



Colorado Preservation Next Academy

Strategies to Protect the
Existing Affordable
Housing Stock

July 11, 2023





Building Resilient Futures

The challenges are bigger than any one of us can solve alone.

That's why we're leading the way to protect people and protect their homes. And why we're working with all our partners to create solutions that leave no one behind.

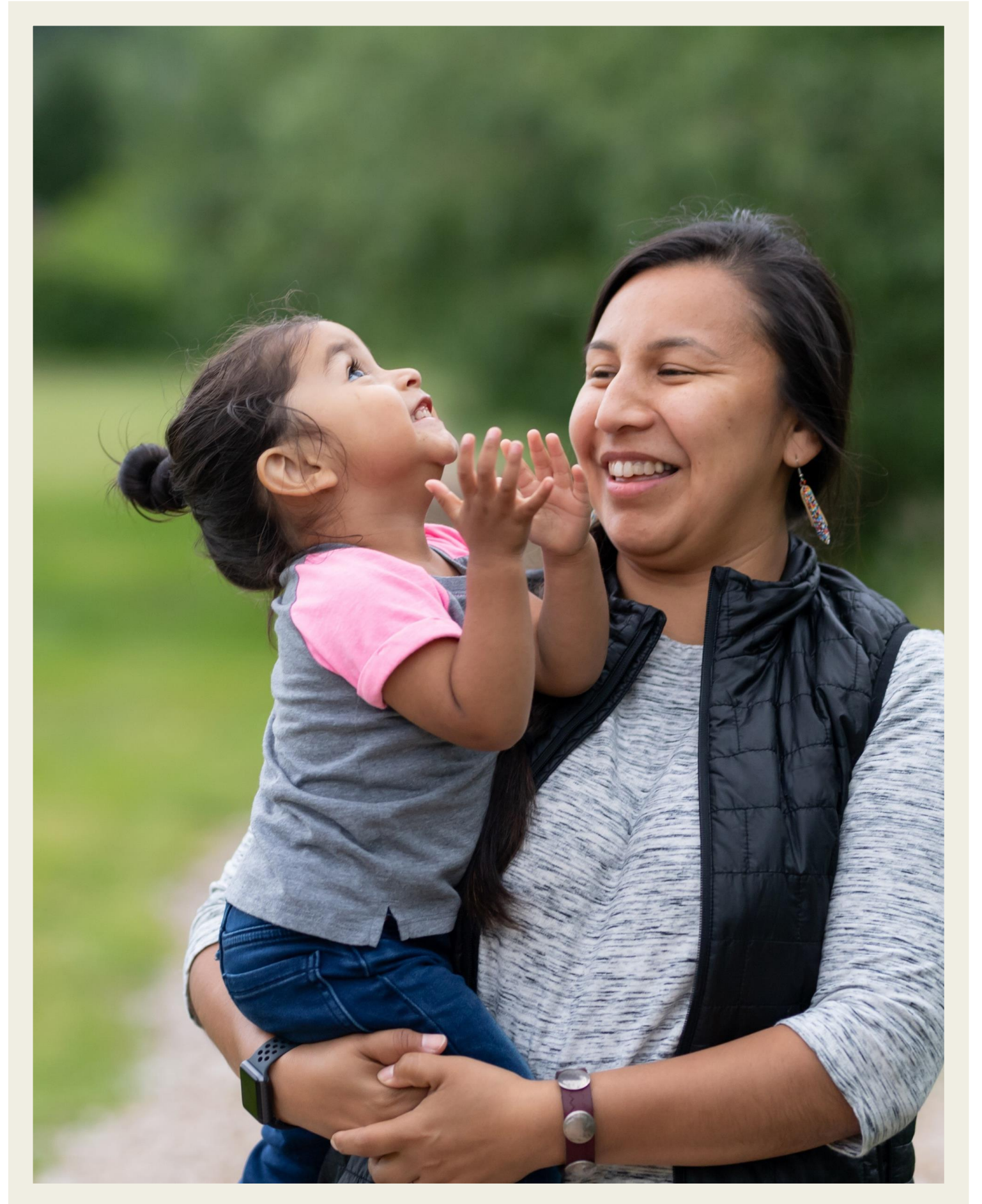
We believe resilience isn't just about being able to bounce back or rebuild after a disaster – it's about drawing from the inherent strength in communities and helping everyone prepare for and move forward in the face of our new climate future. And when we build more resilient communities, we build a better future for everyone.

“ Environmental events are not inherently unjust. Vulnerability to the effects of a disaster is informed by gender, race, ethnicity, language, socio-economic status, special needs, age, housing tenure, and (most importantly) how government, philanthropy, and civil society respond to residents. ”

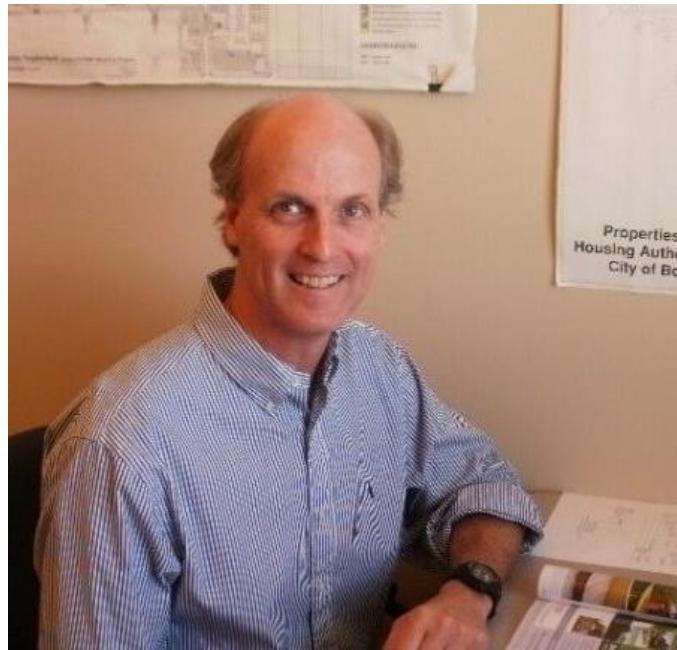
North Bay Organizing Project

Centering Frontline Communities

1. Highlighting the impact of disasters on frontline communities.
2. Honoring the wisdom, experience, and energy of frontline communities.
3. Facilitating trauma-informed and healing-centered responses to disasters for frontline communities.



Meet Our Guest Speakers



Tim Beal

**DIRECTOR OF
SUSTAINABLE
COMMUNITIES**
BOULDER HOUSING
PARTNERS



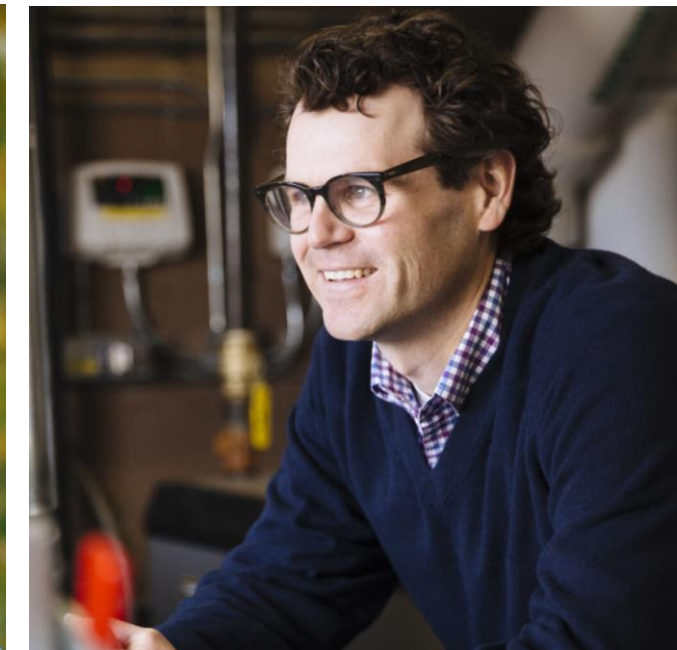
**Michelle
Gabrielloff-
Parish**

FOUNDER
FOUNDATION FOR
LEADERS ORGANIZING
FOR WATER AND
SUSTAINABILITY



Sarah Hong

**BUILDING ENERGY
ENGINEER**
GROUP14 ENGINEERING



Luke Ilderton

DEPUTY DIRECTOR
ENERGY OUTREACH
COLORADO



**Mihir Parikh,
Moderator**

**SENIOR PROGRAM
DIRECTOR**
ENTERPRISE
COMMUNITY
PARTNERS

Housing

#8

Colorado



View State Map

SELECT STATE:

Select a state...

State Facts

MINIMUM WAGE	\$13.65
2-BEDROOM HOUSING WAGE	\$32.13
NUMBER OF RENTER HOUSEHOLDS	754,483
NUMBER OF RENTER HOUSEHOLDS BELOW 30% AMI	163,917
PERCENT OF RENTER HOUSEHOLDS BELOW 30% AMI	22%
NUMBER OF RENTER HOUSEHOLDS BELOW 50% AMI	291,575
PERCENT OF RENTER HOUSEHOLDS BELOW 50% AMI	39%

Affordable Rent for Low Income Households

Minimum Wage Worker



Household at 30% of Area Median Income



Household at 50% of Area Median Income



Fair Market Rent

1-Bedroom Fair Market Rent



2-Bedroom Fair Market Rent



Working at minimum wage

\$13.65/hr

Each week you have to work

77 HOURS

To afford a modest 1 bedroom rental home at Fair Market Rent

DOWNLOAD STATE REPORT

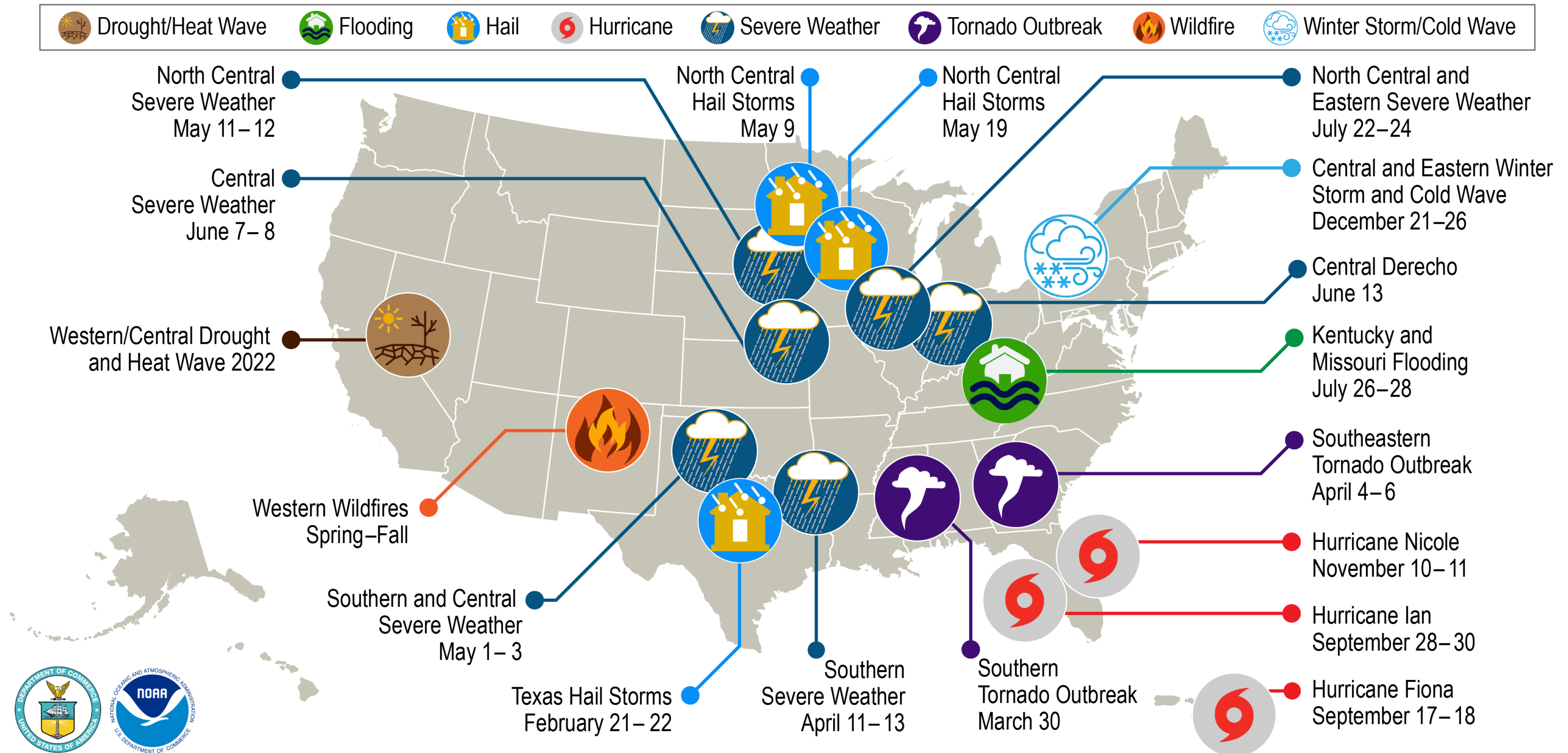


CONNECT TO NETWORK
Colorado



Climate

U.S. 2022 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 18 separate billion-dollar weather and climate disasters that impacted the United States in 2022.

The Challenge

- Due to its age, physical conditions and maintenance needs, most of the country's affordable housing stock cannot withstand our changing climate.
- Every building on the planet must be net-zero-carbon by 2050 to avoid irreversible loss of ecosystems and crisis for vulnerable people.
- The pace, and expense, of disasters has increased dramatically.
- Post-disaster government assistance is well-intentioned, but slow and inequitable; resources lack coordination.
- As temperatures and sea levels rise, so do the number of low-income households that are at risk.

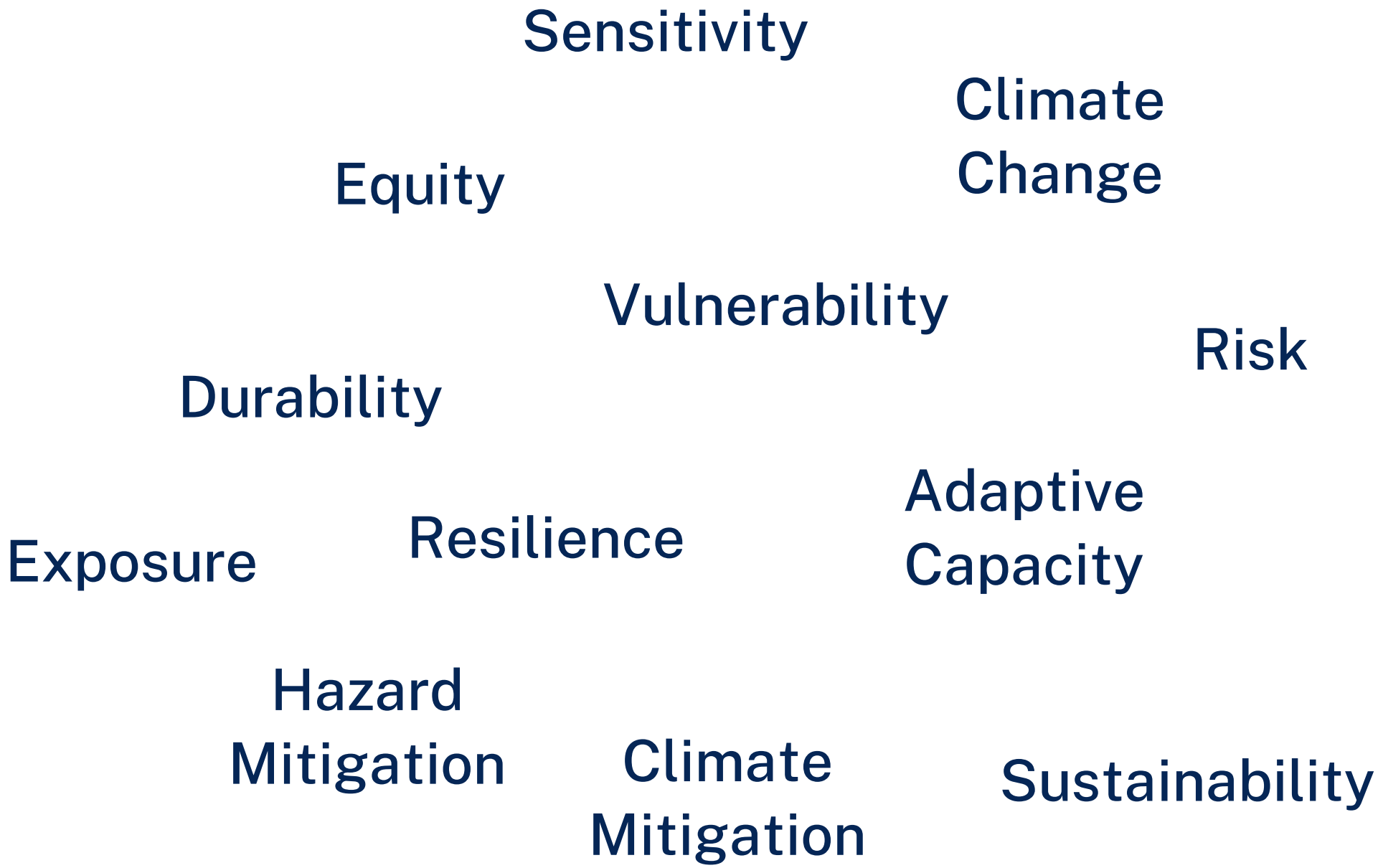
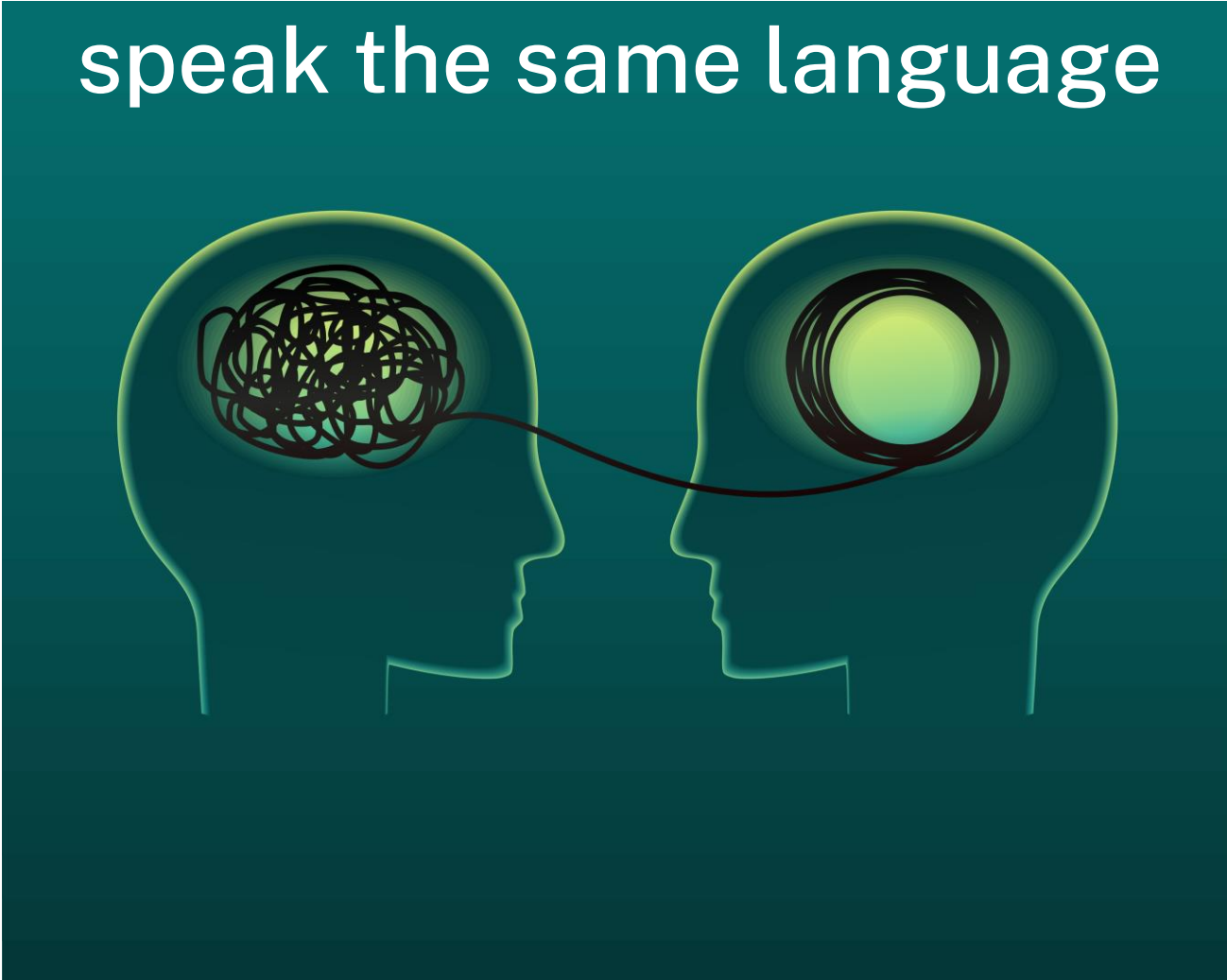


Climate Change

Establishing a Shared Language of Resilience

Untangling the Language of Risk, Climate, and Resilience

We need to first untangle the vocabulary of risk, climate, and resilience in order to speak the same language



Climate Change

Establishing a Shared Language of Resilience

Simplified Working Definitions

Getting on the Same Page

Risk

The probabilistic consequence of hazard x exposure x vulnerability

Vulnerability

A combination of sensitivity, condition, durability, and adaptive capacity

Resilience

The ability to withstand and adapt to a disturbance

Equity*

The consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities, particularly communities of color

** As defined in Executive Order on Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (EO 13985) and HUD Climate Action Plan.*

Changing the Risk Variables

Approaches to Risk Reduction

If we want to reduce **RISK**

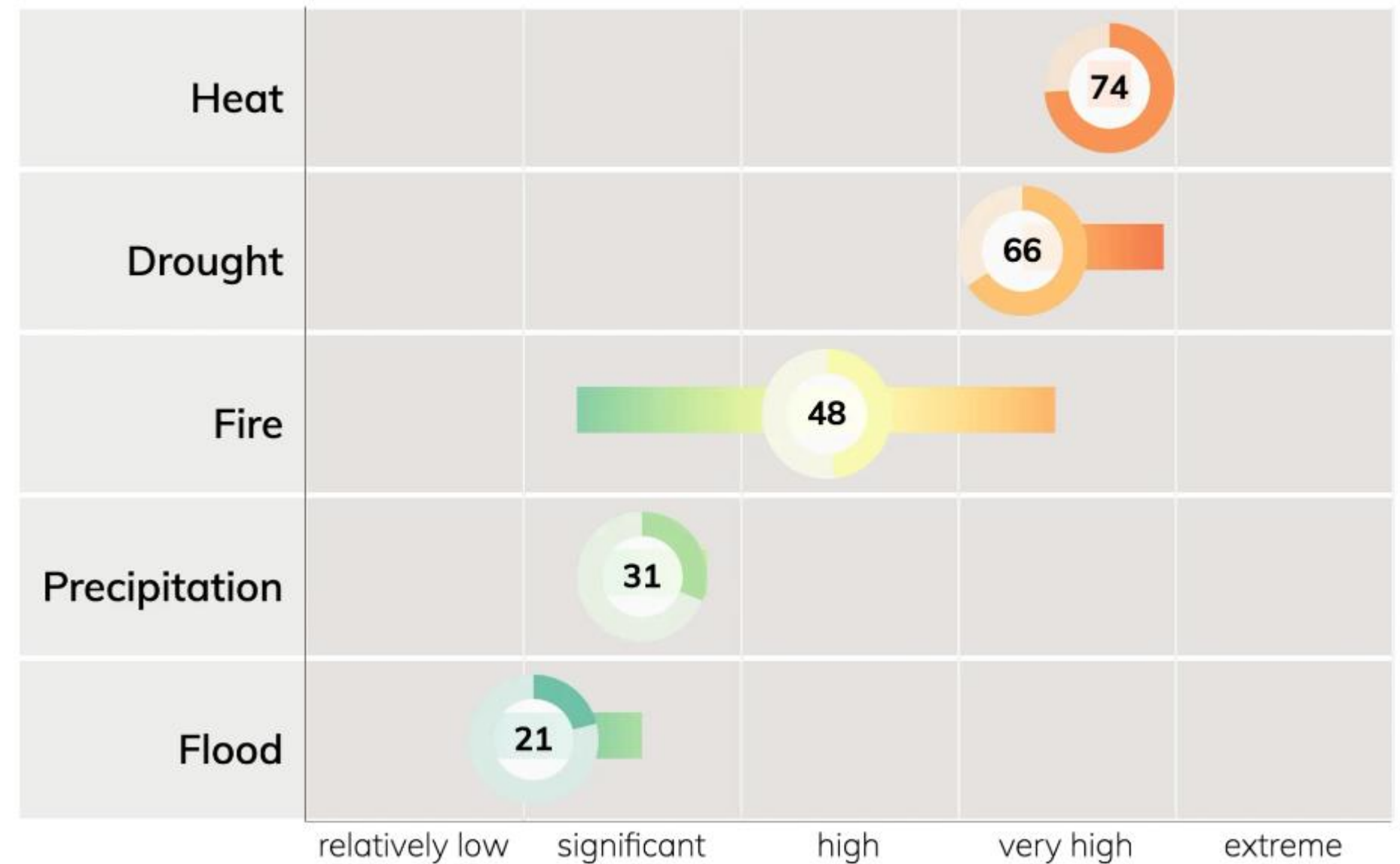
We must reduce the **RISK VARIABLES**



Main Climate Hazards Affecting Colorado:

1. Extreme heat events
2. Increasingly severe wildfires
3. More frequent and intense droughts
4. Inland flooding from increased precipitation

Median Risk Ratings for Colorado





Identify your hazard exposure.

Learn the lessons of previous climate and emergency events, research the location and climate zone of your site and your community and evaluate future risk.



Assess your risks.

Assess potential threats and anticipate their impact on your infrastructure and residents to determine where to focus your attention.



Determine your resilience strategies.

Once you understand your hazards and risk, you can assess which resilience strategies make sense for your building.



Identify your hazard exposure.

Potential Hazard

Determine your Exposure



Flooding

Housing in coastal areas or next to bodies of water is at the greatest risk of flooding, but heavy rainfall can drastically damage buildings in any area. Conventional guidance can often be technically and financially impractical for multifamily properties undergoing retrofit. For instance, elevating a building or its systems above the flood elevation may be unfeasible.

- » Locate your Flood Zone and Base Flood Elevation on the **FEMA flood map center**.[↗]
- » Hire a surveyor to provide you with an Elevation Certificate and your flood zone determination.
- » Determine how future sea-level rise will impact your property using **NOAA's Sea Level Rise Viewer**.[↗]
- » Areas with combined sewer-stormwater systems are at risk for flooding, even if not located within the Flood Zone.





Extreme Temperatures, Winter Storms and Blizzards

Power grids and HVAC systems become overtaxed and may fail during extreme temperatures. Buildings with little natural ventilation and poor envelope performance are at risk during heat waves from overheating. The Urban Heat Island Effect (UHIE) can make heat waves worse.

- » FEMA and the National Oceanic and Atmosphere Administration (NOAA) provide tools to assess risks of long-range changes in weather and climate.
- » Third-party subscription services provide severe weather alerts by Email or SMS.



Assess your risks.

Risks to Residents	Risks to Buildings	Risks to Business Continuity	Risks to the Community
 <ul style="list-style-type: none">» Injury or loss of life.» Psychological trauma.» Loss of property.» Economic hardship and loss of jobs.» Exposure to pathogens and toxins.» Security risk.» Housing displacement.» Loss of community services.	 <p>Damage to:</p> <ul style="list-style-type: none">» Envelope.» Building systems.» Communications infrastructure.» Roof.» Foundation.» Loss of housing units.» Loss of commercial and institutional tenants.	 <ul style="list-style-type: none">» Cost of repairs.» Displacement of tenants and loss of rental income.» Rising insurance rates.» Reduction in property value.» Regulatory fines.	 <ul style="list-style-type: none">» Destruction of public infrastructure.» Downturn in community business and economy.» Evacuation and Migration.» Disruption in transportation.» Loss of faith in public institutions.» Water supply contamination.



Determine your resilience strategies.



Low to mid-rise walk-ups



Low-rise contemporary



Mid-rise contemporary



High-Rise contemporary

Protection					
1	Wet Floodproofing	●	●	●	●
2	Dry Floodproofing	●	●	●	●
3	Site Perimeter Floodproofing	○	●	●	●
4	Resilient Elevators	●	○	●	●
5	Backwater Valves	●	●	●	●
6	Sump Pumps	●	●	●	●
Adaptation					
7	Envelope Efficiency	●	●	●	●
8	Elevated Equipment	●	●	●	●
9	Elevated Living Space	●	●	●	●
10	Surface Stormwater Management	●	●	●	●
11	Window Shading	●	●	●	●
12	Distributed Heating and Cooling	●	●	●	○

Types of Solutions

Practical Approaches to Risk Reduction

Built Solutions

Natural & Nature-Based Solutions

Policy Solutions

Operational Solutions

Technological Solutions

Hybrids of Above / Other

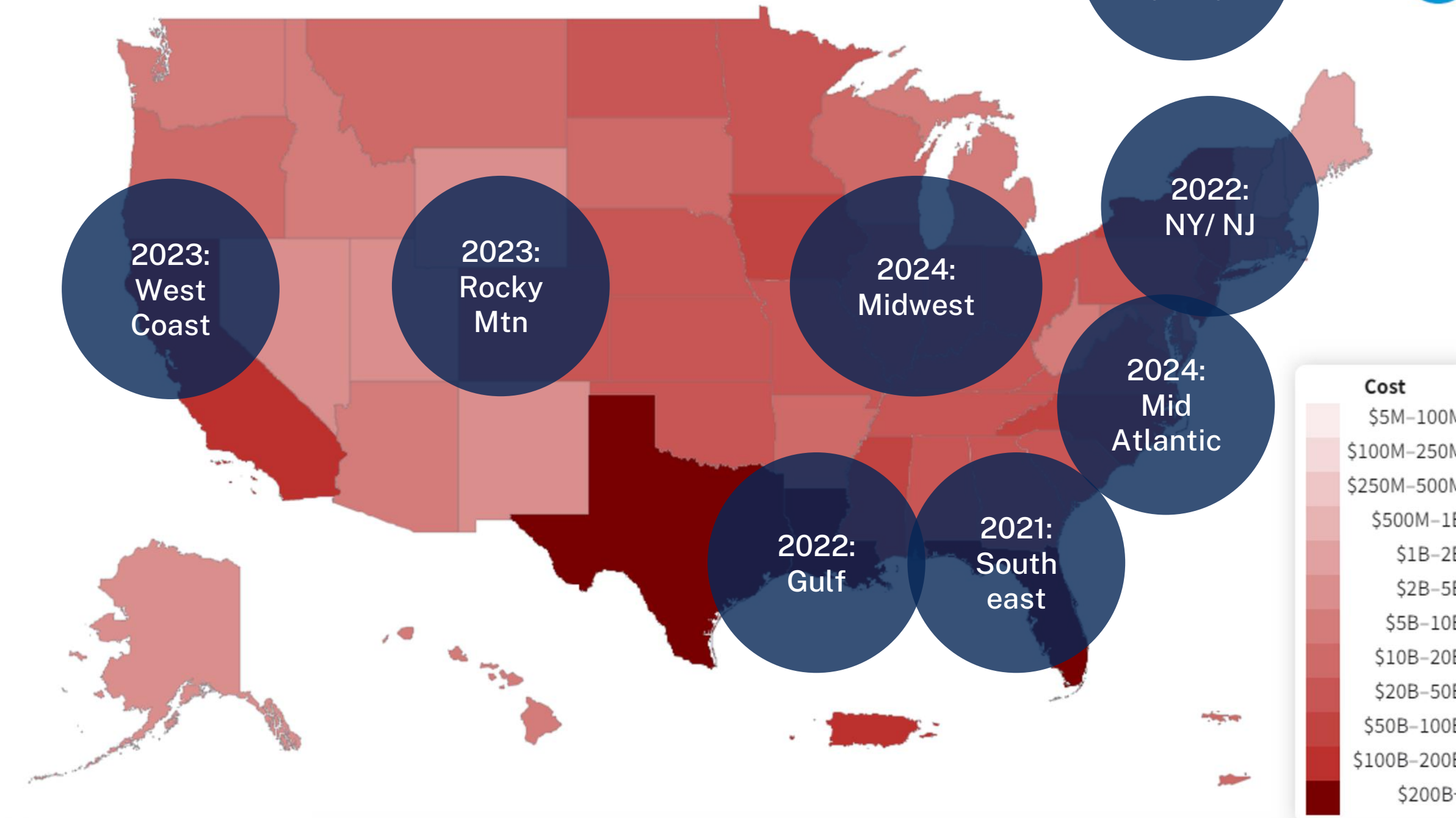
The following examples explore options for extreme heat solutions

[Source: USGCRP, Draft 5th National Climate Assessment](#)



Climate Resilience Academies

1980-2021* Billion-Dollar Weather and Climate Disaster Cost (CPI-Adjusted)



United States							
■ Drought:	\$250B+	■ Flooding:	\$100B-200B	■ Freeze:	\$20B-50B	■ Severe Storm:	\$250B+
■ Tropical Cyclone:	\$1.1T+	■ Wildfire:	\$100B-200B	■ Winter Storm:	\$50B-100B	■ All Disasters:	\$2.1T+



Identify your hazard exposure

Assess your risks

Determine your resilience strategies

Implement resilience strategies

[Portfolio Protect](#)

[Building Protect](#)

[Multifamily Strategies for Building Resilience](#)

[Business Continuity](#)

[Keep Safe Florida](#)

[Keep Safe: A Guide for Resilient Housing Design in Island Communities](#)

[Funding Resources Guide](#)

[Keep Safe Florida](#)

[2020 Enterprise Green Communities Criteria](#)

[Business Continuity](#)

[Multifamily Strategies for Building Resilience](#)

[Keep Safe Florida](#)

Resources & Innovations



Resilience Strategies to Protect the Existing Housing Stock

Sarah Hong, PE

group14eng.com





- Current State of Colorado
 - What are the highest risk hazards projected in CO for the next 30 years?
 - Who / where are the most vulnerable communities?
- Best practices for multi-hazard risk mitigation on existing affordable housing projects
 - HVAC equipment + building systems perspective
- Top recommendations for resilience improvements
 - What investments provide the most value to existing buildings on limited budget to address highest risk hazards?
 - Providing cooling
 - Protecting air quality
 - Emergency preparedness

High Priority Hazard Threats in CO



Building systems can help healing design features continue to function during hazards, **when they are needed the most.**



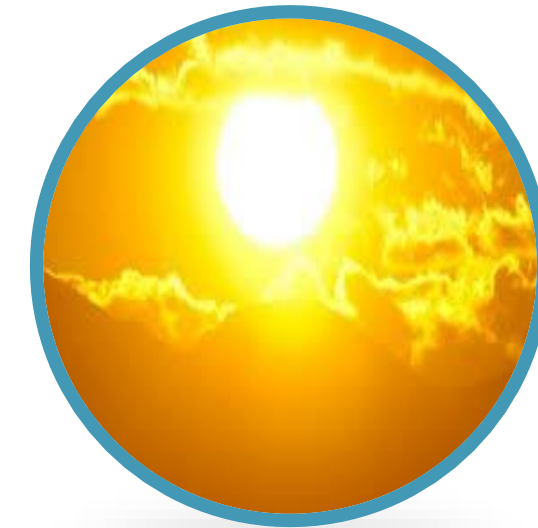
Drought

25-50% increase in water withdrawal over next 50 years



Flooding

Intense rain events combined with warmer winter temperatures increase flood risk



Extreme Heat

Ave temperature expected to rise 2-5 degrees F in next 50 years

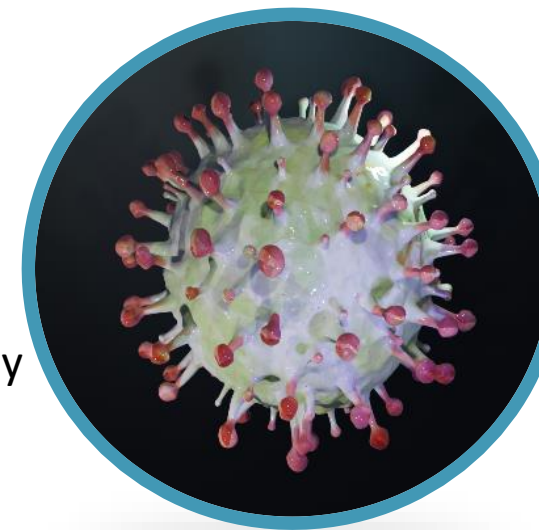
Severe Winter Storms

Severe storms can cause power outages and closures of streets, schools, and businesses



Disease Outbreak

COVID-19 and similar pandemics put the elderly at higher risk



Wildfire

Fire frequency and intensity increases with rising global temperatures





DENVER DAYS ABOVE 90°



Change in annual days above 90° based on rate of change since 1970.
Source: RCC-ACIS.org

CLIMATE CENTRAL

Extreme heat episodes disproportionately threaten the health of populations who are especially vulnerable...

Communicable diseases, ground-level ozone air pollution, dust storms, and allergens can combine with temperature and precipitation extremes to generate multiple disease burdens.

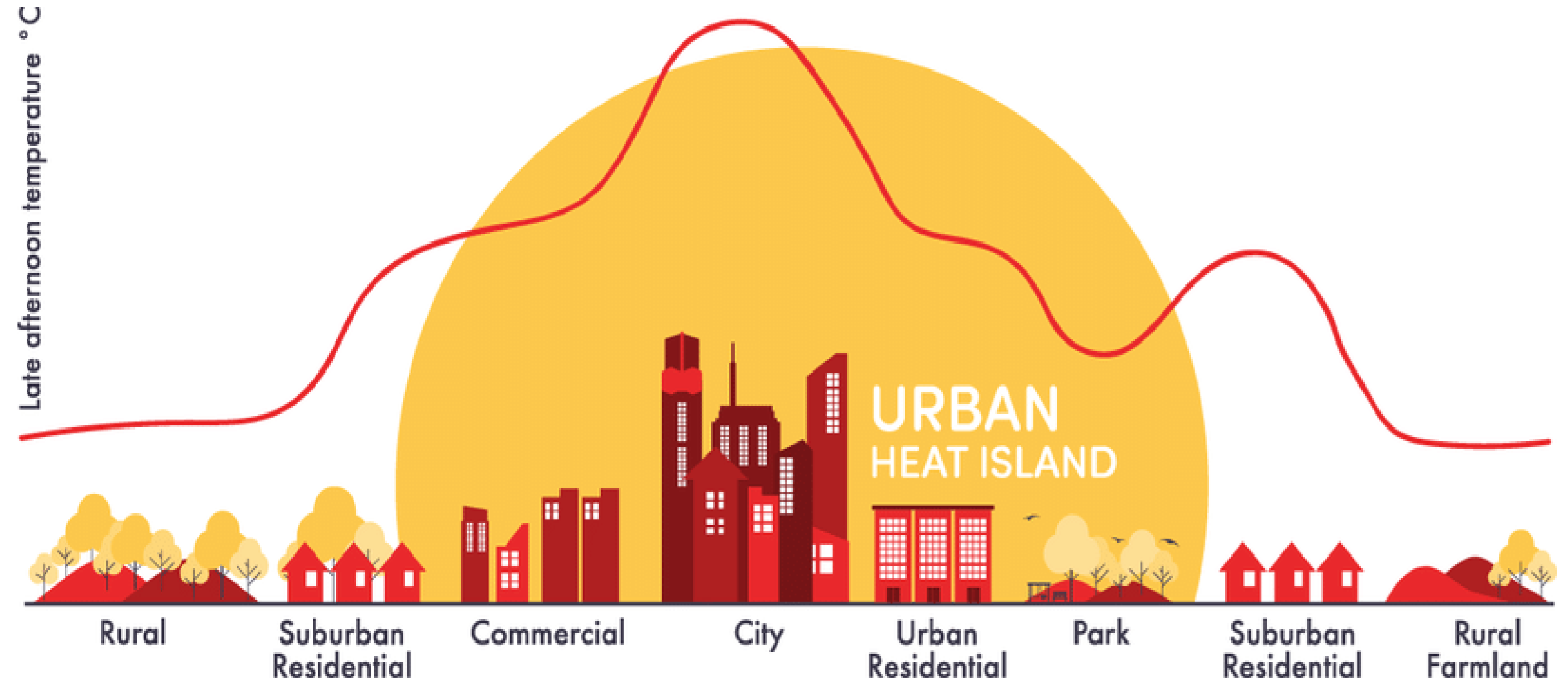
US Fourth National Climate Assessment - 2018

Mortality rates due to extreme heat events are expected to increase to annual average of 13,000 by 2050. – Natural Resources Defense Council

Contributors to heat vulnerability:

- “Heat Island” effect
- Shading vegetation
- Neighborhood demography
- Prevalence of health conditions
- Vehicle ownership
- Income levels

Urban Areas Can Be 27°F Hotter Than Rural Areas, 18°F Higher at Night



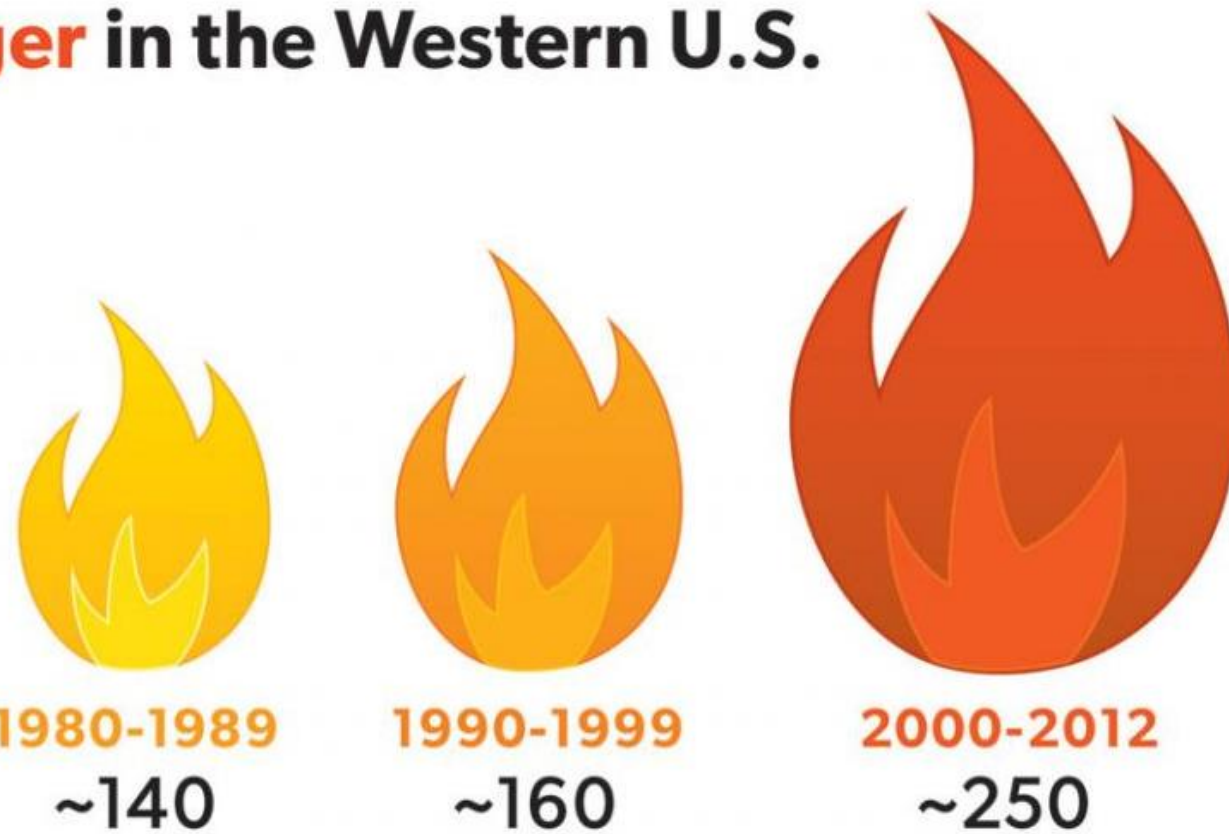


Wildfires are **increasing** and wildfire season is getting **longer** in the Western U.S.



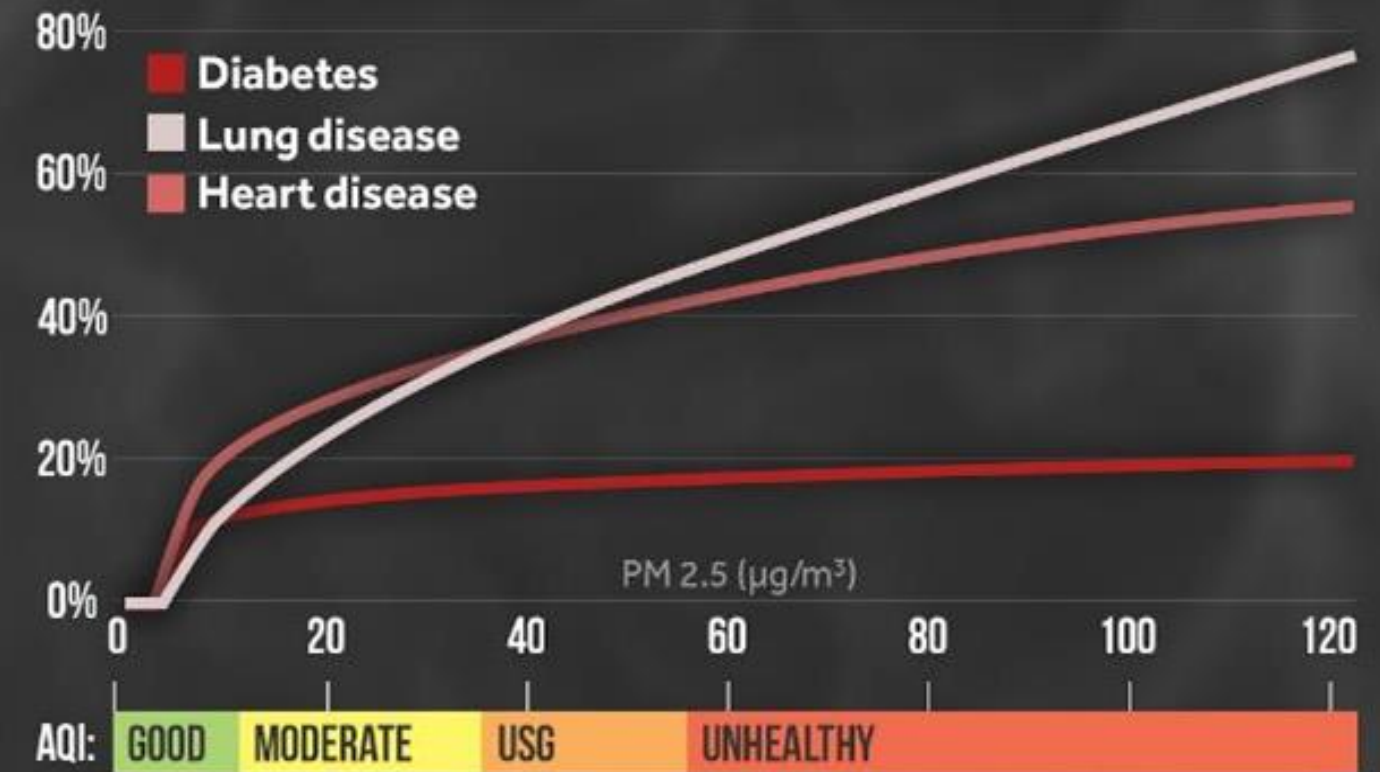
Average number of large wildfires per year

bigger than 1,000 acres



WILDFIRE SMOKE RISKS

Increased Risk



USG = Unhealthy for sensitive groups
Source: Bowe et al (2018), Cohen et al (2017)

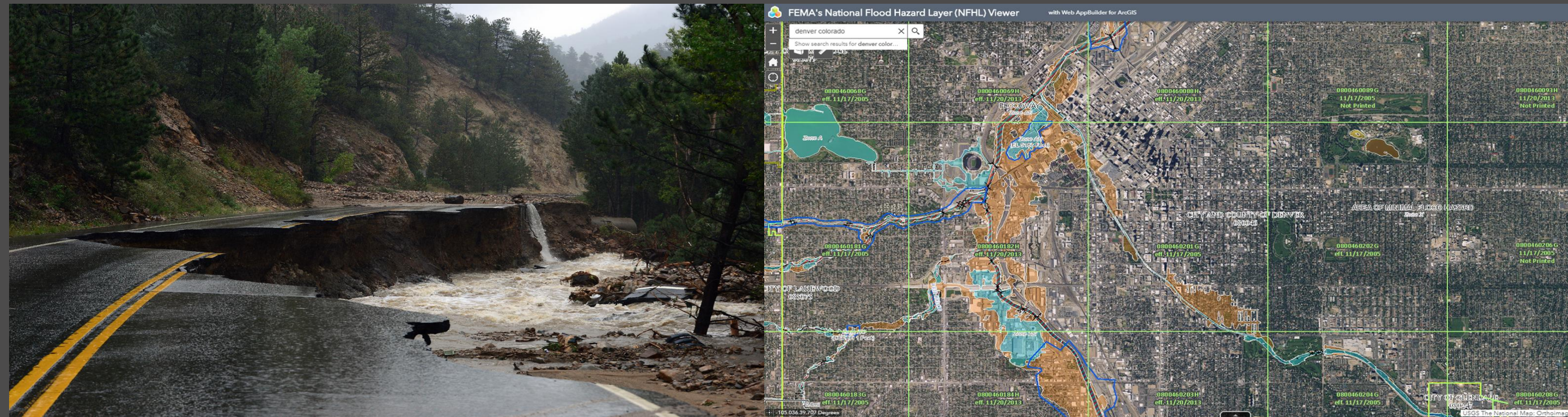
CLIMATE CENTRAL

“In the last few years, we’ve seen enormous spikes in episodes where wildfires contribute to pollution,” said Janice Nolen [American Lung Association]. “It doesn’t have to be a continuous problem every day to be unhealthy. A spike that happens for a few days of difficult breathing can shorten lives.”

17%

of homes hit by the
2013 floods were
outside of the
mapped floodplain

- FEMA flood maps based on historical data only
- Takes 2-3 years to update a region
- Nationally, 25% of flood insurance claims come from outside of designated floodplains



THREATS TO COLORADO'S POWER GRID

- Rising temperatures can lead to an increase in energy demand due to a rising demand for cooling. If the grid cannot support the higher load, blackouts can occur.
- Changes in water availability can disrupt hydropower production, thereby leading to power outages.
- Wildfires can damage and destroy power transmission lines and distribution equipment, resulting in blackouts and localized power outages.
- Winter precipitation events are projected to increase in frequency and magnitude



Extreme weather in CO - June 2023

Flooding, high winds, tornadoes, hail, and extreme precipitation events pose risks to human life, energy systems, and infrastructure

Some communities in Colorado are disproportionately vulnerable

- **Extreme Heat** = Vehicle ownership, income levels, disability, and lack of neighborhood green infrastructure
- **Poor Air Quality** = Multi-family affordable housing is more likely to rely on unfiltered natural ventilation than market rate multifamily housing
- **Health** = Impacts of climate change on health are significantly moderated by individual and community vulnerability and resilience. Two critical components of climate vulnerability are pre-existing health status and living conditions



Resilient Design Retrofit Strategies



Retrofit Cooling Strategy



- Portable evaporative cooling systems may be a good backup solution, especially for vulnerable populations
- Providing control for resident's of their home so that the can be comfortable even during power outage, extreme heat, and peak energy use times. Strategies include:
 - Ceiling fans: Moving air evaporates moisture from our skin, cooling the skin surface
 - Interior shading and drapes – black out shades



Spaces for Respite & Refuge



- Spaces in building for heatwave respite and survival. Highly insulated, well-shaded cool rooms with little window areas and effective cooling system – with emergency backup system for electricity.
- Ideally, these areas will also contain emergency supplies, such as basic first aid kits, storable water, AEDs, portable air purifiers, etc.





MITIGATION EFFORTS

Primary determinants of a home's ability to survive a fire are **roofing material** and surrounding **defensible space**.

- Break up continuity of horizontal and vertical fuel sources
- Replace wood shingled roofs with non-combustible material
- Prescribed fire control (burns)

Homes with 30' defensible space and non-combustible roofs have a 85% survival rate in the event of a wildfire.



Also provides protections against VOCs, formaldehyde, dust, PM2.5, PM10, dust, infectious diseases, and more.

MITIGATION EFFORTS

When the air quality index exceeds 100, close exterior dampers to prevent polluted air from entering to building if possible.

- Integrate MERV-13 or higher filters for enhanced filtration in HVAC.
- Have portable air purifiers available with HEPA filters for poor air quality days.
 - Activated carbon filters reduce ozone level infiltration

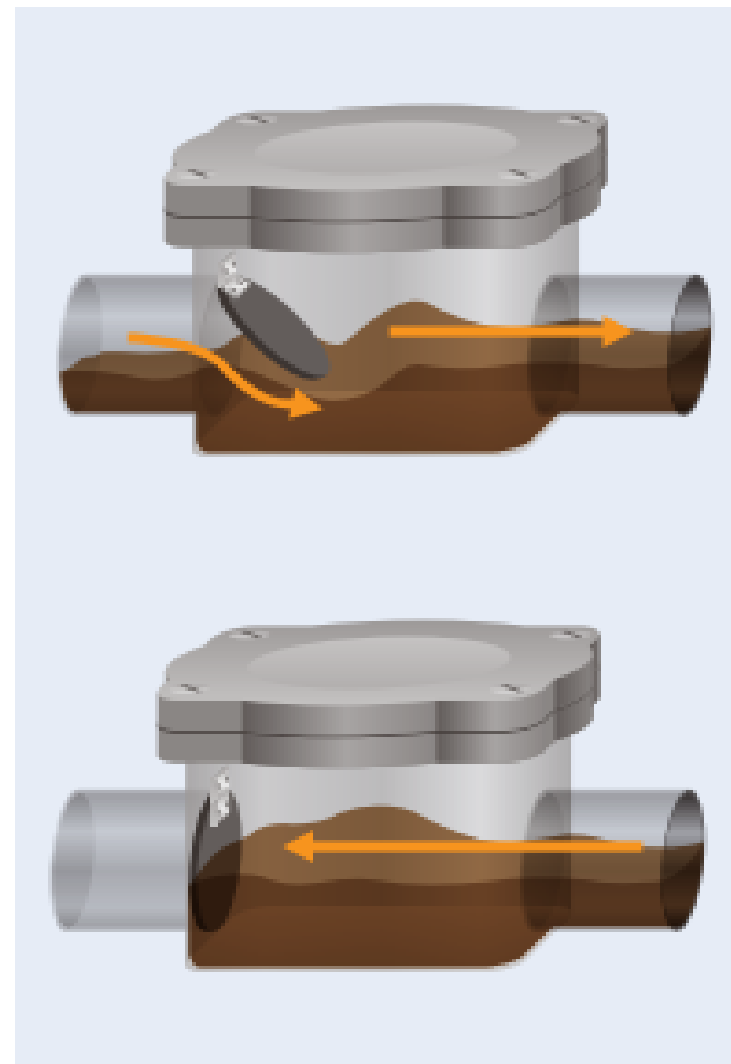
Sump pumps

Remove water that accumulates at lowest point in building



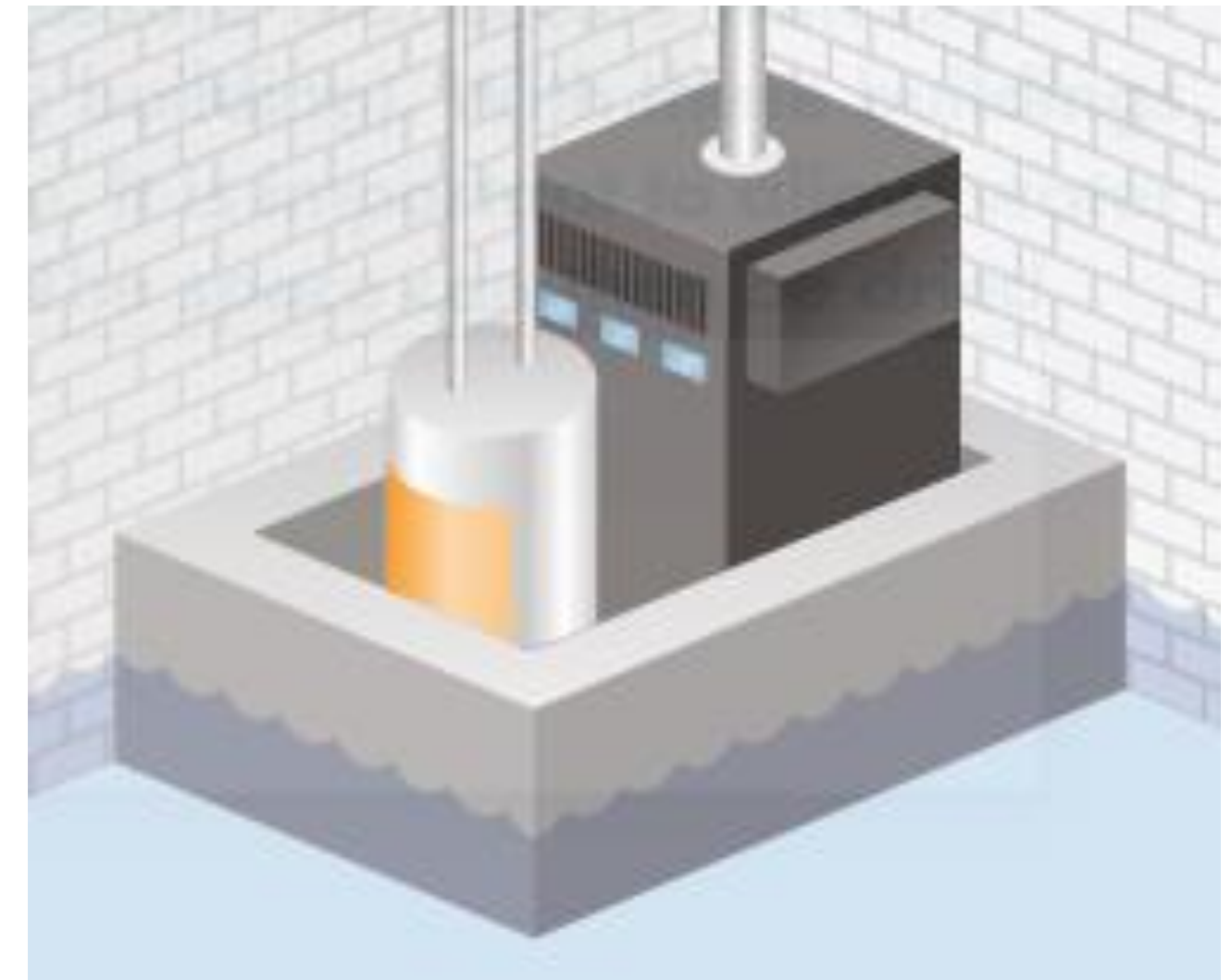
Backwater valves

Prevent sewage backflow



Protect mechanical equipment

Build barrier around critical systems if it can't be elevated



Partial Electrification:

- Natural gas backup for peak heating
- Electrify when equipment is replaced, or a major modification is planned
- Key opportunities:
 - Easy-to-Electrify or Medium-to-Electrify systems are being replaced at the end of their useful life
 - Cooling is being added to a building
 - Boilers are being replaced
 - An addition or major renovation is being planned





Objective: Prepare a whole building plan for emergency events

Description:

- Develop emergency HVAC response plan
- Develop an evacuation Plan
- Post maps and procedures.
- Plan and provide training and supplies for Shelter-in-Place strategies.
- Prepare preventative maintenance plan with ongoing checklist for maintenance

KEY CONSIDERATIONS

- Engage residents in community education effort
- Include site details, contact and communication plan, emergency procedures, roles and responsibilities.
- Consider providing emergency provisions and care supplies.



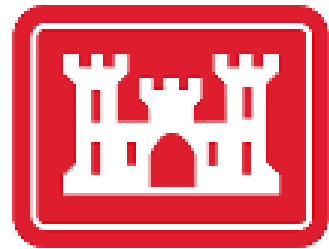
High Priority Hazard Mitigation Strategies



Design Strategies to Address One or More High Risk Hazards

Strategy	Cost	Risks Addressed
Install portable cooling systems	\$	Extreme heat
Increasing green spaces and tree canopy, reducing dark -colored surfaces	\$\$	Extreme heat, urban flooding
High quality filters on return air	\$	Spread of infectious disease
High quality filters on outside air	\$\$	Poor air quality during wildfire season
In-unit ducted supply and exhaust	\$\$\$	Poor air quality during wildfires, infectious disease
Back-up power to key areas in building	\$\$\$	Extreme heat or cold, power outage, wildfires, urban flooding, severe storms

Resilient Design in Green Building Certification Standards



Passive House Institute US



- **LEED ReLi credits**
- **Passive House Institute**
- **Army Corps of Engineers**
- **Enterprise Green Communities**
- **International Green Construction Code (IgCC)**
- **NGBS Resiliency Badge**

*Resilience starts with strong, regularly updated, and properly implemented building codes.
- International Code Council (ICC)*

THANK YOU!



14



1 Vulnerability Assessment

2 Strategies for top 3 risks identified in Vulnerability Assessment



1.3b

Optional | 15 points

Resilient Communities: Multi-Hazard Risk/Vulnerability Assessment

REQUIREMENTS

Carry out a Vulnerabilities Assessment and implement building elements designed to enable the project to adapt to, and mitigate, climate impacts given the project location, building/construction type and resident population. Your Vulnerabilities Assessment should prioritize evaluation of issues (e.g., wildfires, flooding, etc.) identified in the state or county hazard mitigation plan for which your project is located. Implement strategies to address at least the top three risk factors identified for your project. Also ensure that these measures are incorporated in response to Criterion 8.2 Emergency Management Manual.

RATIONALE

Creating affordable housing projects that will perform well during natural disasters requires careful planning. The exercise of assessing vulnerabilities and creating a plan to mitigate appropriate risks will result in greater focus on this issue. Engaging in this exercise during the integrative design process will allow for input from a variety of stakeholders and incorporation of measures that enhance resilience throughout the project design and construction documents.

Boulder Housing Partners



Boulder Housing Partners
www.boulderhousing.org
(720) 564-4610
bhpinfo@boulderhousing.org



BOULDER
HOUSING
PARTNERS

BOULDER HOUSING PARTNERS

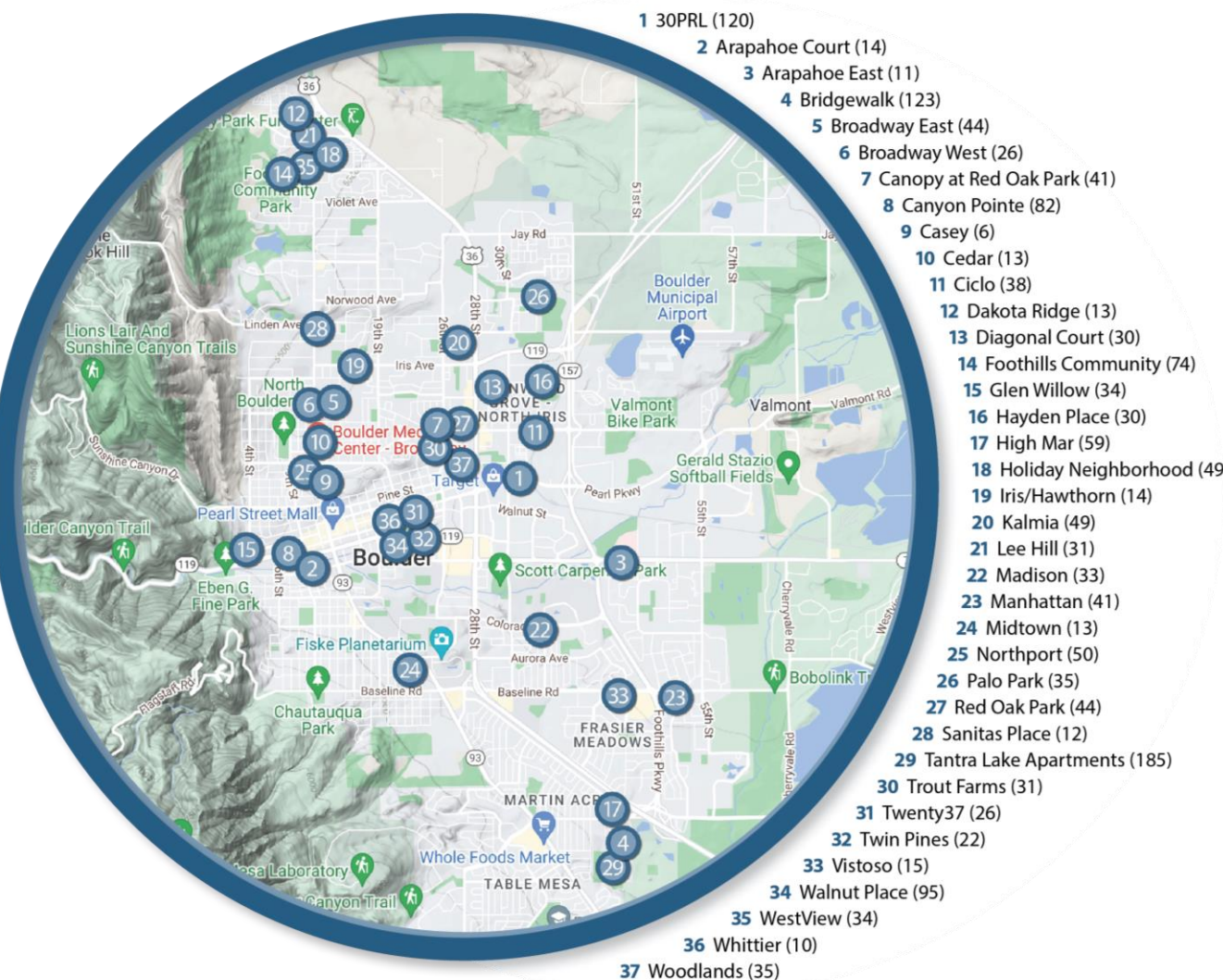
HOUSER | PROPERTY OWNER | PROPERTY MANAGER | HOUSING DEVELOPER | VOUCHER ADMINISTRATOR | SERVICE PROVIDER | CHAMPION OF THE ENVIRONMENT

Mission

To provide quality, affordable homes and foster thriving Boulder communities.

Vision

To help create a diverse, inclusive, & sustainable Boulder.



BY THE NUMBERS

1597

Total Homes
Leased +
Managed

1411

Total Vouchers
Administered

4000+

Individuals
Served Annually

2,382

Households

~5%

Percentage of
City of Boulder's
Households

\$516
MM

In Assets
Managed

\$44.5
MM

2023 Operating
Budget

648

Homes
Renovated
Since 2016

501

Households
Added
Since 2016

733

Households in
Pipeline for
Development

2.6
MW

Solar

~100

BHP Team
Members

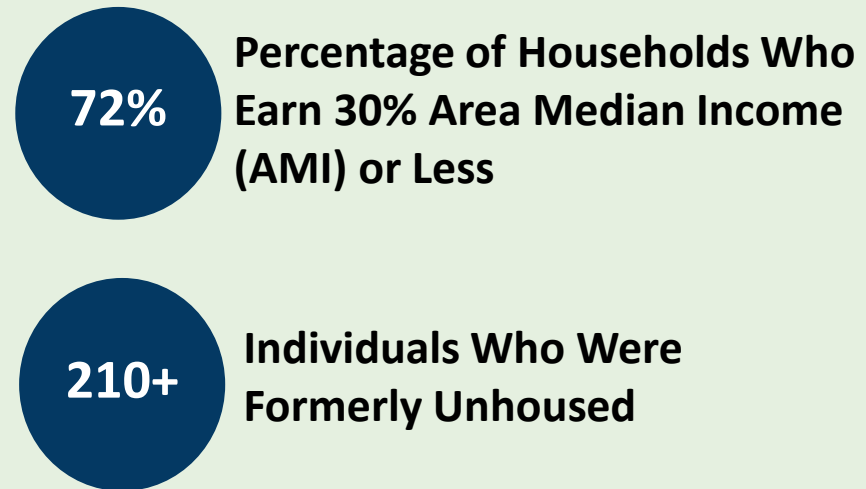
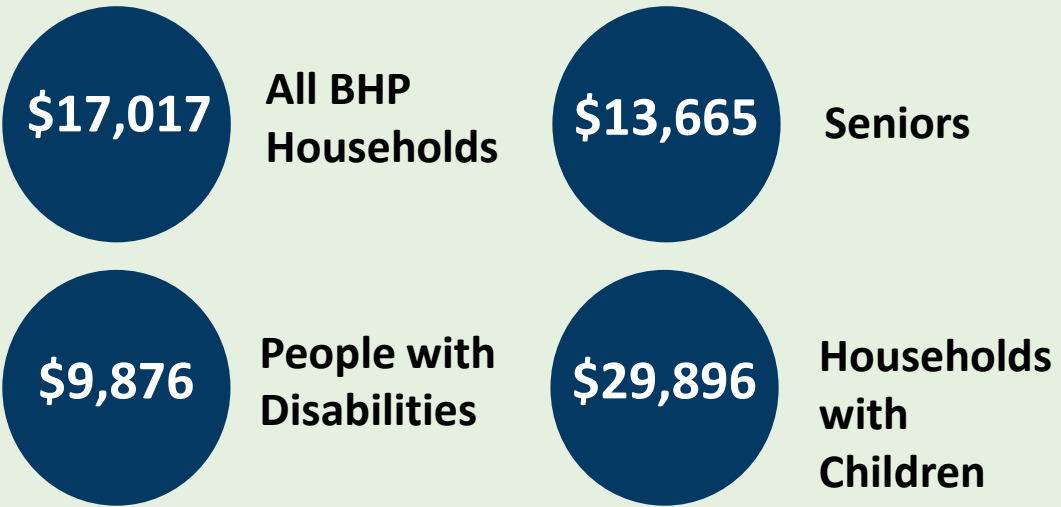
CORE BELIEFS

- We believe in the **power of having a home.**
- We believe in **opportunity for all.**
- We celebrate our **diversity.**
- We believe our work is **one part of a broader solution** to a thriving community.
- We believe in keeping our **impact on the environment small.**
- We believe in working as **one team.**



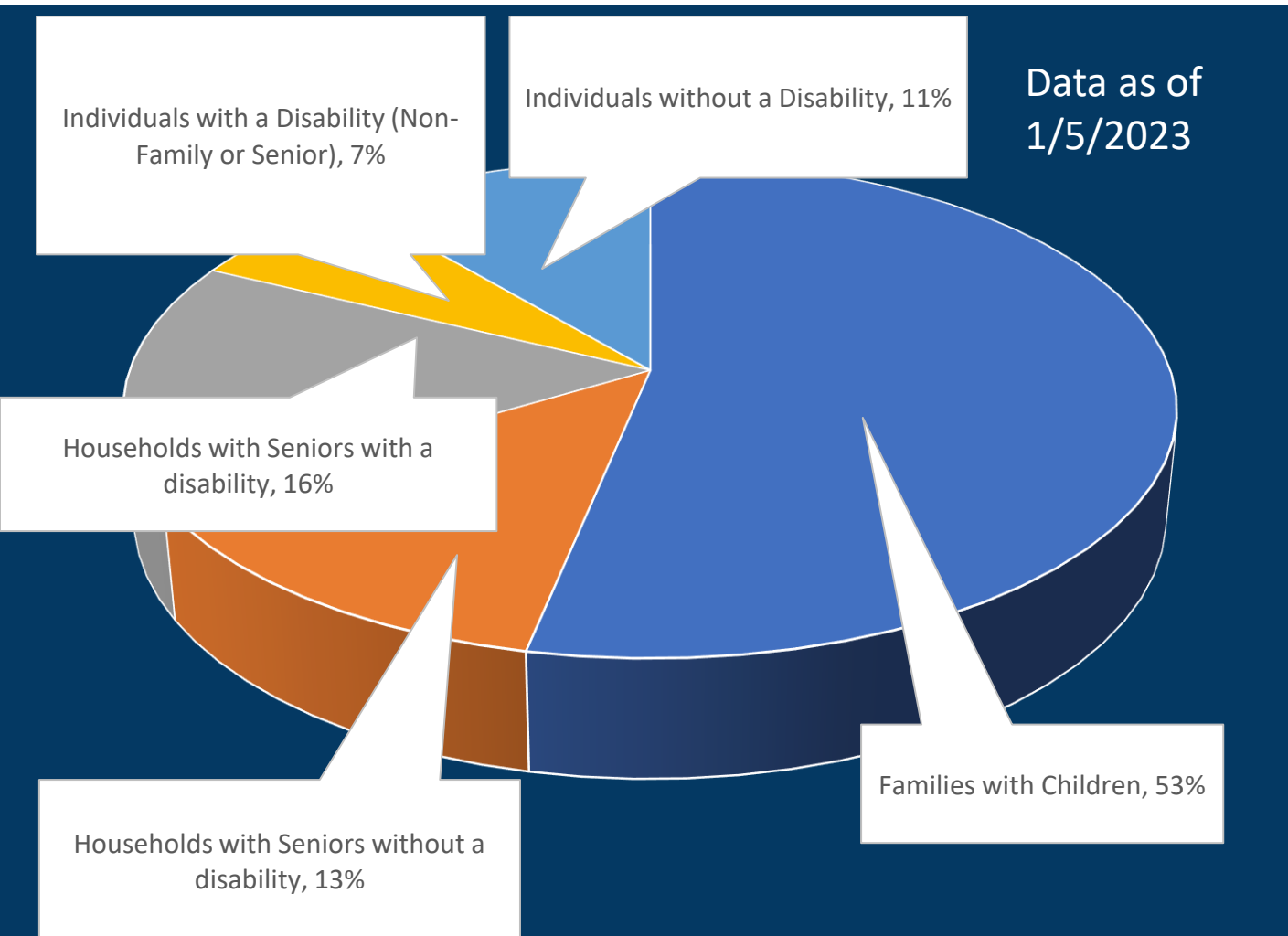
WHO WE SERVE

AVERAGE INCOME



AREA MEDIAN INCOME (AMI)

Household Size	30% AMI	60% AMI
3 Person Household	\$33,870	\$67,740



RESIDENT ENGAGEMENT & FEEDBACK

- Quarterly Newsletter
- Community Meetings
- Resident Focus Meetings
- Resident Representative Council
- Emergency Preparedness
- Customer Service Surveys



Resident Representative Council



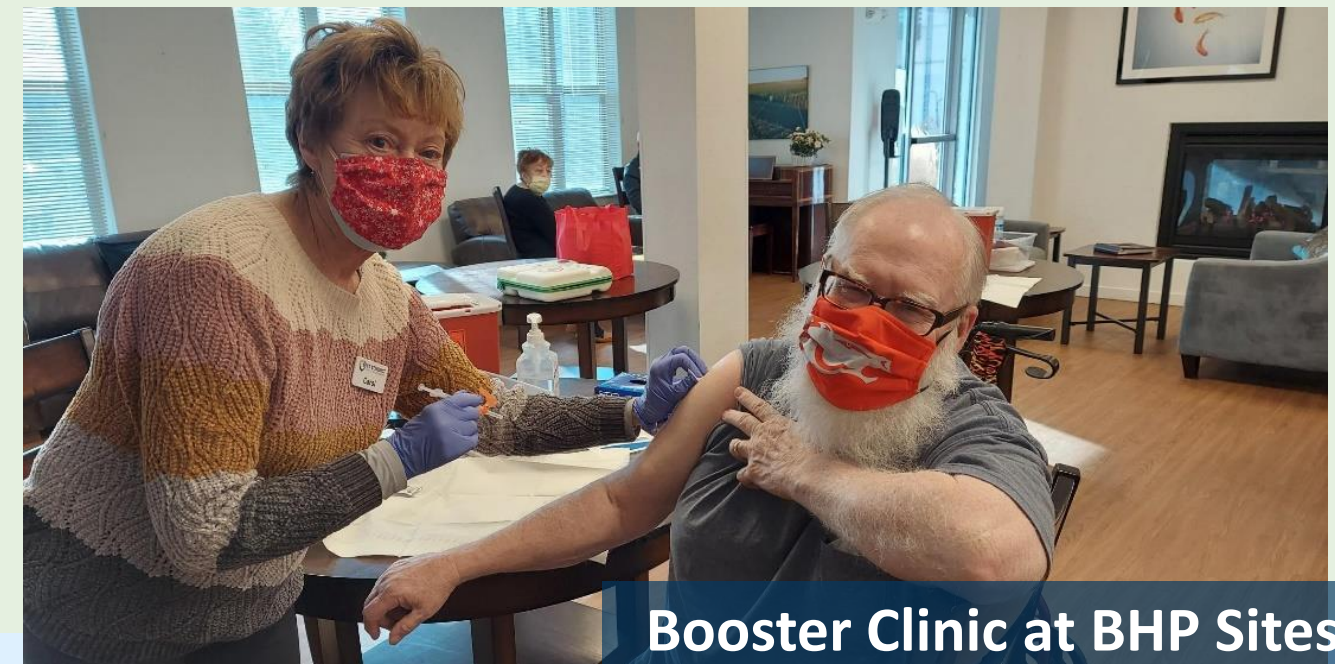
Resident Focus Group



sustainability rooted in social justice



Book Rich Environment Event



Booster Clinic at BHP Sites

INVESTING IN OUR COMMUNITIES

\$67.6
MM

Amount Raised and Invested Since 2016

\$104K

Average Investment Per Home

648

Homes Renovated Since 2016 (over 40% of our total portfolio and 56% of our portfolio that's 10+ years old)

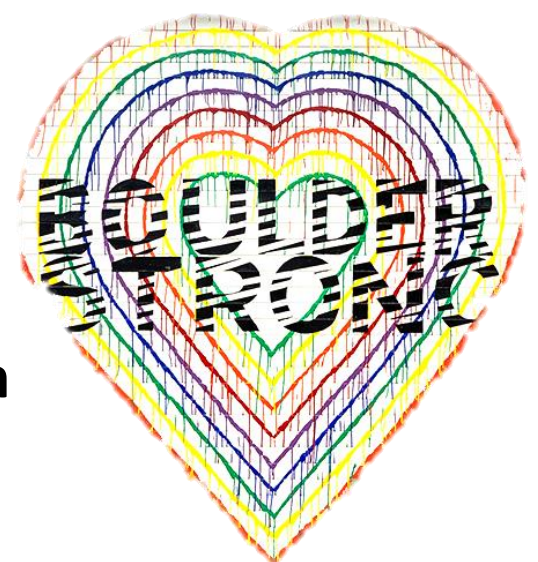
Bridging the Digital Divide

78%

Properties with Free Wi-Fi

22%

Free Wi-Fi in Progress



Tantra Lake Apartments



Kalmia



Glen Willow



Madison



Diagonal Court



Iris Hawthorne

40% OF OUR PORTFOLIO ARE PROPERTIES WITH 30 OR LESS APARTMENTS



Whittier Apartments – 10 apartments



Casey - 6 apartments

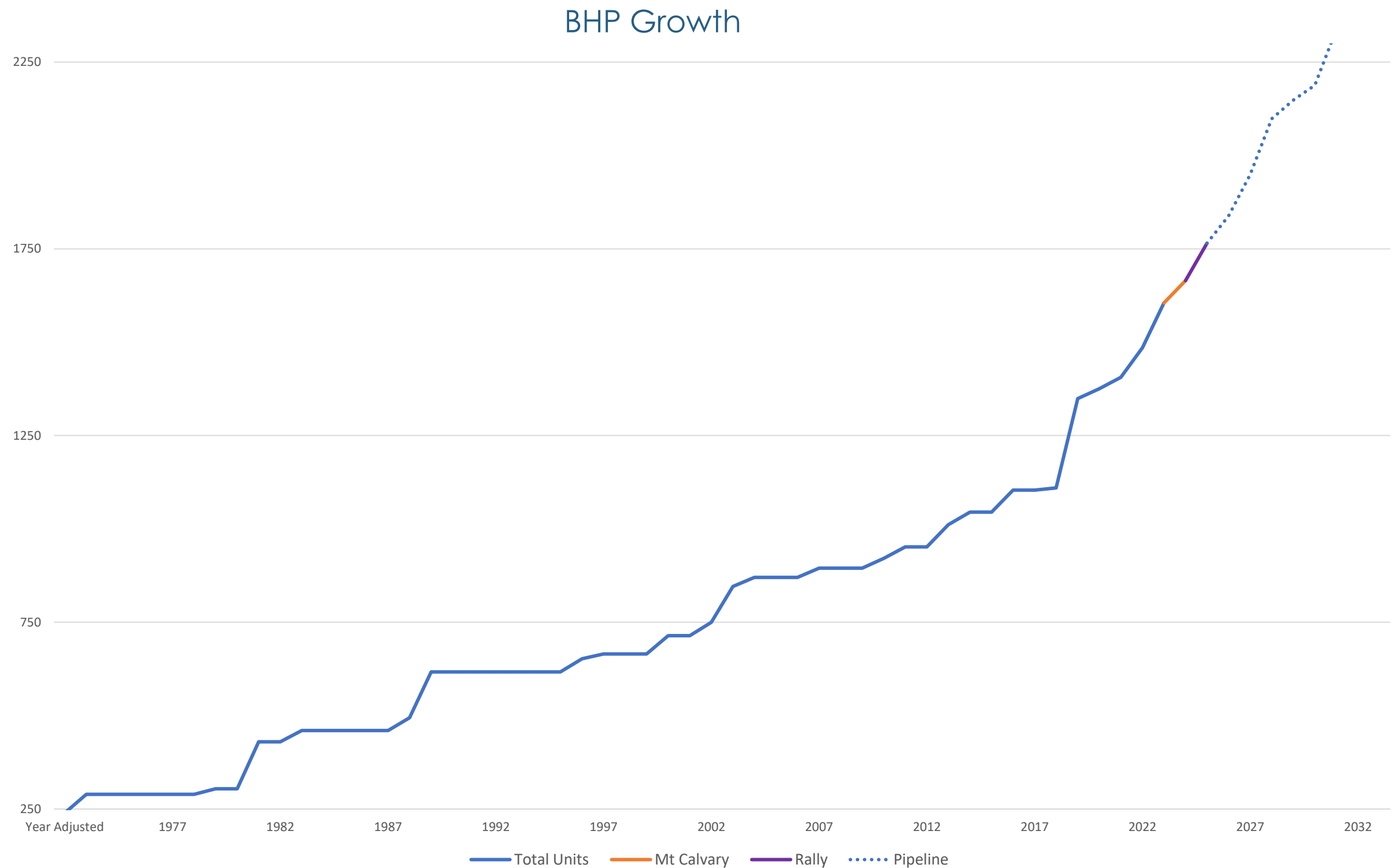


Dakota Ridge – 13 Townhomes

AFFORDABLE HOMES OVER TIME

2016-2023

- Expansion to meet need
- 501 homes since 2016
- Planning for another 733 new build homes, plus acquisitions, plus 406 homes of renovation



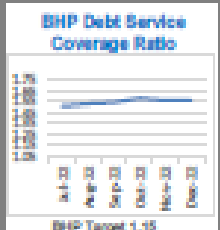
Measure, Manage, Share

Boulder Housing Partners Benchmark Report as of December-2022

BHP Net Income

	YTD Actual	YTD Budget	% Diff
Income	43,128,150	43,383,882	-1%
Expenses	(35,475,736)	(34,343,148)	-3%
Net Income *	7,652,414	9,040,734	

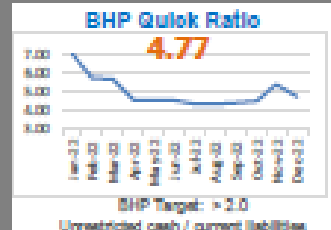
* includes Tax on Sale, Tax on Annual PMA, etc



BHP Balance Sheet Summary

	Actual Dec-22	Actual Dec-21	Net Change YTD
Assets	242,691,732	254,508,542	(11,814,750)
Liabilities	(59,914,573)	(80,378,754)	20,464,181
Equity	182,777,219	185,127,778	17,649,441

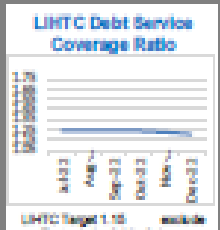
April 2022: Purchased GSA property: \$10.3M, Sold Taxita Lake to LIHTC



LIHTC Net Income

	YTD Actual	YTD Budget	% Diff
Income	13,821,680	13,417,900	3%
Expenses	(24,649,238)	(23,970,787)	-3%
Net Income *	(10,827,570)	(10,552,777)	

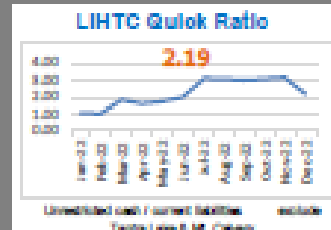
* includes Taxita Lake and MI Gateway



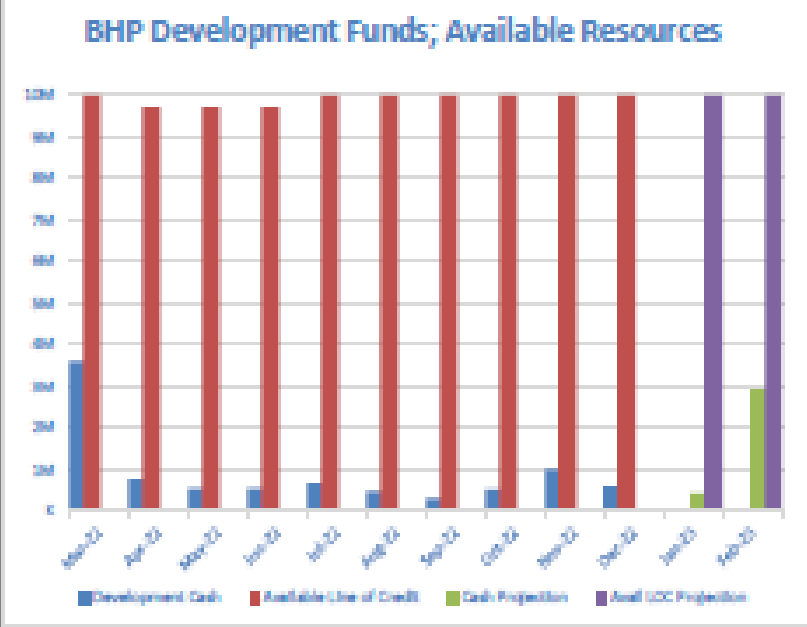
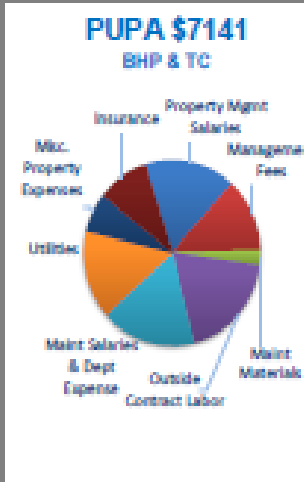
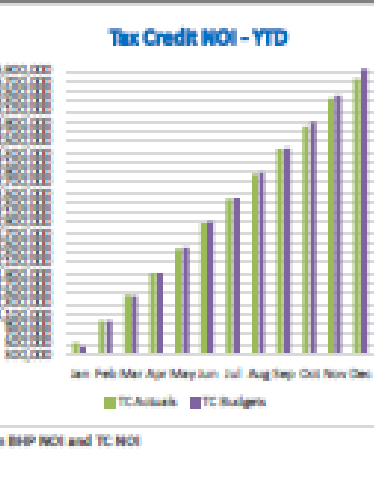
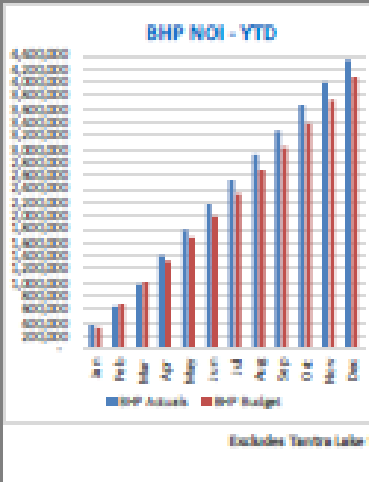
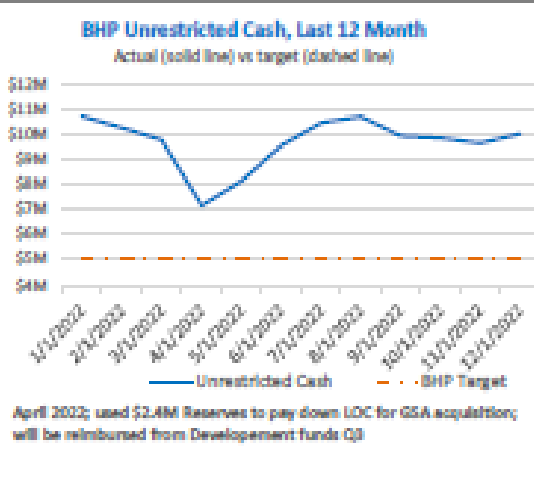
LIHTC Balance Sheet Summary

	Actual Dec-22	Actual Dec-21	Net Change YTD
Assets	254,952,254	283,145,523	(8,193,269)
Liabilities	(192,918,003)	(211,274,448)	18,356,443
Equity	62,034,251	51,871,077	10,163,174

excludes Taxita Lake and MI Gateway



Maintenance Unit Turns: **15.5** Average days to complete: **282** turn YTD Work Orders: **6.1** Average days to complete: **12,235** work orders YTD

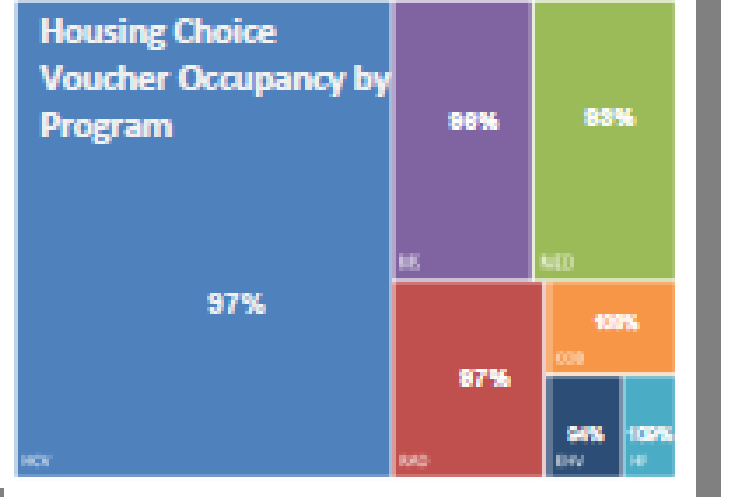
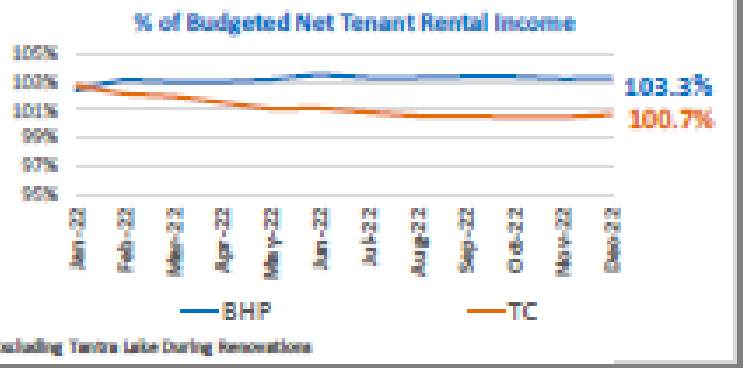


Operating Reserves

Current Operating Reserves
4,678,841

2022 Annualized Expenses
13,139,009

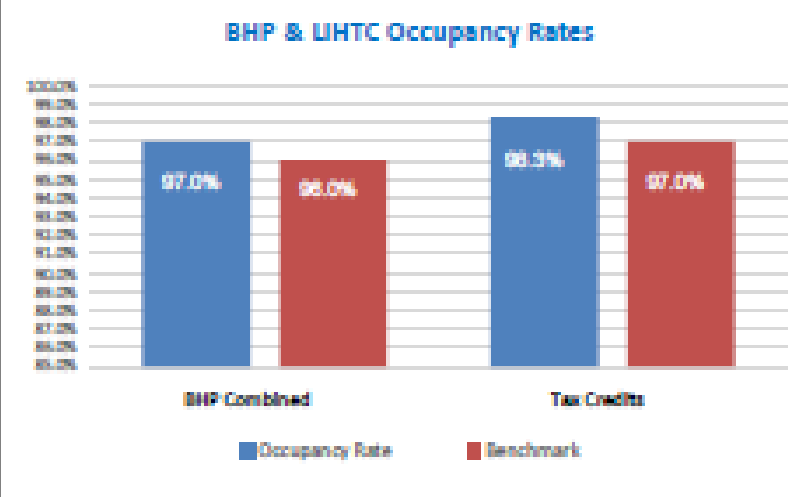
4.2 Months
of annual operating expenses are covered by the current operating reserves.
BHP Target is 3 Months



Unit Mix

	AMI	BHP	LIHTC
Public Housing		14	
Vouchers*		54	524
30%		12	19
40%		57	53
45%		-	16
50%		109	167
60%		117	312
Market		143	-
Total		506	1091
All Units		1,597	

* project based vouchers, project based contracts and COOH



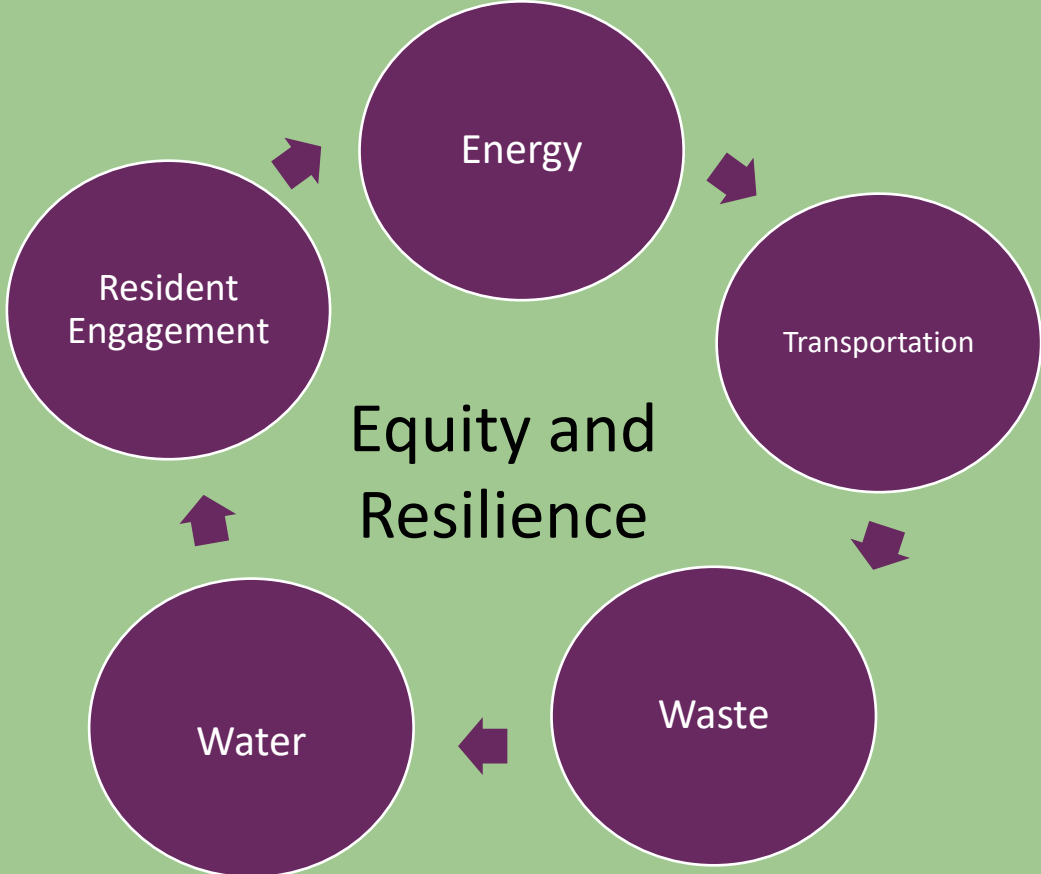
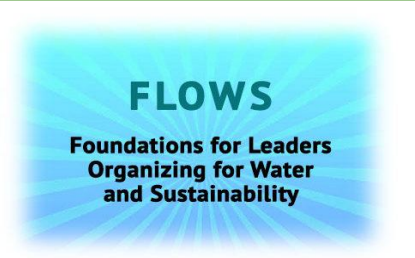
Housing Choice Voucher Programs:

- HCV - 802 Housing Choice Vouchers (14 Fair Share Vouchers added as of 10/1/2022)
- RAD - 135 Rental Assistance Demonstration Vouchers
- HED - 101 Non-Elderly Disabled Vouchers
- MIS - 178 Mainstream
- HFP - 22 Housing First Vouchers
- COB - 48 COB PSH Vouchers
- EHV - 35 Emergency Housing Vouchers (Awarded mid 2021)

Unique Households Served

2382

Sustainability



PARTNERED WITH ENERGY OUTREACH COLORADO ON HEATING AND COOLING UPGRADE



Heating and cooling upgrade

Installed all electric mini splits in each apartment

Solution provides back up heat from gas furnace

While flash flooding had been commonplace in Boulder County, it was a 100-year flooding event in September 2013 that catalyzed interest in resilient energy infrastructure.



Project partners – City of Boulder, Boulder Housing Partners, GRID Alternatives, Independent Power Systems, Clean Energy Group, U.S. Department of Energy



**Solar - 20.67 kW
Storage 18kW**



Back up power, EV charging, Demand Management

Community-Led, Nature-Based Climate Action



Pollinator Pathways

Connected Canopies

Absorbent Landscaping



BHP rooftop capacity is currently 1,124kw - 18 of 37 properties have roof top solar



BHP currently participates in 5 solar gardens.

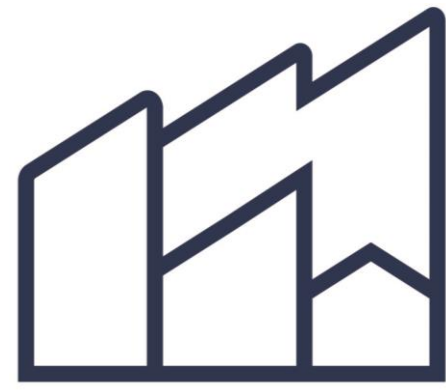
These supply 1,528kw of power to multiple BHP sites

PARTNERSHIPS

 <p>ENERGY PARTNERS</p>	 Working together on affordable community solar solutions.  • Energy Challenge Grant, Affordable Housing Empowerment • Department of Energy Nano Grid Grant recipient under COB application  Clean Energy COLLECTIVE Receiving solar garden energy for the direct benefit of residents.  GRID ALTERNATIVES Community-based nonprofit providing local job training and solar for affordable housing.  IPS INDEPENDENT POWER SYSTEMS™ Technical partner - Energy Nano Grid pilot project.  PACE Partners for a Clean Environment Advisory services for environmentally sustainable practices.
 <p>TRANSPORTATION PARTNERS</p>	 • Local Coordinating Council on Transportation • Mobility for All strategic working group  BOULDER BUILDING BLOCKS FUND Creating easier payment access for EcoPass neighborhoods.  COMMUNITY CYCLES Bike clinics and technical support for residents.  CarShare Partner in promoting carsharing as affordable alternative to car ownership.  GO BOULDER Subsidy support to existing affordable housing EcoPass programs.  Via Mobility for Life Helping to coordinate and expand transportation options for our most vulnerable residents.
 <p>WATER PARTNERS</p>	 Partner on water conservation, including sub-metering, rain barrel education and resiliency.  CENTER FOR ReSource CONSERVATION Conservation for All program, helping residents conserve water, energy & other natural resources while helping to control utility bills.  ENVIRONMENTAL PROTECTION AGENCY Water sub-metering and ENERGY STAR Portfolio Manager® tracking tool.  Metron Farnier Smart Water Meters & Systems Real-time leak detection.  KOHLER Donated 75 low-flow toilets.  CU CU FLOWS Program, providing job training, low-flow fixtures and water conservation education to residents.
 <p>WASTE PARTNERS</p>	 Recycling and composting advising and educational support.  Funding and advising for zero waste initiatives across our portfolio.  eco-cycle Working to Build Zero Waste Communities Green Star Business Program. Consulting on zero waste strategies and programs.  Western DISPOSAL SERVICES THE WAY TO A BETTER ENVIRONMENT Composting and recycling program service provider.

Boulder Housing Partners • 4800 Broadway, Boulder, CO 80304 • www.boulderhousing.org • 720-564-4610
 Tim Beal, Director of Sustainable Communities • bealt@boulderhousing.org



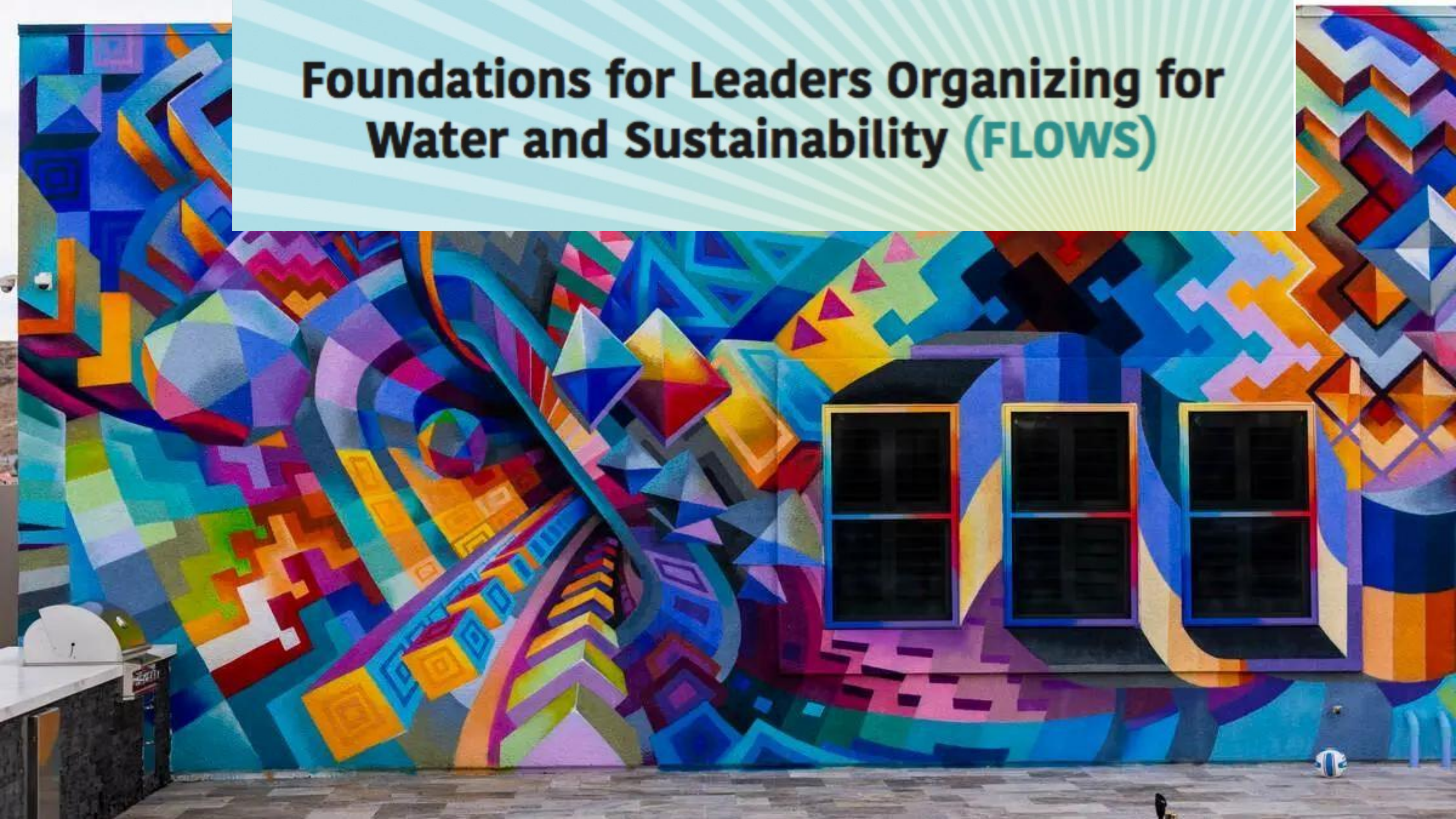


BOULDER
HOUSING
PARTNERS

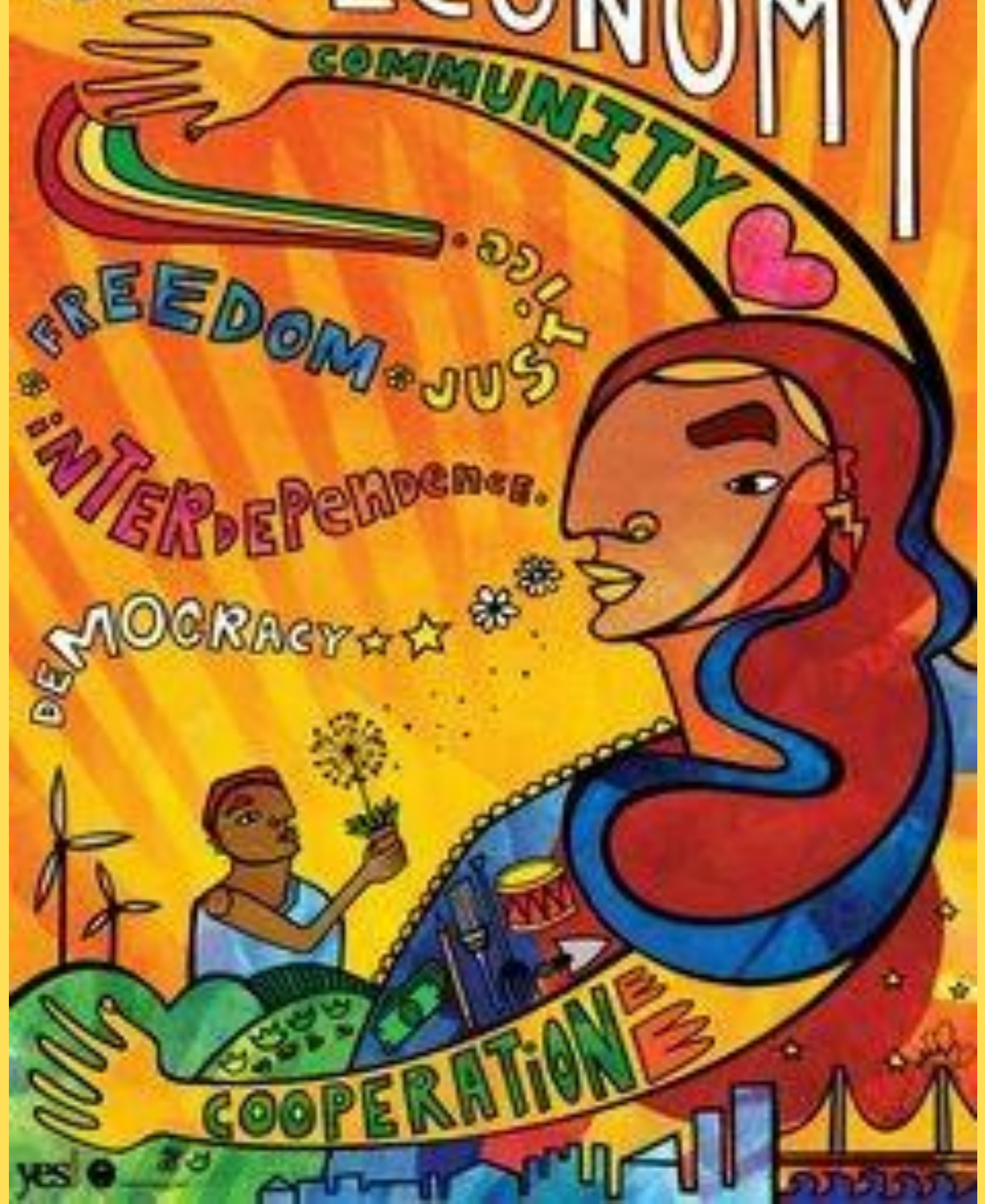
Thank you!



Foundations for Leaders Organizing for Water and Sustainability (FLOWS)



NEW ECONOMY



FREEDOM • JUST

INTERDEPENDENCE

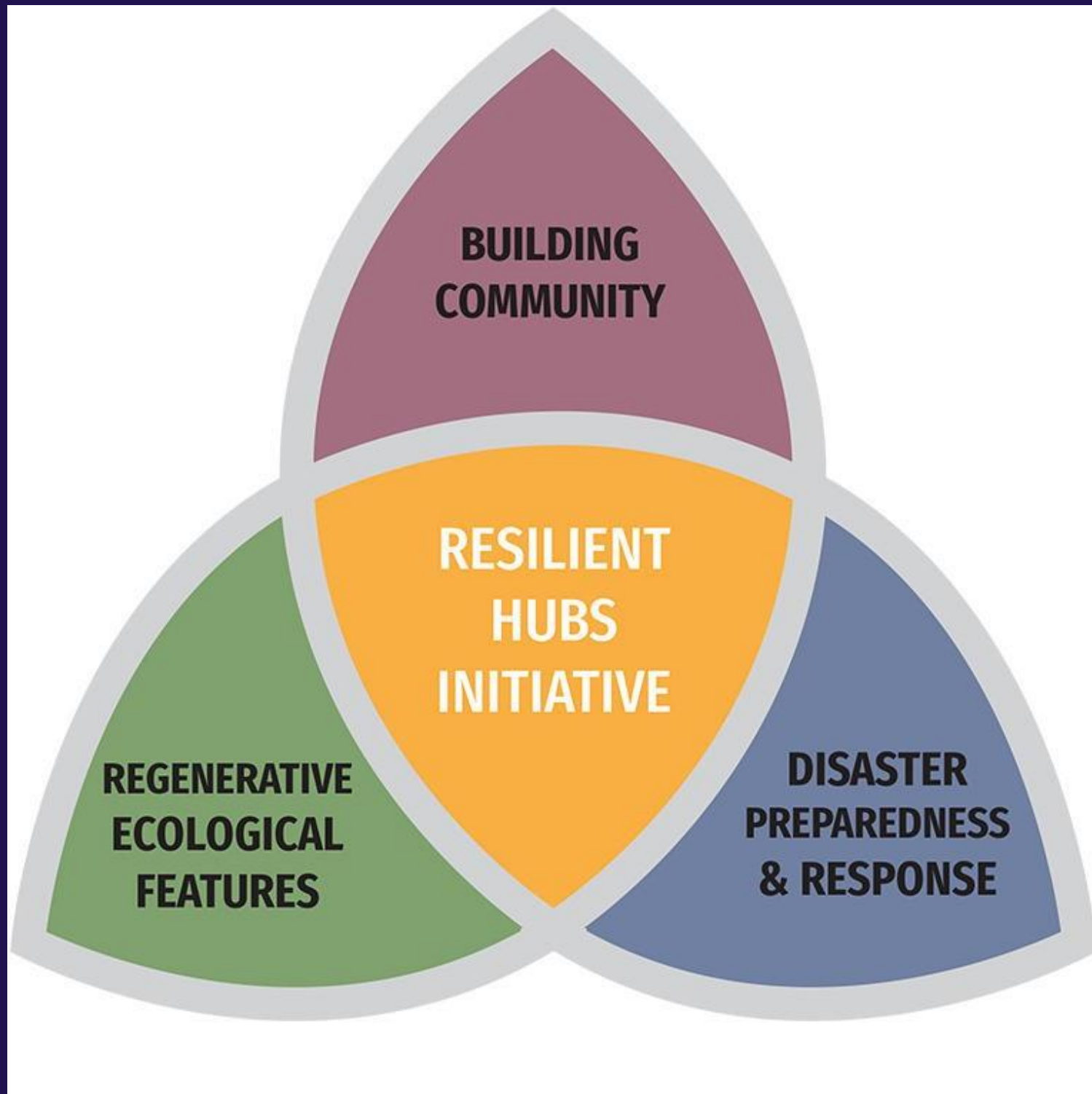
DEMOCRACY

COOPERATION

Foundations for Leaders Organizing for Water and Sustainability (FLOWS)







GREEN

OUR COMMUNITIES!

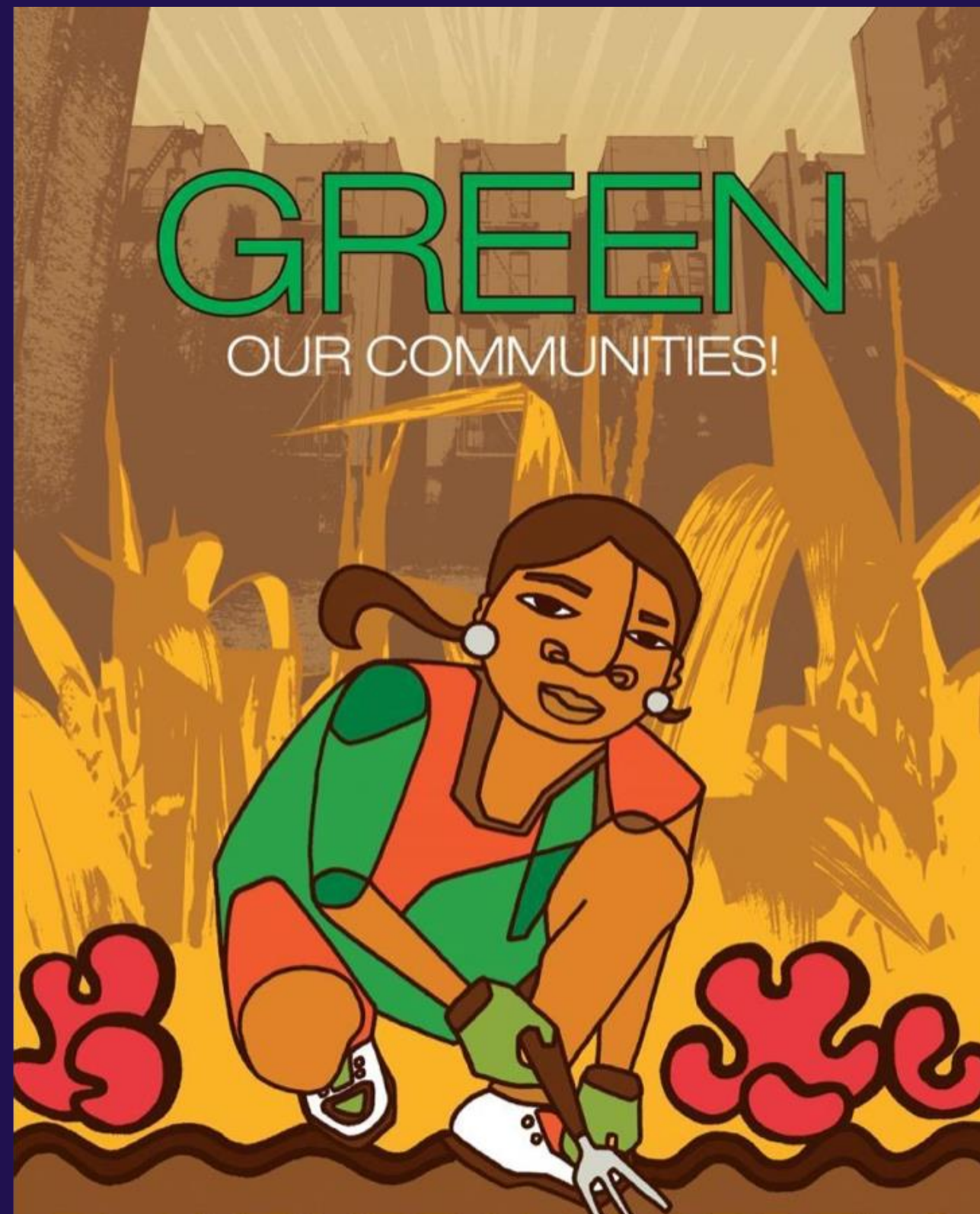


Once and Future Green .com

Michelle GP



beyondsustainable@gmail.com



MICHELLE GABRIELOFF-PARISH
ONCEANDFUTUREGREEN.COM
BEYONDSUSTAINABLE@GMAIL.COM





ENERGY OUTREACH COLORADO

Together We Power Stability



APPROACH TO ENERGY AFFORDABILITY

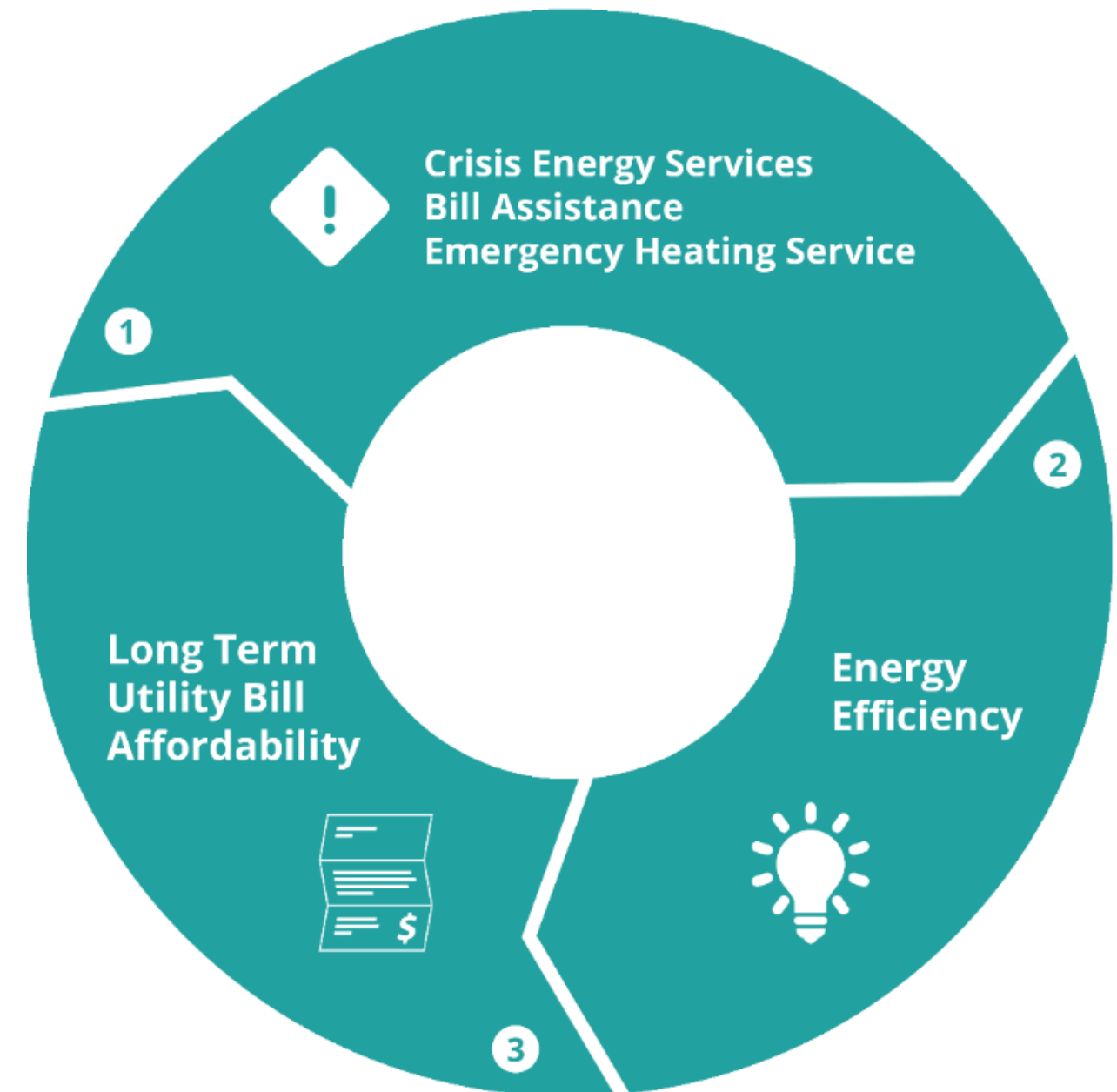
EOC is focused on energy supportive services that lead to stability

Vision

All Coloradans can afford their energy needs.

Strategic Foundation

- SUPPORT** ► Bill Assistance, Furnace Repair - Short Term
- STABILIZE** ► Energy Efficiency, Behavior Change - Mid Term
- SUSTAIN** ► Renewable Subscriptions, Advocacy - Long Term



INCOME QUALIFIED HOMES & BUILDINGS

What type of buildings and homes are served?

Residential Homes

- CARE(CO Affordable Residential Energy) Program-850 homes/yr
- Healthy Homes Electrification Program-150 homes/yr
- Crisis Intervention Program-2700 homes/yr

Commercial Buildings

- Statewide Multifamily Weatherization-5-10 buildings/yr
- Utility Demand Side Management IQ Programs and Pilots-80 buildings/yr
- Nonprofit Energy Efficiency Program-60 buildings/yr



CO ENERGY REHAB PROGRAMS

How does electrification fit in to building incentive programs?

- **Utility Incentives:** All investor-owned utilities (Xcel, Black Hills, Atmos Energy, CNG) have income qualified multifamily energy efficiency incentives if 66% of the units are 80% AMI or less
- **Rural Electric and Municipal Utilities:** More nuanced program designs with a large focus on electric efficiency options, importance of contacting your utility representative to discuss options
- **State Weatherization Program** administered by EOC
- **Municipal Incentives can offer more flexibility:** City of Denver example
- **Building Electrification Pilots**



BUILDINGS PROGRAMS

Colorado Existing Affordable Housing Energy Programs

The **Multifamily Weatherization Program** serves income qualified multifamily properties throughout the state. EOC walks property owners through the process of making energy efficiency upgrades, guiding them from initial audit to work completion.

The flexibility and comprehensive coverage of the program makes it easy for property owners to address energy efficiency throughout their portfolio.

Resiliency: Equipment replacement=new placement, air sealing and insulating the entire building during a service disruption, electrification, improved lighting during building emergency



BUILDING UPGRADES & RESILIENCY

What resiliency factors cross path with efficiency approach?

Resiliency Adaptation: Identify how building shell construction can prevent moisture issues, allow buildings to endure longer utility disruption events, create healthier living spaces for residents, and reduce air infiltration during a wildfire event.

- Routine Building Assessments
- Climate Risk Evaluation
- Community Engagement
- Create Community Resiliency Hub/Cooling Centers
- On-site solar and battery storage options



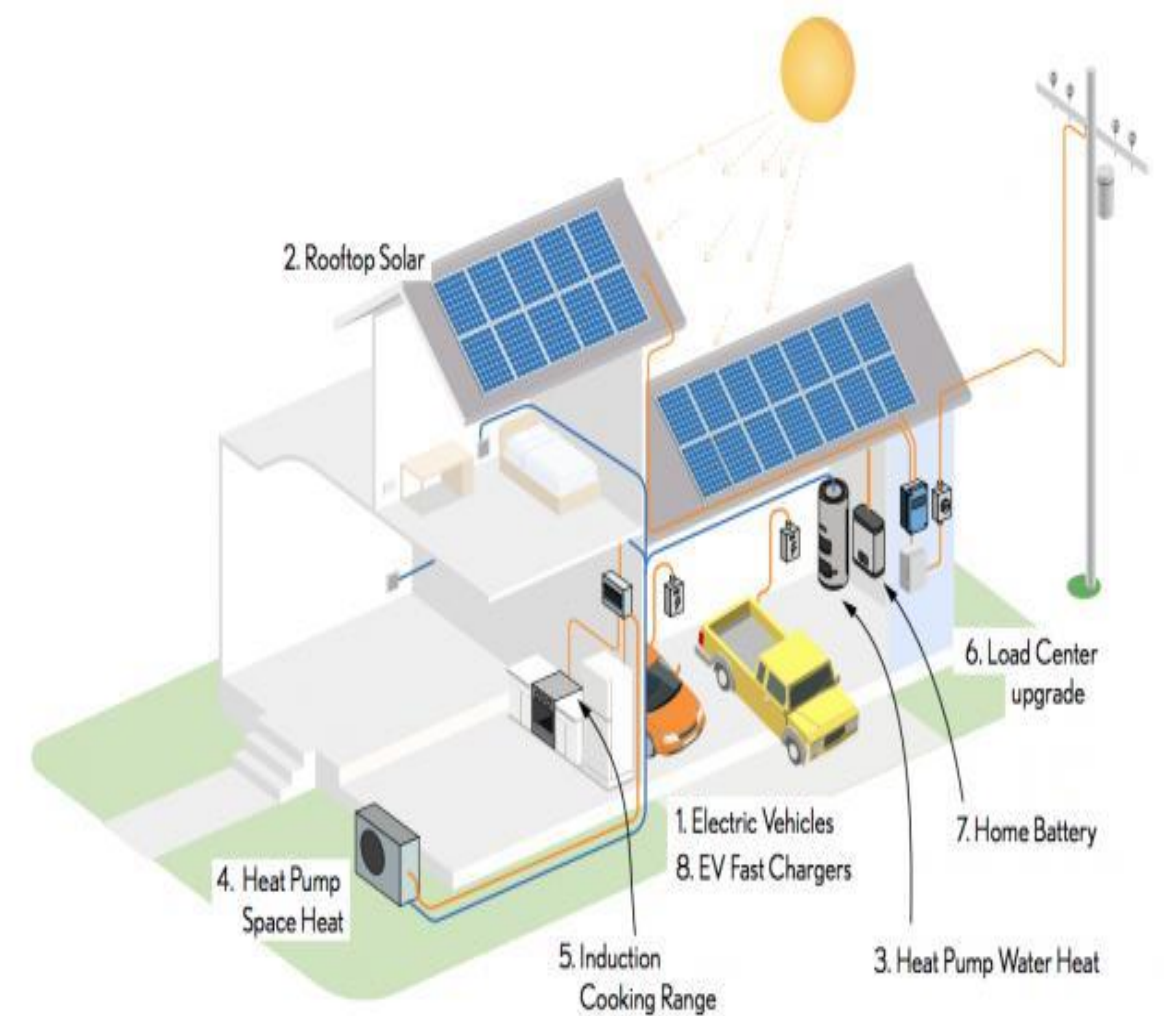
BENEFICIAL ELECTRIFICATION

Strategic electrification that reduces emissions and cost

Baseline Electrification: replacing technologies that use fossil fuels with equipment that is electrically powered

Beneficial Electrification:

- Saves consumers money over time
- Benefits the environment and reduces greenhouse gas emissions
- Improves product quality or consumer quality of life
- Fosters a more robust and resilient electrical grid
- Combine with energy efficiency



PROJECT EXAMPLE: EXISTING FURNACES

Townhomes or rowhomes solution

Case study	
Organization	37 units: 1 and 2 story townhomes
Influencing factors	<ul style="list-style-type: none">• Furnace upgrade at property with no cooling• Organization supportive of electrification• Budget constraints: couldn't add cooling outside of heat pumps
Existing Cooling	No
Existing Heating	Furnaces

Implementation	
Equipment	Cold Climate Air Source Heat Pumps
Efficiency	18 SEER/12.5 EER/10 HSPF
Controls	Manufacturer thermostats
Back up	Furnaces
Approved funding	\$457,320



PROJECT EXAMPLE: EXISTING FURNACES

Large apartment project

Case study	
Organization	200 units: 3 story townhomes
Influencing factors	<ul style="list-style-type: none"> Furnace upgrade from atmospheric venting to high efficiency cost prohibitive Organization supportive of electrification Couldn't add cooling outside of heat pumps
Existing Cooling	No
Existing Heating	Furnaces

Implementation	
Equipment	Cold Climate Air Source Heat Pumps
Efficiency	18 SEER/12.5 EER/10 HSPF
Controls	Manufacturer thermostats
Back up	Aquatherm units
Approved funding	tbd



COMMUNITY SOLAR GARDEN CREDITS

Energy Savings Options

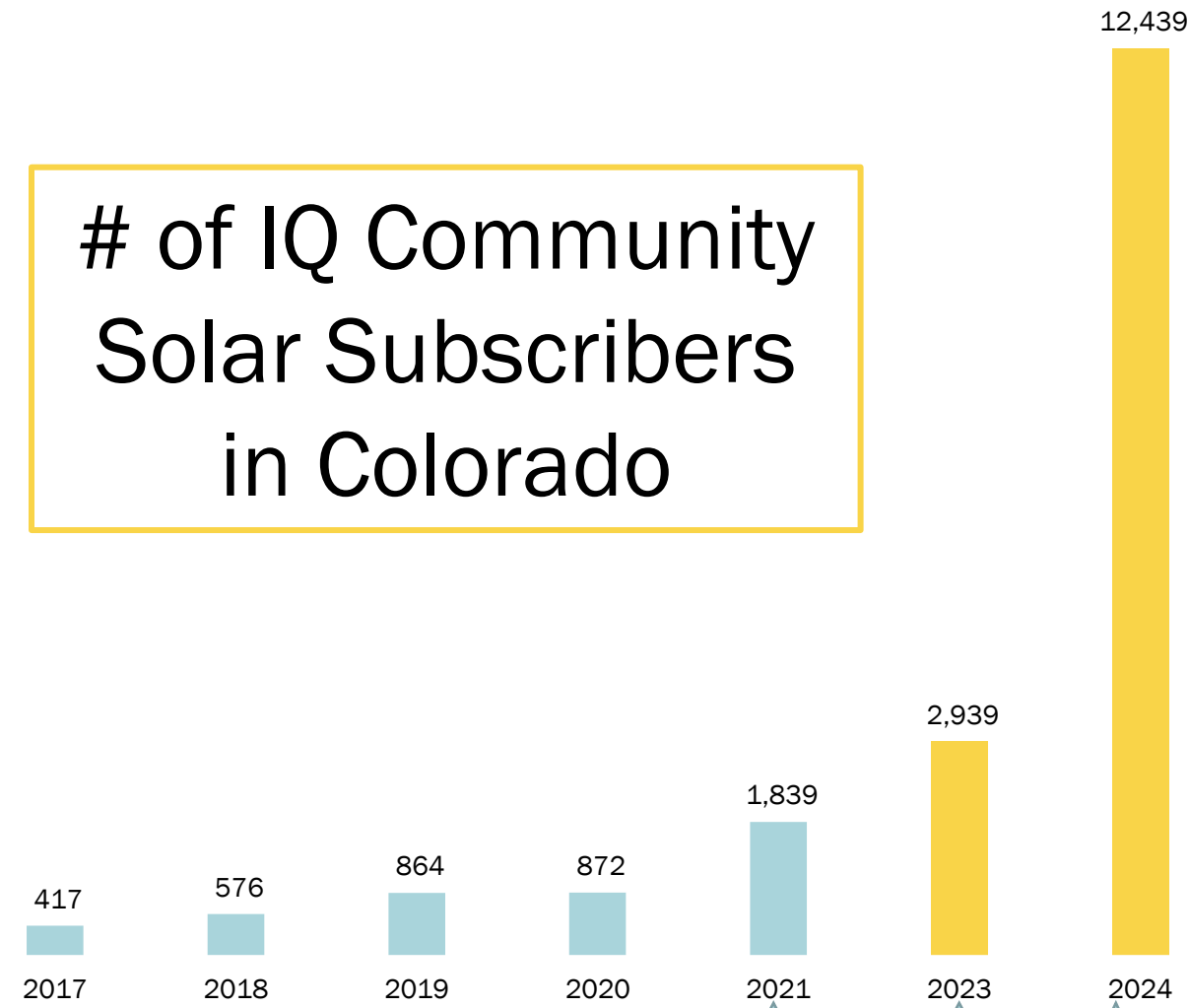
- EOC works with developers to income verify and certify as a “income qualified” subscriber, important for all electric buildings, adjustment of utility allowances, sustainability goals and compliance
- Complies with Energize Denver with a subscription contract from a community solar garden
- Many housing customer only want short term subscription terms



IQ SUBSCRIBER GROWTH

Record growth in 2024

of IQ Community Solar Subscribers in Colorado



+ Xcel-owned
+ First 100% IQ, no-cost subscriptions
+ 60MW of 100% IQ, no-cost subscriptions



HEALTHY HOMES PROGRAM

Measures Installed

- Air Sealing
- Weatherstripping
- Low Flow Fixtures
- LEDs
- Thermostat
- Cold Climate Heat Pump
- HP Hot Water Heater
- Electric Dryer
- Electrical Subpanel
- Induction Stove
- Induction Cookware
- Pest Control
- Mold Remediation
- Kitchen Range Hood
- Bathroom Exhaust Fan
- Carpet Removal
- LVP Flooring Install
- HEPA Vacuum
- (3) Air cleaners/purifiers
- Green Cleaning Supplies
- (1) Window replacement

Rebates Cover 15-30% of costs

TOTAL: \$72,464.84

Xcel Utility Rebates: \$11,186

CHFA funding: \$11,979.04

CASR funding: \$49,299.80



HEALTHY HOMES PROGRAM



HEALTHY HOMES PROGRAM



HEALTHY HOMES PROGRAM



THE HOUSING & TRANSPORTATION NEXUS

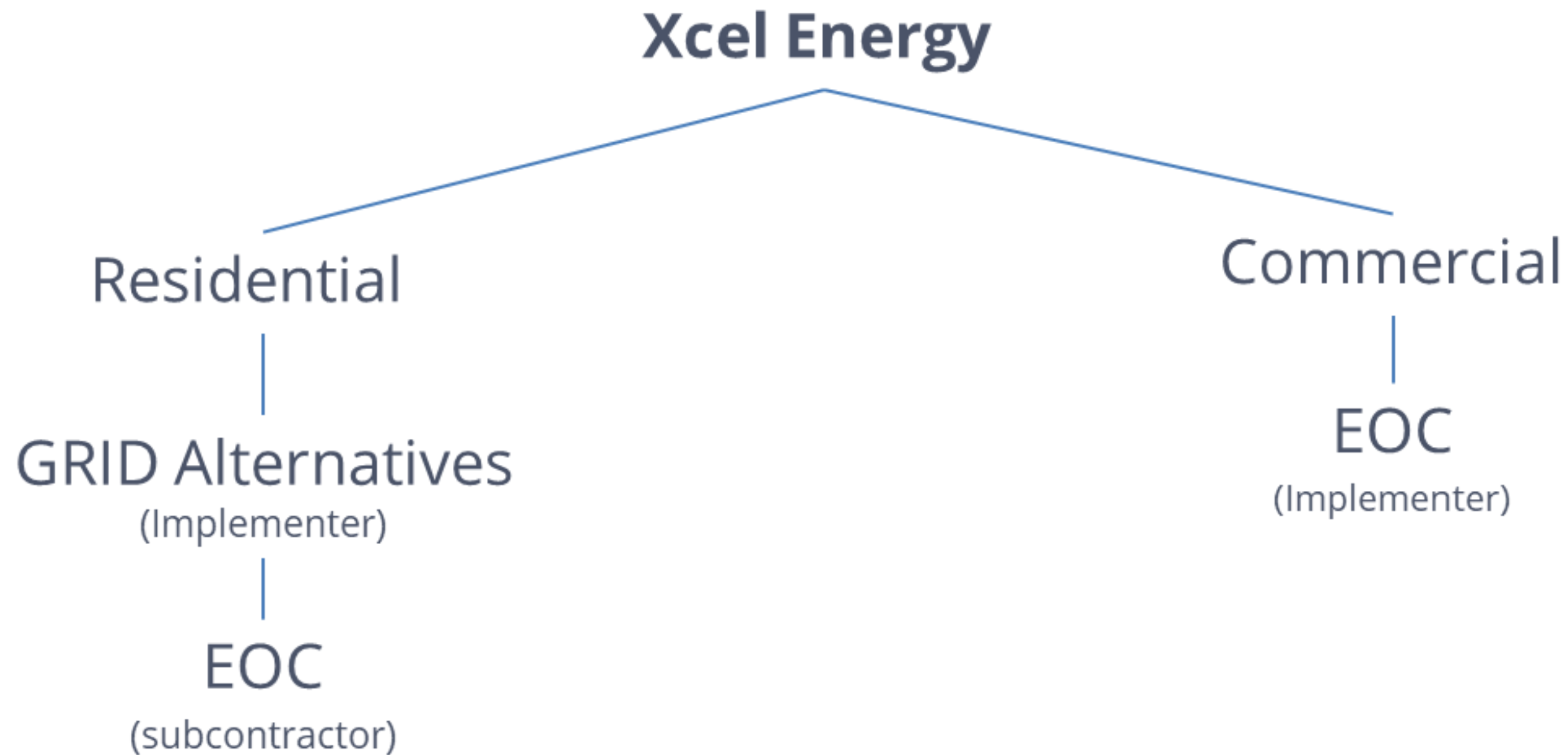
Clean transportation's impact on communities and homes

- Combining cost of electrical upgrades for efficiency and transportation purposes
- Preserve housing with energy efficiency, solar credits on utility accounts, and adding charging infrastructure to the homes
- Specially designed EV advisory services
- Discussion of rates, rebate programs, when residents consume energy, and if an EV works for their lifestyle-goals, driving habits, fuel savings, maintenance
- Community Mobility Hubs
- Non-energy benefits



EV PROGRAM STRUCTURE

CY 2021-2023





**ENERGY
OUTREACH
COLORADO**
Together We Power Stability

Luke Ilderton
lilderton@energyoutreach.org
303-226-5059

