

# City of Boulder's Experience with Guaranteed Energy Savings Performance Contracting

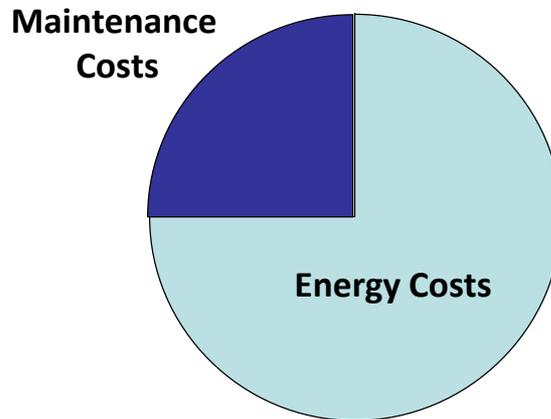


# City of Boulder - Phase 1 EPC Goals

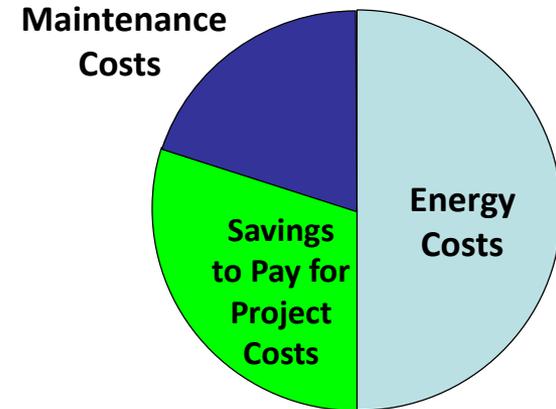


## Budget Neutrality

- Finance infrastructure improvements over longer term
- Energy savings generated from improvements are used to make the debt payments



Before Performance Contracting



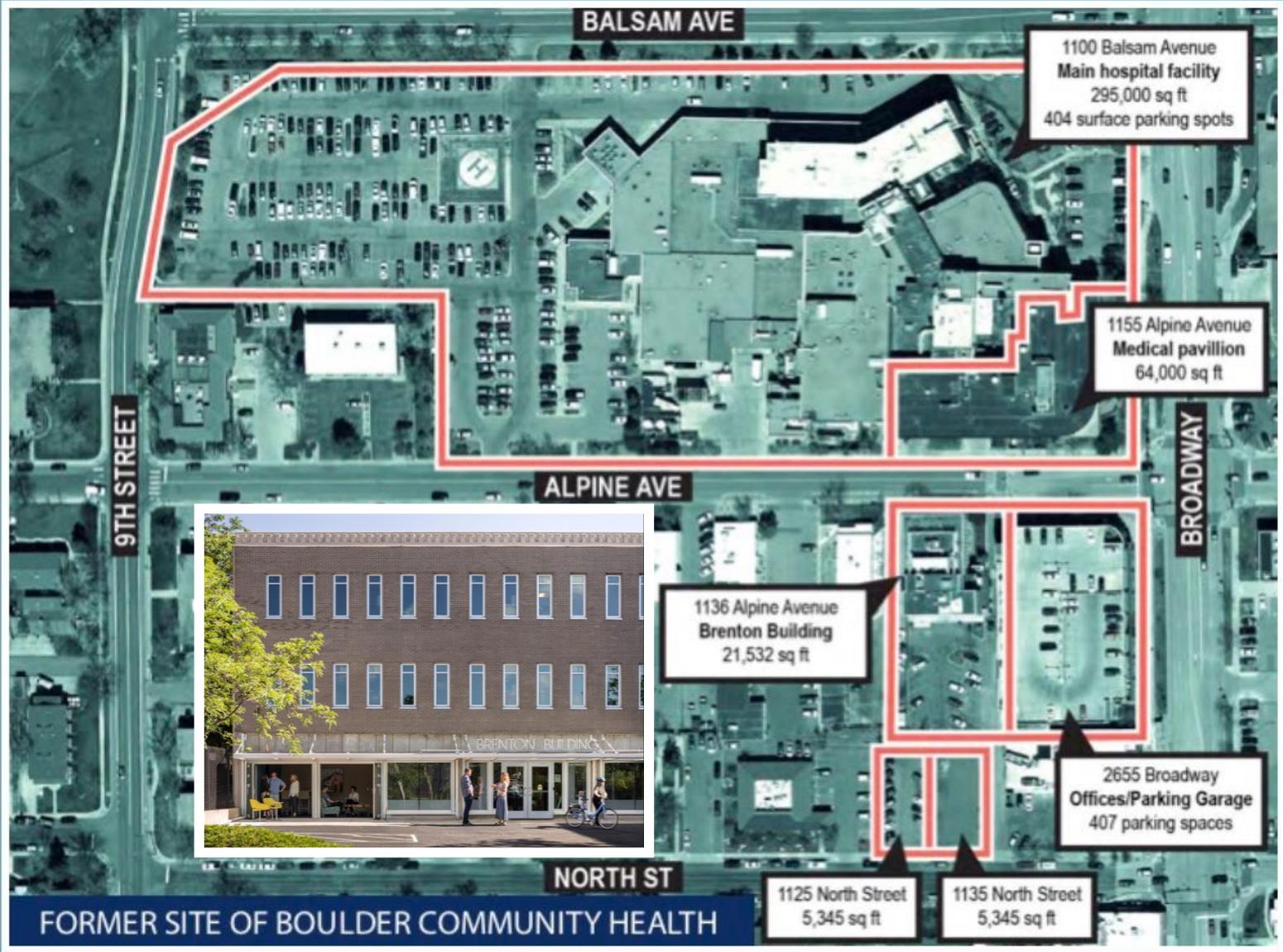
After Performance Contracting

# Phase 1 & 2 EPC Measures Implemented



- Lighting audit and retrofits
- Water conservation audit - 57 buildings & irrigation
- Building envelope: 57 buildings audited; “weatherization” at 43
- Solar PV at 13 locations – total output of 1,061 kW
- Solar thermal pool heating systems at 2 Recreation Centers
- Mechanical Replacements (chillers, boilers, AHU, etc.)
- Variable frequency drives
- Building controls, scheduling and optimization/re-commissioning
- Employee Education/Behavioral Change

# Phase 3 EPC



# Brenton Building Deep Energy Retrofit



## Existing Conditions

- 4-story, 21,532 sf medical office building
- Surgery Center on lower levels
- EUI of 128 / Energy Star rating of 1

# Phase 3 – Brenton Building Deep Energy Retrofit

- EUI reduction from 128 to under 28
- Extensive envelope improvements
- Complete mechanical system replacement
- Disconnected gas service
- City's first all-electric building



# Brenton Building Transformation

- Customer experience
- Healthy work environment
- Collaboration and meeting space
- Flexible and adaptable workspaces

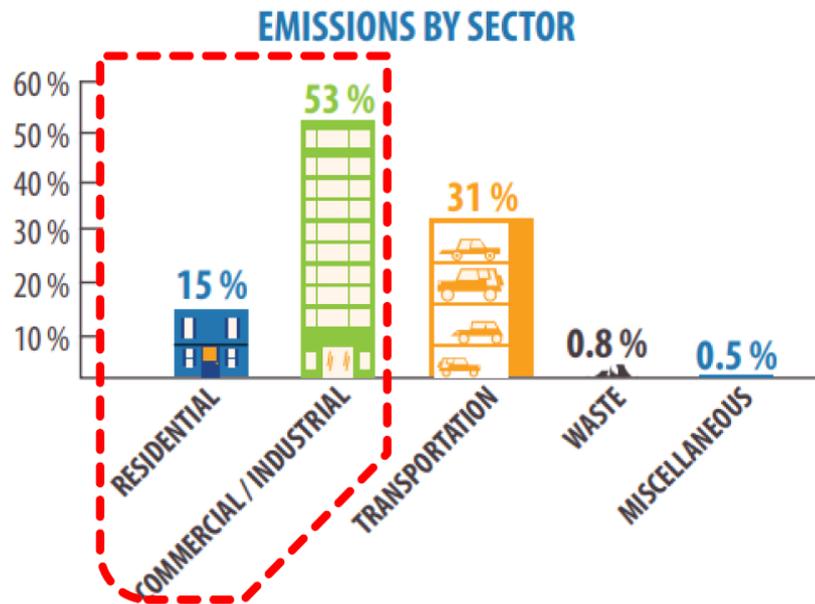


**AFTER**  
**DURING**  
**BEFORE**

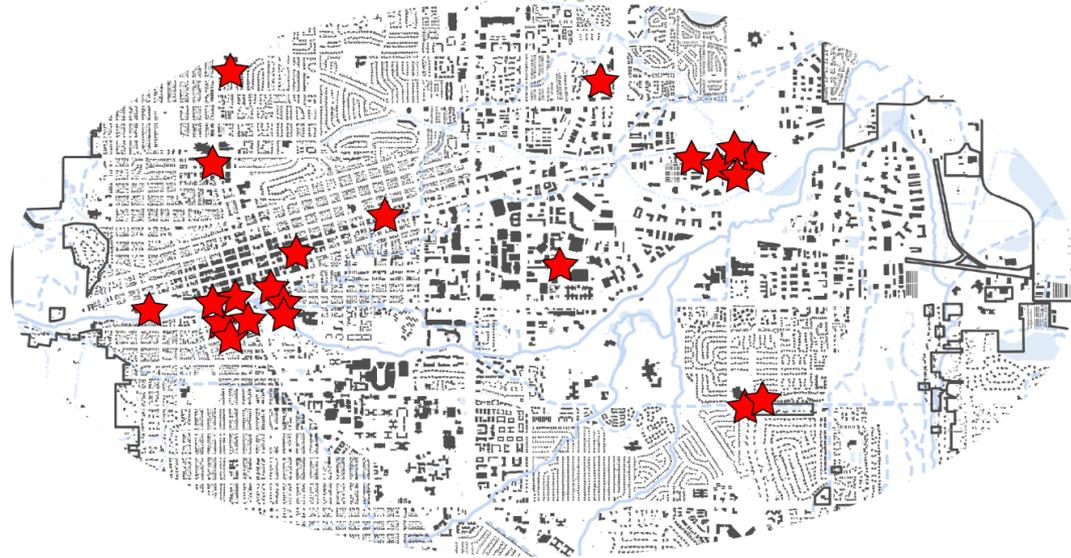
# City of Boulder Climate Commitment Goals



Achieve 80% GHG reduction for all city operations by 2030 (20 years ahead of community)  
86% GHG reduction from city buildings/facilities  
>40% reduction in natural gas usage



# Consolidation of Buildings Key to Meeting Climate Goals



**Facilities Master Plan** assessing opportunities to consolidate buildings and save energy.

Early Indications:

- 50% - 80% reduction in CO2 emissions
- 30% - 60% reduction in O&M costs
- 30% - 60% reduction in Capital Maintenance Costs



# Benefits of GESPC

- ✓ Design-Build: effective project delivery method
  - Easier implementation of projects
  - Options Analysis / Choosing right ECMs
- ✓ Energy Performance Guarantee
  - Confidence construction and installations done correctly
  - Contractor has vested interest in project success
- ✓ Three-year M&V
  - Verification of energy performance
  - Identifying issues that arise and trouble shooting with maintenance staff
- ✓ Methodology: projected future savings to support implementation of a project and realize goals