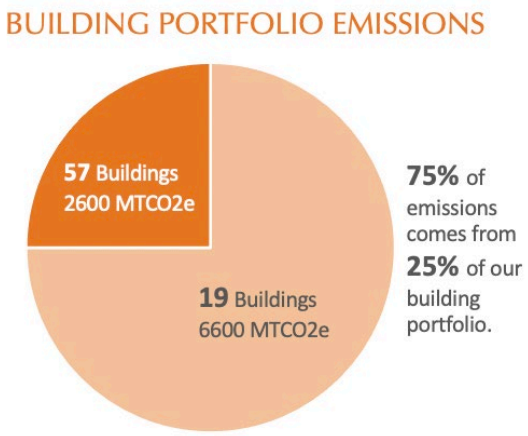
Dedicated department or program funding streams. Some departments (such as Open Space and Mountain Parks) have designated funding streams available to fund facility improvements. This can result in uneven investment across departments.

The current funding strategy has resulted in uneven investment across the city's facilities portfolio. As a result, many city facilities have accumulated sizeable unfunded liabilities and need substantial capital investment soon to merely continue to operate. To meet city climate, access, and equity goals many facilities would require significant additional investments. This Facilities Master Plan provides an understanding of the fiscal needs of the current facilities, methods for the city to use in evaluating whether to maintain or liquidate a facility, and recommendations on future facilities investment strategies to ensure transparency, efficiency, and equity across the city's facilities portfolio.

Building Carbon Use

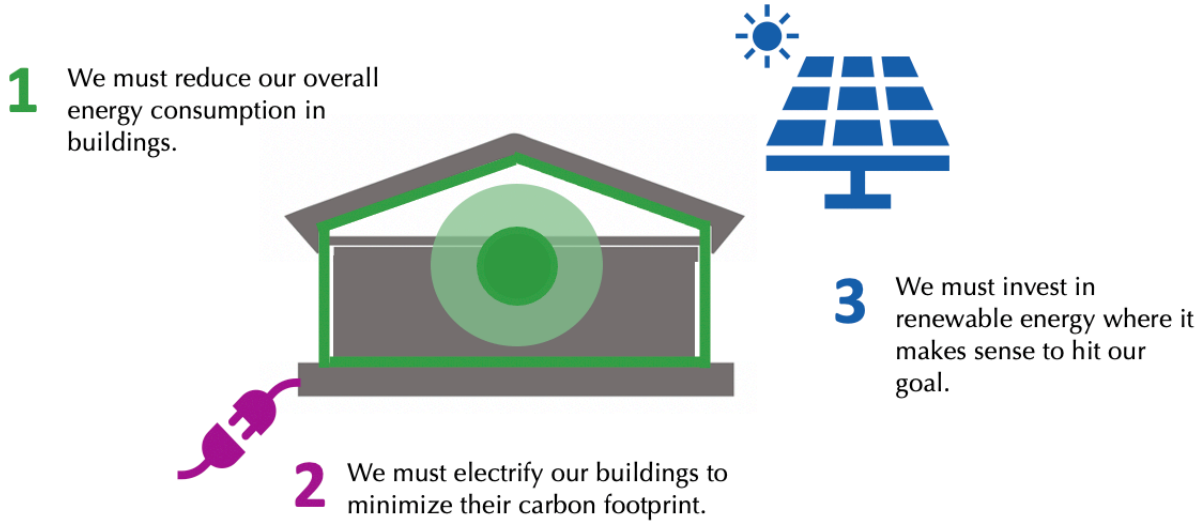
In the US, the building sector makes up roughly 40% of all primary energy use and associated greenhouse has (GHG) emissions. In 2008, GHG emissions from city facilities was 14,440 metric tons of CO2 equivalent (mt CO2e). By 2016, city facilities reduced carbon emissions by 40%, however, those positive reductions have since plateaued.





To meet the city's commitment to reduce carbon emissions by 80% by 2030 (and ultimately to get to carbon neutral), taking stock of existing facilities and the challenges faced with aging infrastructure is necessary. In this assessment, it was determined that roughly 75% of emissions from city buildings come from just 25% of the total building stock.

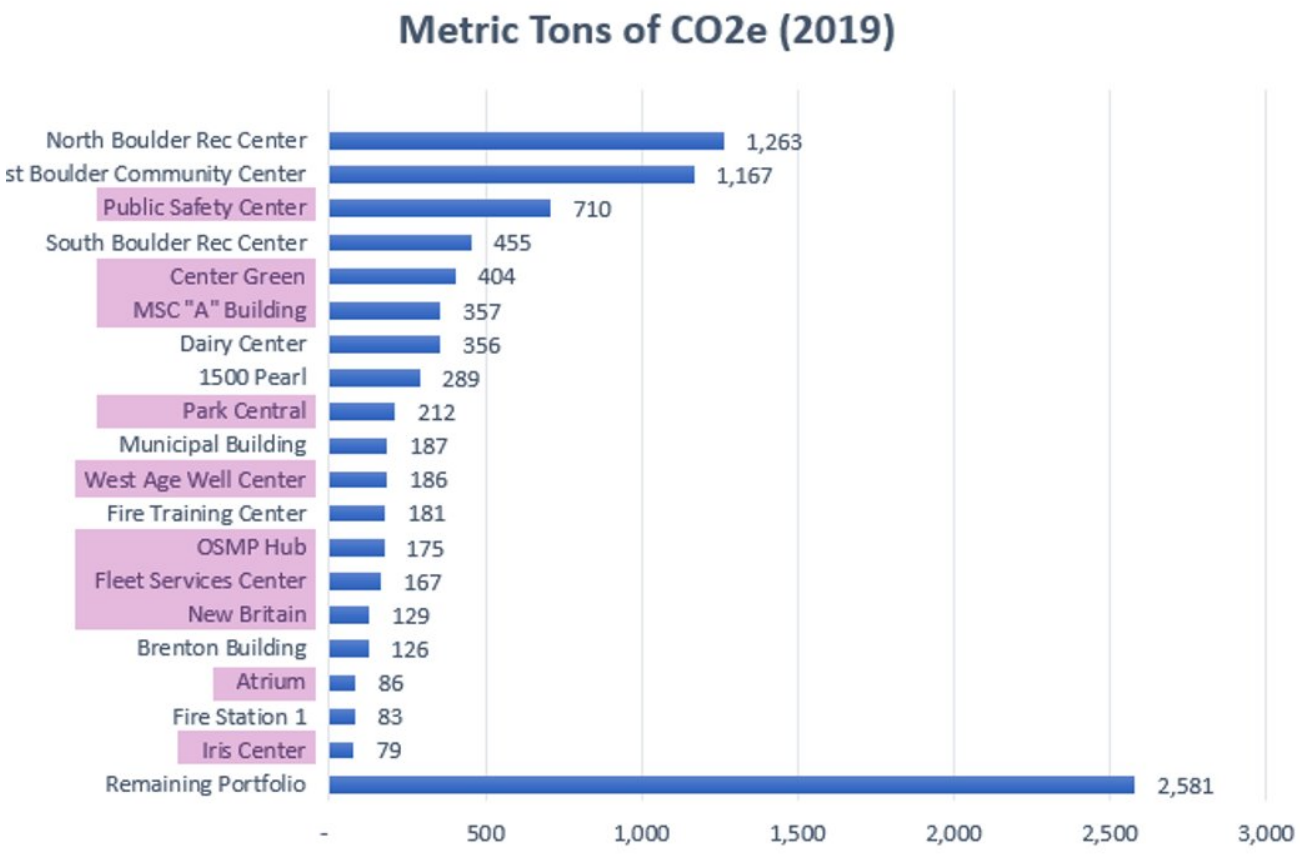
Three key actions must be taken to meet the city's climate goals and truly lead the way

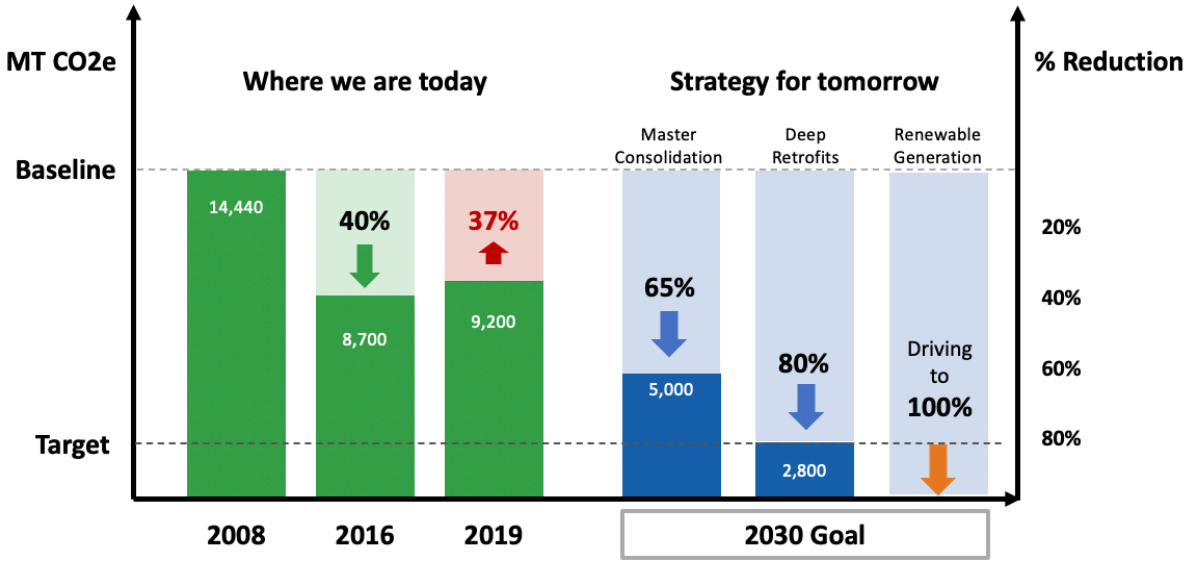


Reducing Building Carbon Emissions

Nineteen buildings have been identified to focus on reducing emissions. Half of this list would be addressed through the consolidation initiative. The remaining building would be a focus for deep energy retrofits.

One of the challenges facing the city's buildings is the escalating cost of aging infrastructure. This could be defined tangibly as the cost of renewal and/or the cost to operate and maintain. However, there's also the environmental and social costs for maintaining buildings which hinder progress towards the city's climate and circular economy goals.





Driving energy consumption to zero in our city facilities

Consolidation: The FMP's proposed consolidation strategy addresses many older and inefficient buildings which significantly contribute to carbon emissions from city buildings.

Deep Retrofits: The city's buildings are old, inefficient, and are reliant upon fossil fuels to operate. Natural gas is the primary fuel for heat and hot water. Energy assessments will help identify energy conservation measures (ECMs) which will help improve our Energy Use Intensity (EUI) through targeted improvements. However, ad-hoc energy efficiency projects will only get the city so far. There is a need to go further and invest in buildings by performing deep retrofits and electrify the building stock. This would open more pathways for a comprehensive renewable energy system, increasing the need for a year-round base load of green electricity, improving building resilience and the ability to respond to natural disasters and other climate related impacts.

As stated, further carbon reductions in buildings since 2016 have been challenging to achieve. Simple, economical measures have been employed in buildings to save energy and now a more aggressive approach must be pursued if carbon consumption is to be driven towards zero. This master plan identifies the paths necessary in buildings to achieve the city's climate goals.

Brenton Building Deep Energy Retrofit

The city has demonstrated what needs to be done through the renovation of the Brenton Building in 2018. The EUI in this building was 128 kBtu/SF and through a Deep Energy Retrofit which included complete conversion of mechanical systems, has reduced its EUI to 26 kBtu/SF over the past two years. The Brenton Building is the city's first all-electric building and as such can meet its energy demand through renewables.

Note: *Electrifying buildings will require deep retrofits – which is discussed more in the following section – alongside other strategies such as Consolidation.*

CLIMATE ACTION

By 2019, the city had realized a 40% reduction in emissions from city operations and facilities. A renewed focus is required to ensure the city remains on track to meet the 80% reduction by 2030 and is reliant upon a fully renewable grid.

To address the challenge, the city is undertaking the following actions:

- Conducting a building stock analysis to determine long-term strategy for improving the city's building portfolio;
- Setting individual building EUI targets;
- Moving staff out of inefficient buildings located in the flood zone into high-performing, at or near net-zero retrofitted buildings;
- Installing solar on 18 city facilities and exploring options for additional solar onsite, including an ongoing bulk purchase program;
- Electrifying natural gas loads.

THE COST OF CARBON

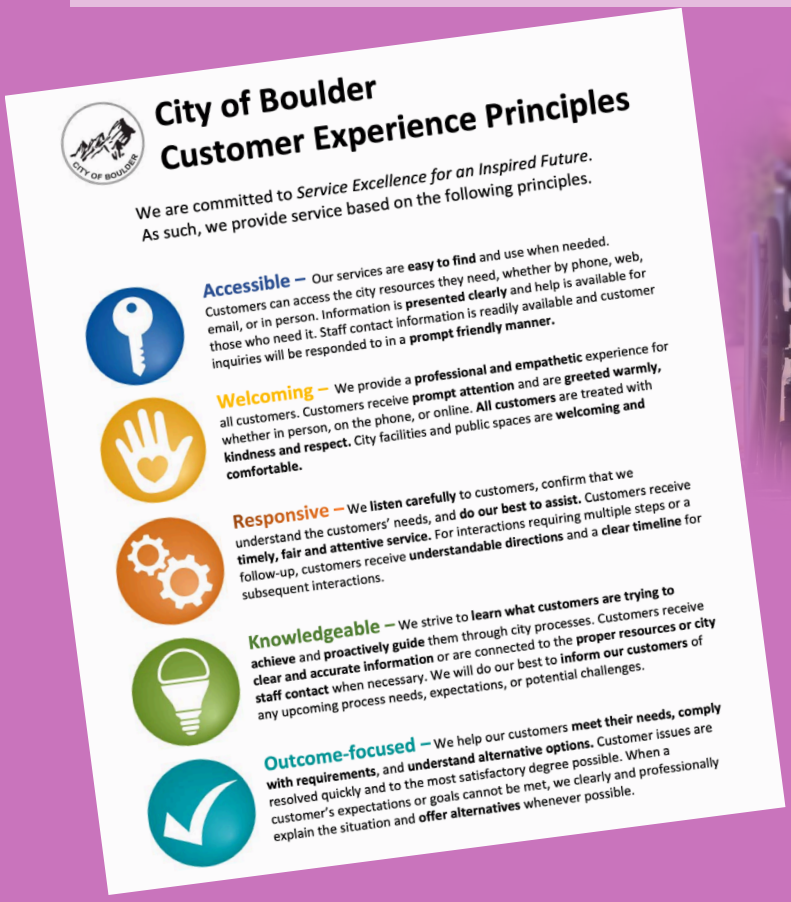
According to the Environmental Defense Fund (EDF), the current estimate of the social cost of carbon is over $50 per metric ton in today's dollars. At 9,192 MT CO2e in 2019, the cost of operating existing city building's is in the range of approximately $460,000 per annum, not including waste and wastewater treatment plants. An 80% reduction from 2008 levels, estimated at 14,440 MT CO2e per year, implies that city buildings have some way to go, as must emit less than 2,888 MT CO2e per year in 2030. This requires a further reduction of 6,304 MT CO2e from current levels, potentially unlocking an additional $315,200 per year in savings using current year dollars.

PRIORITIZING THE REDUCTION OF GHG

In Boulder, carbon from Natural Gas accounts for over 35% of our facilities GHG emissions (2019). Taking steps to decarbonize will offer significant GHG reduction potential.

Prioritizing Social Responsibility

In general, city buildings fail to meet the accessible, equitable, and experiential guiding principles that support the FMP's Social Responsibility Pillar. The Key Performance Indicators used to assess social responsibility include meeting ADA compliance; serving all people in a welcoming manner; being easily accessed through multi-modal transportation options; and creating a great experience for the community and city staff. An analysis of existing buildings demonstrates that there is room for significant improvement in these areas. Any future building must prioritize meeting our social responsibility through thoughtful design, including addressing the increasing climate challenges we will inevitably face. This is especially vital for Boulder's underserved and vulnerable populations.



City of Boulder
Customer Experience Principles

We are committed to *Service Excellence for an Inspired Future.*
As such, we provide service based on the following principles.

Accessible – Our services are **easy to find** and use when needed. Customers can access the city resources they need, whether by phone, web, email, or in person. Information is **presented clearly** and help is available for those who need it. Staff contact information is readily available and customer inquiries will be responded to in a **prompt friendly manner.**

Welcoming – We provide a **professional and empathetic** experience for all customers. Customers receive **prompt attention** and are **greeted warmly,** whether in person, on the phone, or online. **All customers** are treated with **kindness and respect.** City facilities and public spaces are **welcoming and comfortable.**

Responsive – We **listen carefully** to customers, confirm that we understand the customers' needs, and **do our best to assist.** Customers receive **timely, fair and attentive service.** For interactions requiring multiple steps or a follow-up, customers receive **understandable directions** and a **clear timeline** for subsequent interactions.

Knowledgeable – We strive to **learn what customers are trying to achieve** and **proactively guide** them through city processes. Customers receive **clear and accurate information** or are connected to the **proper resources or city staff contact** when necessary. We will do our best to **inform our customers** of any upcoming process needs, expectations, or potential challenges.

Outcome-focused – We help our customers **meet their needs, comply with requirements,** and **understand alternative options.** Customer issues are resolved quickly and to the most satisfactory degree possible. When a customer's expectations or goals cannot be met, we clearly and professionally explain the situation and **offer alternatives** whenever possible.

The FMP prioritizes improving the customer experience throughout city buildings.

Guiding Principles Assessment

The FMP's guiding principles consider facility overall condition, financial indicators, energy performance measures as well as more qualitative measures such as experience and function to rate the buildings against each other. The spreadsheet to the right illustrates the current condition of city buildings relative to the six guiding principles. In general, city buildings:

- do not meet functional needs of the people using them and are challenging to operate;
- provide disproportionate experience to customers and staff;
- do not meet sustainability values;
- vary in their resiliency from good to poor;
- are lagging in being accessible to all people; and
- are costly and inefficient to operate and maintain.

As such, there is clear room for improvement across the board.

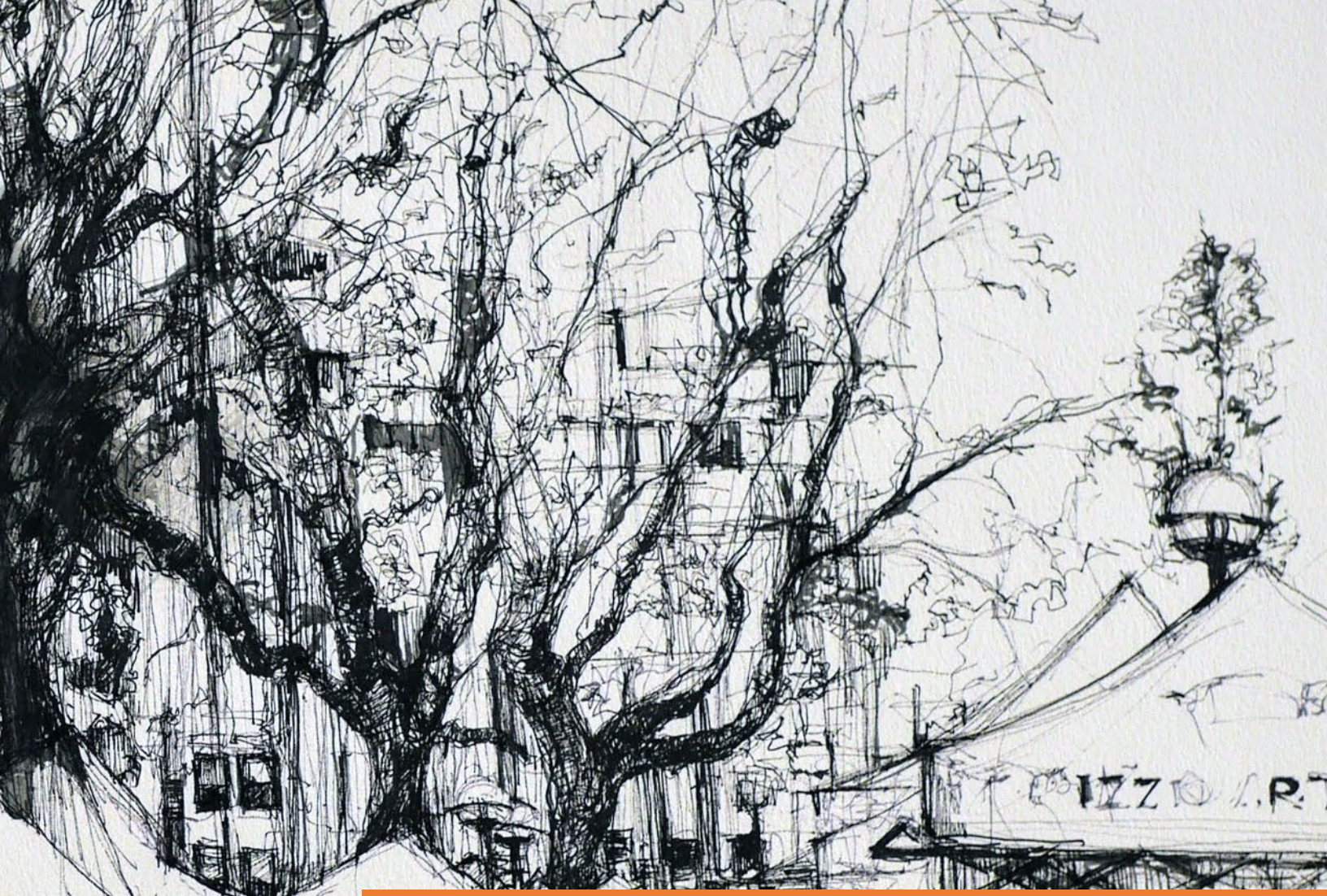
Tiering Matrix		Scoring - All Core Values	Summary - Letter Grades					
Asset Name	Asset Department	Letter	Financial	Sustainable	Resilient	Accessible	Functional	Experiential
Brenton Building	Offices	A	B	A	D	B	C	B
11th & Spruce	Parking	B	D	A	E	C	E	D
BMOCA	Leased	B	B	A	E	C	E	C
East Boulder Community Center	Rec Center	B	D	E	B	C	D	B
Fire Station 8	Emergency Services	B	A	B	C	D	E	D
Fire Training Center	Emergency Services	B	A	E	C	D	E	D
Main Library	Libraries	B	D	B	D	B	C	D
North Boulder Branch Library	Libraries	B	B	B	E	D	C	D
North Boulder Rec Center	Rec Center	B	C	E	B	B	D	C
OSMP Hub	Offices	B	B	B	E	B	C	B
10th & Walnut	Parking	C	D	A	E	C	E	D
1500 Pearl	Parking	C	D	B	E	C	E	D
Boulder Reservoir Visitor Center	Parks & Recreation	C	E	C	D	C	C	B
Broadway Parking Strucutre	Parking	C	D	A	E	C	E	D
Chautauqua Dining Hall	Leased	C	C	E	E	D	E	C
Child, Youth and Family Services	Offices	C	A	D	E	D	D	D
Fire Station 1	Emergency Services	C	A	E	C	D	E	E
Fire Station 2	Emergency Services	C	C	C	C	E	E	E
Fire Station 4	Emergency Services	C	B	D	C	E	E	E
Fire Station 5	Emergency Services	C	B	D	D	E	E	E
Fire Station 7	Emergency Services	C	A	D	D	D	E	E
Fleet Services	Support Services	C	A	E	C	E	E	E
Iris Center	Offices	C	A	C	E	D	D	E
Meadows Library	Libraries	C	B	B	E	D	C	D
OSMP - Cherryvale South	Offices	C	B	B	D	E	E	E
OSMP Office Annex	Offices	C	B	A	E	E	E	D
OSMP Shop	Support Services	C	B	A	D	E	E	D
Park Ops / Forestry	Parks & Recreation	C	B	D	D	E	E	D
Pleasant View Restrooms	Parks & Recreation	C	D	B	E	E	E	D
Randolf Center Parking	Parking	C	D	A	E	C	E	D
Reynolds Library	Libraries	C	B	A	D	D	E	E
RTD Parking Structure	Parking	C	D	A	E	C	E	D
Scott Carpenter Athletic Center	Parks & Recreation	C	E	B	E	B	E	D
Scott Carpernter Bathhouse	Parks & Recreation	C	E	C	E	B	D	B
Stazio Ballfields Buildings	Parks & Recreation	C	B	D	E	E	E	C
Valmont Park	Parks & Recreation	C	B	B	E	E	E	C
63rd St WTP	Water Treatment	D	E	E	C	E	E	D
75th WTPP	Water Treatment	D	D	E	C	E	E	D
Age Well West	Offices	D	E	E	E	D	D	E
Atrium	Offices	D	D	D	E	E	C	E
Carnegie Library	Libraries	D	E	D	E	E	E	D
CV 1500 Pearl	Offices	D	B	D	E	D	E	E
Dairy Center	Leased	D	D	E	E	C	E	D
FAM & P&R Bldg	Support Services	D	D	B	D	D	E	E
Fire Station 3	Emergency Services	D	D	D	D	E	E	E
Fire Station 6	Emergency Services	D	D	E	C	E	E	E
Harbeck - Bergheim House	Leased	D	B	B	E	E	E	E
Mapleton Ballfields Building	Parks & Recreation	D	E	B	E	E	E	E
MSC A Blg	Support Services	D	B	E	C	E	E	E
Municipal Building	Offices	D	E	D	D	D	E	E
OSMP - Cherryvale North	Offices	D	B	C	D	E	E	E
Pearl St Mall Public Restrooms	Parks & Recreation	D	C	B	E	D	E	E
Pearl Street Mall Visitors Kiosk	Parks & Recreation	D	D	B	E	D	E	E
Pottery Lab	Leased	D	E	C	E	E	E	E
Radio Tower Equipment Shelters	Support Services	D	E	B	C	E	E	D
Resource Center (6400 Arapahoe)	Leased	D	D	C	E	E	E	D
South Boulder Rec Center	Rec Center	D	E	E	C	E	E	D
Spruce Pool Bathhouse	Parks & Recreation	D	D	D	E	E	E	D
Tea House	Leased	D	E	B	E	D	E	D
The Edge (1301 Arapahoe)	Offices	D	D	C	E	E	E	E
Betasso WTP	Water Treatment	E	E	E	D	E	E	E
Boulder Reservoir Boat House	Parks & Recreation	E	E	B	E	E	E	E
Boulder Reservoir Maintenance	Parks & Recreation	E	E	B	E	E	E	E
Center Green	Offices	E	E	E	E	E	E	E
Fire Truck Storage Bldg	Support Services	E	E	B	D	E	E	E
Flatiron Golf Pro Shop	Support Services	E	E	C	E	E	E	E
Foothills Maintenace Shop	Support Services	E	E	E	D	E	E	E
Justice Center	Offices	E	E	E	E	C	E	D
MSC B Blg	Support Services	E	E	E	D	E	E	E
Mustards Last Stand	Leased	E	E	E	E	D	E	E
New Britain	Offices	E	D	E	E	E	E	E
Park Central	Offices	E	E	E	E	E	E	E
Pleasant View Maintenance Shop	Parks & Recreation	E	E	E	E	E	E	D
Public Safety Center	Emergency Services	E	E	E	D	E	D	E
Roadway Building	Support Services	E	E	E	E	E	E	E
Salberg	Parks & Recreation	E	E	B	E	E	E	E
Tantra Park Maintenace Shop	Support Services	E	E	E	D	E	E	E
Tom Watson	Parks & Recreation	E	E	B	E	E	E	E
Valmont Butte	Support Services	E	E	E	E	E	E	E

Summary of Building Analysis

The city needs to make critical and strategic decisions in many of the buildings today to address failing infrastructure, respond to climate change, and better serve the community in the future.

- Currently facilities have $55 million in deferred equipment and systems renewal across the portfolio that will increase to $307 million by 2050 if current funding levels are maintained.
- The condition of the city's facility portfolio is "fair" – just under 10% – but will be in the critical range by 2030 if current practices and approach towards building renewal are maintained.
- The City of Boulder is currently not on a path to meet climate commitment goals. City buildings are inefficient and consume too much energy. Across the building portfolio, consumption needs to be reduced and carbon-using equipment (present in most city buildings) needs to be eliminated in favor of renewable energy. This conversion requires deep energy retrofits - like-for-like replacement of aging infrastructure will not close the gap in meeting the city's climate goals.
- City buildings currently do not meet the FMP's guiding principles. Many of the city's buildings are hard to find, un-inviting for community members, do not provide supportive or healthy work environments, nor do they accommodate people of varying needs well.

It is time to address the city's buildings in a holistic, strategic manner to accomplish local goals and be fiscally responsible. There is an opportunity, and responsibility, to create a new legacy for the future.



CHARTING A NEW COURSE

Illustration Credit: William Wu

Decision Framework

The FMP's decision framework relies on the three pillars and six guiding principles described in the first sections of this plan. It uses the quantitative and qualitative Key Performance Indicators (KPIs) to evaluate and "score" buildings. This process identifies the best buildings, i.e., those that support the city's core services, enhance community interaction, and are operating effectively. This process also identifies the worst buildings that fail in meeting critical values and are increasingly expensive and inefficient to operate and maintain. The framework provides a plan for addressing all the buildings that fall in between the best and worst to aid in making decisions in where and how to invest wisely or repurpose the asset entirely.

There are **2 key initiatives** recommended in this plan that bookend **3 strategic actions** that can be taken with buildings that support those initiatives.

The first key initiative is to maintain city buildings well.

This is the primary objective; to put ***all*** city buildings on a path towards this end where we are effectively and efficiently maintaining good buildings. Good buildings are those that meet the FMP's guiding principles and climate goals, are resilient, and functional, and serve the staff and community well.

The second key initiative is to consolidate services when and where appropriate.

The analysis of city buildings and the services they contain within has revealed huge benefit to moving quickly in a direction towards consolidation. One quarter of the building portfolio (about 20 buildings) house services and uses that can be considered for consolidation. ***By addressing this portion of the building portfolio, the city can cut the unfunded liability in half by 2030 and significantly accelerate progress towards climate commitment goals.***

The Decision Framework starts with a key question focused on the second key initiative, consolidation of services, to guide decision making and ultimately the fate of a building. All paths in the framework end in Maintain Well, the ultimate objective. If the asset, meaning the building and site, will not be repurposed, there are **three strategic actions** that can be taken, consolidated or not, that put the building on a path towards Maintain Well. These Strategic Actions are:

1. **Targeted Improvements**
2. **Deep Retrofits**
3. **Build New**

The recommended strategic actions all have the common end goals of:

- Meeting qualitative aspirations defined in building guiding principles.
- Sustained FCI of 10% average across building portfolio.
- Achieving climate goals. Overall reduction of energy consumption and electrification of buildings whenever possible.
- Good governance of city buildings. Effective and efficient operations and maintenance of buildings to achieve good financial stewardship.

These common goals will guide a Building Assessment and the level of investment that can be and should be made. The Building Assessment uses these goals to evaluate suitability of a structure for renovation or full adaptive reuse and the level of investment required compared to building new.

If a building will not be renovated or reused for city services, then the city may **repurpose the asset,** that is the building and/or the site, to an entirely other use which in many cases will mean deconstruction of the building and/or sale of the property.

BUILDING ASSESSMENT

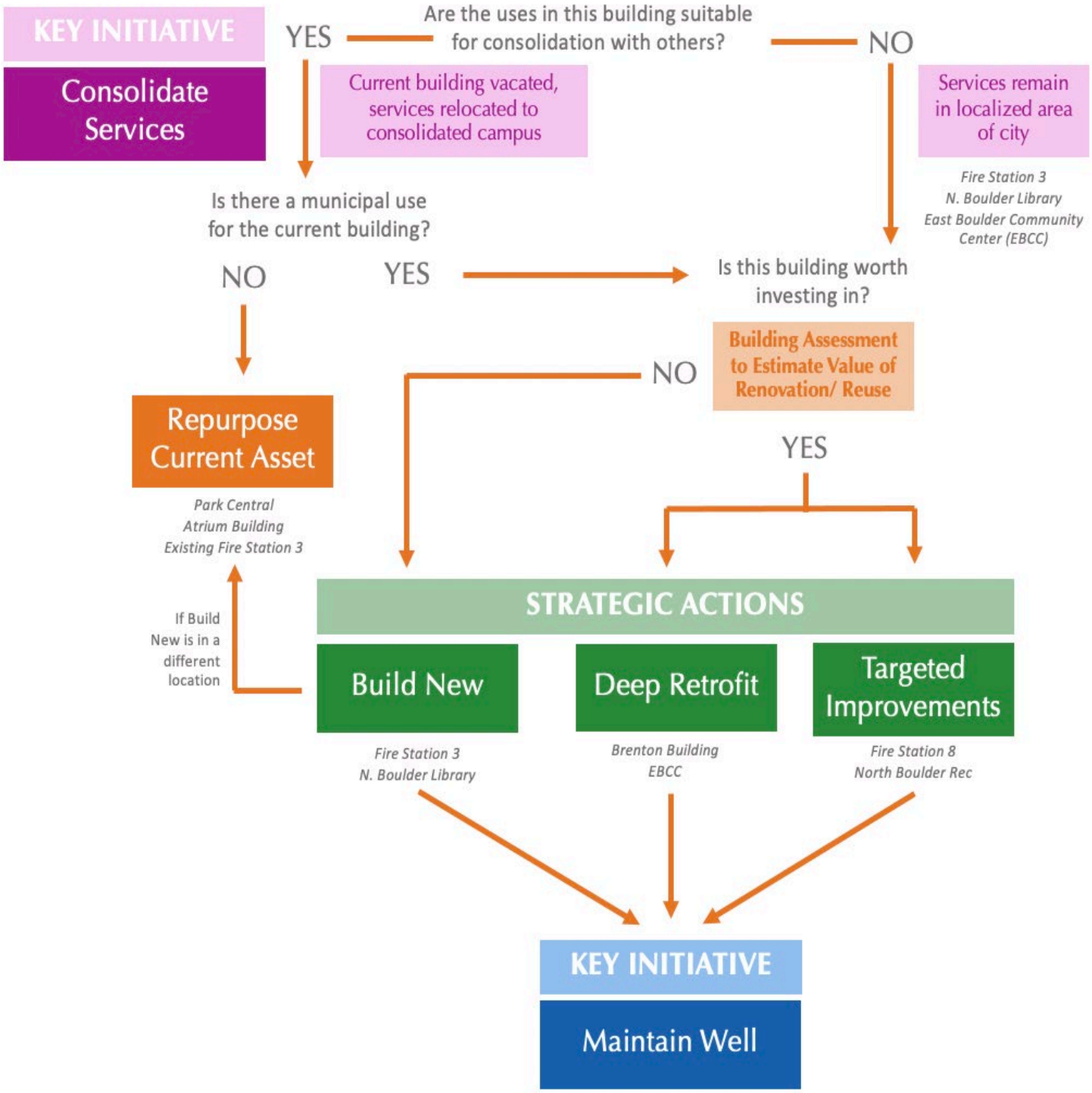
Once goals for a building have been established, key areas that should be investigated in support of the goals are:

- The **Story** of the building and its site – the history of the building and site and its future, as a city building or not, at this location and in context of the BVCP and future of the city.
- **Site** conditions – is the building in the right location on the site or does the site have a better use or purpose with the building removed? (e.g., Pavilion – yes, Fleet Building – no). Is the location of historic value that should be considered?
- **Structural** Integrity – is the structure fully intact and ready to live on for another 100-years?
- **Form** of Building – is the building the right form, size, shape for new services and uses? Is it highly adaptable and flexible? Can the form support building guiding principles when renovated? Is the building of historic value?

In 2019, the city completed a Reuse Analysis of the Medical Office Pavilion. The analysis demonstrates how these key areas (story, site, structure, and form) are assessed and conclusions made about the suitability of the Pavilion for reuse.

Decision-Making Framework

WHAT IS THE FATE OF THIS ASSET?



REPURPOSING ASSETS

Buildings that are identified not to be reused to provide city services will need to undergo analysis of their property's value to the city and community – either economic, social or environmental. For instance, by executing the consolidation strategy, the city will vacate space in more than 20 buildings. Some of these buildings hold monetary value in resale but many hold greater social and/or environmental value. Once a facility, or portion of a facility, is made available for other uses, the city should consider the value of that facility in three areas:

- Economic – what is the monetary value of selling or leasing the asset, at that time, and by disposing of the asset, will the city avoid substantial operational or capital expenditures?
- Social – is there an alternate civic use for the facility or site that would help the city meet other planning goals (e.g., consolidating properties on the East Bookend of the Civic Area or converting a property to a park or cultural facility)?
- Environmental – by disposing of the asset, is the city improving safety, resiliency or reducing carbon footprint by allowing a more resilient and sustainable building to take its place?

By valuing buildings in these three areas, the city can ensure that it is meeting its guiding principles for facilities and serving as a prudent steward of city resources.

KEY INITIATIVE

Maintain Well

ANALYSIS

Maintaining buildings well is the end goal of all activities in city buildings.

Good asset management and facilities stewardship requires strategic and tactical plans to ensure buildings are appropriately funded, managed, and maintained. Proactive maintenance techniques, such as preventive and predictive maintenance, have been proven as cost-effective strategies for increasing asset life cycle, improving productivity, and reducing unplanned downtime.

The goal of adopting practices and funding programs that adhere to a Maintain Well Initiative is to reduce the overall total cost of ownership of the building asset.

Taking good care of city buildings is fundamentally a resiliency strategy. First, it represents a reduction in risk. Well cared for facilities will support the city during emergency operations. Second, by maintaining facilities well, fiscal impacts become more predictable and transparent. Finally, in response to the environment, well maintained buildings that undergo regular commissioning keep energy use as low as possible. In the future, there may be increased poor outdoor air quality as a result of increased wildfires, making our indoor environments even more important to the health and wellbeing of the community. The COVID-19 pandemic also served as a lesson for how important the air quality and ability to provide fresh air is in buildings.

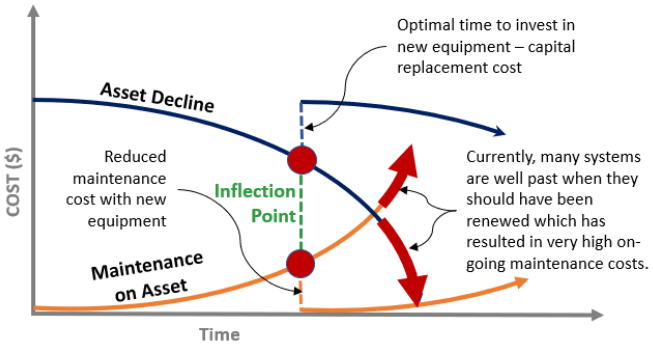
MAINTAINING BUILDINGS WELL IS:

- Taking care of existing buildings and practicing good governance and stewardship of expensive and long-lasting city assets.
- Ensuring predictability and transparency in funding needs for capital renewal.
- Providing flexibility and choice in how and when investment in buildings is needed to serve the community, rather than reacting in crisis moments with large capital needs in potentially poor fiscal environments.
- Reducing the total cost of ownership of city buildings while providing maximum benefit to people using the building.

PREVENTATIVE AND PREDICTIVE MAINTENANCE WHAT'S THE DIFFERENCE?

Both preventive maintenance and predictive maintenance are designed to increase the reliability of assets and reduce the amount of reactivity to failures.

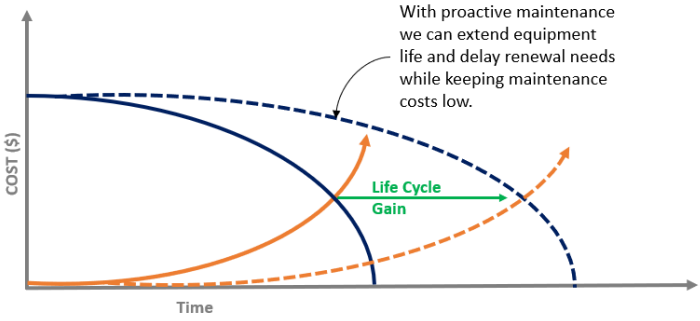
As an asset ages, specific components of elements of the asset – pumps, motors, electronics – start to fail and need repair. This results in increasing maintenance attention and cost of the asset. There is an inflection point when the asset or system should be replaced, and the system renewed before maintenance costs rapidly escalate. The upfront capital renewal costs are offset by driving maintenance costs back near zero on a new asset.



PREVENTATIVE MAINTENANCE is generally performed on a routine schedule, like annual roof inspections or cleaning of mechanical filters. This approach uses a "best estimate" approach to scheduling maintenance tasks "just-in-time" potentially causing excessive maintenance and increasing administrative burden.

PREDICTIVE MAINTENANCE, increasingly found in "smart buildings," is scheduled when called for by an asset and is based on the asset condition. Predictive maintenance requires a little more investment in the design (i.e., need for monitoring equipment and software) but can predict when failure will occur using data-driven algorithms and software systems.

Both approaches to proactive maintenance have a significant advantage to reactive maintenance (also known as breakdown maintenance) which can be unpredictable, inconvenient, and compromise productivity through increased downtime. For perspective, when weighing the "cost-benefit" of these approaches, it's important to consider the total cost of ownership of a building and its equipment. While predictive maintenance carries the most "up-front" cost during design and construction, it will pay dividends over the life cycle of an asset.



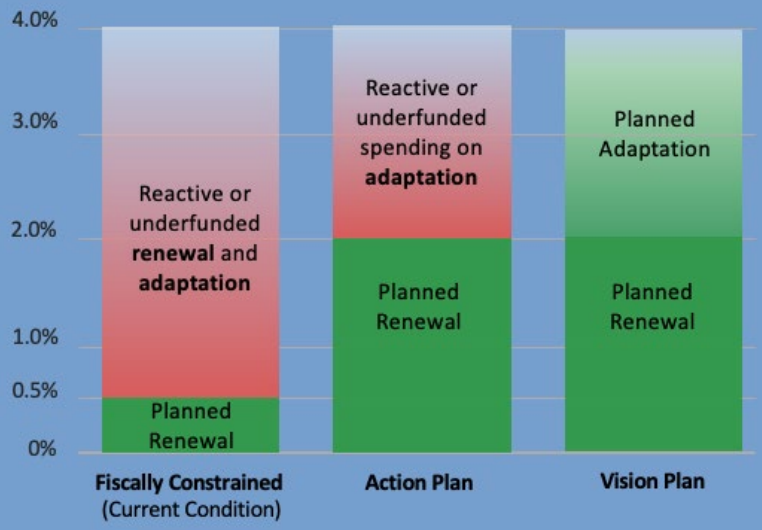
FUNDING PRIORITIES

Many guidelines for facility renewal have been established – most notable is a pioneering study conducted by the Building Research Board of the National Research Council, which highlighted that underfunding of maintenance and repair is a widespread and persistent problem in public buildings. These studies have concluded that appropriate annual budget allocations for maintaining building assets is in the range of 2-4% of the buildings current replacement value (CRV). There are two key aspects of this recommended range; building renewal, which accounts for the anticipated like-for-like replacement of infrastructure such as boilers, chillers etc. and then there is building adaptation which addresses the need for buildings to change in the future in response to code updates, changes in how services are delivered etc. This second category, building adaptation is harder to pinpoint specific future changes but it is certain that over a building's life space, renovations will be required to meet new needs.

FISCALLY CONSTRAINED

(Current Condition)

Currently the city contributes 0.5% of CRV towards its facilities which is shown in the chart under the Fiscally Constrained (current condition). This has resulted in a backlog of building replacement and renewal needs of $55 million. Maintaining the current funding approach and investment in buildings will result in the building portfolio falling into critical condition by 2030 and a cumulative unfunded liability of $120 million.



Operational expenditures continue to compensate for capital renewal funding resulting in fluctuating and unpredictable costs. This approach encourages degradation of buildings and borrowing against future needs of the building. This becomes an increasing risk and liability to the city. Climate goals and guiding principles will not be achieved continuing this approach to funding buildings.

ACTION PLAN

The Action Plan funding priority shown in the chart budgets 2% CRV annually to address building renewal needs. This is strategic savings for known future costs to replace existing equipment and systems that have generally accepted standards of service life. Planning for equipment replacement through the city's asset planning software is efficient and effective. At this funding level, money is still needed to address adaptation and likely funded much the way it is today through one-time requests to address an urgent need.

VISION PLAN

The Vision Plan funding priority which funds buildings up to 4% demonstrates strategically saving to invest in a planned way for both infrastructure renewal and building adaptation. At this level, renovations required to update a building in response to changes in service delivery, work standards, or code requirements (an example would be our Building Performance Ordinance requirements) would be planned for and funded.

RECOMMENDED FUNDING PROGRAM

The building industry has identified a funding standard of 2-4% CRV be set aside to properly fund building renewal needs to maintain a FCI of 10% - also a well-established industry standard reflecting responsible stewardship of building assets.

The recommendation of this master plan is to fund the minimum industry standard of 2% CRV identified as the Action Plan Funding Level. To this end, a budget request would be presented during the annual budgeting process to fund at least 2% CRV moving forward on buildings that:

- Were built within the last fifteen years (e.g., Fire Station 8, Reservoir Building, Scott Carpenter Pool)
- Have received recent significant investment in the renovation (e.g., Brenton Building)
- Are new or have been deeply retrofitted

This approach provides fiscal flexibility for the city by appropriately managing risk and will put buildings on a path to a well-sustained future.

KEY INITIATIVE

Consolidate Services

ANALYSIS

In 2015 the city made a strategic purchase of the former Boulder Community Hospital (BCH) site, sparking a vision to centralize a number of city services to this area. Over the past five years, much discussion, engagement, assessment, and planning has been done to understand the value of consolidation of many city services and the larger opportunity presented.

CONSOLIDATION CAN:

Better serve the community. Through consolidation, the city can reduce overall space needed to perform, execute, and deliver city services. In the process of converting space, it is possible to create better, more engaging, inspiring, equitable, accessible, healthy, and long-lasting built environments that can adapt over time to future needs. Existing buildings and properties can also be repurposed towards better uses for the community.

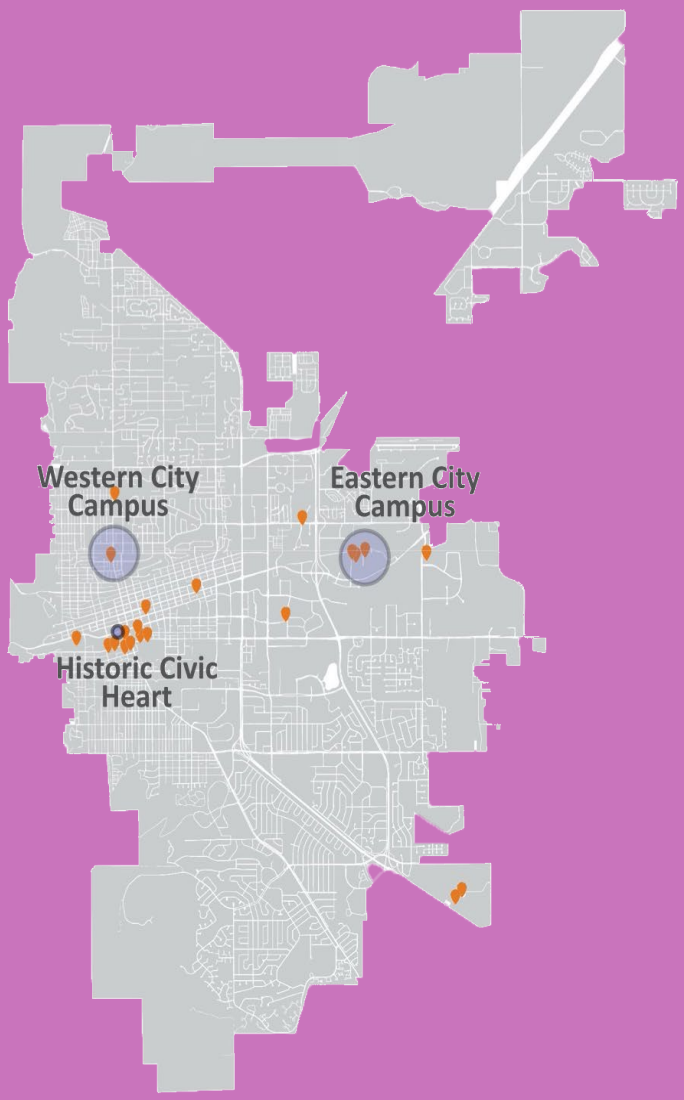
Meet city climate commitment goals by converting roughly 25% of the building portfolio to all-electric, high performing buildings. Consolidation can drive another 20%-30% progress across the portfolio towards these goals.

Be resilient. Consolidation is an opportunity to literally build resiliency into delivery of city services to adapt and quickly support the community in times of crisis and chronic stress.

Create a financially sustainable future by reducing the unfunded liability of the total building portfolio by half and putting city buildings on a path towards good fiscal stewardship.

The city has conducted several discrete planning studies and building projects that have informed this initiative. In 2018 conceptual plans for both the east and west campuses were developed to test the possibilities and uncover the challenges and complexities these sites present. An urban analysis was also conducted to understand benefits of these sites' locations in relation to major transportation corridors and where people in the city live and conduct business. High level cost estimates were generated to quantify the rough order of magnitude of cost to develop these sites and contrast that against the *costs inherent in simply maintaining our current buildings as they are.*

The conclusion from this analysis is that consolidation of roughly 20 buildings, one – quarter of the city's portfolio – to two centralized campuses is financially viable, will enable the city to achieve climate goals as well as social goals that could not otherwise be achieved in buildings as they currently stand and are maintained. Furthermore, consolidation can make a significant *positive impact* across our entire building portfolio which will be demonstrated in the following pages.



East Bookend Graphic from the Civic Area Master Plan

Buildings suitable for consolidation house uses that can be combined with other like uses to create targeted efficiencies. Buildings and properties vacated hold social, financial, and environmental value for the city. For example, when the city vacates space east of Central Park, that will create opportunities for community use in line with the Civic Area Master Plan.

TARGETED EFFICIENCIES – SPACE, CARBON, MONEY

Space refers to the amount of building floor area the city operates and maintains annually. Carbon refers to the amount of carbon used in operating buildings and the relationship to the City's Climate Commitment Goals. Money refers to the value of current physical assets, the capital needed for replacement, and annual operation and maintenance expenses. **Overall, money needs to go farther.**

Simply stated, when buildings are consolidated, it is possible to be more efficient with how space is used. Consolidation can reduce the city's square footage by roughly one third, helping drive carbon use to zero. Consolidation can also reduce operations and maintenance costs to half by building smart, connected buildings, and employing the proactive maintenance practices discussed under the Maintain Well Initiative.

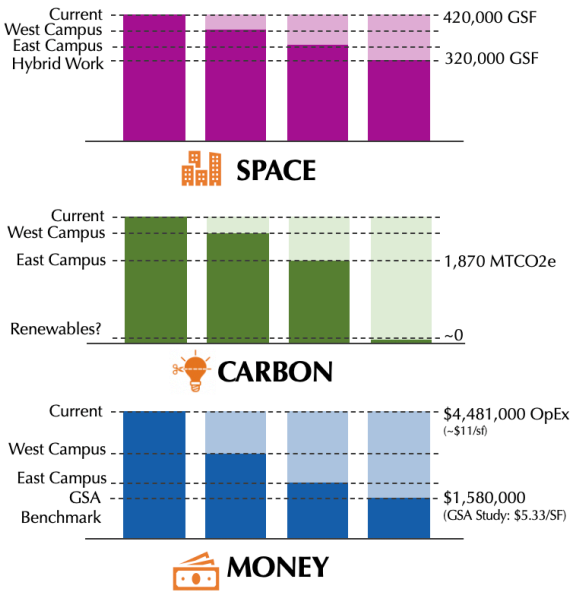
SPACE

Currently: redundant, dispersed spaces are wasteful and contribute to greenhouse gas emissions. Some buildings are used for purposes never intended. Poor building conditions negatively impact accessibility, customer service, staff health, morale, productivity, and retention. Some buildings are also in high-risk locations.

After Consolidation: more optimized space usage resulting in less square footage per person needed overall, but better-quality space. Better experience for customers and the community in accessing buildings and providing access and equitable experience within buildings. Buildings removed from high-risk areas, can provide better resiliency. *Chart shows efficiencies in Gross Square Feet (GSF).*

CARBON

Currently: buildings and their systems are energy inefficient and wasteful. Impossible to meet climate goals with current building stock. Cost to update existing buildings is more than the cost to liquidate and build new. Three phases of Energy Performance Contracting have already been completed to make energy improvements in buildings.



City facilities (excluding plants) make up 32% of Green House Gas Emissions (GHG) but are challenged to reduce emissions by 86% over the baseline to achieve city goals. With existing buildings, this can only be accomplished through deep energy retrofits.

After Consolidation, the campus will have high-performing buildings that are optimized for energy efficiency. Full electrification of buildings enables for all-renewables power sourcing. Daily travels between dispersed buildings will be eliminated.

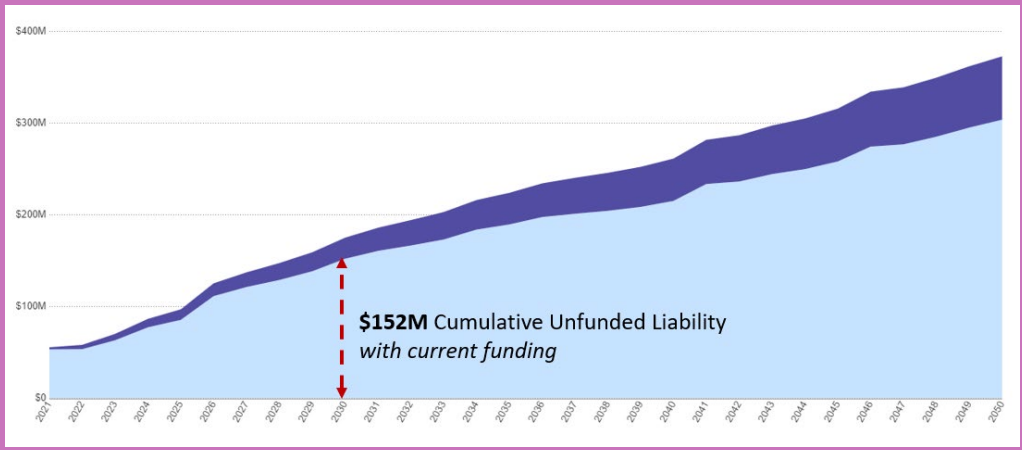
MONEY

Currently: leasing is more expensive than owning. Reactive maintenance is far more costly than preventative maintenance. Inefficient buildings and HVAC systems are more costly to operate.

After Consolidation: all systems under one roof – less Operational Expense (OpEx) of many different systems creates efficiency. Optimized maintenance practices can be employed. Systems can be maintained proactively to extend their life and lengthen time between system renewal needs. The General Services Administration (GSA) provides good benchmarks.

As has been shown already, the cumulative liability across the entire building portfolio will be $175 million by 2030.

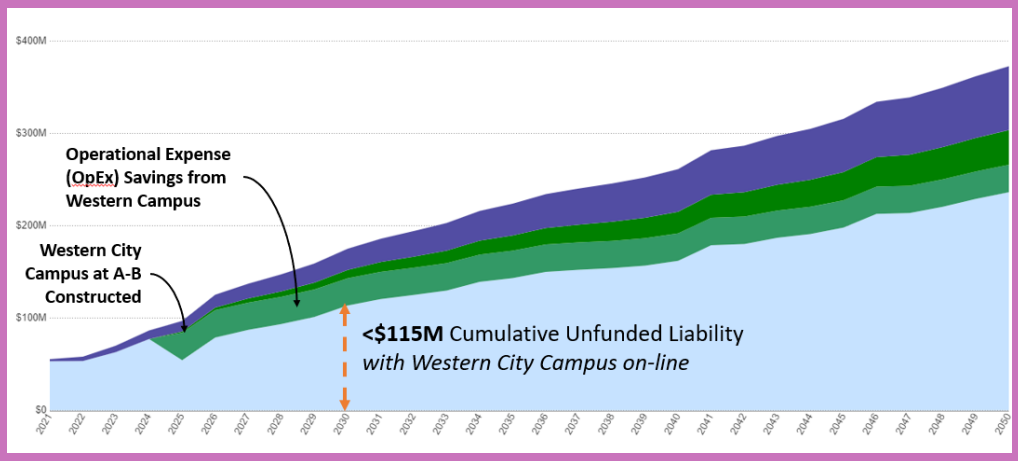
When this is overlayed with the current $2.3 million annual funding, the cumulative unfunded liability in 2030 is reduced to $152 million dollars.



Unfunded Liability (UL) Across Entire Building Portfolio

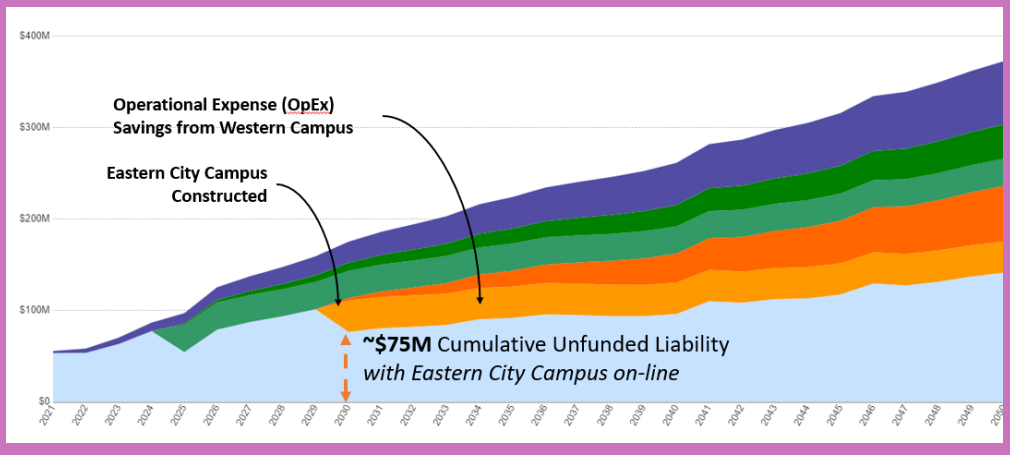
Consolidation of roughly six buildings to Alpine-Balsam, the Western City Campus, will result in a 40% reduction in unfunded liability across the entire building portfolio. This is achieved in two ways:

1. Six buildings with capital infrastructure replacement needs are removed from the portfolio which eliminates their liability.
2. They are replaced with a high performing building that is efficiently operated and maintained as discussed in the Maintain Well initiative. This results in a 50% reduction in O&M costs that can be leveraged towards consolidation.

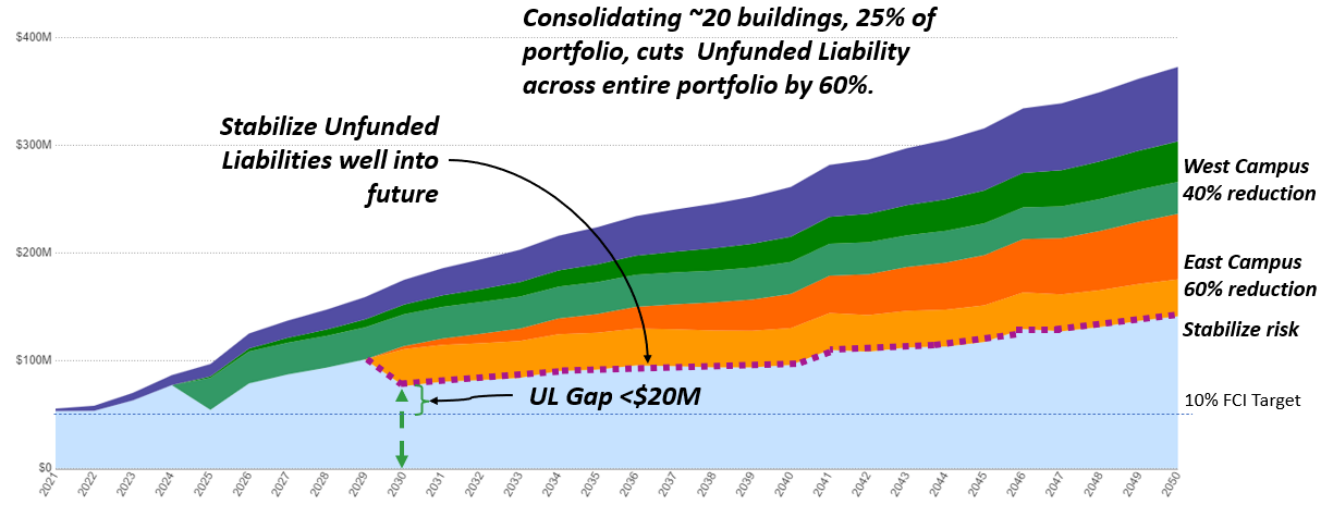


Western City Campus Impact Reducing UL

Consolidation of the roughly 15 buildings to an Eastern City Campus at the current Municipal Service Center site will result in an additional 60% reduction in unfunded liability across the entire building portfolio.



Eastern City Campus Impact Reducing UL



Consolidations Impact Reducing UL and Stabilizing into Future Entire Across Building Portfolio

Consolidation of 20 buildings, 25% of the city building portfolio, cuts the Unfunded Liability across the entire portfolio by more than 60%.

The unfunded liability gap goes from $100 million to less than $20 million. More importantly, with buildings employing principles of the Maintain Well Initiative, they are more efficiently operated and maintained. This results in stabilizing the unfunded liability well into the future.

These models do not take into account many other potential funding sources that could make this even more compelling such as energy rebates, funds from disposal of certain properties, grants for energy efficient, resilient infrastructure improvements, etc.

RECOMMENDATIONS

This plan recommends that the city pursue consolidation of buildings into two campuses – one at Alpine Balsam and the other at the Municipal Service Center (adjacent to Valmont City Park). The Penfield W. Tate II Municipal Building in the Civic Area will be preserved as the historic civic heart of the municipal government.

Specifically, this means pursuing a strategy over the next several years that:

- Diverts capital investments and projects away from current buildings, limiting improvements to what is essential, and leverages these resources towards consolidation.
- Seizes real estate opportunities that support this approach (strategic and timely acquisition or disposal) to achieve financial, social, and environmental value for the city and Boulder community (example Park Central and New Britain, once vacated).
- Creates high-performing buildings and sites to achieve guiding principles.
- Proceeds with development of new funding structures that support consolidation and proactive care of buildings to limit TCO.

LESSONS FROM COVID-19 AND HYBRID WORK

The year 2020 changed work forever, impacting individuals and workplaces across the globe. Boulder was no exception. Multiple research studies continue to show that most workers across all sectors seek to return to work in a hybrid mode – spending some time in the office, and the remainder of time working remotely. The 2021 Work Trend Index Annual Report by Microsoft identifies a path forward into this hybrid world:

- Create a plan to empower people for extreme flexibility - "Every organization will need a plan that puts people at the center and encompasses policy, physical space, and technology." (p.25)
- Invest in space and technology to bridge the physical and digital worlds.
- Combat digital exhaustion and isolation.
- Prioritize rebuilding social capital and culture.
- Rethink employee experience and compete for the best and most diverse talent.

The Facilities Department is on the cutting edge of this change with the development of several "curiosity labs" that will test the concepts of hybrid work. These curiosity labs, located in Park Central and the Municipal Building will provide opportunities for enhanced hybrid meetings (including public meetings) and explore ideas around shared workspaces designed to eliminate silos and enhance collaboration and culture. It is intentional investigation into what works and what doesn't to inform our future campuses and potential for increased space efficiency while also providing better, more innovative, and supportive space for staff and the community.

The hybrid work model will be a valuable tool to address a growing community in the future as the city keeps pace with service delivery needs. The pressure for additional office space can be relieved through more flexible work arrangements. The workplace is rapidly evolving to provide a more amenity rich environment better supporting an innovative, collaborative culture with an overall reduced square footage need. The ramifications of leveraging hybrid work extend to reduced stress on transportation systems.

New, flexible meeting and workspaces created in existing buildings through reduction in individual offices.

Coined "Curiosity Labs: these new spaces are being used to learn what environments best support staff work and customer service in a post-pandemic world that utilizes more virtual services.

FINANCIAL TOOLKIT

Given the scale, timeline, and efficiencies associated with consolidation, the city has at least four financing mechanisms or tools it can consider with complete consolidation which will likely include some combination of these. The city also has several alternate funding streams to consider alongside choices around financing. This master plan has not included any of these tools described below in the charts on pages 59 and 60, which present savings and efficiency from consolidation, making them highly conservative in showing the future potential.

FINANCING MECHANISMS

Bonds – A loan to the city with capital provided upfront and principal and interest paid back over time, typically 15 to 30 years. Low interest rate for the city on the debt, assets held by the city. Requires voter approval which impacts timing.

Certificates of Participation (COPs) – Investors purchase lease-shares of a capital project, which entitles them to future lease revenues paid by the city. Low interest rate on debt, assets held by the city. Does not require voter approval, can move more quickly on opportunity.

Energy Savings Performance Contract (ESPC) – A business model where private investors provide upfront capital to advance a project with guaranteed energy savings identified to pay back the loan. Interest rates are higher, city holds the assets. Does not require voter approval.

Energy as a Service / Infrastructure as a Service (EaaS/IaaS) – Like ESPC, however assets are owned by a third party and the city leases equipment, etc. Risks of development and performance shift to third party. Higher interest rates, assets are off balance sheet. Does not require voter approval.

FUNDING STREAMS

District Energy and Waste Heat Recovery – Exploration of district energy at Alpine-Balsam that included public engagement has already taken place and is a viable consideration. The Eastern City Campus also could take advantage of district energy, which looks beyond singular building solutions to drive energy and cost down, making the whole site more efficient and in turn, improving paybacks and ROI. Waste Heat Recovery is another exciting option that will be explored extending further potential for energy savings.

Rebates, Incentive Programs and Grants – Designed to accelerate the transition to more efficient and decarbonized buildings, utilities, government, and state agencies, offer energy incentive programs that help make building improvements more accessible. These can take the form of rebate incentives or loans for qualified purchases. Grants provide upfront funding from federal and state agencies to provide additional financial assets to transition to cleaner energy and build more resilient infrastructure.

Property Disposal – Sale of properties the city vacates through consolidation. Page 51 discusses how the city values and can consider re-purposing assets, some of which hold monetary value.

FINANCIAL TOOLKIT

Weighing the Options

The financing mechanisms and different funding streams each come with various tradeoffs that must be weighed against each other along with their impact on other city-wide projects, initiatives and goals. The following are some of the key factors when assessing tradeoffs between options. These considerations will be further analyzed and shared through the detailed Consolidation Master Plan and Financial Strategy development.

Risk – assumed by either the city or outside investor to ensure the assets performance.

Cost of $ - the cost of financing options and specifically the interest rate we pay on borrowed money.

Ownership or control of asset – the city's flexibility and ability to change or adapt easily in the future.

Voter Approval – some financial mechanisms require while others do not, impacting how quickly the city can act on opportunities.

On/Off Balance Sheet - is the asset and debt carried on the balance sheet or not. On balance sheet can present a risk to the credit rating but its advantageous to leverage assets as collateral for other city projects.

Scope – economy of scale of project can greatly impact outside investor interest and payback periods.

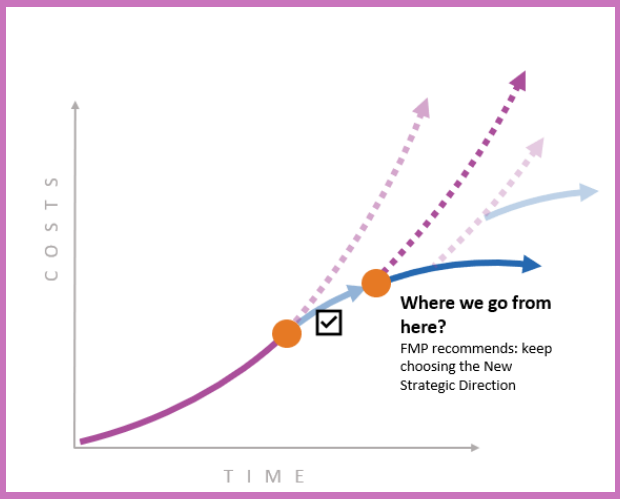
Time – specifically when money is needed to advance an aspect of development it is directly impacted in that current moment by the fiscal health of the city, and overall economic factors such as interest rates, material and labor costs

FUNDING PRIORITIES

The city is faced with an aging building portfolio that currently is seeing exponentially increasing unfunded liability costs that will be roughly $95 million by 2030. Significant investments in the buildings are required no matter what course of action is chosen, however the current course we are on will spend the money and result in not meeting any of the city's goals. Consolidation – whether pursued aggressively or over time – drives towards meeting the city's climate goals and social values in addition to being fiscally responsible. **The city has already made a strategic decision towards consolidation of a Western City Campus at Alpine-Balsam.** Continuing this strategic direction towards consolidation of an Eastern City Campus, the city will experience significant efficiency, financial savings, and achievement of climate and social goals in stark contrast to maintaining the current path.

The city has already departed from current coarse by taking the first step to consolidate to a new Western City Campus at Alpine-Balsam. An annual debt services has been programmed to begin when construction starts for the renovation of the Pavilion building and associated site improvements. Design work to create a Western City Campus at Alpine-Balsam is planned to begin in the fall of 2021.

The purpose of the Facilities Master Plan is to establish intent to continue to pursue this **new strategic direction** to consolidate services to two centralized campuses within the city. Following acceptance of the 2021 FMP, a detailed Consolidation Master Plan and Financial Strategy will be developed that demonstrate specific development options and phases, accompanied by the financial mechanisms that can be leveraged in each option to realize the goals of this initiative. The work will outline an approach – both to development and financing – to achieve consolidation by 2030 and then evaluate alternatives and implications to prolonging development.



A Consolidation Master Plan and Financial Strategy is a project and process that will provide opportunities for public review and input. At a minimum, funding aspects will be brought through the annual budgeting process and development of buildings and infrastructure on the two sites will be carried out through the city's regulatory planning process.

FUNDING APPROACHES

This master planning process has highlighted key elements that can be expected at these three funding levels. Further exploration of the financial strategy will fill in the gaps.

Fiscally Constrained Approach (Current Condition)

- Limited strategy for just a few buildings, not strategic approach for remaining buildings resulting in high risk of unplanned failure in buildings not being consolidated.
- Need at least $95 million by 2030 to keep infrastructure from failure, yet this approach will not result in meeting any climate or social goals.
- Spending in this scenario will be reactive, sporadic, and often unplanned.
- This approach does not result in energy or operational savings to fund future investments, minimizing financing tools available to address infrastructure needs.
- The reactive dollar is weaker than the proactive dollar. This is the least fiscally responsible approach.

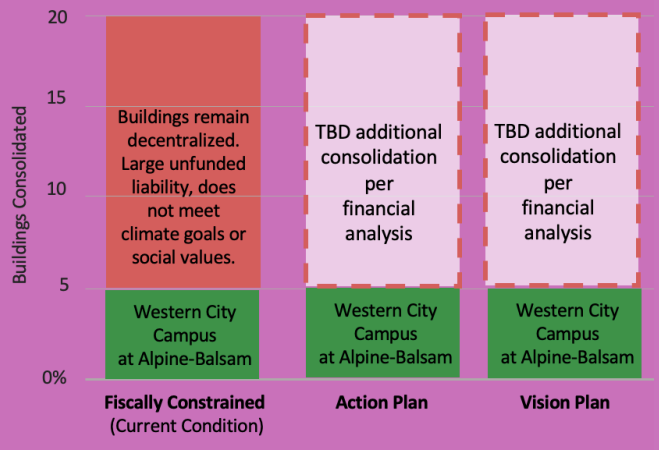
There are two general approaches to advancing consolidation that will be accompanied by a funding strategy. However, before a throughout financial assessment is completed, it is premature to suggest which is an "Action Plan" or "Vision Plan." Following are key characteristics of the two approaches that will be evaluated in further detail following adoption of the Facilities Master Plan.

ACT NOW- Pursue Consolidation by 2030: will result in lowest total cost of ownership and will most quickly advance the city towards meeting climate goals and social values in city buildings.

- Strategic approach to move out of failing buildings before investing more in them.
- Meet environmentally sustainable pillar values and climate commitment goals in buildings.
- Leverage most financing tools towards project to realize goals.
- Hedge against inflation and construction escalation costs.

PROLONGUED APPROACH – Advance Consolidation More Incrementally Over Longer Timeframe: will advance city towards environmental and social goals by incurs greater risks along the path**.**

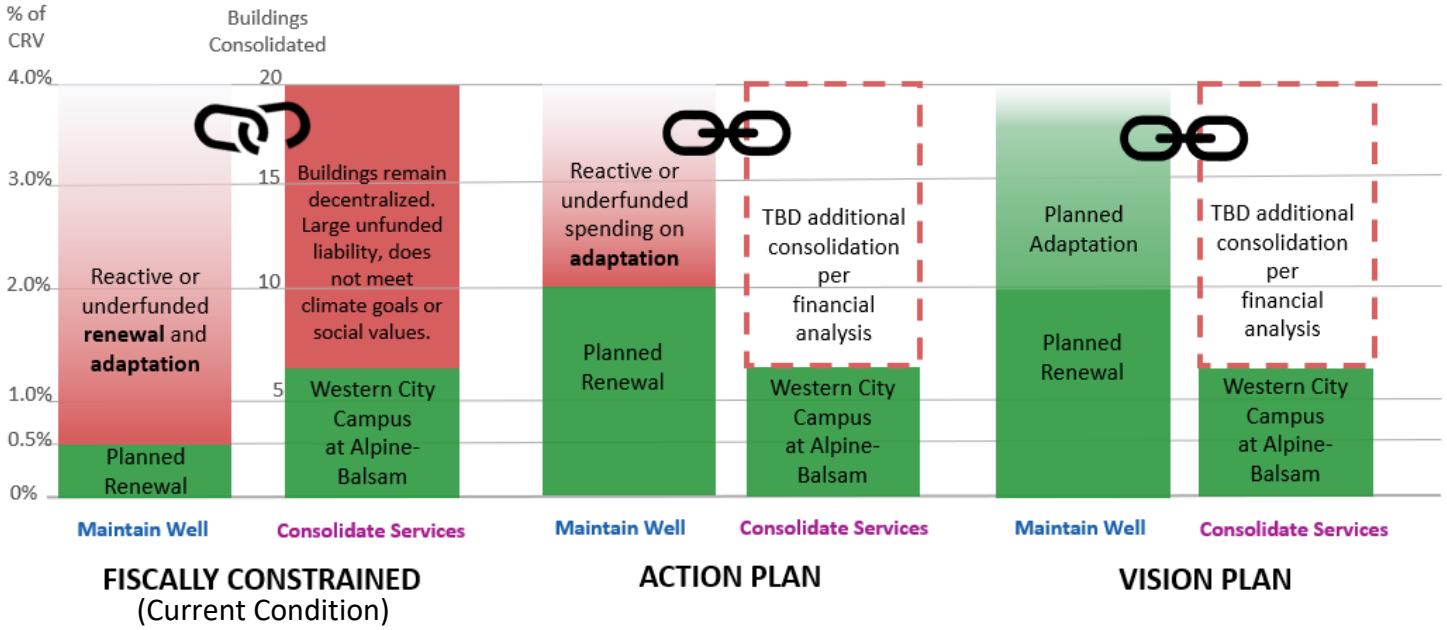
- Strategic approach to move out of failing budlings but may require large investments in current buildings as systems will fail before buildings can be vacated.
- Less financing tools available to deliver project, which risks not fully realizing total consolidation.
- Risks of inflation and construction escalation.
- Risk realizing fully consolidation.
- Risk being able to deliver on environmental and social pillar values.



Summary of Funding Priorities

These two Key Initiatives – Maintain Well and Consolidate Services – are linked together in the ultimate success towards the goals laid out in this plan. With advancement of consolidation, buildings are put on a path towards being maintained well which benefits the entire building portfolio.

FISCALLY CONSTRAINED (Current Condition) - The current funding approach for facilities provides less than adequate planned renewal funding which in turn requires annual one-time contributions from departments, the general fund, and bonds to augment the annual capital investment. This results in uneven investment in city facilities and a tendency to allow facilities to accumulate unfunded liabilities (through facility and infrastructure degradation). This master plan provides the Facilities Department with clear priorities for maintaining and constructing facilities, but without a consistent funding source as recommended in the Maintain Well Key Initiative it will be difficult to fully implement this



ACTION AND VISION PLAN – The Maintain Well Key Initiative recommends a funding plan for newly invested in city buildings that will result in significant savings over current spending in operations and maintenance (O&M) budgets. Currently, the city spends ~$11/sf from O&M budgets to maintain buildings, which is subsidizing a lack of adequate funding for building renewal. Industry standards on new high performing buildings indicate annual O&M should be about ~$5/sf and the city's experience on the recently renovated Brenton Building demonstrates costs to operate and maintain that building are beating those industry standards. **Implementation of the Key Initiative to Consolidate Services relies on these O&M savings attained through implementation of the Maintain Well Key Initiative.** In this way these Key Initiatives are linked together and success of one is predicated on the success of the other.

Implementing the Funding Priorities

The Consolidation Initiative provides a strategy for roughly 25% of the building portfolio to transition out of current buildings and away from a need to invest further in these buildings. A Consolidation Master Plan and Financial Strategy will be developed following master plan acceptance to provide options for financing and implementation, which will be the funding plan for these buildings.

Remaining buildings in the portfolio will be assessed using the **Decision-Making Framework** (page 50) for which **Strategic Action** (page 68-72) should be taken to address deficiencies and capital needs. As warranted, Vision Plan levels of funding may be requested, with justifications, on certain buildings or the consolidated campuses.

Keys to Success

The key to advancing the Consolidate Services Initiative and to a slightly lesser degree the Maintain Well Initiative is to use savings from reduced energy, operating and maintenance costs to help finance facility investments. The tools described in the Financial Toolkit can only be fully leveraged if quantified monetary savings from efficiencies are captured and used to repay debt in any of the scenarios presented. Using this principle, it is likely that the master plan key initiatives could be viewed as projects that would support its own financing (through any of the mechanisms in the toolkit). Holding onto these savings from improved operations and rededicating them back to funding facility improvements is essential to the success of the master plan. Siphoning savings from facilities towards other city priorities will undermine advancement of these Initiatives and likely result in continued degradation of city assets and continuation of a piecemeal, reactive approach to facilities.

As part of the detailed financial strategy developed for the Consolidate Services Initiative, the Facilities Department will also make recommendations to restructure and centralize the funding model for facilities rehabilitation, replacement, and maintenance that is commensurate with the needs identified through this master planning process. Initial estimates of the overall portfolio need are approximately $11 million annually as shown on the charts on page 34 of this document.

STRATEGIC ACTION

Targeted Improvements

Targeted improvements in buildings includes discrete equipment or systems replacement, limited remodels, and small additions. Key characteristics of these improvements are:

- Improvements required to limited systems.
- Small disruption and low cost to achieve measurable value.

Today, there are city buildings that are in good condition and would not be considered as part of a consolidation strategy that require targeted improvements to meet city-wide goals and maintain an FCI of 10%.

As other buildings are built or improved because of the recommendations from this master plan there will come a time when they require targeted improvements to meet current needs of the community and keep systems in optimal condition.

Prior to the FMP, this has been the predominate approach in all city buildings, to fix what is breaking right now. Targeted improvements will now be recommended in buildings taking better into consideration the improvements impact on TCO, other city-wide goals, and the buildings fate. The FMP guides appropriate levels of investment in these types of improvements to prolong a buildings life as part of the annual Capital Improvement Program (CIP) process.

Main Library – Recent building controls upgrade.

North Boulder Recreation Center – Targeted Improvements for HVAC equipment and in the building, envelope will be recommended.

RECOMMENDATIONS

- Prioritize buildings for targeted improvements based on the Facilities Master Plan Key Initiatives using the Decision Making Framework.
- Incorporate into annual CIP

STRATEGIC ACTION

Deep Retrofit

A Deep Retrofit, commonly known in the industry as a Deep Energy Retrofit, is a whole building approach to renewal and revitalization of a structure that results in significant energy efficiency – normally more than 50%, and extensive renovation and refresh of the interior which meets needs and goals of the community and population the building serves. A Deep Retrofit is highly disruptive, even if limited to a wing or area of a building. It is highly invasive from a construction perspective and requires full shut-down of area or building to complete. Conducting these types of retrofits while a building is occupied can be done but is normally cost prohibitive.

The city has buildings that are well sited in the community, are historic, and need to be preserved, but require extensive renovation and upgrades to meet financial, environmental and social goals. A Building Assessment as discussed in Section 2 can identify good candidates for a Deep Retrofit.

CASE STUDY

The city completed a Deep Energy Retrofit of the Brenton Building back in 2018. The building was vacant at the time. The exterior envelop was poorly performing, the mechanical systems were old and inefficient. The layout inside was carved up as numerous medical suits and a surgery center. The retrofit consisted of gutting the building down to the concrete structure and original exterior shell. All mechanical systems were removed and replaced with an all-electric variable refrigerant flow system.

A high-performing building envelop was built back to seal and highly insulate the building. In addition to making the building 80% more efficient, many other guiding principles were achieved through the renovation including provision of a more welcoming customer experience and better workplace environment for staff.

Following the renovation of the Brenton Building and with new insights into what is required to convert poorly performing buildings into high-performing ones that enable the city to meet its climate commitment goals – the city conducted holistic building assessments of three of its buildings that need major equipment and systems renewals. The analysis evaluated two different paths – optimized energy savings and optimized cost efficiency. The studies of the Penfield W. Tate II Municipal Building, East Boulder Community Center and the Municipal Service Center – Building A can be found in the appendix.

RECOMMENDATIONS

The Facilities Department has identified two buildings that are recommended for Deep Retrofits:

- Penfield W. Tate II Municipal Building
- East Boulder Community Center (EBCC)

Funding for EBCC is being considered currently as part of the potential Community, Culture, and Safety tax renewal.

Funding for the Penfield W. Tate II Municipal Building could be considered as part of the larger consolidation effort.

The Facilities Department will collaborate with other departments and coordinate with goals of their Master Plans to identify other buildings that should be considered for Deep Retrofits.

STRATEGIC ACTION

Build New

The city will need to build new buildings over the coming decades, both for consolidation and for more specific uses, such as a new fire station. New buildings will be durable and long lasting, energy efficient, and flexible for changing needs. New buildings will also be designed to meet the guiding principles while also meeting the specific needs of their department's programs.

Built to last, built for future generations. New building in the city should be designed to these goals. The city will need to build new buildings over the next decade and beyond – both for consolidation and more specific use buildings, like Fire Stations when the city is required to bring services closer to its residents. New buildings should strive to meet the FMP guiding principles while meeting the specific needs of their department's programs.

NEW BUILDING CHARACTERISTICS:

- Built to last: structures that are durable and long-lasting.
- Built for adaptability: building form that lends itself to alternate uses, regular and as open as possible.
- Systems adaptations: plan for future technology during building renewal by making systems easily accessible.
- Build high-performing buildings that are predictive, connected, and responsive.
- Net zero construction.
- Reduction of embodied energy over life cycle: make material and systems choices that lower the total embodied energy of the building over its life span.
- Build for health: buildings are one of the biggest contributing factors to human health. As air quality degrades, indoor environments will be critical to resiliency.
- Build for the community we serve and the people working in the buildings.

Existing buildings in this category that are slated for replacement will be prioritized when identified in other departments' master plans.

EXAMPLES

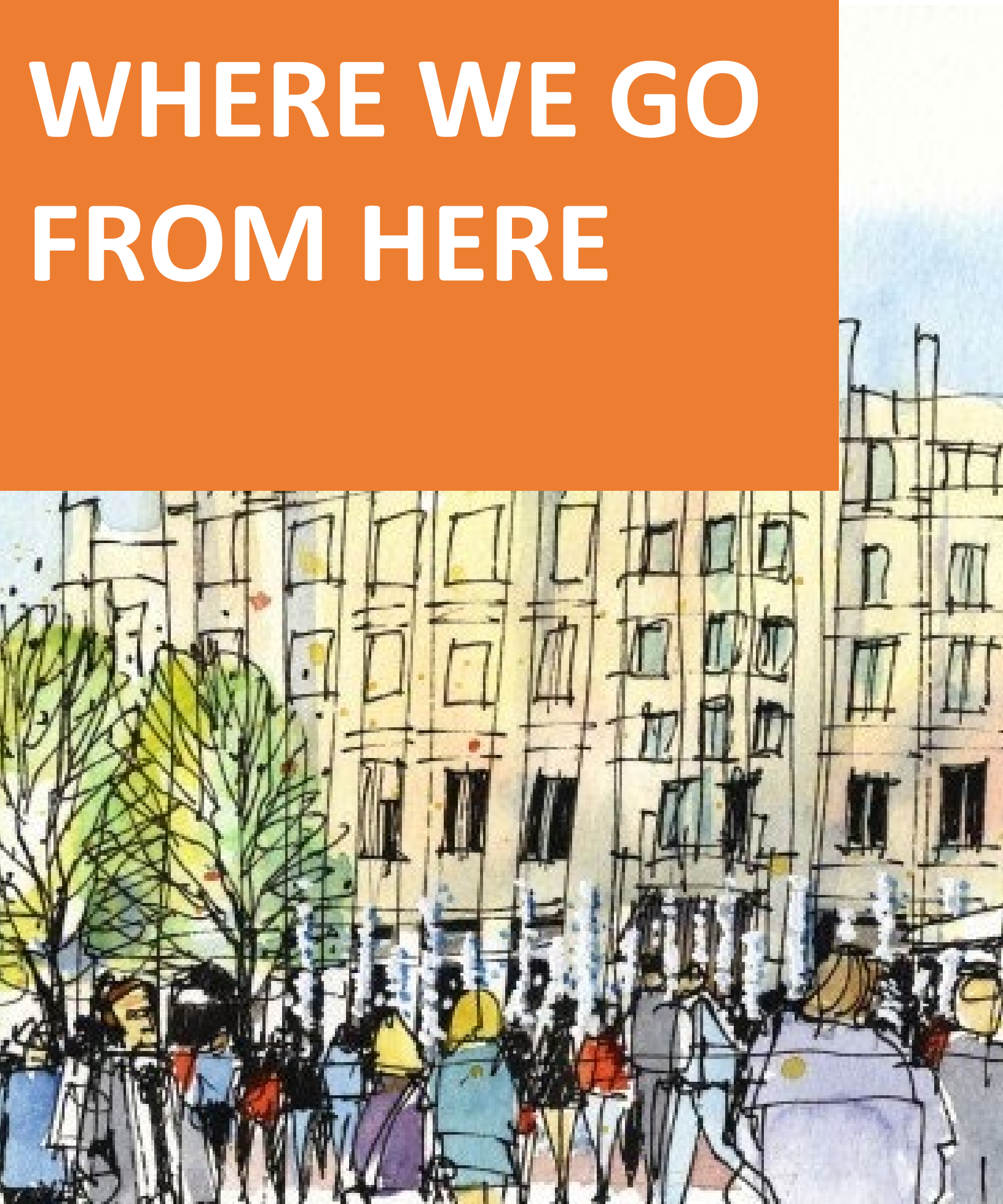
North Boulder Branch Library

Fire Station 3

RECOMMENDATIONS

Work with individual departments to use the FMP to assess their facility recommendations to build new and then build those building with the FMP as a guide.

WHERE WE GO FROM HERE



Updates to the Facilities Master Plan

The Facilities Department is already looking forward to the update of the Facilities Master Plan. The FMP update will be a tremendous opportunity to report on the progress of the Key Initiatives from this first FMP. Now, with many data collection tools and key performance metrics in place, it will be possible to measure quantifiably progress on consolidation, climate goals in buildings, and how far down the path we are towards better financial stewardship of city buildings. We anticipate sharing case studies and lessons learned along the way.

This first Facility Master Plan's overarching objective is to point city building infrastructure in a new direction and create a common and holistic approach in how city buildings are designed, built, operated, maintained and funded. Now on a new path, in subsequent updates we can dive deeper into some of the details around building standards, service delivery, and fine tune our operations and maintenance of buildings.

Future updates could include the following:

- Revised funding structure that reflects how we build, use, operate and maintain buildings.
- Guidelines and standards for all buildings grounded in our guiding principles.
- Annual budgeting process and determine additional funding to achieve the FMP.
- Leased building / properties strategic plan that identifies mission, vision, and values for when the city is involved in leasing.

We are on the road to good financial stewardship of one of our most expensive and asset categories – our buildings. The path created in this plan leads us to operational excellence.

Immediate Next Steps

With guidance from City Council, the Facilities Department will be working on these next steps:

1. Implementing workplace transformation and hybrid work in several key city buildings and bringing staff and customers back to these buildings.
2. Develop Consolidation Master Plan and Financial Strategy to demonstrate phased development options accompanied by financial mechanisms that support the various ways to realize full consolidation.
3. Completing the redevelopment of the Western City Hub at Alpine-Balsam and realizing Phase 1 of the consolidation strategy.
4. Proceeding with redevelopment of the Municipal Service Center site as the Eastern City Hub and coordinating with the East Boulder Subcommunity Plan and other Department Master Plan goals for this area.
5. Using the Facilities Department website to show dashboards linked to the Asset Planner database to demonstrate, in real time, the conditions of city buildings.

Conclusion

This Facilities Master Plan creates a new vision to **enrich lives through buildings**. The actions of this City Council have paved the way for a new legacy in our city buildings that anticipates the needs of tomorrow while addressing the most immediate needs of today.

The Facilities Department has a clear mission: **to care for our buildings now and imagine the buildings of our future.** And we have a clear set of guiding principles to hold as a common standard across all city buildings.

We are on the road to good financial stewardship of one of our most expensive and valuable asset categories – our buildings. The path created in this plan leads us to operational excellence.

APPENDIX

Appendix A - Glossary

Adaptation Needs / Adaptive Renewal: The process of funding and repurposing buildings for viable new uses and modern functions, other than those originally intended to address present-day renewal needs. Building adaptations allows for a building's continued use and helps it remain a viable community asset. An example would be compliance with new building codes or deep retrofits to achieve sustainability goals.

Asset Sustainability Target: A measure of good financial stewardship of buildings, typically defined as an FCI threshold of 10%. This states that less than 10% of a buildings CRV is in a state of deferral.

Building Life Cycle: Refers to the view of a building over the course of its entire life, taking into consideration the design, construction, operation, and disposal of the asset.

Capital Improvement Program (CIP): A six-year plan designating key investments in major city infrastructure or facilities. The plan includes estimates of project funding requirements as well as revenue projections. The CIP serves as a statement of the city's long-term investment priorities.

Current Replacement Value (CRV): The financial resources needed to reconstruct a facility in like kind given prevailing labor and supply costs.

Deep Energy Retrofit: A whole-building approach to energy conservation through holistic improvements to the entire energy system within a building. For example, HVAC technology improvements drive efficiency, but further and deeper savings can be achieved when paired with thermal envelope improvements and controls.

Deferred Maintenance: Refers to the practice of deferring, or delaying, and backlogging capital renewal needs within buildings due to budget limitations or lack of funding.**:**

Energy Savings Performance Contracting: A budget-neutral approach to make building improvements that reduce utility use and increase operational efficiency.

Facility Condition Index (FCI): An industry standard metric used to objectively assess the current and projected condition of a building. Defined as the ratio of current year renewal needs to current building replacement value.

Key Performance Indicators (KPI): A quantifiable measure used to evaluate the success of an activity, practice, etc., in meeting objectives for performance.

Operations and Maintenance (O&M): **T**he functions, duties and labor associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life.

Predictive Maintenance: A proactive maintenance technique, using monitoring equipment, data-informed algorithms, and software, to predict when failure will occur. By current estimates, predictive maintenance techniques can increase the useful life of buildings and systems by 20-25%.

Total Cost of Ownership (TCO): A metric that determines the overall cost of a building asset throughout its lifecycle. The calculation methodology considers the design and construction costs, in addition to the operational costs over the asset's lifespan.

Unfunded Liability: The projected debts accumulated over time associated with capital renewal within the building asset, less the current and projected funding available to address the lifecycle needs of the building.

Appendix B – List of Facilities Included in the Plan

Asset	Building Use	Address	Current Replacement Value (CRV)	Facility Size (sqft)	For Consolidation Buildings	General Fund	Dedicated Fund	Non-city Funding
Valmont Butte		6379 Valmont Rd			No	X	X	
Boulder Reservoir Boat House	Accessory	5151 North 51st	$534,350	2,000	No	X	X	
Boulder Reservoir Maintenance Building	Accessory	5151 North 51st	$1,870,225	5,000	No	X	X	
Flatiron Golf Pro Shop	Accessory	5706 Arapahoe Ave	$1,671,607	4,469	No	X	X	
Pearl St Mall Public Restrooms	Accessory	1303 Pearl St	$246,870	924	No	X	X	
Pearl St Mall Visitor Kiosk	Accessory	1300 Pearl St	$130,916	490	No	X	X	
Radio Tower Equip. Shelters	Accessory	N/A	$90,840	340	No	X		
Salberg	Accessory	19th & Elder (3045 19th)	$1,366,760	3,654	No	X	X	
Tom Watson	Accessory	6180 N 63rd St	$650,625	1,522	No	X	X	

Fire Station 1	Fire Station	2441 13th St	$4,667,601	7,941	No	X		
Fire Station 2	Fire Station	2225 Baseline Rd	$2,541,903	4,757	No	X		
Fire Station 3 (Old)	Fire Station	1585 30th St	$3,291,596	6,160	No	X		
Fire Station 4	Fire Station	4100 Darley Ave	$1,869,156	3,498	No	X		
Fire Station 5	Fire Station	4365 19th St	$1,985,645	3,716	No	X		
Fire Station 6	Fire Station	5145 N 63rd St	$1,835,492	3,435	No	X		
Fire Station 7	Fire Station	1380 55th St	$2,715,032	5,081	No	X		
Fire Station 8 (Wild Lands)	Fire Station	6075 Reservoir Rd	$6,623,161	11,268	No	X		
Fire Training Center	Fire Station	6055 Reservoir Rd	$10,395,566	17,686	No	X		
Fire Truck Storage Building… EcoCycle	Fire Station	5050 Pearl St	$1,956,255	5,230	No	X		
BMoCA	Leased	1750 13th St	$9,671,414	16,454	No	X		X
Chautauqua Dining Hall	Leased	900 Baseline Rd	$3,077,642	5,236	No	X	X	X
Dairy Center	Leased	2590 Walnut St	$19,493,302	33,164	No	X		X
Harbeck-Bergheim House + Beach Park	Leased	1206 Euclid Ave	$3, 154,054	5,366	No			X

Mustards Last Stand	Leased	1719 Broadway	$-	772	No	X		X
Pottery lab	Leased	1010 Aurora Ave	$1,890,317	3,216	No			X
Resource Center	Leased	6400 Arapahoe Rd	$10,857,992	25,400	No			X
Tea House	Leased	1770 13th St	$2,289,423	3,895	No	X		X
Carnegie Library	Library	1125 Pine St	$3,174,039	5,400	No	X		
Main Library	Library	1001 Arapahoe Ave	$45,291,506	84,760	Yes	X		
Meadows Library	Library	4800 Baseline Rd	$4,591,776	7,812	No	X		
North Boulder Branch	Library	4600 Broadway	$293,893	500	No	X		
Reynolds Library	Library	3595 Table Mesa	$6,095,918	10,371	No	X		
Atrium	Office	1300 Canyon Blvd	$5,536,721	12,952	Yes	X		
Brenton Building	Office	1136 Alpine Ave	$9,233,568	21,600	Yes	X		
Child, Youth and Family Services	Office	2160 Spruce St	$2,229,308	5,215	Yes	X		
Community Vitality (1500 Pearl)	Office	1500 Pearl St	$2,351,140	5,500	Yes		X	
FAM & P&R Bldg	Office	1720 13th St	$2,334,041	5,460	Yes	X	X	

Iris Center	Office	3198 Broadway	$6,394,673	14,959	Yes	X	X	
Justice Center	Office	1777 6th Street	$3,103,505	7,260	Yes	X		
Municipal Building	Office	1777 Broadway	$9,715,765	22,728	Yes	X		
New Britain	Office	1101 Arapahoe Ave	$5,689,759	13,310	Yes	X		
OSMP Cherryvale - North Building	Office	66 South Cherryvale Rd	$2,325,491	5,440	Yes		X	
OSMP Offices Annex (Red Deer Dr)	Office	7315 Red Deer Drive	$4,321,823	10,110	Yes		X	
Park Central	Office	1739 Broadway	$8,074,670	18,889	Yes	X		
The Edge	Office	1301 Arapahoe	$806,227	1,886	Yes	X		
West Age Well Center	Office	909 Arapahoe Dr	$9,258,202	15,751	Yes	X	x	
OSMP Hub	Office/Leased	2520 55th St	$12,824,400	30,000	Yes		X	
10th & Walnut	Parking	10th & Walnut	$28,277,802	252,000	No		X	
11th & Spruce	Parking	1100 Spruce	$691,171	7,186	No		X	
1500 Pearl	Parking	1500 Pearl St	$1,579,902	16,426	No		X	
Broadway Parking Structure	Parking	2655 N Broadway	$11,372,005	118,233	No		X	

Randolf Center (Parking)	Parking	1100 Walnut St	$15,030,902	156,274	No		X	
RTD	Parking	14th And Walnut	$9,618,300	100,000	No		X	
Public Safety Center	Police	1805 33rd St	$52,304,636	88,986	Yes	X		
East Boulder Community Center	Rec Center	5660 Sioux Dr	$32,379,312	55,087	No	X	X	
North Boulder Rec Center	Rec Center	3170 Broadway	$36,540,242	62,166	No	X	X	
South Boulder Rec Center	Rec Center	Gillaspie Dr	$20,926,909	35,603	No	X	X	
Boulder Reservoir Visitor Services Center	Rec/Seasonal	5151 North 51st	$-	7,500	No	X	X	
Foothills Maintenance Shop	Rec/Seasonal	800 Cherry Ave	$932,761	2,182	No	X	X	
Mapleton Ballfields Building	Rec/Seasonal	2900 Mapleton	$240,458	900	No	X	X	
Pleasant View restrooms	Rec/Seasonal	3805 47th St	$141,603	530	No	X	X	
Scott Carpenter - Athletic Office	Rec/Seasonal	1505 30th St	$747,235	1,748	No	X	X	
Scott Carpenter Bathhouse	Rec/Seasonal	1505 30th St	$3,459,703	5,886	No	X	X	

Spruce Pool Bathhouse	Rec/Seasonal	2102 Spruce St or 2040 21st St	$773,739	1,810	No	X	X	
Stazio Ballfields Buildings	Rec/Seasonal	2445 Stazio Dr	$1,375,951	5,150	No	X	X	
Valmont Park	Rec/Seasonal	5110 Valmont Rd	$115,420	432	No	X	X	
Fleet Services	Service	5064 Pearl St	$10,624,588	24,854	Yes		X	
MSC 'A' Building	Service	5050 Pearl St	$14,949,403	34,971	Yes		X	
MSC 'B' Buildings	Service	5050 Pearl St	$10,763,091	25,178	No		X	
OSMP Cherryvale - South Building	Service	66 South Cherryvale Rd	$2,261,369	5,290	No		X	
Park Operations / Forestry	Service	5200 Pearl St	$4,306,006	10,073	Yes	X	X	
Pleasant View maintenance shop	Service	3805 47th St		200	No	X	X	
Roadway Building	Service	4990 Pearl St	$1,709,920	4,000	No	X	X	
Tantra Park Maintenance Shop	Service	585 Tantra Dr	$1,308,944	3,062	No	X	X	
The OSMP Shop	Service	7455 Red Deer Drive	$3,429,245	8,022	Yes		X	

Appendix C – Guiding Principles, BVCP Policies, and Industry References

Economical Guiding Principle

Industry and Community Resources:

- United States General Services Administration – High Performance Green Buildings
- City of Boulder Capital Improvement Program
- Ameresco Asset Planner
- City of Boulder Climate Commitment
- BVCP Policy 5.01 – Revitalizing Commercial & industrial Areas
- BVCP Policy 5.08 – Funding City Services & Urban Infrastructure

Sustainable Guiding Principle

Industry and Community Resources:

- City of Boulder Energy Conservation Code (COBECC)
- USGBC LEED
- Green Globes Building Certification
- ILFI's Living Building Challenge
- ILFI's Net Zero Energy Building Certification (NZEB)
- GBCI's The Sustainable SITES Initiative
- IWBI's WELL Building Standard
- International Green Construction Code (IgCC)
- Climate Commitment
- Environmental Sustainability Plan (County)
- Environmental Resource Element (County)
- Zero Waste Strategic Plan
- Solid Waste Element & Zero Waste Action Plan (County)
- Sustainable Materials Management Element (County)
- Water Efficiency Plan
- BVCP Policy 3.01 Incorporating Ecological Systems into Planning
- BVCP Policy 3.11Urban Environmental Quality
- BVCP Policy 3.13 Water Conservation
- BVCP Policy 3.26-3.32 Sustaining & Improving Water & Air Quality
- BVCP Policy 4.03-4.06 Energy Conservation & Renewable Energy
- BVCP Policy 4.07 & 4.08 Energy-Efficient Land Use & Building Design
- BVCP Policy 4.09-4.11 Waste Minimization, Recycling & Sustainable Purchasing
- BVCP Policy 4.01 Climate Action: Reduce GHG Emissions
- BVCP Policy 5.12 Sustainable Business Practices
- BVCP Policy 6.11-6.19 Integration of Land Use and Transportation with Sustainability Initiatives

- BVCP Policy 6.20 Improving Air Quality & Reducing GHG Emissions

Resilient Guiding Principle

Industry and Community Resources:

- https://www.resilientdesign.org
- https://www.usace.army.mil/Missions/Sustainability/Building-Resilience/
- https://www.sciencedirect.com/book/9780128162408/optimizing-community-infrastructure
- https://www.iccsafe.org/about/periodicals-and-newsroom/resilience-in-the-buildings-codes/
- https://betterbuildingssolutioncenter.energy.gov/resilience/resilient-building-design
- Fire-Rescue Master Plan
- Resiliency Strategy
- 2018 Multi-Hazard Mitigation Plan Update
- All-Hazards Recovery Plan (OEM)
- Disaster Debris Management Guide (State)
- Police Master Plan
- Forest & Grassland Ecosystem Management Plans (OSMP)
- BVCP Policy 3.16-3.25 Protecting Geologic Resources & Reducing Risks from Natural Hazards
- BVCP Policy 4.02 Climate Adaption Planning
- BVCP Policy 5.15 Economic Resilience
- BVCP Policy 6.22 Emergency Response Access
- BVCP Policy 8.01 Providing for a Broad Spectrum of Human Needs (Resiliency)
- BVCP Policy 8.09 Resilience in Public Safety & Risk Prevention

Experiential Guiding Principle

Industry and Community Resources:

- Community Cultural Plan
- Water Utility Master Plan
- Integrated Pest Management Policy
- Historic Preservation Plan
- BVCP Policy 1.06 City's Role in Managing Growth & Development
- BVCP Policy 1.09 & 1.10 Growth Requirements & Jobs: Housing Balance
- BVCP Policy 1.11 Enhanced Community Benefit2.01 Unique Community Identity
- BVCP Policy 2.03 Compact Development Pattern
- BVCP Policy 2.20 Role of the Central Area
- BVCP Policy 2.22-2.26 Public Realm, Urban Design & Linkage
- BVCP Policy 2.28 Leadership in Preservation: City & County Owned Resources
- BVCP Policy 2.33 & 2.34 Sensitive Infill & Redevelopment / Design of Newly Developing Areas

- BVCP Policy 2.36 & 2.37 Physical Design for People & Environmentally Sensitive Urban Design
- BVCP Policy 2.40 & 2.41 Design Excellence for Public Projects & Enhanced Design for All Projects
- BVCP Policy 3.28 Drinking Water
- BVCP Policy 3.31 Wastewater
- BVCP Policy 3.32 Protection of Air Quality
- BVCP Policy 8.08 Health & Well Being
- BVCP Policy 8.21, 8.22 & 8.23 Arts & Cultural Facilities, The Arts & Community Culture & Public Art

Accessible & Equitable Guiding Principle

Industry and Community Resources:

- Federal ADA Standards for Accessible Design https://www.ada.gov/regs2010/2010ADAStandards/2010ADAstandards.htm
- The Principles of Inclusive Design by the Commission for Architecture and the Built Environment https://www.designcouncil.org.uk/sites/default/files/asset/document/the-principles-of-inclusive-design.pdf
- Center for Inclusive Design and Environmental Access
- Design for All Foundation
- Institute for Human Centered Design
- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
- National Endowment for the Arts
- BVCP Policy 5.19 Diverse Workforce, Education & Training
- BVCP Policy 6.01-6.06 Complete Transportation System
- BVCP Policy 6.08 Regional Travel Coordination
- BVCP Policy 8.02 Regional Approach to Human Services
- BVCP Policy 8.03 Equitable Distribution of Resources
- BVCP Policy 8.04 Addressing Community Deficiencies
- BVCP Policy 8.05 Diversity
- BVCP Policy 8.06 Mutual Respect
- BVCP Policy 8.10 Community Connectivity & Preparedness
- BVCP Policy 8.13 Support for Community Facilities
- BVCP Policy 8.18 & 8.19 Libraries & Information Resource/Community Center

Functional Guiding Principle

Industry and Community Resources

- International Facility Management Association (IFMA)
- Functional Performance Test (or FPT)
- ASHRAE Standards and Guidelines
- 1.01 Regional & Statewide Cooperation
- 1.03 &1.04 Collaboration in Service Delivery & Compliance with Land Use Regulations
- BVCP Policy 1.14 Definition of New Urban Development
- BVCP Policy 1.18 Provision of Urban Services in the Boulder Valley
- BVCP Policy 1.19 Definition of Adequate Urban Facilities & Services
- BVCP Policy 1.20 Phased Extension of Urban Services/ Capital Improvements Plan
- BVCP Policy 1.21 Channeling Development to Areas with Adequate Infrastructure
- BVCP Policy 1.22 Growth to Pay Fair Share of New Facility Costs
- BVCP Policy 1.23Adjacency of Open Space/Utility Impacts
- BVCP Policy 1.24 Multi-Purpose Use of Public Lands
- BVCP Policy 1.25-1.28 Utilities
- BVCP Policy 2.39 Outdoor Lighting/Light Pollution
- BVCP Policy 8.07 Safety

Appendix D – Current Building Status

To evaluate the status of existing facilities, the Facilities Master Plan created a scoring system to rank buildings based on how well each one meets the six guiding principles. The scoring is intended to be dynamic and has been designed to guide the city with an enhanced decision development framework as it prioritizes buildings for renovation and helps move them from needing "Deep Retrofits" or "Targeted Improvements" to a "Maintain Well" status. Developing strategies based on multiple categories of data enables improved planning and decision making for stakeholders as we seek to enrich community living through our buildings.

Developing strategies for our existing buildings

Our approach and methodology to establish a building score involved developing key performance indicators (KPI), a logic behind how to score each KPI, and a weighting system to help emphasize the importance of certain traits by department or building type. In total, we identified nineteen (19) unique KPI's for the city buildings. Each building was given a score of 1 to 5, where 1 is the worst score and 5 is the best score possible relative to a group of similar buildings, and those scores were combined within the weighting system to establish a rank by core value and an overall building score.

Key Performance Indicators

The table below provides definitions for each of the KPI's identified during the process and by which the buildings were measured against:

Guiding Principle	KPI Label	KPI Description	Definition
Economical	KPI 1	Capital Needs per Square Foot	A relative measure of deferred maintenance and 5-year capital needs forecasted for a facility
Economical	KPI 2	Operating Costs per Square Foot	A relative measure of the cost to operate and maintain a facility (inc. minor maintenance, custodial, utilities)
Economical	KPI 3	Facility Condition Index (FCI)	An industry standard risk metric comparing the amount of deferral relative to the current replacement value of an asset

Sustainable	KPI 4	MEP Deferral Backlog (%)	The proportion of deferred maintenance backlog which can be attributed to mechanical, electrical, and plumbing systems within a facility
Sustainable	KPI 5	Building Energy Use Intensity (EUI)	An industry benchmark standard for measuring the relative energy usage within a facility by gross floor area
Sustainable	KPI 6	Carbon Footprint	The calculated carbon emissions a facility produces from its energy and utility usage, measured in metric tons per year
Resilient	KPI 7	Flood Vulnerability	Assesses a facility's proximity to the 100-year floodplain. Could the facility be surrounded by potential flood waters making access into or out of the facility extremely difficult, if not impossible, during a flood event?
Resilient	KPI 8	Wildfire Vulnerability	Assesses a facility's proximity to a fire zone (i.e., West of Broadway) and the challenges that might be faced by the facility during a wildfire event.
Resilient	KPI 9	Disaster Readiness	Is the facility disaster response ready or does it require further study and investment?
Resilient	KPI 10	Community Shelter	Has the facility been identified as, and can it serve as, a community shelter?
Resilient	KPI 11	Essential Building	Has the facility been identified as an "essential" building?
Accessible & Equitable	KPI 12	ADA Compliant	Assesses whether a building is fully compliant to today's standards or somewhat compliant based on previous standards. If non-compliant, an audit is required to assess whether a facility can be upgraded or whether it would be cost prohibitive to do so.
Accessible & Equitable	KPI 13	All inclusive	Considers whether a facility "serves all people"? Is it all inclusive and welcoming?
Accessible & Equitable	KPI 14	Multi-modal transport	Can the facility be accessed by multi-modal means? How limited are the options to arrive at, and access, the facility?
Functional	KPI 15	Maintenance and Operability of Facility	Assesses whether a facility is easy to operate and maintain. This measures several criteria including age of facility, redundancy, access to materials, frequency of failure, and the intrusive nature of the maintenance to be performed
Functional	KPI 16	Facility Adaptability	Assesses how easily adaptable a facility is from its current form, considering the costs and functional challenges associated with adaptive renewal.
Functional	KPI 17	Facility Security	Considers how secure a facility is in its current state from a physical, preventative, and technological standpoint.
Experiential	KPI 18	Facility Experience for Community	Assesses whether the facility, in its current state, is a good experience for the community and its customers to use and experience
Experiential	KPI 19	Facility Experience for Staff	Assesses whether the facility, in its current state, is a good experience for staff

Scoring

With the key performance indicators established, and the scoring requirements determined, each building was graded against the criteria to establish and overall building score. For economical and sustainable, the building scores were calculated from data provided in AssetPlanner®. Whereas KPI's associated with accessible or experiential, the building scores were determined based on institutional knowledge or other documentation pertinent to the criteria. The figure below is a snapshot view for a sample of buildings.

Weighting of Core Value	20%			20%			15%					15%			15%			15%	
Weighting within Core Value	33%	33%	33%	33%	33%	33%	20%	20%	20%	20%	20%	33%	33%	33%	33%	33%	33%	50%	50%
Weighted Score by KPI	6.7%	6.7%	6.7%	6.7%	6.7%	6.7%	3.0%	3.0%	3.0%	3.0%	3.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	7.5%	7.5%

Tiering Matrix		Economical			Sustainable			Resilient					Accessible & Equitable			Functional			Experiential	
Asset Name	Asset Department	KPI	KPI	KPI	KPI	KPI	KPI	KPI	KPI	KPI	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1	KPI 1
Fire Station 8	Emergency Services	5	5	5	4	3	3	5	5	5	1	5	4	4	2	3	1	3	2	4
Child, Youth and Family Services	Offices	5	5	3	4	1	3	5	5	1	1	1	3	3	4	3	2	5	3	3
Fire Station 1	Emergency Services	5	5	4	3	1	2	5	5	5	1	5	2	3	4	3	2	3	2	3
Fire Station 2	Emergency Services	2	5	2	4	2	3	5	5	5	1	5	2	2	4	3	2	3	2	2
Fire Station 4	Emergency Services	3	5	3	4	1	3	5	5	5	1	5	2	1	3	3	1	3	2	2
Fleet Services	Support Services	4	5	3	2	1	3	3	5	5	1	5	2	3	3	2	1	3	2	2
Iris Center	Offices	4	5	3	3	3	3	2	5	1	1	3	2	3	4	3	4	3	2	3
Park Ops / Forestry	Parks & Recreation	3	5	2	3	2	3	5	5	2	1	5	2	2	3	3	1	3	3	3
Fire Station 3	Emergency Services	1	5	1	3	1	3	1	5	5	1	5	2	2	4	3	2	3	2	2
MSC A Blg	Support Services	3	5	2	2	1	3	3	5	5	1	5	2	3	3	2	2	4	1	2
Fire Training Center	Emergency Services	5	4	5	3	1	2	5	5	5	1	5	4	4	2	3	2	3	2	4
Fire Station 7	Emergency Services	5	4	5	5	1	2	2	5	5	1	5	2	4	3	3	2	3	2	3
Fire Station 5	Emergency Services	4	3	3	4	1	2	2	5	5	1	5	2	3	3	3	2	3	2	3
Fire Station 6	Emergency Services	3	3	2	3	1	2	5	5	5	1	5	2	3	2	3	2	3	2	2
New Britain	Offices	3	3	2	2	1	2	1	5	1	1	1	1	1	5	2	1	3	2	2
South Boulder Rec Center	Rec Center	2	2	2	2	1	2	5	5	3	3	5	2	3	3	3	1	3	2	4
Park Central	Offices	1	2	1	2	1	2	1	5	1	1	1	1	1	5	2	1	3	1	1
Brenton Building	Offices	5	1	5	5	4	3	5	5	1	1	3	5	4	5	4	3	5	5	5
East Boulder Community Center	Rec Center	4	1	3	2	1	2	5	5	4	5	5	4	4	4	4	3	3	5	4
Main Library	Libraries	4	1	3	2	3	5	1	5	3	3	5	4	4	5	3	4	4	5	2
North Boulder Branch Library	Libraries	5	1	5	5	3	3	5	5	1	1	1	4	3	3	4	5	3	5	2
North Boulder Rec Center	Rec Center	4	1	4	2	1	2	3	5	4	5	5	4	4	5	4	3	3	4	4
OSMP Hub	Offices	5	1	5	5	2	3	2	5	1	1	1	5	4	4	3	5	4	5	5
Meadows Library	Libraries	5	1	5	4	3	3	2	5	1	1	3	4	3	2	4	4	3	3	3
OSMP Office Annex	Offices	5	1	5	5	4	4	5	5	1	1	1	2	3	1	3	3	2	3	3
OSMP Shop	Support Services	5	1	5	5	3	4	5	5	2	1	5	2	3	1	3	3	2	3	3
Reynolds Library	Libraries	5	1	5	4	5	4	5	5	1	1	3	2	3	4	2	2	3	3	2
Age Well West	Offices	2	1	2	2	1	2	1	5	1	1	1	2	3	4	2	4	4	2	3
Atrium	Offices	3	1	3	3	1	3	2	5	1	1	1	2	1	4	4	4	4	1	2
Carnegie Library	Libraries	2	1	2	3	2	3	5	5	1	1	1	1	2	4	2	3	2	4	3
FAM & P&R Bldg	Support Services	3	1	3	4	2	4	2	5	3	1	5	2	3	5	2	2	3	1	2

Snapshot of a sample of buildings and their KPI scores

Building Scores

The weighting of the scoring is dynamic and can be adjusted depending on the needs and goals of the city. The figure above provided a snapshot view for a sample of buildings. For now, "economical and sustainable" show a higher weighting than "experiential". Whereas the KPIs within each core values are evenly split. All weightings are subject to change and iteration to ensure decisions remain objective and aligned to our most current mission and vision.

Once each KPI is scored, the model calculates an overall building score, a score per guiding principle, and a letter grade score highlighting where a building fare well or poorly. Any building can be ranked by overall score or individual guiding principle to help analyze what the correct strategic action might be based on its current state. The figure below shows a ranked summary of a sample of buildings by overall score (best to worst). The final figure shows an entire snapshot of the city's portfolio by letter grade (best to worst), with Brenton Building scoring the highest.

Tiering Matrix		Scoring			Summary						Summary					
Asset Name	Asset Department	Weighte	Tier	Letter	Financial	Sustainable	Resilient	Accessible	Functional	Experientia	Financial	Sustainable	Resilient	Accessible	Functional	Experientia
Brenton Building	Offices	80.7%	1	A	73%	80%	45%	70%	60%	75%	B	A	D	B	C	B
OSMP Hub	Offices	74.0%	1	B	73%	67%	30%	65%	60%	75%	B	B	E	B	C	B
Fire Station 8	Emergency Services	71.9%	1	B	100%	67%	63%	50%	35%	45%	A	B	C	D	E	D
North Boulder Branch Library	Libraries	69.6%	1	B	73%	73%	39%	50%	60%	53%	B	B	E	D	C	D
Main Library	Libraries	68.7%	1	B	53%	67%	51%	65%	55%	53%	D	B	D	B	C	D
BMOCA	Leased	68.7%	1	B	67%	87%	30%	60%	40%	60%	B	A	E	C	E	C
East Boulder Community Center	Rec Center	67.2%	1	B	53%	33%	72%	60%	50%	68%	D	E	B	C	D	B
North Boulder Rec Center	Rec Center	66.9%	1	B	60%	33%	66%	65%	50%	60%	C	E	B	B	D	C
Fire Training Center	Emergency Services	66.3%	1	B	93%	40%	63%	50%	40%	45%	A	E	C	D	E	D
11th & Spruce	Parking	66.1%	1	B	53%	93%	39%	60%	40%	45%	D	A	E	C	E	D
Child, Youth and Family Services	Offices	64.8%	2	C	87%	53%	39%	50%	50%	45%	A	D	E	D	D	D
Fire Station 7	Emergency Services	64.6%	2	C	93%	53%	54%	45%	40%	38%	A	D	D	D	E	E
Reynolds Library	Libraries	64.5%	2	C	73%	87%	45%	45%	35%	38%	B	A	D	D	E	E
OSMP Shop	Support Services	64.5%	2	C	73%	80%	54%	30%	40%	45%	B	A	D	E	E	D
Meadows Library	Libraries	64.2%	2	C	73%	67%	36%	45%	55%	45%	B	B	E	D	C	D
Fire Station 1	Emergency Services	63.8%	2	C	93%	40%	63%	45%	40%	38%	A	E	C	D	E	E
OSMP Office Annex	Offices	62.8%	2	C	73%	87%	39%	30%	40%	45%	B	A	E	E	E	D
Valmont Park	Parks & Recreation	61.8%	2	C	67%	73%	39%	35%	35%	60%	B	B	E	E	E	C
Iris Center	Offices	61.7%	2	C	80%	60%	36%	45%	50%	38%	A	C	E	D	D	E
Boulder Reservoir Visitor Center	Parks & Recreation	61.7%	2	C	13%	60%	45%	55%	60%	75%	E	C	D	C	C	B
10th & Walnut	Parking	61.1%	2	C	53%	80%	27%	60%	40%	45%	D	A	E	C	E	D
Scott Carpernter Bathhouse	Parks & Recreation	60.3%	2	C	27%	60%	30%	65%	45%	75%	E	C	E	B	D	B
Broadway Parking Strucutre	Parking	60.1%	2	C	47%	80%	39%	55%	35%	45%	D	A	E	C	E	D
1500 Pearl	Parking	59.0%	2	C	47%	73%	30%	60%	40%	45%	D	B	E	C	E	D
Fire Station 2	Emergency Services	58.6%	2	C	60%	60%	63%	40%	40%	30%	C	C	C	E	E	E
Randolf Center Parking	Parking	58.3%	2	C	47%	80%	30%	60%	30%	45%	D	A	E	C	E	D
RTD Parking Structure	Parking	58.3%	2	C	47%	80%	30%	60%	30%	45%	D	A	E	C	E	D
Park Ops / Forestry	Parks & Recreation	57.8%	2	C	67%	53%	54%	35%	35%	45%	B	D	D	E	E	D
Fire Station 5	Emergency Services	57.0%	2	C	67%	47%	54%	40%	40%	38%	B	D	D	E	E	E
Fire Station 4	Emergency Services	56.9%	2	C	73%	53%	63%	30%	35%	30%	B	D	C	E	E	E
Stazio Ballfields Buildings	Parks & Recreation	56.8%	2	C	67%	53%	39%	35%	30%	60%	B	D	E	E	E	C
OSMP - Cherryvale South	Offices	55.6%	2	C	67%	73%	48%	30%	30%	30%	B	B	D	E	E	E
Fleet Services	Support Services	55.4%	2	C	80%	40%	57%	40%	30%	30%	A	E	C	E	E	E
Pleasant View Restrooms	Parks & Recreation	55.1%	2	C	53%	73%	39%	35%	30%	45%	D	B	E	E	E	D
Scott Carpenter Athletic Center	Parks & Recreation	55.0%	2	C	33%	67%	30%	65%	35%	45%	E	B	E	B	E	D
Chautauqua Dining Hall	Leased	55.0%	2	C	60%	40%	30%	50%	35%	60%	C	E	E	D	E	C
Pearl St Mall Public Restrooms	Parks & Recreation	54.5%	2	D	60%	73%	39%	50%	20%	30%	C	B	E	D	E	E
OSMP - Cherryvale North	Offices	54.3%	2	D	73%	60%	48%	30%	30%	30%	B	C	D	E	E	E

Snapshot of a sample of buildings ranked by overall score (best to worst)

Strategic Direction

The facility master plan establishes strategic direction to address the city's building portfolio.

Tiering Matrix		Scoring - All Core Values	Summary - Letter Grades					
Asset Name	Asset Department	Letter	Financial	Sustainable	Resilient	Accessible	Functional	Experiential
Brenton Building	Offices	A	B	A	D	B	C	B
11th & Spruce	Parking	B	D	A	E	C	E	D
BMOCA	Leased	B	B	A	E	C	E	C
East Boulder Community Center	Rec Center	B	D	E	B	C	D	B
Fire Station 8	Emergency Services	B	A	B	C	D	E	D
Fire Training Center	Emergency Services	B	A	E	C	D	E	D
Main Library	Libraries	B	D	B	D	B	C	D
North Boulder Branch Library	Libraries	B	B	B	E	D	C	D
North Boulder Rec Center	Rec Center	B	C	E	B	B	D	C
OSMP Hub	Offices	B	B	B	E	B	C	B
10th & Walnut	Parking	C	D	A	E	C	E	D
1500 Pearl	Parking	C	D	B	E	C	E	D
Boulder Reservoir Visitor Center	Parks & Recreation	C	E	C	D	C	C	B
Broadway Parking Strucutre	Parking	C	D	A	E	C	E	D
Chautauqua Dining Hall	Leased	C	C	E	E	D	E	C
Child, Youth and Family Services	Offices	C	A	D	E	D	D	D
Fire Station 1	Emergency Services	C	A	E	C	D	E	E
Fire Station 2	Emergency Services	C	C	C	C	E	E	E
Fire Station 4	Emergency Services	C	B	D	C	E	E	E
Fire Station 5	Emergency Services	C	B	D	D	E	E	E
Fire Station 7	Emergency Services	C	A	D	D	D	E	E
Fleet Services	Support Services	C	A	E	C	E	E	E
Iris Center	Offices	C	A	C	E	D	D	E
Meadows Library	Libraries	C	B	B	E	D	C	D
OSMP - Cherryvale South	Offices	C	B	B	D	E	E	E
OSMP Office Annex	Offices	C	B	A	E	E	E	D
OSMP Shop	Support Services	C	B	A	D	E	E	D
Park Ops / Forestry	Parks & Recreation	C	B	D	D	E	E	D
Pleasant View Restrooms	Parks & Recreation	C	D	B	E	E	E	D
Randolf Center Parking	Parking	C	D	A	E	C	E	D
Reynolds Library	Libraries	C	B	A	D	D	E	E
RTD Parking Structure	Parking	C	D	A	E	C	E	D
Scott Carpenter Athletic Center	Parks & Recreation	C	E	B	E	B	E	D
Scott Carpernter Bathhouse	Parks & Recreation	C	E	C	E	B	D	B
Stazio Ballfields Buildings	Parks & Recreation	C	B	D	E	E	E	C
Valmont Park	Parks & Recreation	C	B	B	E	E	E	C
63rd St WTP	Water Treatment	D	E	E	C	E	E	D
75th WTPP	Water Treatment	D	D	E	C	E	E	D
Age Well West	Offices	D	E	E	E	D	D	E
Atrium	Offices	D	D	D	E	E	C	E
Carnegie Library	Libraries	D	E	D	E	E	E	D
CV 1500 Pearl	Offices	D	B	D	E	D	E	E
Dairy Center	Leased	D	D	E	E	C	E	D
FAM & P&R Bldg	Support Services	D	D	B	D	D	E	E
Fire Station 3	Emergency Services	D	D	D	D	E	E	E
Fire Station 6	Emergency Services	D	D	E	C	E	E	E
Harbeck - Bergheim House	Leased	D	B	B	E	E	E	E
Mapleton Ballfields Building	Parks & Recreation	D	E	B	E	E	E	E
MSC A Blg	Support Services	D	B	E	C	E	E	E
Municipal Building	Offices	D	E	D	D	D	E	E
OSMP - Cherryvale North	Offices	D	B	C	D	E	E	E
Pearl St Mall Public Restrooms	Parks & Recreation	D	C	B	E	D	E	E
Pearl Street Mall Visitors Kiosk	Parks & Recreation	D	D	B	E	D	E	E
Pottery Lab	Leased	D	E	C	E	E	E	E
Radio Tower Equipment Shelters	Support Services	D	E	B	C	E	E	D
Resource Center (6400 Arapahoe)	Leased	D	D	C	E	E	E	D
South Boulder Rec Center	Rec Center	D	E	E	C	E	E	D
Spruce Pool Bathhouse	Parks & Recreation	D	D	D	E	E	E	D
Tea House	Leased	D	E	B	E	D	E	D
The Edge (1301 Arapahoe)	Offices	D	D	C	E	E	E	E
Betasso WTP	Water Treatment	E	E	E	D	E	E	E
Boulder Reservoir Boat House	Parks & Recreation	E	E	B	E	E	E	E
Boulder Reservoir Maintenance	Parks & Recreation	E	E	B	E	E	E	E
Center Green	Offices	E	E	E	E	E	E	E
Fire Truck Storage Bldg	Support Services	E	E	B	D	E	E	E
Flatiron Golf Pro Shop	Support Services	E	E	C	E	E	E	E
Foothills Maintenace Shop	Support Services	E	E	E	D	E	E	E
Justice Center	Offices	E	E	E	E	C	E	D
MSC B Blg	Support Services	E	E	E	D	E	E	E
Mustards Last Stand	Leased	E	E	E	E	D	E	E
New Britain	Offices	E	D	E	E	E	E	E
Park Central	Offices	E	E	E	E	E	E	E
Pleasant View Maintenance Shop	Parks & Recreation	E	E	E	E	E	E	D
Public Safety Center	Emergency Services	E	E	E	D	E	D	E
Roadway Building	Support Services	E	E	E	E	E	E	E
Salberg	Parks & Recreation	E	E	B	E	E	E	E
Tantra Park Maintenace Shop	Support Services	E	E	E	D	E	E	E
Tom Watson	Parks & Recreation	E	E	B	E	E	E	E
Valmont Butte	Support Services	E	E	E	E	E	E	E

Snapshot of the city's portfolio by letter grade (best to worst)

Appendix E – Modeling Assumptions for Consolidation

This portion of appendix E provides details on the key assumptions used to model the fiscal impacts of the strategies considered as a part of the facilities master planning process. In general, the team attempted to make conservative assumptions related to potential savings related to the proposed strategies of consolidation. As has been shown over the past few years, the escalation of construction costs frequently outpaces general inflation and incorporating this in the financial models would suggest even greater savings from consolidation, especially scenarios where the construction timeline shifts towards the earlier part of implementation. Many of the analyses used current year dollars for comparison as the relative discrepancies between Consumer Price Index-based inflation, escalation of construction costs, and the cost of financing can result in substantial changes in the present value of a given strategy. As a part of implementation, it is important for the city to consider inflation, escalation, and financing costs. During implementation it will be substantially easier to estimate these parameters given a much more concrete timeline for facility construction, financing, and operation. Below we provide additional detail about key assumptions used to develop the fiscal models for the master plan.

Financial Model Assumptions for 22 Building Consolidation

- Center Green (already vacated but included for wholesome analysis)
- Main Library (pro-rated to reflect portion impacted by strategy)

Asset	Campus	Use	Size (SF)	CRV ($)
Atrium	West Campus	Office	12,952	$ 5,802,977
Brenton Building	West Campus	Office	21,600	$ 9,488,104
Center Green	West Campus	Office	31,942	$ 13,654,566
Children, Youth, & Family Services	West Campus	Office	5,215	$ 2,465,608
Community Vitality (1500 Pearl)	East Campus	Office	5,500	$ 2,861,277
FAM & P&R Bldg	West Campus	Office	5,460	$ 2,955,199
Fleet Services Center	East Campus	Service	24,854	$ 10,803,631
Iris Center	West Campus	Office	14,959	$ 7,226,804
Justice Center	West Campus	Office	9,779	$ 6,262,108
Main Library (Facilities Portion)	East Campus	Office	3,584	$ 1,938,655
Municipal Building	East Campus	Office	60,149	$ 9,947,509
MSC "A" Building	West Campus	Office	22,728	$ 12,348,640
New Britain	West Campus	Office	13,310	$ 5,923,303
OSMP Cherryvale	East Campus	Office	5,440	$ 3,803,018
OSMP Hub	East Campus	Office	30,000	$ 13,191,819
OSMP Offices Annex (Red Deer Dr)	East Campus	Office	10,110	$ 4,707,037
Park Central	West Campus	Office	18,889	$ 8,259,726
Park Operations / Forestry	East Campus	Service	10,073	$ 5,830,856
Public Safety Center	East Campus	Police	88,986	$ 53,852,413
The Edge	West Campus	Office	1,886	$ 898,082
The OSMP Shop (Ute)	East Campus	Service	8,022	$ 4,367,131
West Age Well Center	West Campus	Office	15,751	$ 9,374,404

List of Buildings included for Consolidation

Space Requirements

Description	Units	Consolidation
1. Space Optimization - Current		**Before**
Size of Buildings	SF	421,189
Number of FTEs	Qty.	938
Space per FTE	SF / FTE	449
1. Space Optimization - Future		**After**
Target Space Req. per Employee	SF / FTE	375
Additional Space Requirements	SF / FTE	-
Future Number of FTEs	Qty.	938
Estimated Future Space Requirements	SF	351,750
1. Space Optimization - Savings		
Reduction in Space Requirements	SF	69,439
Reduction in Space Requirements	% SF	16.5%

Energy Requirements

Description	Units	Consolidation
2a. Energy - Current		
Annual Utility Consumption	mmBtu/Year	33,763
Energy Use Intensity (EUI)	kBtu/SF	80.2
Annual Utility Costs	$/Year	$ 579,119.1
Energy Cost Intensity (ECI)	$/SF	$ 1.37
2a. Energy & Carbon - Future		
Target Energy Use Intensity (EUI)	kBtu/SF	35.0
Future Utility Consumption	mmBtu/Year	12,311
Future Rate for Electricity	$/kWh	$ 0.10
Future Utility Costs	$/Year	$ 360,822.1
Est. Energy Cost Intensity (ECI)	$/SF	$ 1.03
2a. Energy & Carbon Reduction - Savings		
Annual Utility Consumption Reduction	mmBtu/Year	21,452
	%	63.5%
Annual Utility Cost Savings	$/Year	$ 218,297.0
	%	37.7%

Carbon Requirements

Description	Units	Consolidation
2b. Carbon - Current (using 2019)		
Annual Carbon Emissions	mt CO2 / Year	3,127
Est. Social Cost of Carbon	$ / mt CO2	$ 40.00
Annual Carbon Costs	$/Year	$ 125,060
2b. Carbon - Future		
Est. Renewable Supply	% Renewables	0%
Est. Emissions Factor from Grid	mt CO2/ MWh	0.514
Est. Future Carbon Emissions	mt CO2 / Year	1,855
Est. Social Cost of Carbon (Future)	$ / mt CO2	$ 40.00
Annual Carbon Costs (Future)	$/Year	$ 74,185
2b. Energy & Carbon Reduction - Savings		
Annual Carbon Emissions Reduction	mt CO2 / Year	1,272
	%	40.7%
Annual Carbon Cost Savings	$/Year	$ 50,875
	%	40.7%

Financials

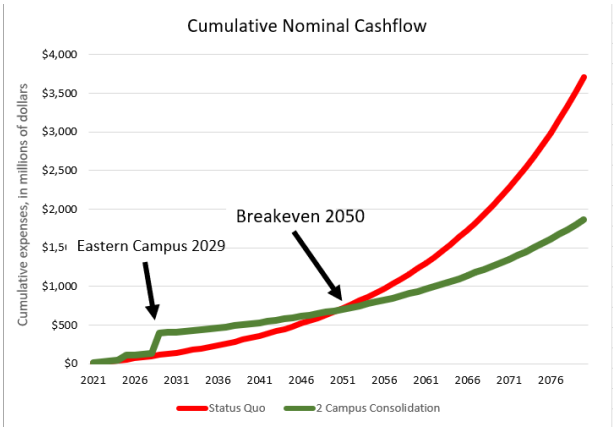
Description	Units	Consolidation
3a. Financial (OpEx) - Current		
Annual O&M Costs	$/Year	$ -
Annual Custodial Costs	$/Year	$ -
Annual Utility costs	$/Year	$ -
2019 Combined OpEx Costs	$/Year	$ 4,480,506
2019 OpEx Cost per SF ($/SF)	$/SF	$ 10.64
3a. Financial (OpEx) - Future		
Target O&M Costs per SF	$/SF	$ 5.33
Adjusted O&M Costs per SF (excl. utility)	$/SF	$ 4.30
Est. O&M Costs	$/Year	1,514,005
3a. Financial (OpEx) - Savings		
2025 - West Campus OpEx Savings	$/Year	$ 2,966,500
2025 - West Campus Carbon Savings	%	66.2%

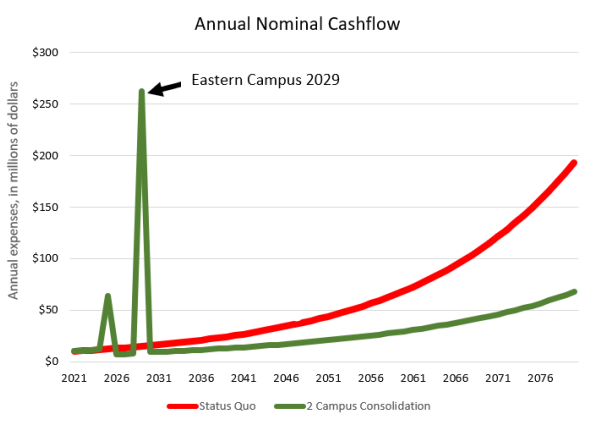
Assumptions/Drivers

Inputs	All
Average Age	49
Est. Const' Yr	1972
Size (SF) of 22 Buildings	421,189
Size (SF) of West Buildings	174,471
Size (SF) of East Buildings	246,718
CRV ($M) of 22 Buildings 2021	$ 195.96
CRV ($M) of West Buildings 2021	$ 111.30
CRV ($M) of East Buildings 2021	$ 84.66
FY19 - O&M	7.30
FY19 - Custodial	1.88
FY19 - Utilities	1.14
Inputs	**All**
Size once Consolidated (Total SF)	351,750
Size once Consolidated (West SF)	126,730
Size once Consolidated (East SF)	224,460
New CRV + Soft Costs (Total)	$ 310.40
New CRV + Soft Costs (West)	$ 56.50
New CRV + Soft Costs (East)	$ 253.90
Future O&M Costs per SF	$ 2.08
Future Custodial per SF	$ 1.90
Future Utilities per SF	$ 1.36
Variables	**West**
Inflation Factor	3.75%
Capital Renewal (2% CRV)	2.0%
Soft Cost Factor	25.0%
O&M Degredation Factor (Yr1-30)	0.50%
O&M Degredation Factor (Yr 30-50)	1.00%
O&M Degredation Factor (Yr 50+)	2.00%
Annual Discount Rate	4.0%

Model 1: Nominal Cash Flow

Status Quo								2 Campus Consolidation							
*All numbers in millions of current (2021) year dollars, assuming 3.75% Annual Inflation															
Year	Construction	Renewal	Minor Maintenance	Custodial	Utilities	Total	Total Cumulative	Year	Construction	Renewal	Minor Maintenance	Custodial	Utilities	Total	Total Cumulative
2021	0	4.6	4.0	1.0	0.6	10.2	10.2	2021	0	4.6	4.0	1.0	0.6	10.2	10.2
2022	0	4.7	4.2	1.1	0.7	10.7	20.9	2022	0	4.7	4.2	1.1	0.7	10.7	20.9
2023	0	4.9	4.5	1.1	0.7	11.2	32.2	2023	0	4.9	4.5	1.1	0.7	11.2	32.2
2024	0	5.1	4.7	1.2	0.7	11.8	44.0	2024	0	5.1	4.7	1.2	0.7	11.8	44.0
2025	0	5.3	5.0	1.3	0.8	12.4	56.3	2025	56.5	3.0	2.6	0.9	0.6	63.5	107.5
2026	0	5.5	5.3	1.4	0.8	13.0	69.3	2026	0	3.1	2.7	0.9	0.6	7.3	114.7
2027	0	5.7	5.6	1.4	0.9	13.6	82.9	2027	0	3.2	2.8	1.0	0.6	7.6	122.3
2028	0	5.9	5.9	1.5	0.9	14.3	97.2	2028	0	3.3	2.9	1.0	0.6	7.9	130.1
2029	0	6.1	6.3	1.6	1.0	15.0	112.2	2029	253.9	6.2	1.1	1.0	0.7	262.8	393.0
2030	0	6.4	6.6	1.7	1.0	15.7	127.9	2030	0	6.4	1.1	1.0	0.7	9.3	402.2
2031	0	6.6	7.0	1.8	1.1	16.5	144.4	2031	0	6.7	1.1	1.0	0.8	9.6	411.9
2032	0	6.9	7.4	1.9	1.2	17.3	161.7	2032	0	6.9	1.2	1.1	0.8	10.0	421.9
2033	0	7.1	7.8	2.0	1.2	18.2	179.8	2033	0	7.2	1.2	1.1	0.8	10.4	432.3
2034	0	7.4	8.3	2.1	1.3	19.1	198.9	2034	0	7.5	1.3	1.2	0.9	10.8	443.1
2035	0	7.7	8.7	2.2	1.4	20.0	218.9	2035	0	7.7	1.4	1.2	0.9	11.2	454.3
2036	0	7.9	9.2	2.4	1.4	21.0	239.9	2036	0	8.0	1.4	1.3	0.9	11.7	466.0
2037	0	8.2	9.8	2.5	1.5	22.1	262.0	2037	0	8.3	1.5	1.3	1.0	12.1	478.1
2038	0	8.5	10.3	2.7	1.6	23.2	285.1	2038	0	8.6	1.5	1.4	1.0	12.6	490.7
2039	0	8.9	10.9	2.8	1.7	24.3	309.5	2039	0	9.0	1.6	1.5	1.0	13.1	503.8
2040	0	9.2	11.6	3.0	1.8	25.5	335.0	2040	0	9.3	1.7	1.5	1.1	13.6	517.4
2041	0	9.5	12.2	3.1	1.9	26.8	361.8	2041	0	9.7	1.7	1.6	1.1	14.1	531.5
2042	0	9.9	12.9	3.3	2.0	28.2	390.0	2042	0	10.0	1.8	1.7	1.2	14.7	546.2
2043	0	10.3	13.7	3.5	2.1	29.6	419.6	2043	0	10.4	1.9	1.7	1.2	15.3	561.4
2044	0	10.7	14.5	3.7	2.3	31.1	450.7	2044	0	10.8	2.0	1.8	1.3	15.9	577.3
2045	0	11.1	15.3	3.9	2.4	32.7	483.4	2045	0	11.2	2.1	1.9	1.3	16.5	593.7
2046	0	11.5	16.2	4.2	2.5	34.3	517.7	2046	0	11.6	2.1	2.0	1.4	17.1	610.9
2047	0	11.9	17.1	4.4	2.7	36.1	553.8	2047	0	12.0	2.2	2.0	1.5	17.8	628.6
2048	0	12.4	18.1	4.7	2.8	37.9	591.7	2048	0	12.5	2.3	2.1	1.5	18.5	647.1
2049	0	12.8	19.1	4.9	3.0	39.8	631.6	2049	0	13.0	2.4	2.2	1.6	19.2	666.3
2050	0	13.3	20.2	5.2	3.2	41.9	673.5	2050	0	13.4	2.5	2.3	1.7	20.0	686.3
2051	0	13.8	21.4	5.5	3.3	44.0	717.5	2051	0	14.0	2.6	2.4	1.7	20.7	707.0
2052	0	14.3	22.6	5.8	3.5	46.3	763.8	2052	0	14.5	2.8	2.5	1.8	21.5	728.6
2053	0	14.9	23.9	6.2	3.7	48.7	812.4	2053	0	15.0	2.9	2.6	1.9	22.4	751.0
2054	0	15.4	25.3	6.5	3.9	51.2	863.6	2054	0	15.6	3.0	2.7	2.0	23.3	774.2
2055	0	16.0	26.8	6.9	4.2	53.8	917.4	2055	0	16.2	3.1	2.9	2.0	24.2	798.4
2056	0	16.6	28.3	7.3	4.4	56.6	974.0	2056	0	16.8	3.3	3.0	2.1	25.2	823.6
2057	0	17.2	29.9	7.7	4.7	59.5	1033.4	2057	0	17.4	3.4	3.1	2.2	26.2	849.9
2058	0	17.9	31.6	8.1	4.9	62.6	1096.0	2058	0	18.1	3.6	3.3	2.4	27.3	877.2
2059	0	18.5	33.5	8.6	5.2	65.8	1161.8	2059	0	18.7	3.8	3.4	2.5	28.4	905.6
2060	0	19.2	35.4	9.1	5.5	69.2	1231.0	2060	0	19.4	4.0	3.6	2.6	29.6	935.2
2061	0	19.9	37.4	9.6	5.8	72.8	1303.8	2061	0	20.2	4.1	3.8	2.7	30.8	966.0
2062	0	20.7	39.6	10.2	6.2	76.6	1380.4	2062	0	20.9	4.3	4.0	2.8	32.1	998.0
2063	0	21.5	41.8	10.8	6.5	80.6	1461.0	2063	0	21.7	4.5	4.2	3.0	33.4	1031.4
2064	0	22.3	44.2	11.4	6.9	84.8	1545.8	2064	0	22.5	4.8	4.3	3.1	34.7	1066.2
2065	0	23.1	46.8	12.0	7.3	89.2	1635.0	2065	0	23.4	5.0	4.6	3.3	36.2	1102.3
2066	0	24.0	49.5	12.7	7.7	93.9	1728.9	2066	0	24.2	5.2	4.8	3.4	37.6	1140.0
2067	0	24.9	52.3	13.5	8.2	98.8	1827.8	2067	0	25.1	5.5	5.0	3.6	39.2	1179.2
2068	0	25.8	55.3	14.2	8.6	104.0	1931.7	2068	0	26.1	5.7	5.2	3.7	40.8	1220.0
2069	0	26.8	58.5	15.0	9.1	109.5	2041.2	2069	0	27.1	6.0	5.5	3.9	42.5	1262.4
2070	0	27.8	61.9	15.9	9.7	115.2	2156.4	2070	0	28.1	6.3	5.7	4.1	44.2	1306.7
2071	0	28.8	65.4	16.8	10.2	121.3	2277.7	2071	0	29.1	6.6	6.0	4.3	46.0	1352.7
2072	0	29.9	69.2	17.8	10.8	127.7	2405.4	2072	0	30.2	6.9	6.3	4.5	47.9	1400.7
2073	0	31.0	73.2	18.8	11.4	134.4	2539.8	2073	0	31.4	7.2	6.6	4.7	49.9	1450.6
2074	0	32.2	77.4	19.9	12.1	141.5	2681.4	2074	0	32.5	7.6	6.9	5.0	52.0	1502.6
2075	0	33.4	81.8	21.0	12.8	149.0	2830.4	2075	0	33.8	8.0	7.3	5.2	54.3	1556.9
2076	0	34.6	86.5	22.3	13.5	156.9	2987.4	2076	0	35.0	8.5	7.7	5.5	56.8	1613.6
2077	0	35.9	91.5	23.5	14.3	165.3	3152.6	2077	0	36.3	9.0	8.2	5.9	59.3	1673.0
2078	0	37.3	96.8	24.9	15.1	174.1	3326.7	2078	0	37.7	9.5	8.6	6.2	62.0	1735.0
2079	0	38.7	102.3	26.3	16.0	183.3	3510.0	2079	0	39.1	10.0	9.1	6.5	64.8	1799.8
2080	0	40.1	108.2	27.8	16.9	193.1	3703.1	2080	0	40.6	10.6	9.7	6.9	67.8	1867.6

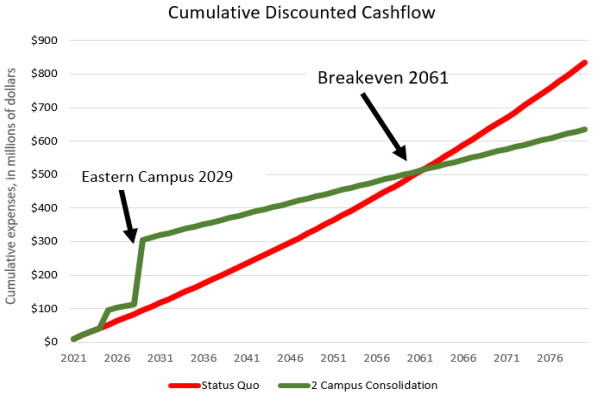


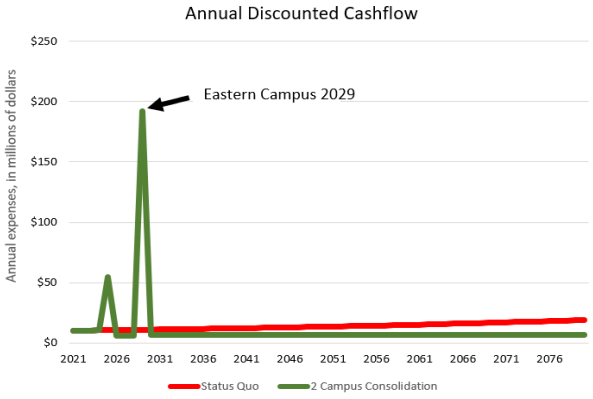


Model 2: Discounted Cash Flow

*All numbers in millions of current (2021) year dollars, assuming 3.75% Annual Inflation and 4% discount rate

Status Quo								2 Campus Consolidation							
Year	Construction	Renewal	Minor Maintenance	Custodial	Utilities	Total	Total Cumulative	Year	Construction	Renewal	Minor Maintenance	Custodial	Utilities	Total	Total Cumulative
2021	0.0	4.6	4.0	1.0	0.6	10.2	10.2	2021	0.0	4.6	4.0	1.0	0.6	10.2	10.2
2022	0.0	4.6	4.1	1.0	0.6	10.3	20.5	2022	0.0	4.6	4.1	1.0	0.6	10.3	20.5
2023	0.0	4.6	4.1	1.1	0.6	10.4	30.9	2023	0.0	4.6	4.1	1.1	0.6	10.4	30.9
2024	0.0	4.5	4.2	1.1	0.7	10.5	41.4	2024	0.0	4.5	4.2	1.1	0.7	10.5	41.4
2025	0.0	4.5	4.3	1.1	0.7	10.6	52.0	2025	48.3	2.5	2.2	0.8	0.5	54.3	95.7
2026	0.0	4.5	4.3	1.1	0.7	10.7	62.6	2026	0.0	2.5	2.2	0.8	0.5	6.0	101.6
2027	0.0	4.5	4.4	1.1	0.7	10.8	73.4	2027	0.0	2.5	2.2	0.8	0.5	6.0	107.6
2028	0.0	4.5	4.5	1.2	0.7	10.8	84.2	2028	0.0	2.5	2.2	0.8	0.5	6.0	113.6
2029	0.0	4.5	4.6	1.2	0.7	10.9	95.2	2029	185.5	4.5	0.8	0.7	0.5	192.0	305.6
2030	0.0	4.5	4.6	1.2	0.7	11.0	106.2	2030	0.0	4.5	0.8	0.7	0.5	6.5	312.1
2031	0.0	4.5	4.7	1.2	0.7	11.1	117.3	2031	0.0	4.5	0.8	0.7	0.5	6.5	318.6
2032	0.0	4.5	4.8	1.2	0.7	11.2	128.6	2032	0.0	4.5	0.8	0.7	0.5	6.5	325.1
2033	0.0	4.4	4.9	1.3	0.8	11.3	139.9	2033	0.0	4.5	0.8	0.7	0.5	6.5	331.6
2034	0.0	4.4	5.0	1.3	0.8	11.5	151.4	2034	0.0	4.5	0.8	0.7	0.5	6.5	338.1
2035	0.0	4.4	5.0	1.3	0.8	11.6	162.9	2035	0.0	4.5	0.8	0.7	0.5	6.5	344.6
2036	0.0	4.4	5.1	1.3	0.8	11.7	174.6	2036	0.0	4.5	0.8	0.7	0.5	6.5	351.1
2037	0.0	4.4	5.2	1.3	0.8	11.8	186.4	2037	0.0	4.4	0.8	0.7	0.5	6.5	357.6
2038	0.0	4.4	5.3	1.4	0.8	11.9	198.3	2038	0.0	4.4	0.8	0.7	0.5	6.5	364.0
2039	0.0	4.4	5.4	1.4	0.8	12.0	210.3	2039	0.0	4.4	0.8	0.7	0.5	6.5	370.5
2040	0.0	4.4	5.5	1.4	0.9	12.1	222.4	2040	0.0	4.4	0.8	0.7	0.5	6.5	376.9
2041	0.0	4.4	5.6	1.4	0.9	12.2	234.7	2041	0.0	4.4	0.8	0.7	0.5	6.4	383.4
2042	0.0	4.3	5.7	1.5	0.9	12.4	247.0	2042	0.0	4.4	0.8	0.7	0.5	6.4	389.8
2043	0.0	4.3	5.8	1.5	0.9	12.5	259.5	2043	0.0	4.4	0.8	0.7	0.5	6.4	396.3
2044	0.0	4.3	5.9	1.5	0.9	12.6	272.1	2044	0.0	4.4	0.8	0.7	0.5	6.4	402.7
2045	0.0	4.3	6.0	1.5	0.9	12.7	284.9	2045	0.0	4.4	0.8	0.7	0.5	6.4	409.1
2046	0.0	4.3	6.1	1.6	0.9	12.9	297.8	2046	0.0	4.4	0.8	0.7	0.5	6.4	415.5
2047	0.0	4.3	6.2	1.6	1.0	13.0	310.8	2047	0.0	4.3	0.8	0.7	0.5	6.4	422.0
2048	0.0	4.3	6.3	1.6	1.0	13.2	323.9	2048	0.0	4.3	0.8	0.7	0.5	6.4	428.4
2049	0.0	4.3	6.4	1.6	1.0	13.3	337.2	2049	0.0	4.3	0.8	0.7	0.5	6.4	434.8
2050	0.0	4.3	6.5	1.7	1.0	13.4	350.6	2050	0.0	4.3	0.8	0.7	0.5	6.4	441.2
2051	0.0	4.3	6.6	1.7	1.0	13.6	364.2	2051	0.0	4.3	0.8	0.7	0.5	6.4	447.6
2052	0.0	4.2	6.7	1.7	1.0	13.7	377.9	2052	0.0	4.3	0.8	0.7	0.5	6.4	454.0
2053	0.0	4.2	6.8	1.8	1.1	13.9	391.8	2053	0.0	4.3	0.8	0.7	0.5	6.4	460.3
2054	0.0	4.2	6.9	1.8	1.1	14.0	405.8	2054	0.0	4.3	0.8	0.7	0.5	6.4	466.7
2055	0.0	4.2	7.1	1.8	1.1	14.2	420.0	2055	0.0	4.3	0.8	0.8	0.5	6.4	473.1
2056	0.0	4.2	7.2	1.8	1.1	14.3	434.3	2056	0.0	4.3	0.8	0.8	0.5	6.4	479.5
2057	0.0	4.2	7.3	1.9	1.1	14.5	448.8	2057	0.0	4.2	0.8	0.8	0.5	6.4	485.9
2058	0.0	4.2	7.4	1.9	1.2	14.7	463.5	2058	0.0	4.2	0.8	0.8	0.6	6.4	492.3
2059	0.0	4.2	7.5	1.9	1.2	14.8	478.3	2059	0.0	4.2	0.9	0.8	0.6	6.4	498.7
2060	0.0	4.2	7.7	2.0	1.2	15.0	493.3	2060	0.0	4.2	0.9	0.8	0.6	6.4	505.1
2061	0.0	4.2	7.8	2.0	1.2	15.2	508.5	2061	0.0	4.2	0.9	0.8	0.6	6.4	511.5
2062	0.0	4.1	7.9	2.0	1.2	15.3	523.8	2062	0.0	4.2	0.9	0.8	0.6	6.4	517.9
2063	0.0	4.1	8.1	2.1	1.3	15.5	539.3	2063	0.0	4.2	0.9	0.8	0.6	6.4	524.3
2064	0.0	4.1	8.2	2.1	1.3	15.7	555.0	2064	0.0	4.2	0.9	0.8	0.6	6.4	530.8
2065	0.0	4.1	8.3	2.1	1.3	15.9	570.9	2065	0.0	4.2	0.9	0.8	0.6	6.4	537.2
2066	0.0	4.1	8.5	2.2	1.3	16.1	587.0	2066	0.0	4.1	0.9	0.8	0.6	6.4	543.7
2067	0.0	4.1	8.6	2.2	1.3	16.3	603.3	2067	0.0	4.1	0.9	0.8	0.6	6.5	550.1
2068	0.0	4.1	8.8	2.3	1.4	16.5	619.7	2068	0.0	4.1	0.9	0.8	0.6	6.5	556.6
2069	0.0	4.1	8.9	2.3	1.4	16.7	636.4	2069	0.0	4.1	0.9	0.8	0.6	6.5	563.0
2070	0.0	4.1	9.1	2.3	1.4	16.9	653.3	2070	0.0	4.1	0.9	0.8	0.6	6.5	569.5
2071	0.0	4.1	9.2	2.4	1.4	17.1	670.3	2071	0.0	4.1	0.9	0.8	0.6	6.5	576.0
2072	0.0	4.0	9.4	2.4	1.5	17.3	687.6	2072	0.0	4.1	0.9	0.9	0.6	6.5	582.5
2073	0.0	4.0	9.5	2.4	1.5	17.5	705.1	2073	0.0	4.1	0.9	0.9	0.6	6.5	589.0
2074	0.0	4.0	9.7	2.5	1.5	17.7	722.8	2074	0.0	4.1	0.9	0.9	0.6	6.5	595.5
2075	0.0	4.0	9.8	2.5	1.5	17.9	740.7	2075	0.0	4.1	1.0	0.9	0.6	6.5	602.0
2076	0.0	4.0	10.0	2.6	1.6	18.2	758.9	2076	0.0	4.1	1.0	0.9	0.6	6.6	608.6
2077	0.0	4.0	10.2	2.6	1.6	18.4	777.2	2077	0.0	4.0	1.0	0.9	0.7	6.6	615.2
2078	0.0	4.0	10.3	2.7	1.6	18.6	795.9	2078	0.0	4.0	1.0	0.9	0.7	6.6	621.8
2079	0.0	4.0	10.5	2.7	1.6	18.8	814.7	2079	0.0	4.0	1.0	0.9	0.7	6.7	628.5
2080	0.0	4.0	10.7	2.8	1.7	19.1	833.8	2080	0.0	4.0	1.0	1.0	0.7	6.7	635.2





Appendix F – Energy Case Studies

In 2018 the city conducted a holistic energy assessment on three buildings; the Municipal Building located at 1777 Broadway, The Municipal Service Center – Building A located at 5050 Peal Street, and the East Boulder Community Center located at 5660 Sioux Drive. The purpose of the work was to assess necessary improvements on existing buildings, cost, and implementation factors to meet the city's climate commitment goals. The three buildings selected represented differing building types in the city's holding: an office building, a recreation center with pools, and a service building. All three buildings are in current need of a mechanical asset or system replacements and the study evaluated like-for-like replacement in contrast to what is needed to bring the building more closely in line with meeting energy reduction goals.

These studies heavily informed the degree of renovation required in buildings to meet the city's climate goals and the challenge to make such improvements. They have informed much of the additional analysis performed as part of this master plan process and laid a foundation for proposed frameworks, processes, and recommendations.

The energy case studies can be found here on the city's website.

Appendix G – Medical Office Pavilion Reuse Analysis

In 2017-18 the city conducted a Reuse Analysis of the Medical Office Pavilion located at 1155 Alpine Ave on the Alpine-Balsam site. The purpose of the study was to establish a basis for evaluating design, engineering and code requirements associated with reusing the existing Medical Office Pavilion as future city offices and a service center. The baseline assumptions were subsequently used to develop a construction cost estimate to understand the relative costs of renovation the pavilion compare dot eh costs of a similar replacement building. Knowing costs are never isolated from other value proposition. This study endeavored to evaluate other tangible, and some intangible factors as they might influence reuse potential.

The analysis was rigorous and incorporated recent learning experiences from renovation of the Brenton Building directly across the street and south on what is required to meet the city's energy codes and climate commitment. What was learned from this Reuse Analysis provided direction for work in this master plan and foundation for recommendations in the Key Initiatives and Strategic Actions. This reuse analysis directly informed how we conduct future building assessments that has been summarized on page 50 as part of the Decision-Making Framework.

The Reuse Analysis can be found here on the city's website.

Appendix H – Municipal Service Center Max Capacity Analysis

In 2018 the city conducted a Maximum Capacity Analysis of the Municipal Service Center site to understand the full build-out potential the site held for future consideration of consolidation of additional services to this area. The analysis included evaluation of the existing conditions – site and area circulation, access, infrastructure, utilities, programs and services in current operation and assessment of their future needs. Land use regulations, parking requirements, maximum buildable areas were assessed to develop a conceptual plan that could be submitted to Planning and Development Services (P&DS) as part of a Pre-Application Review of a proposed future development. The purpose of submitting the Pre-Application was to obtain formal regulatory evaluation and response to many questions regarding the site's future development potential. This appendix provides documents that were included in the pre-application submission along with P&DS's review comments.

This Analysis has been instrumental in advancing recommendations to pursue a more comprehensive consolidation of services at the MSC site as an Eastern City Campus. This work provided the foundation for understanding the value of the current city holding in achieving the goals articulated in the Consolidate Services Key Initiative.

The MSC Max Capacity Analysis can be found here on the city's website.

Appendix I – Detailed Descriptions of Financing Mechanisms

Bonds – One of the more traditional methods to fund large capital projects is through the issuance of a bond. The bond works as a loan, which provides capital upfront, and the principal and interest – together referred to as the debt service – is paid back to investors over the term of the bond, typically between 15 and 30 years. Bonds are backed solely by the credit and taxing power of the city and essentially acts as a pledge to use all legally available avenues, including tax revenues, to repay bond holders. Boulder's strong bond rating allows the city to borrow money at favorable interest rates, which makes this one of the least expensive financing options. The debt service could be partially offset by anticipated operational savings that consolidation would bring. Issuing a bond requires voter approval.

Certificates of Participation (COPs) – A popular alternative to municipal bons are Certificates of Participation, or COPs. In this arrangement, investors purchase lease-shares of a capital project, which entitle them to future lease revenues paid by the city. Because the new piece of infrastructure is technically owned by an independent authority, the city is not bound by restrictions on the amount of debt that it can incur and thus can be issued quicker and without voter approval. Similar to a bond, annual payments could be offset by operational savings realized by consolidation.

Energy Savings Performance Contract (ESPC) – A business model which helps customers leverage energy savings to generate capital to renew facilities and building systems. An ESPC is budget-neutral in that it uses money already being spent on monthly utility bills to finance energy infrastructure and facility improvements. During the contract term, improvements in energy infrastructure yield positive energy savings through efficiency to pay for the work and debt service. Once the contract is complete, the customer will receive the full benefit of the energy-efficiency savings, providing capital for further facility improvements.

Energy as a Service / Infrastructure as a Service (EaaS/IaaS) – A business model whereby customers pay for an energy service without having to make any upfront capital investment. EaaS models usually take the form of a subscription for energy equipment owned by a service company or management of energy usage to deliver the desired energy service. The business model typically promotes the transition to, and deployment of, advanced low-carbon technology while removing barriers such as high upfront technological costs, capital constraints, and uncertainty about performance. Under an EaaS model, a service firm may accept certain defined, ongoing risks (e.g., equipment failure, performance, etc.) and obligations (e.g., operations and maintenance, repair and replacement, etc.) generally associated with ownership of the related assets and are compensated based on agreed upon performance criteria (e.g., energy savings, electrons delivered, lumens level, carbon footprint reduction, facility condition index maintained, plant availability, etc.). While not a strict requirement, the objective is often to structure the EaaS such that the impact of the agreement is credit neutral/credit positive for the customer and such that the deal receives off balance sheet treatment.

Facilities Master Plan