



Sustainability and Deferred Maintenance Strategic Plan Goals



University of Colorado
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Regent Finance Committee
May 24, 2023

Presentations to Board

- June 2021
 - CU System Strategic Plan approved by Board of Regents
- May 2022
 - One year progress presentation to Regents Finance Committee
- May 2023
 - Two year progress presentation to Regents Finance Committee

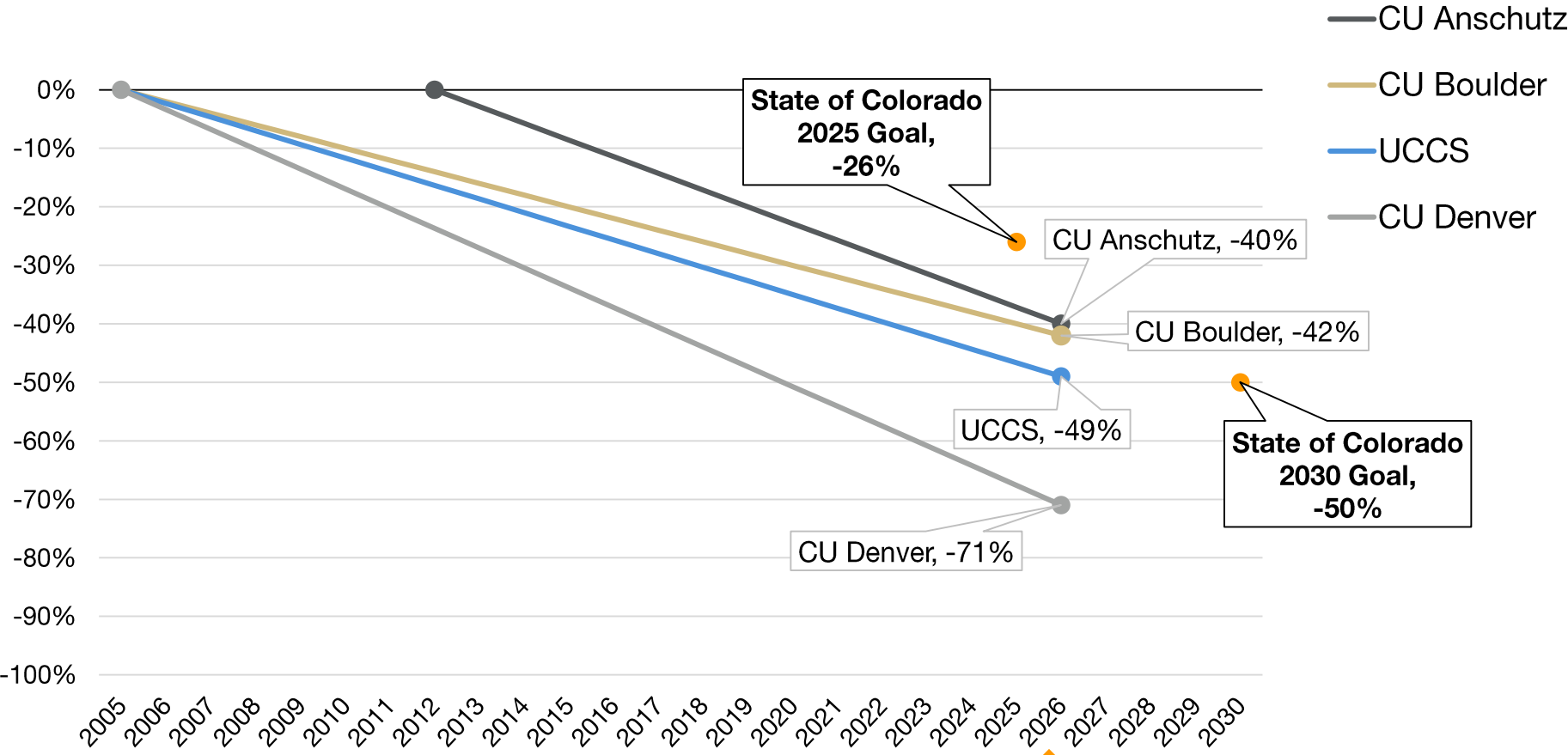


External Circumstances

- Inflationary pressure
 - Two years of high building cost inflation
 - 2021: 13.6%
 - 2022: 9.2%
- Legislation
 - Global Warming Potential For Public Project Materials (HB21-1303)
 - Sustainable building materials
 - Greenhouse Gas Emission Reduction Measures (SB 23-016)
 - Updated statewide sustainability goals



Greenhouse Gas Emissions Reduction Goals vs. State Goals



Energy Use Intensity (EUI)



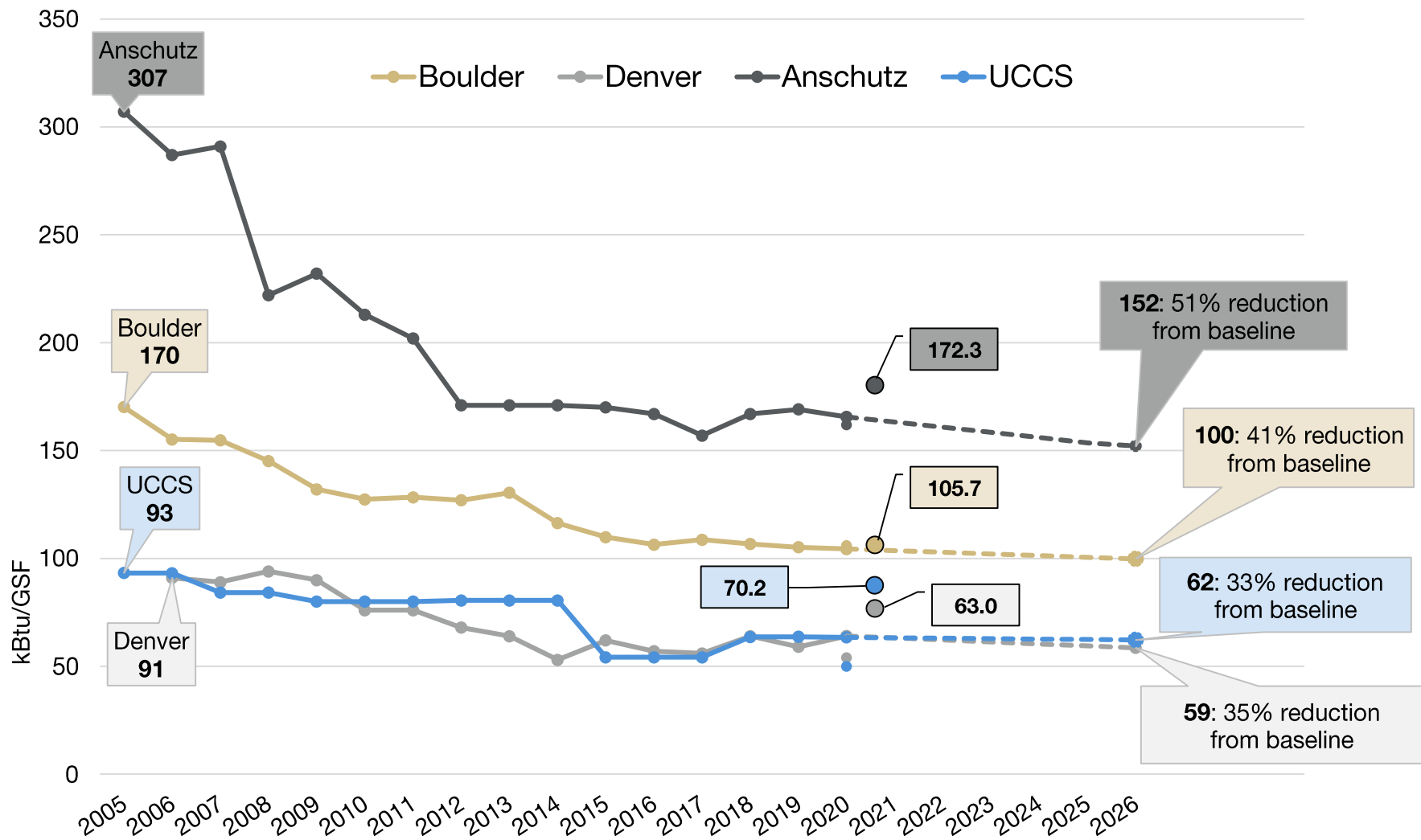
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Energy per square foot per year

Energy Use Intensity

Goals (with 2020 and 2021 actuals)



Energy Use Intensity Action Steps

In the Strategic Plan, campuses committed to three action steps:

1. Standardize the way that campuses calculate EUI
2. When possible, create or maintain a fund at the campus-level to finance green initiatives
3. Upgrade 1800 Grant parking garage and stairwell lighting to LED



Energy Use Intensity

Examples

1. **Standardize the way that campuses calculate EUI**

- Campuses are closely aligned in how data is reported

2. **When possible, create or maintain a fund at the campus-level to finance green initiatives**

- Boulder: Considering funding strategies through development of Climate Action Plan
- Denver: Auraria Sustainable Campus Program
- Anschutz: Project-specific rebates from Xcel Energy for conservation projects, such as ongoing lighting upgrades and improved building metering
- UCCS: Green Action Fund
 - One-year gap in student fee, pursue renewal in Spring 2024
 - Sufficient funding to support program through FY 2023-24

3. **Upgrade 1800 Grant parking garage and stairwell lighting to LED**

- Garage converted in 2020
- Building lighting is replaced floor-by-floor when other upgrades are undertaken



Greenhouse Gas Emissions (GHG)



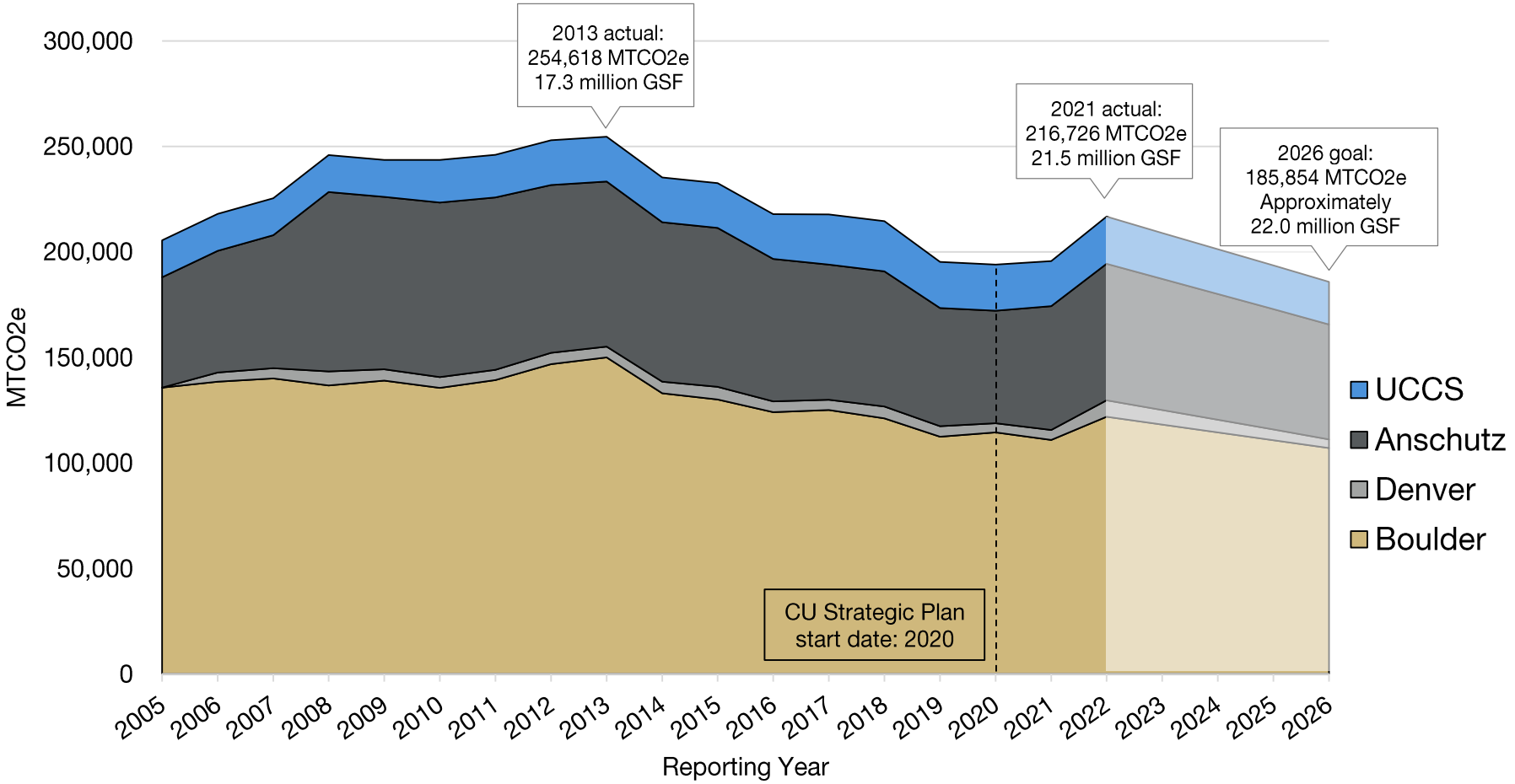
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Metric tons of carbon dioxide

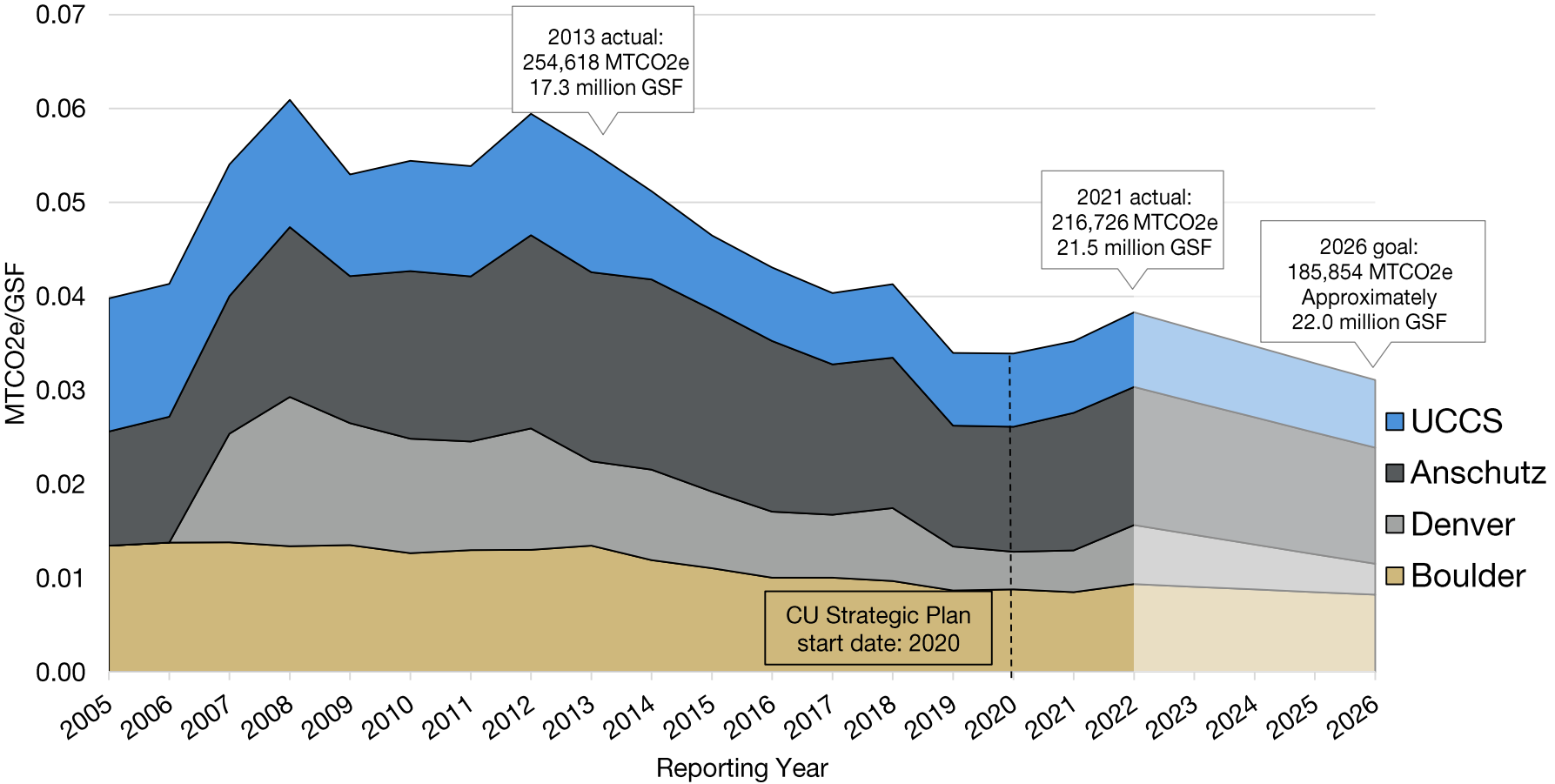
Greenhouse Gas Emissions (MTCO2e)

Progress Toward Goal



Greenhouse Gas Emissions per GSF (MTCO₂e/GSF)

Progress Toward Goal



Greenhouse Gas Emissions Action Steps

In the Strategic Plan, campuses committed to five action steps:

1. Update Campus Climate Action Plans with focus on reducing greenhouse gas emissions
2. Look for opportunities to transition to green vehicle fleet
3. Increase the renewable energy mix within campus energy portfolio
4. Identify energy-savings opportunities in capital improvement projects, including deferred maintenance projects
 - Replace legacy equipment with more energy efficient equipment in all spaces including labs, residence halls and offices



Greenhouse Gas Emissions

Examples: Boulder

1. Climate Action Plan in development, completion planned for fall 2023
 - Originally planned to address Scope 1 and 2 GHG emissions. Will expand to parts of Scope 3
 - Incorporates climate justice as part of evaluation of all recommended strategies
2. Campus on track to replace four buses by 2023
 - Awarded two EPA Diesel Emissions Reduction Act (DERA) grants totaling \$1.7 million
 - 45% cost share to purchase four battery electric buses
 - Two battery electric buses went into service November 2022 and two are scheduled for fall 2023
3. Campus solicited energy performance contract earlier this year
 - Currently at 60% of the assessment stage for 18 buildings
 - Goal is to develop a project with 15-year simple payback
 - Assessing potential east campus solar project
4. Capital improvement projects
 - Miramontes Baca Building | planned completion 2023 | addresses \$9.7 million of deferred maintenance
 - Engineering North Wing North Tower | completed 2022 | addresses \$9.0 million of deferred maintenance
 - Campus replacing legacy equipment where possible



Greenhouse Gas Emissions

Examples: Denver

1. Auraria Campus Draft Campus Climate Action Plan
 - Focused on reducing greenhouse gas emissions
 - Presented to the Auraria Executive Council November 2022
 - Institutional leaders asked to make public commitment to work toward goals
2. Campus on track to phase out gas-powered equipment
 - Replaced gas carts with electric carts
 - Replaced gas-powered grounds equipment with battery-powered equipment
3. Increase the renewable energy mix within campus energy portfolio
4. Identified energy savings opportunities in 2023 Engineering Audit
 - Planned replacement of dated, inefficient cooling units in Business School
 - Planned replacement of obsolete mechanical system in Lawrence Street Center
 - Campus replacing legacy equipment where possible



Greenhouse Gas Emissions

Examples: Anschutz

1. Draft Facilities Masterplan

- Will inform future Energy Master Plan and Climate Action Plan

2. Campus on track to phase out gas-powered equipment

- Replaced one fossil fuel vehicle with an electric van
- Researching gas-to-electric conversions

3. Completed Campus Safety and Emergency Preparedness Facility

- Expect LEED Net Zero Certification after one year of operation
- Includes 270kW of solar on roof and covered parking

4. Capital improvement projects

- Bundled energy project will complete 25 energy conservation measures in 5 buildings
 - Estimated GHG reduction = 4,500 metric tons per year
- Campus replacing legacy equipment where possible



Greenhouse Gas Emissions

Progress Toward Action Steps: UCCS

1. UCCS Sustainability Strategic Plan 2030 approved Spring 2022
2. Campus on track to replace one vehicle this year and meet goal of replacing one diesel bus with an electric battery bus by 2026
 - Replaced 2005 Ford Explorer with 2022 Ford F-150 Hybrid
 - Evaluating electric ride-on and stand-up mowers
 - Pursuing several grant opportunities
3. Campus solicited energy performance contract in early 2023
 - Investment Grade Audit (IGA) completed Spring 2023
 - Includes an estimated \$3.5 million in capital improvement projects
4. Capital improvement projects
 - Planned improvements to Columbine Hall | lighting upgrades, roof replacement, and new HVAC and controls | addresses \$2.3 million deferred maintenance
 - Planned improvements to Engineering Building Renovation | energy efficiency improvements reduce costs by estimated \$50,000/year | addresses \$13.0 million deferred maintenance
 - Campus replacing legacy equipment where possible



Facilities Condition Index (FCI)

Campus average index of building condition



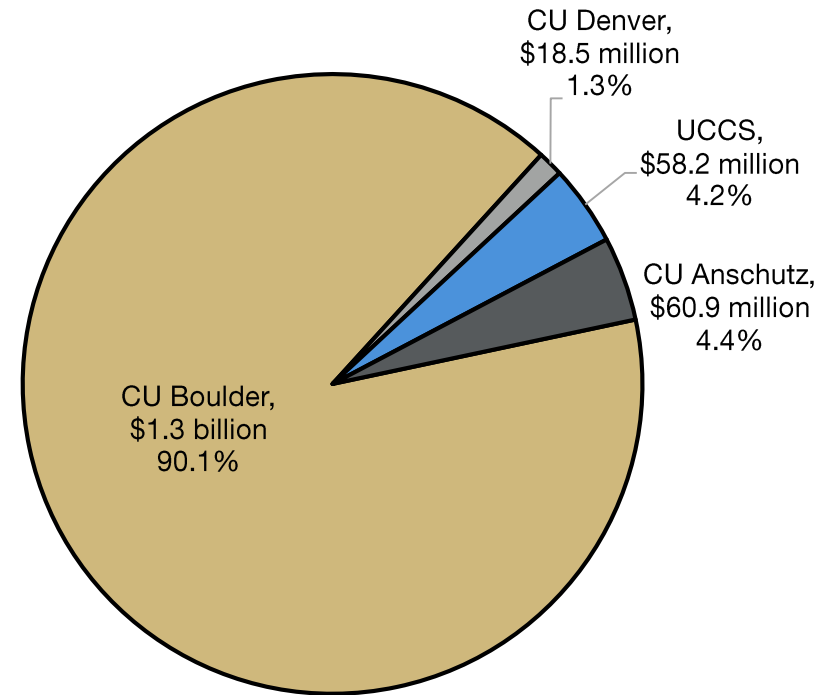
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Deferred Maintenance

Total Deferred Maintenance Backlog

Campus	2020	2021	2022
CU Boulder	\$1,126,941,402	\$1,172,491,811	\$1,250,189,042
General Fund	\$666,848,420	\$698,596,040	\$752,598,483
Non-General Fund	\$460,092,982	\$473,895,771	\$497,590,559
CU Denver	\$16,693,369	\$17,252,426	\$18,464,654
General Fund	\$15,973,069	\$16,532,126	\$17,826,104
Non-General Fund	\$720,300	\$720,300	\$638,550
UCCS	\$43,553,057	\$52,572,846	\$58,187,926
General Fund	\$40,149,914	\$48,464,917	\$49,563,388
Non-General Fund	\$3,403,143	\$4,107,930	\$8,624,538
CU Anschutz	\$48,791,183	\$54,482,265	\$60,868,573
General Fund	\$35,951,120	\$39,449,652	\$44,294,367
Non-General Fund	\$12,840,063	\$15,032,613	\$16,574,206
Total	\$1,235,979,011	\$1,296,799,349	\$1,387,710,195
General Fund	\$758,922,523	\$803,042,735	\$864,282,342
Non-General Fund	\$477,056,488	\$493,756,614	\$523,427,853



Note: Campus deferred maintenance backlog numbers reflect the cost to achieve a campus average Facility Condition Index (FCI) score of 85%.

FCI Action Steps

1. Routine assessment of facility condition and deferred maintenance

- Develop a uniform methodology across the campuses to assess facilities and calculate the deferred maintenance backlog

2. Plan for funding maintenance of new and renovated buildings

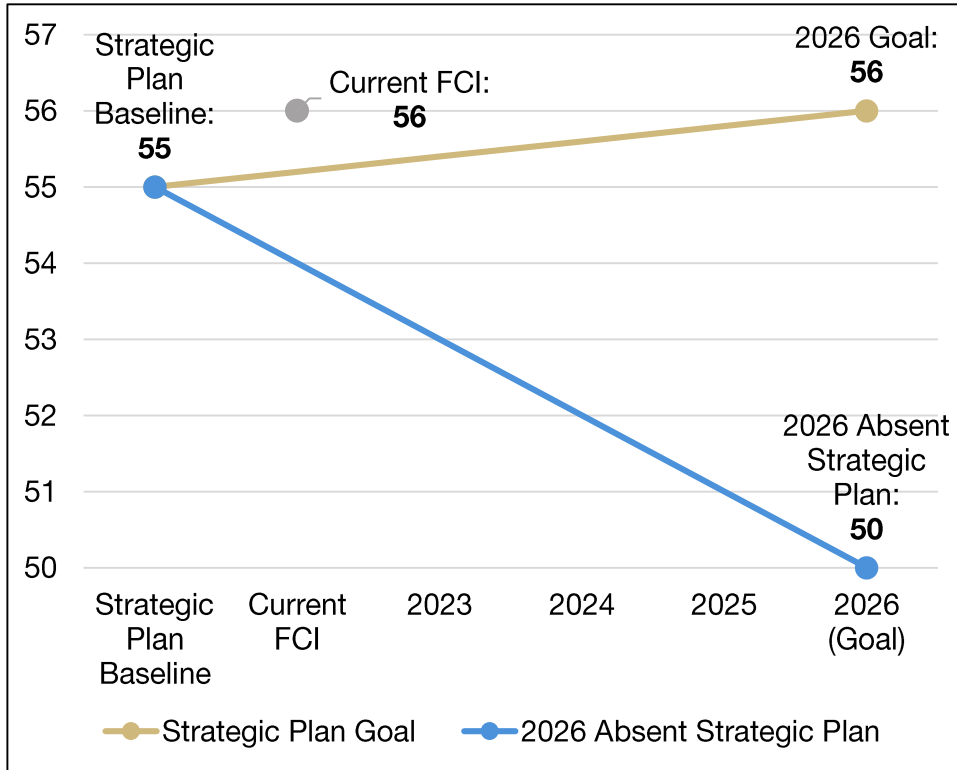
3. Long-term funding and spending plan to:

- Slow or stop the growth of the deferred maintenance backlog;
- Significantly reduce the backlog of deferred maintenance, particularly critical need and life-safety;
- Proactively fund preventative maintenance

4. Reduce deferred maintenance backlog or backlog growth

FCI Action Steps

CU Boulder



Facilities Condition Index

- Current index for all facilities – 56%
 - 95 buildings below 85% FCI
 - 15 buildings above 85% FCI
- FCI impacted by new square footage
 - Additions IMIG, Business-Engineering, Ramaley, 1135 Broadway
- Backlog cost affected by inflation

Deferred Maintenance – FY 2022-23

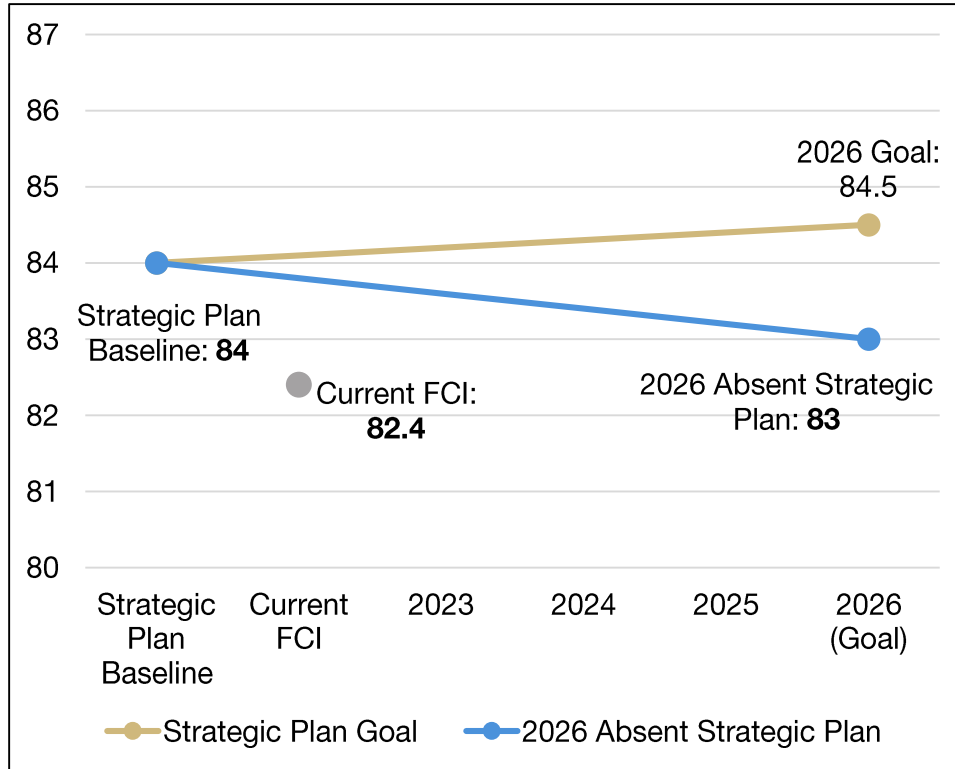
- University-funded - \$25 million
 - Miramontes Baca Phase II - \$9.7 million
 - NWNT Renovation projection - \$9 million
- State-funded - \$3.6 million
- Slowed growth of backlog by \$23 million

Upcoming Projects – DM/FCI Impact

- University-funded
 - Old Main Exterior Preservation - \$7 million
 - Annual Small Project Allocation - \$10 million
- State-funded
 - Hellems - \$36.8 million in deferred maintenance
 - Average annual controlled maintenance funding - \$3.7 million

FCI Action Steps

CU Denver



Deferred Maintenance – FY 2022-23

- University-funded - \$2.4 million
- State-funded - \$1.2 million
 - CU Denver Building Electrical Distribution (Phase 2 of 2)

Upcoming Projects – DM/FCI

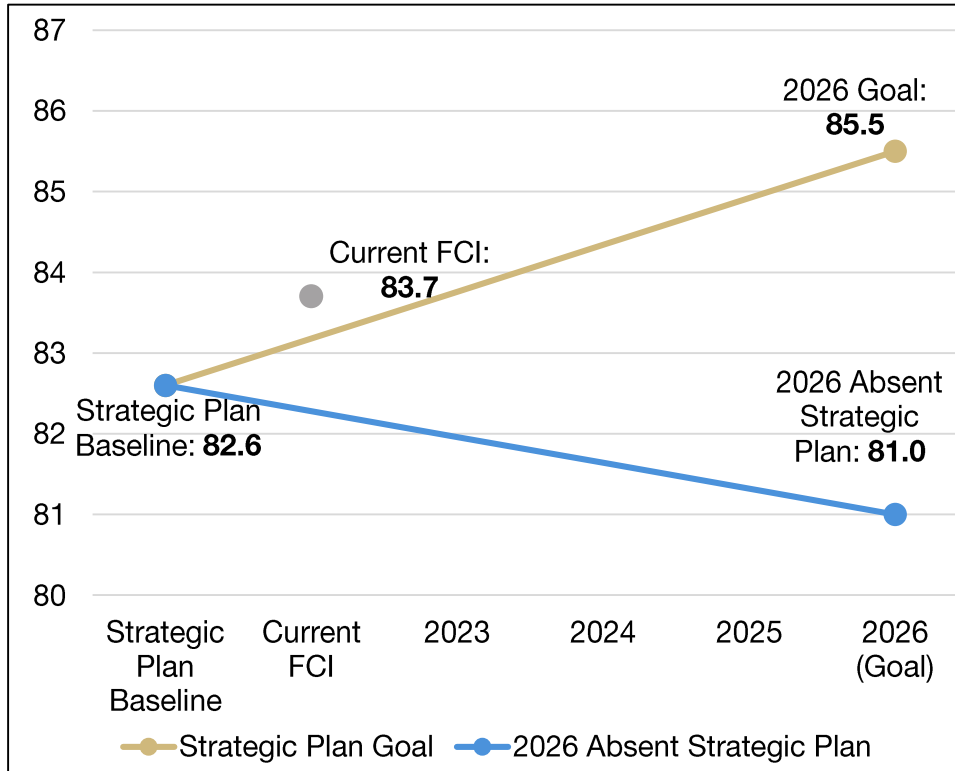
- University-funded
 - \$1.6 million
- State-funded
 - Fire protection replacement, CU Denver Building - \$1.8 million

Facilities Condition Index

- Current index for all facilities – 82.4%
 - 2 buildings below 85% FCI
 - 2 buildings above 93% FCI
- Backlog cost increased approximately 7% from previous fiscal year

FCI Action Steps

CU Anschutz



Facilities Condition Index

- Current index for all GF facilities – 83.7%
 - 10 buildings below 85% FCI
 - 15 buildings above 85% FCI
- Backlog cost increased 11.7% from previous fiscal year

Deferred Maintenance – FY 2022-23

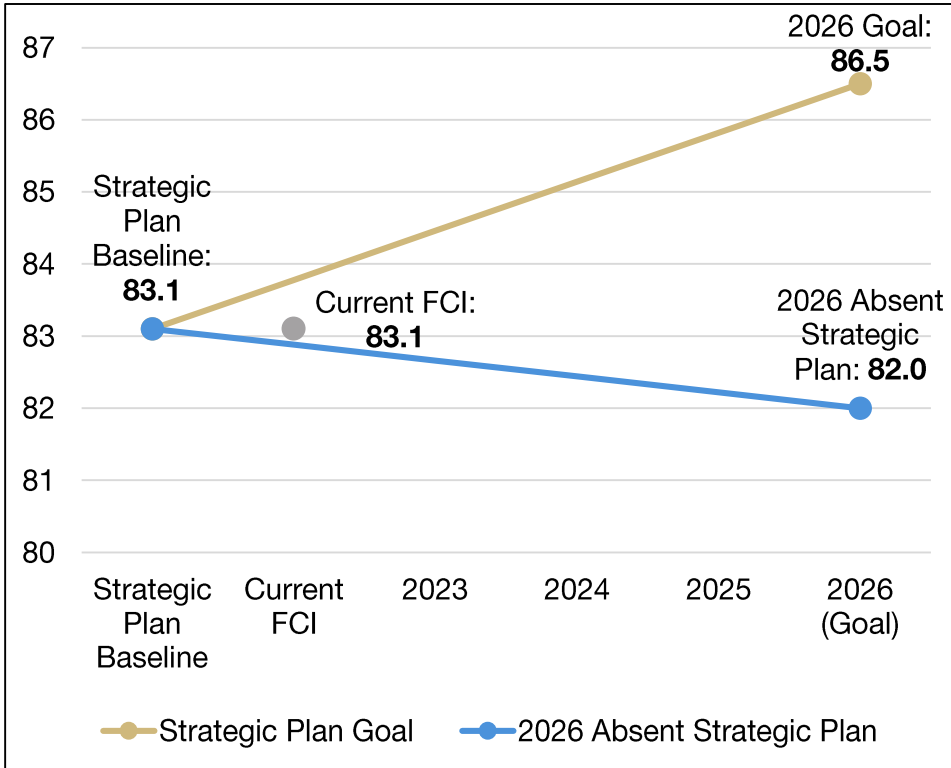
- University-funded - \$2.3 million
- State-funded - \$5.5 million

Upcoming Projects – DM/FCI

- University-funded
 - \$2.2 million
- State-funded
 - Fitzsimons Heating Upgrades - \$1.2 million
 - Academic Office Curtain Wall Repairs - \$1.6 million
 - School of Dental Medicine Façade Repairs - \$1.2 million
 - Research 1 Vivarium Ventilation Upgrades - \$2.4 million
 - State Historical Fund matching grant for ongoing window replacements, Fitzsimons Building - \$250,000

FCI Action Steps

UCCS



Facilities Condition Index

- Campus average FCI is 83.1%
 - 47 buildings below 85% FCI
 - 24 buildings above 85% FCI
- Average FCI is skewed due to newer buildings
- Backlog cost affected by inflation

Deferred Maintenance – FY 2022-23

- University-funded - \$1 million
 - 3.2% of total major maintenance needs
- State-funded - \$0.8 million

Upcoming Projects – DM/FCI

- University-funded
 - Engineering Building renovation – \$9 million of DM
- State-funded
 - Elevator modernization projects, Phase 3 - \$2.0 million
 - Chiller replacement, El Pomar Center, Kramer Family Library - \$2.0 million
 - Upgrade controls, El Pomar Center, Kramer Family Library - \$1.1 million

Future Steps

- System Sustainability Report expected Fall 2023
- Spring 2024 Update
- Continue to Study and Evaluate
 - How public utility changes affect overall EUI and GHG emissions
 - Long-term strategies to reduce GHG emissions
 - Cost increases associated with sustainable building materials
 - How to show a more complete picture of greenhouse gas emissions (scope 3 emissions)
 - E.g. fewer miles driven to/from work because of remote/hybrid work vs. full-time in-person work

