RESILIENCE

# RESILIENCE HUB TOOLKIT

## *For a Climate-Ready North Front Range*

C2ES CENTER FOR CLIMATE AND ENERGY SOLUTIONS

by

The Center for Climate and Energy Solutions

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# INTRODUCTION

As communities face increasing disruptions from extreme weather and other emergencies, residents need safe and accessible places to go. Resilience hubs—enhanced community centers or spaces that support the community daily, as well as before, during, and after emergencies—are one solution. Many organizations and local governments already operate resilience hubs or hub-like facilities. Increasing climate impacts represent an opportunity to enhance existing community-serving facilities to be resilient to hazards such as wildfires, heat waves, and power outages.

Support for resilience hubs has been building, with 30 new hubs added to the *U.S. Department of Homeland Security (DHS) Resilience Hub Finder* in the past year, illustrating many communities across the country making early investments to implement hubs in their own neighborhoods.[1] In 2024, resilience hubs and community-integrated microgrids were in a list of 28 game-changing, collaborative solutions poised for private and philanthropic investment in the United States.[2]

The Urban Sustainability Directors Network (USDN) provides a wealth of resources on their *Resilience Hubs* website.[3] In early 2025, the Alliance for a Sustainable Future—a partnership of Center for Climate and Energy Solutions (C2ES) and the U.S. Conference of Mayors—released a report with case studies highlighting a range of leading examples: *Building Community Resilience: How Local Leaders are Advancing Resilience Hubs and Bolstering Critical Infrastructure*.[4]

Building a resilience hub is a collaborative effort that can take many forms and can benefit from diverse stakeholder engagement and financial resources. A successful hub operates and provides programs to serve the community daily, in a trusted location, and may coordinate in a network of hubs. This toolkit should act as a go-to resource for community-based organizations, local governments, and supporting partners in the North Front Range of Colorado that are interested in developing or enhancing resilience hubs. The contents draw on existing resources and are tailored to the region with input from over 65 key stakeholders that have a role to play in supporting resilience hubs. The toolkit covers:

- the spectrum of resilience hub and microgrid models, including existing examples in the region
- local, state, and national expertise on how to prioritize locations, tailor for local needs, and ensure intended community benefits
- the diverse local support system that can accelerate and strengthen hub implementation
- current funding and technical resources
- considerations for a regional network of resilience hubs.

Microgrids are presented as an optional component of a resilience hub that can provide energy security and operations continuity during disruptions, as well as enable local energy generation sources.

## BACKGROUND

Colorado is facing *increasing climate impacts* from extreme weather events like wildfires and heat waves.[5] Each year, the state experiences *more than 2,400 wildfires*, which recent climate projections expect to worsen with warmer and drier air.[6] Both increased wildfires and extreme heat events lead to poor air quality and negative health impacts. In 2020, the state suffered its three largest fires, and in 2021, the *Marshall Fire* destroyed over 1,100 homes and businesses, caused two deaths, and led to more than $2 billion in damages in the Front Range.[7] Additionally, Denver and other urbanized areas in the region have experienced *record-breaking heat waves*.[8] Some pre-disaster

> Resilience cannot be achieved by one person or one entity alone. Stakeholders and diverse partnerships allow for innovative thinking and problem solving and this toolkit provides some good techniques and examples to help get your conversation started.
>
> *—Heidi Pruess, Sustainability and Climate Manager, Larimer County Office of Sustainability and Climate*

risk management is underway; for instance, electric utilities have used *power safety shutoffs* more often to reduce wildfire risk, presenting new impacts to communities.[9]

The Front Range is at particular risk of wildfire impacts due to high housing density in the *wildland urban interface (WUI)*.[10] The devastation from these events has long-lasting impacts, and as of 2025, recovery efforts are still ongoing from the 2021 Marshall Fire. Additionally, both increased wildfires and extreme heat events lead to poor air quality and negative health impacts, which are particularly harmful to vulnerable populations in the North Front Range. As the impacts of climate change intensify, these communities will need safe and accessible places to go during wildfires, heat waves, or power outages.

C2ES launched the first regional *Climate Resilient Communities Accelerator* in Colorado's North Front Range, based on high climate hazards, social vulnerability, and community interest.[11] In 2023, participants explored how community spaces could be enhanced to provide resilience year-round and during emergencies like wildfires and extreme heat. Several hubs and community spaces had already gained momentum and provided value during emergency events (including thethe Covid-19 pandemic and the Marshall fire), and stakeholders agreed that a toolkit to support resilience hubs and microgrids—with an emphasis on wildfire and heat resilience—would be an impactful resource for the North Front Range.

In 2024, C2ES hosted a collaborative event series to inform, connect, and empower over 60 stakeholders to lead or facilitate resilience hubs and microgrids, and develop this regionally tailored toolkit. Local practitioners envisioned equity, collaboration, and cohesive emergency preparedness as guiding principles for developing these solutions in the region. As such, this toolkit was developed over the course of 10 months with extensive stakeholder involvement. To learn more about the process and organizations involved in creating this toolkit, please visit "Toolkit Process" on page 37

## TOOLKIT OVERVIEW

**This toolkit is intended to be an action-oriented resource to implement resilience hubs in the North Front Range.** The primary audiences are community-based organizations (CBOs) and local governments that often take the lead on developing a resilience hub. The toolkit is also designed to inform and inspire a range of partners, including academic institutions, private businesses, non-governmental organizations (NGOs), state and federal agencies, and electric utilities, that can support a community- or government-led hub and create hubs and hub-like spaces of their own.

The toolkit is organized into four main parts. Part 1 introduces the benefits and key features of resilience hubs and microgrids as well as how to talk about these solutions with colleagues and the community. Part 2 focuses on applying these in the North Front Range, detailing the current state of play, priority areas, and opportunities to take a network approach in the region. Part 3 offers an action list with specific steps and a path to developing a resilience hub. Part 4 covers key elements for successful implementation in detail, including chapters on partnership roles and models, locations and components, programming and operations, and financial resources. Guidance is provided on how each element supports a successful resilience hub, along with regional considerations and best practices. Leading examples, primarily from the North Front Range, are included throughout to illustrate real-world applications. The toolkit concludes with an overview of the process to create this toolkit and appendices with further details on financial resources, available data resources, and opportunities for to develop supportive policies and plans.

> "In Larimer County, community-based organizations contribute significantly to the development and empowerment of communities. However, there is a need for enhanced strategies to boost collaboration among stakeholders and develop sustainable long-term solutions. As our community feels the impacts of climate change it becomes essential for local leaders to increase awareness and educate our diverse communities about the importance of resilience hubs.
>
> *—Gloria Kat, Executive Director, The Family Center / La Familia*

## PART 1: INTRODUCING RESILIENCE HUBS AND MICROGRIDS

Resilience hubs and microgrids are customizable, emerging solutions that support communities before, during, and after climate emergencies and other disruptions. They can be implemented together or separately, with microgrids serving as an optional component of a hub to enhance energy security during grid disruptions.

### WHAT IS A RESILIENCE HUB?

**A resilience hub is a community-serving facility that is enhanced to support residents and offer services and resources on a daily basis, as well as before, during, and after climate disasters, emergencies, and other disruptions.** A hub can take many shapes and forms, but at the core, it is located at a trusted community space like a recreation center, nonprofit or faith-based facility, childcare center, or multi-family housing facility and is most effective when located in underserved communities that have high climate vulnerability. Resilience hubs can operate in three modes: during daily operations ("blue skies"), the hub provides regular community services; during emergency operations ("gray skies"). the hub can respond to disruptions with critical support; and during recovery operations, it can aid in long-term community rebuilding. One key strategy of a hub is to build capacity during blue skies to ensure that systems, resources, and relationships are in place to respond swiftly and effectively when gray skies emergencies arise.

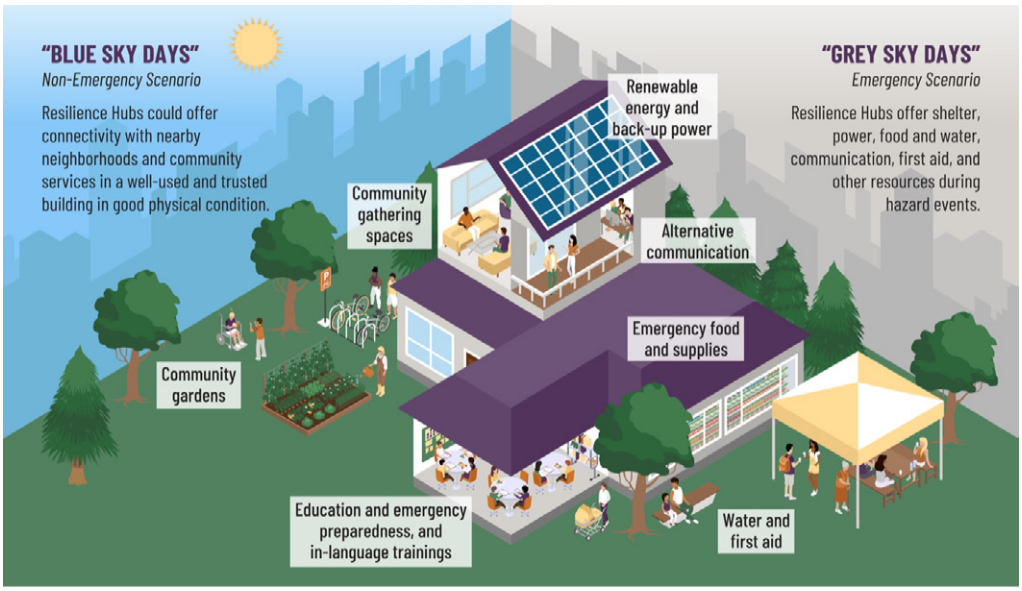
**Key features of a resilience hub can include:**

- community programming during daily or "blue skies" mode (e.g., education, cooling/heating, workforce development opportunities, meals for seniors, childcare, and recreation)
- capacity building for emergency or "gray skies" mode (e.g., adequate food and water supplies, reliable backup power, preparedness information, and recovery resources)
- safe, accessible, and multi-use space(s) with comfortable and cleaner air (e.g., energy efficient cooling and heating, air purification, and accessible transit options)
- flexible and scalable to community needs and priorities (i.e., not a 'one-size fits all' solution).

**Key benefits of a resilience hub can include:**

- increased community capacity and social connection
- enhanced emergency preparedness, response, and recovery
- increased energy security and reduced carbon pollution
- improved support for vulnerable communities.

### Figure 1: What Can a Resilience Hub Offer?




*Source: Puget Sound Resilience Hubs, Seattle Office of Emergency Management, last accessed February 6, 2025, https://experience.arcgis.com/experience/f71d4e26a1854667aef12114e28de5b1/page/Home/?views=What-is-a-Resilience-Hub%3F*

## WHAT IS A MICROGRID?

**A microgrid is a small-scale power system that can operate independently or alongside the main electrical grid, typically incorporating power generation sources, energy storage, and a control system.** A community-based microgrid enhances energy security and operational continuity of community assets and critical infrastructure, including resilience hubs and other facilities that house emergency services.

**Key features of a microgrid can include:**

- a control system that allows it to operate independently or in conjunction with the grid
- power generation sources, such as solar panels, small wind turbines, or generators (e.g., fossil fuel- or nuclear-powered)
- energy storage, such as batteries
- power-consuming facilities (users).

**Key benefits of a microgrid can include:**

- electricity for essential needs remains available during grid disruptions
- increased capacity for clean and local energy resources such as solar and wind.

In this toolkit, microgrids are included as an optional component of a resilience hub. If a microgrid is part of your resilience hub, it should provide energy benefits year-round, not just during emergencies, to make the most of this significant investment and ensure it remains reliable when needed most. During the planning phase of a hub, partners can determine if a microgrid is desirable based on community needs, goals, and budget. For more information, you can read *Microgrids: What Every City Should Know*, review public resources that support microgrids (see Appendix A), and look to your local electric utility to provide specific guidance.[12]

### Learn more about...

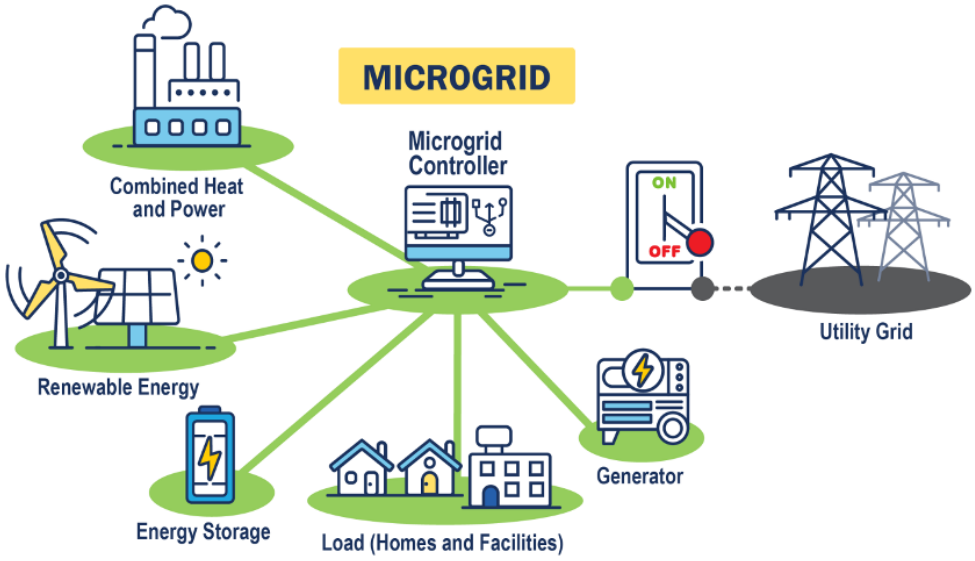
**Resilience Hubs:**

- *Colorado Department of Local Affair (DOLA)*
- *Urban Sustainability Directors Network (USDN)*
- *Building Community Resilience: How Local Leaders are Advancing Resilience Hubs and Bolstering Critical Infrastructure*

**Microgrids:**

- *Colorado Department of Local Affairs Microgrids 101*

## Figure 2: Features of a Microgrid




*Source: U.S. Department of Energy, Microgrid Overview Fact Sheet (Washington, D.C.: DOE Grid Deployment Office, 2024), https://www.energy.gov/sites/default/files/2024-02/46060_DOE_GDO_Microgrid_Overview_Fact_Sheet_RELEASE_508.pdf.*

## WHY SHOULD RESILIENCE HUBS RESOND TO CLIMATE CHANGE?

To deliver resilience benefits to the community over the long term, hubs and microgrids must be designed for current and future climate conditions. In Colorado, climate change is intensifying droughts, flooding, heat, severe storms, wildfires, and other hazards. Projections forecast that these impacts will only worsen with time.

Climate change is a "threat multiplier," exacerbating many community challenges with additional impacts and risks to air quality, water supply, mental health, and more. To build a resilience hub that can support communities today and in the face of future impacts, partners can consider future conditions and the types of risks a hub should provide resources to prepare for, such as wildfires and heatwaves.

You can explore future climate conditions in your community with the *Climate Mapping for Resilience and Adaptation (CMRA)* or *First Street* tool and discover ways to take action using Colorado's *Community Readiness and Resilience Toolkit*.[13,14,15]

## BEST PRACTICES FOR OUTREACH AND MESSAGING

The concept of a resilience hub is nuanced, and each application is meant to be tailored to the unique circumstances of an individual community. Because there are many stakeholders and potential partners that can be involved in the development of a hub, it is important to communicate benefits clearly by using language that resonates with each audience. The lead organization can use flexible language when introducing and describing hubs. **The term 'resilience hub' may not be widely recognized or even necessary to convey the concept effectively to community members**. A community organization or entity that chooses to function as a hub does not need to be called a resilience hub or change its identity—the components are simply meant to be additive and complementary (see Box 1).

### *Key Messages*

Outreach and communication efforts can highlight the following benefits resilience hubs can provide:

- **Safe Spaces During Emergencies**: a resilience hub is a trusted places where people can gather, stay safe, and access critical services during emergencies like wildfires, power outages, or extreme heat. A resilience hub builds on existing emergency systems, giving communities more control and better tools to prepare and recover quickly.
- **Year-Round Community Support**: Beyond emergencies, a resilience hub provides everyday benefits and potential cost savings, offering services like job training, health programs, and community events tailored to strengthen and support the neighborhood it serves.
- **Customized to Local Needs**: a hub is designed with the specific needs of the community in mind, ensuring it offers beneficial programs, services, and resources for residents. For example, to mitigate the impacts of local climate hazards, a hub can provide cleaner air during wildfires, cooling during a heat wave, and electricity during power outages.
- **Building Stronger, Healthier Communities**: By fostering connection, improving access to services, and offering cooling or heating during extreme weather, a resilience hub help create healthier, more resilient communities that are prepared for the future.

### *Strategies to Engage Communities*

Developing a community engagement strategy is a key action to successfully implement a resilience hub. Input and participation from diverse stakeholders in the planning, design, implementation, and evaluation of a hub ensures that it addresses the community's unique needs, priorities, and vulnerabilities.

> Colorado communities, like so many across the globe, are facing threats from increases in heat and wildfire impacts. Now more than ever, diverse, and robust stakeholder engagement is needed to build cohesive messaging, action plans and bolster our community's resilience efforts to continue to adapt year over year.
>
> *—Maddy Nesbit, Senior Planner, Denver Regional Council of Governments*

Local engagement can begin with community-led mapping, design, and visioning activities and continue with collaborative partnerships and community steering, such as in the case of the *Resilience Hub Community Coalition* that supports a resilience hub in Washington, DC.[16] More locally, since 2018, *Commún* has empowered Southwest Denver residents to lead and shape the programs, spaces, and services of their future 40,000-sq.-ft. community center, with 45 community leaders engaged in paid opportunities and all programs fully staffed, funded, and led by those they serve.

Effective stakeholder involvement includes transparent communication, capacity and knowledge building, feedback mechanisms, collaborative decision-making, and long-term partnerships. Offering a variety of practical discussion and feedback opportunities can foster relationships, gather valuable input, and build trust during every stage of developing a resilience hub. A best practice is to begin and cultivate these conversations in the spaces where communities and organizations already gather. Effective and inclusive engagement strategies include:

- community meetings and workshops
- surveys and polls
- focus groups and listening sessions
- social and web platforms
- informational events
- one-on-one outreach
- newsletters and email updates
- partnering with community leaders and local organizations.

Learn more about fostering community leadership by exploring Colorado's Inclusive *Engagement for Community Planning* webpage, the *International Association for Public Participation (IAP2) Spectrum of Public Participation*, and the U.S. Department of Housing and Urban Development (HUD*) Community Engagement Toolkit: Building Purpose and Participation*.[17,18,19]

## Box 1: Building Community Resilience at the Louisville Recreation and Senior Center

*City of Louisville, Colorado*

The *Louisville Recreation and Senior Center* serves as a resilience hub in the community without using that term. The Centers provides physical, mental, and social-wellbeing programming for community members of all ages. The facility features a preschool, teen center, fitness center, indoor and outdoor pools, event spaces, and senior center. In 2023, the Center received grants from the Colorado Department of Local Affairs and Colorado Energy Office to enhance its resilience hub features and programming, including installing a ground-mounted solar array with pollinator plants and 13 rooftop heat pumps, expanding electric vehicle (EV) charging infrastructure, and providing preschool services and daily meals for seniors.


*Source: "Louisville Recreation & Senior Center," Fresh Chalk, accessed February 4, 2025, https://freshchalk.com/louisville-recreation-senior-center.*

## PART 2: EXPANDING RESILIENCE HUBS IN THE NORTH FRONT RANGE

The State of Colorado supports resilience hubs and microgrids as key solutions for mitigating and adapting to climate impacts. The *Colorado Resiliency Framework (2020)* identified a strategy to "Grow a Network of Resiliency Hubs: Support the development of regional state-of-the-art resiliency hubs that serve as community centers for education, services, and community capacity. Provide access to food, shelter, power, and other critical services during emergencies."[20] The *Colorado Climate Preparedness Roadmap (2023)* calls for several state agencies to "promote community resilience hubs as part of an extreme heat preparedness planning as well as provide best-practice information for opening community cooling centers/resilience hubs and explore opportunities to leverage public-private partnerships for access to cool spaces."[21] State programs are supporting resilience hubs and microgrids via the *Climate Resilience Challenge*, *Microgrids for Community Resilience* program, and the *Colorado Microgrid Roadmap*.[22,23,24]

In 2023, a diverse set of leaders convened through C2ES's *Climate Resilient Communities Accelerator* and identified resilience hubs and microgrids as key solutions to advance the North Front Range's resilience to wildfire and heat. Participants discussed how existing community centers and spaces could increase resilience daily and before, during, and after emergencies, including wildfires and extreme heat. These stakeholders then defined the steps that could advance these solutions in the region.

### WHAT IS THE STATE OF RESILIENCE HUBS AND MICROGRIDS IN THE REGION?

Resilience hubs, some with microgrids, are being developed by local governments, community-serving organizations, electric cooperatives and utilities across the region (see Figure 3). Established and in-development resilience hubs represent a wide range of applications, developed with support from local and state government, philanthropy, and electric utilities as key partners. They represent two leading models: **local government-led hubs** that build capacity of public facilities, and **community-led hubs** that enhance the resilience of community-owned facilities with grassroots involvement and adaptability. For more information, see "Partnership Roles and Models" on page 14.

During the research and community input to create this toolkit, C2ES identified the following local resilience hub and community-based microgrid efforts:

#### *Community-led resilience hubs*

(Note: many community-serving organizations operate hubs and hub-like facilities without using the term 'resilience hub' and are not included here.)

- Community Center at Loretto Heights Campus, Southeast Denver, Commún (in development)
- Community HUB, Fort Collins, Urban Renewal Authority (URA) with The Family Center/La Familia providing support to engage the community (in development)
- Globeville Community Center, North Denver, The Big Sandbox (in development)
- Interfaith Climate Resilience Hub, Northside Denver, Shared Ground

#### *Local government-led resilience hubs*

- Central Park Recreation Center, City of Denver* (in development)
- Louisville Recreation and Senior Center, City of Louisville
- Northside Aztlan Center, City of Fort Collins*
- Resource Resilience Center, City of Westminster (in development)

> "When I think of resilience, I not only think of adaptable and robust infrastructure, but of the people and social connections that make our communities strong. In the Front Range of Colorado, we have both. In particular, our local and regional partnerships are proactively advancing resilience through the development of community hubs, microgrids, and proactive hazard response strategies.
>
> *—Bridger Tomlin, Sustainability Administrator, City of Westminster, Colorado*

- Superior Community Center, Town of Superior
- Southeast Community Recreation Center, City of Fort Collins (in development)

*Includes a microgrid

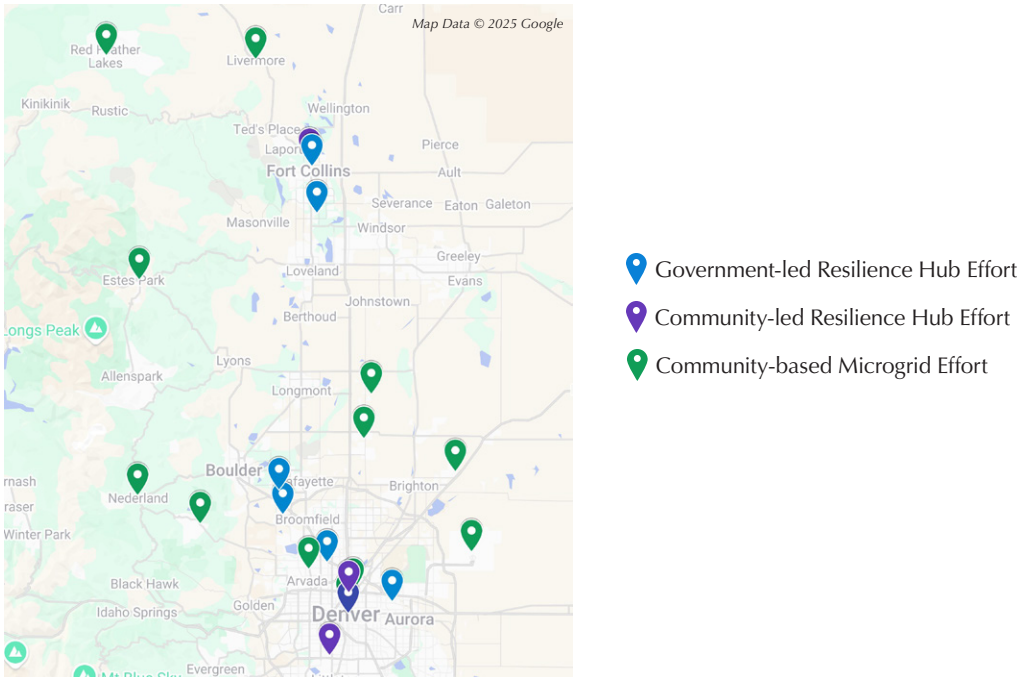
### *Community-based microgrid efforts*

- Climate Resilience Initiative, Xcel Energy
  - Alamosa Family Recreation Center
  - Arvada Center for the Arts and Humanities, Arvada
  - Denver International Airport, Denver
  - Denver Rescue Mission, Denver
  - National Western Center, Denver
  - Nederland Community Center, Nederland
- Estes Park Storage Microgrid Project, Estes Park, Platte River Power Authority
- Livermore Microgrid Project, Livermore, Poudre Valley REA
- Microgrid Batteries for Rural Emergency Services, multiple locations, United Power
  - Blue Mountain Fire Station #3, Coal Creek
  - Frederick Firestone Fire Protection District Station #4, Del Camino
  - Hudson Fire Protection District Station #3, Lochbuie
  - Mountain View Fire Rescue Station #7, Dacono
- Red Feather Lakes Microgrid Project, Red Feather Lakes, Poudre Valley REA

Several of these resilience hub efforts have benefitted from the *Climate Resilience Challenge* hosted by the Colorado Department of Local Affairs (DOLA). The program has provided funds to equip new and existing resilience hubs with solar energy, battery storage, electric vehicle (EV) charging, LEED-certification, emergency shelters, daily services like meals and preschool, as well as community resources like workforce development and emergency operations centers.[25]

Microgrids are supported by several state and utility programs. DOLA's *Microgrids for Community Resilience (MCR)* program offers planning and construction grants to electric utilities and local governments.[26] Local electric utilities are independently implementing microgrids to equip community assets with energy continuity during power outages. Xcel Energy's *Community Resilience Initiative* has developed microgrids on five community-serving facilities in the area, prioritizing those with emergency preparedness features (See Box 4).[27] Poudre Valley REA, with funding from the U.S. Department of Energy (DOE), has completed a *microgrid pilot in Red Feather Lakes* that serves the volunteer fire department, library, community building, post office, area businesses, and more.[28]

## Figure 3: Resilience Hub and Community-based Microgrid Efforts in the North Front Range (Established and In Development)



## Box 2: Energy Resilience at the Central Park Recreation Center

*City of Denver, Colorado*

The *Central Park Recreation Center* in Denver offers a variety of fitness, aquatic, and community programs. The center has been designated as a cooling and heating site since 2011, and new resiliency updates are expected to be operational in 2027.

The City and County of Denver's *Office of Climate Action, Sustainability and Resiliency* (CASR) is piloting an energy resilience program to add infrastructure to existing public assets to create resilience hubs. The *Central Park Recreation Center* pilot includes solar canopies over the center's parking lot along with long-term duration battery storage, allowing the recreation center to remain online during a disaster.* Currently, solar panels provide energy to the recreation center and generate enough additional energy to provide energy bill credits to families in need of assistance.

The program is a partnership between CASR and local agencies, including Denver's Department of Parks and Recreation and Department of Transportation and Infrastructure. The city is using new state and federal grants to fund the program along with the *IRS's Elective Pay provision* which offers federal tax rebates to local governments and nonprofits for renewable and resilient energy investments.† This program is further supported by the *Climate Protection Fund*, a sales tax that provides more than $40 million a year to Denver communities to cut pollution and protect against high temperatures, unnatural disasters, poor air quality, and other climate impacts.‡

*Source: Denver's Office of Climate Action, Sustainability and Resiliency*

"We know that the future will pose new challenges for Denver. A changing climate will impact how we provide the critical infrastructure, services, and programs Denverites need and expect. We are excited to pilot a unique energy storage and dispatching solution to prepare for those new challenges. This pilot will enable us to learn best practices in designing and installing similar systems and to test and collect critical data on different ways to use long-duration energy storage as part of our suite of tools to adapt to changing needs."

*—Elisabeth Cohen, Climate Adaptation and Resiliency Manager, City and County of Denver*

* *"Central Park Recreation Center," City and County of Denver, accessed February 5, 2025, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Parks-Recreation/Recreation-Centers-Pools/Recreation-Centers/Central-Park-Recreation-Center.*

† *"Elective pay and transferability," Internal Revenue Service (IRS), accessed February 7, 2025, https://www.irs.gov/credits-deductions/elective-pay-and-transferability.*

‡ *"Climate Protection Fund," City and County of Denver, accessed February 5, 2025, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-and-Resiliency/Cutting-Denvers-Carbon-Pollution/Climate-Protection-Fund.*

## TAKING A NETWORK APPROACH

**A coordinated network approach to planning and operating, and connecting resilience hubs could increase their impact and help solve greater community and regional challenges**. This approach ensures that resilience hubs are not acting in isolation and can leverage other hubs, organizations, government agencies, and essential resources at a larger scale.

Today, resilience hub networks are being developed in several major cities across the United States, including in *Baltimore, Maryland* (read more in Box 3), *East Bay, California*, *Miami-Dade County, Texas*, and *Seattle-Tacoma, Washington*.[29,30,31,32] East Maui developed their *Resilience Hub Network* after the 2023 wildfires in Lāhainā.[33] Houston, Texas, developed a robust *Resilience Hub Network Strategy* in response to the devastating Hurricane Harvey in 2017 that includes specific guidance and tools to create a coordinated network of resilience "hubs" (city-owned centers), "super spots" (major community-owned centers), "spots" (faith-based and other nonprofit facilities that compliment hubs), and "spokes" (public transit, sidewalks, bike lanes, and other infrastructure that connect hubs, super spots, and spots) (see Figure 4).[34]

## Figure 4: Components of Houston's Resilience Hub Network Strategy (Houston, TX)


*Source: City of Houston, Houston Resilience Hub Network Master Plan, (Houston, TX: City of Houston), http://greenhoustontx.gov/resilience-hubs/Resilience-Hub-Network-Master-Plan.pdf.*

### *What are the Potential Benefits of Taking a Network Approach?*

**With more hubs emerging in the North Front Range region, there is an opportunity to take a network approach to coordinate resources and amplify impact**. A resilience hub network improves resource sharing, coordination, and scalability, enabling more efficient disaster response, equitable service access, and stronger community resilience at scale. A network could accelerate disaster response by coordinating hub emergency operations, streamlining communications within and between communities, and mobilizing help to more heavily impacted areas and disconnected pockets. A network could support economies of scale by enabling access to larger-scale funders, standardizing design and programming, bulk purchasing of supplies, and shared trainers and on-call facilitators. Additionally, a network can more broadly engage communities in disaster preparedness, improve public education on resource availability, and build community capacity for effective disaster response.

### *What Resources are Needed for a Regional Approach?*

**During the collaborative series to develop this toolkit, local practitioners envisioned equity, collaboration, and cohesive emergency preparedness as guiding principles for developing a network of resilience hubs**. Stakeholder input suggested one impactful approach could be a collaborative model that allows organizations across cities or counties to pool resources and collectively make funding decisions. Such an approach would require dedicated financial and staff resources to enhance inter-hub communication and coordination. A steering committee of diverse stakeholders at the community, county, Metropolitan Planning Organization (MPO), and state levels could facilitate this approach.

Local government offices dedicated to emergency management, sustainability, and health could coordinate public programs across a resilience hub network at the city, multi-city, county, or regional level. Collaborative governance across community organizations, academic institutions, NGOs, and/or private businesses could be supported by memoranda of understanding (MOUs). An interest meeting is a first step to discuss specific roles and gaps that partners could fill, establish a common lexicon for all stakeholders, and assess existing programs and tools that a network approach could leverage.

A collaborative, multi-sector strategy would ensure that resilience hubs are effectively integrated and supported within the North Front Range community. Non-governmental organizations and MPOs such as Denver Regional Council of Governments (DRCOG), with backing from local foundations, state agencies, and higher-capacity local governments, are well-suited to spearhead or coordinate this network. Additional support could come from local branches of national nonprofits like the United Way and the Red Cross, regional federal agency offices such as the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA), universities, and professionals experienced in network leadership and communications.

One existing example of county-level network coordination in the region is the *Larimer Connects Community Hubs* program, focused on supporting emergency communications and building social connections before, during, and after disruptions.[35]

Creating an enabling policy environment in the North Front Range and Colorado can support more widespread and coordinated development of resilience hubs, offering opportunities for planners and policymakers to remove barriers and advance these initiatives. Learn more in Appendix C.

## Box 3: Community Resiliency Hub Program Creates a Network Across Baltimore

*City of Baltimore, Maryland*

Since 2015, the City of Baltimore's Office of Sustainability has facilitated a networked and community-led approach to resilience hubs through its *Community Resiliency Hub Program.*[*] As of 2024, the program supports and coordinates 22 community resiliency hub partners, each of which are frontline, service-based, and mission-driven non-profit organizations providing services to the city's most climate-vulnerable neighborhoods. These are locally trusted organizations that operate from various building types, including historic churches, former school buildings, warehouses, and firehouses. While resources vary amongst partners, the city's goal is to provide each organization with the resources that will be most helpful in meeting their own resilience hub programming and operations goals.

Key features of Baltimore's community-based network model include:

- on-site solar power and battery back-up systems
- preparedness training, hub emergency operations, and scenario planning
- grant writing technical assistance and connections to funding opportunities
- focused communications, resources, and support from the city.

The city hosts monthly virtual meetings to support network coordination, fostering peer-to-peer learning and regular engagement with community partners. These meetings are designed to be inclusive, informative, and responsive to community needs, covering topics like extreme weather resources, disaster preparedness, grant opportunities, and city initiatives. Each session starts with a community check-in for updates and event sharing, followed by topical discussions. Meeting notes and resources are shared afterward to keep all partners informed. These meetings build network structure, momentum, and relationships, ensuring smoother collaboration during emergencies.


*Source: Groundswell*

"By providing holistic resource investments and regular touchpoints for elevating community concerns before, during, and after emergencies, Baltimore's Community Resiliency Hub Program proactively builds capacity and trust between the city and its vulnerable communities in advance of disasters. If managed well, the city-facilitated, community-based resilience hub network model can be a powerful tool for the equitable advancement of climate justice and community preparedness within underserved urban areas most vulnerable to the impacts of climate change."

*— Aubrey Germ, former Climate and Resilience Planner, Baltimore City*

** "The Baltimore City Community Resiliency Hub Program," Baltimore Office of Sustainability.*

## PART 3: THE ESSENTIALS: A CHECKLIST FOR SUCCESS

The following list suggests steps to develop a resilience hub based on research, best practices, and community input. It also presents opportunities to collaborate and develop partnerships with various organizations. Some of these steps may be optional and do not need to be taken in this order. For example, a community-based organization may have a single facility they wish to upgrade, whereas a local government may be seeking their first hub location or to support a network of hubs. Communities and organizations can customize their action plan with the help of further details below, in"Part 4: Implementing a Resilience Hub" on page 14.

☑ **Assess Community Needs**

- ☐ Identify priority neighborhoods (e.g., with high climate and social vulnerability) using forward-looking data tools and community mapping.
- ☐ Engage local residents, departments, and organizations to identify critical resilience needs (e.g., energy, emergency response, health services).
- ☐ Create a tailored plan highlighting daily and disaster-related priorities for a hub.

→ *See "Best Practices for Outreach and Messaging" on page 5.*
→ *See "Location and Components" on page 19.*
→ *See"Appendix B: Available Datasets" on page 47*

☑ **Form Partnerships**

- ☐ Collaborate with local government, nonprofits, universities, private businesses, and/or utilities to secure buy-in and resources.
- ☐ Establish collaborative governance via a community steering committee and/or Memorandum of Understandings (MOUs) with diverse partners.

→ *See "Best Practices for Outreach and Messaging" on page 5.*
→ *See "Partnership Roles and Models" on page 14.*

☑ **Secure Funding and Resources**

- ☐ Identify public grants, private investments, and other support for establishing a hub
- ☐ Build grant management capacity by assessing internal capacity, identifying fiscal sponsors or partners for support, and designating staff or volunteers to monitor funding announcements and deadlines.
- ☐ Leverage multiple funding streams (e.g., "stacking" funds from various sources and public-private partnerships) and seek support from technical assistance programs or your *Regional Grant Navigator* (available throughout Colorado).[36]

→ *See "Financial Resources" on page 32.*

☑ **Select and Retrofit a Facility**

- ☐ Choose an accessible, existing community space (if none are found, explore vacant buildings and land where a hub could be created).
- ☐ Upgrade the facility for resilience and emergency functions, with a plan for additional an costly upgrades to be completed in phases over time.

→ *See "Location and Components" on page 19.*

☑ **Develop and Align Programming**

- ☐ Plan year-round community services, like recreation, food distribution, health services, cooling/warming centers, and workforce development training, that serve current and future community needs and climate conditions.
- ☐ Review existing programs offered by government, utility, and nonprofit organizations for alignment.
- ☐ Identify gaps and additional programming needed that could be developed with partners.

→ *See "Programming and Operations" on page 25*

☑ **Establish Emergency Operations and Community Preparedness**

- ☐ Align with local emergency response agencies to ensure the hub can function and provide resources during gray skies.
- ☐ Conduct outreach, education, and preparedness drills to prepare residents for emergencies.

→ *See "Programming and Operations" on page 25.*

☑ **Improve, Scale, and Coordinate**

- ☐ Regularly assess effectiveness and update plans across blue-skies, gray-skies, and recovery operations.
- ☐ Share lessons learned and collaborate in a coordinated network of hubs.
- ☐ Advocate for supportive policies and plans, including incorporating resilience hubs into *local* and *state* Hazard Mitigation Plans.[37,38]

→ *See FEMA's National Continuous Improvement Guidance.*[39]
→ *See "Taking a Network Approach" on page 10.*
→ *See "Appendix C: Policy and Planning tools" on page 49*

# PART 4: IMPLEMENTING A RESILIENCE HUB

The following sections outline four key elements for developing a successful resilience hub: partnership roles and models, location and components, programming and operations, and financial resources. Each chapter highlights specific opportunities in the North Front Range, as well as best practices and local examples.

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## PARTNERSHIP ROLES AND MODELS

External partners play a vital role creating a diverse support system that addresses the unique needs of your community and the specific climate hazards it faces. Successful resilience hubs benefit from collaboration between many organizations and individuals. Partnerships should be explored and established early to help provide essential resources, support vulnerable members, build trust, ensure regulatory compliance, and support long-term sustainability of a hub.

### *Key Ideas*

- Partnerships to establish a resilience hub are customizable to the unique needs and goals of your community.
- Establishing collaborative governance across a diversity of community stakeholders helps a resilience hub to effectively serve vulnerable populations daily and during local emergencies.
- In a public-private partnership, community partners should be front and center with industry partners listening and following their lead.

### *How Can Different Organizations Support a Resilience Hub?*

Here are key organizations and some of the leading and supporting roles they can play while developing and operating a resilience hub.

**Community-serving organizations** are natural leaders that have established trust and can align hub operations with community needs. They can engage residents, manage day-to-day operations, and provide essential services like food distribution, emergency shelter, childcare and mental health support. In the public sector, **local governments** can play a central role in building capacity, as well as offering funding, technical assistance, and necessary resources to community assets and organizations. Localities can coordinate resilience hub operations in alignment with local emergency management and social services, as well as manage regulatory compliance.

Additional nonprofits and private sector entities can support the operation and financial sustainability of a resilience hub. **Academic institutions** can research resilience hub technologies and community impact, facilitate stakeholder coordination, develop training programs for hub staff and volunteers, and establish hubs on college campuses. **Private businesses** can provide funding, technical assistance, and critical goods and services when they are needed most. They can also integrate hub-like features into consumer-facing facilities like shopping malls, restaurants, and housing developments. **Utilities** can ensure the reliable supply of essential services, such as energy, water, and telecommunications, while developing energy security solutions like local energy sources and microgrids.

**State agencies** can provide policy guidance, financial resources through grants and loans, and technical assistance for developing resilience hubs. **Federal agencies** can support strategic direction and funding, while also contributing research and best practices through various agencies to inform hub components and operations.

> Collaboration with a diverse range of stakeholders is essential to ensuring resilience hub projects are effective and attainable. These partnerships can contribute to project planning, the process of securing funding, and implementing the project, ultimately creating a hub that is both sustainable and responsive to community needs.
>
> *—Alison Pegg, Regional Grant Navigator, Upstate Colorado Economic Development*

### *What Partnership Models Can Support a Resilience Hub?*

Below are common partnership models, each with strengths, challenges, and examples. These models are not mutually exclusive and can complement one another. Community-led and government-led resilience hubs may serve different populations and offer varying services, and by coordinating within a city or regional network, a diverse mix of hubs representing different partnership models can maximize impact, address unique opportunities and challenges, and ensure effective operation through strong collaboration. Read more in "Taking a Network Approach" on page 10.

#### Community-Led Model

In this model, local community-serving organizations, such as faith-based organizations, food pantries, childcare facilities, and social service organizations, or residents take the lead in the planning, developing, and operating a resilience hub.

- **Strengths**: Grounded in local needs and voices; adaptable to evolving community needs; builds community ownership; leverages existing community relationships and services; resilience hub resources stay within and directly benefit the communities being served.
- **Challenges**: May require significant capacity building and upfront funding to empower local organizations; property ownership may be a consideration.
- **Example**: Community Center at Loretto Heights Campus (see Box 5); *Boyle Heights Arts Conservatory (PDF)*, which was supported by California-focused nonprofit Climate Resolve (see Box 6).[40]

#### Local Government-Led Model

Cities, counties, and towns can proactively enhance the resiliency of publicly owned and operated critical facilities and community assets, such as libraries, youth centers, shelters, recreation centers, and schools, by enhancing their ability to operate and continue serving the community during climate emergencies and other disruptions.

- **Strengths**: Clear ownership of public facilities; more consistent staff and funding capacity; local authority; direct line to city resources.
- **Challenges**: Lack of community trust in government; lengthy public processes and approvals; government staff turnover or changes in political priorities could cause operational disruptions; potential to be less in-tune with or adaptable to community needs.
- **Examples**: Central Park Recreation Center, Louisville Recreation and Senior Center, Northside Aztlan Community Center, and Superior Community Center (see Boxes 1, 2, 7, and 8).

#### Community-Public Partnership

This model focuses on government bodies supporting and building the capacity of community-serving organizations and their existing facilities and leadership. Local governments provide connections to funding, training resources, technical assistance and regulatory support, while community organizations lead public engagement to determine priorities, services, and design of the resilience hub. This partnership helps ensure that resilience hubs are community-managed, accessible, and adaptable to the needs of vulnerable populations while connected to and supported by local government.

- **Strengths**: Bridges the strengths and challenges of both parties; helps to build trust between the government and community; promotes a balanced, sustainable approach; requires government to listen and adapt to the evolving needs of the community; government can quickly distribute emergency resources to community resilience hubs.
- **Challenges**: May require substantial effort to bridge communication gaps between government and community organizations; resource and information-sharing between government and community-based organizations (CBO) can be tricky and might involve red tape or formal partnership agreements (e.g., MOUs); requires a government point of contact to manage relationships with and support the needs of community resilience hubs.

- **Examples**: Baltimore's Community Resiliency Hub Program and the Community Center at Loretto Heights Campus (see Boxes 3 and 5).

#### Public-Private Partnership

A public-private partnership (P3) brings together the strengths and resources of both public and private sectors to effectively address larger-scale challenges. In a P3, the government typically plays a regulatory or oversight role, while the private sector partner(s) contributes capital, technology, and expertise in exchange for financial incentives, shared risk, or future revenue. For example, in a community-driven public-private partnership, local governments might provide the regulatory framework, utilities handle technical operations, private companies offer funding or technology, and community organizations manage engagement and programs on the ground.

A utility-led model is a type of public-private partnership that involves a utility company (e.g., electric or water) taking a central role in developing and/or managing a resilience hub. For example, partnership with the electric utility may be provide valuable financial and technical resources when energy security or a microgrid is key. For microgrids themselves, various ownership models include utility, individual, co-op, and district owned and operated and can be explored more in Pacific Energy Institute's *Community Microgrid Ownership Models (PDF)*.[41]

Private businesses can also serve as effective resilience hubs, including grocery stores, gyms, hotels, cafés, coworking spaces, warehouses, retail stores, childcare centers, and recreational facilities, by leveraging their existing infrastructure and community presence.

- **Strengths**: Brings private sector expertise, infrastructure and capital into the project; shares benefits and risks; private financial resources can provide match for local government to access larger federal and state grants.
- **Challenges**: Needs strong governance to ensure that private sector priorities align with community needs and equity goals; a utility-led model may focus more on infrastructure and less on community needs.
- **Examples**: Xcel Energy's Community Resilience Initiative (see Box 4); *Brooklyn Microgrid Project*;[42] Pacific Gas and Electric Company's (PG&E's) *Resilience Hubs Grant program*.[43]

#### Anchor Institution Model

This model involves large, stable institutions such as universities, hospitals, or multi-family housing acting as key leaders in the development and operation of resilience hubs. These institutions often have the infrastructure, resources, and long-term interest in community well-being. For example, some hospitals, universities, and housing complexes have community-facing buildings that provide regular services such as food distribution, workforce development, casework, and financial services that could be enhanced to function as a resilience hub.

- **Strengths**: Meets residents where they are; can provide multiple layers of benefits (e.g., hospitals can also provide education and resources on related public health guidance); more stable funding and long-term commitment.
- **Challenges**: Can be slow-moving or bureaucratic; need to ensure community voices remain central to the hub's mission; management of hub operations can be challenging due to competing priorities.
- **Examples**: *Groundswell Resilience Centers* at Spelman College, Morehouse College, and Clark-Atlanta University; *Hampshire Tower Apartments; Tzu Chi Resiliency Center*

### *Partnership Opportunities in the North Front Range*

The North Front Range is home to numerous public and private organizations advancing climate action and community resilience, and offer opportunities to form strategic partnerships around key issues like wildfire, air quality, and affordable housing. During community engagement to create this toolkit, stakeholders envisioned partnerships that leverage each organization's strengths to maximize the impact of resilience hubs while prioritizing community leadership, public health, workforce development, and a collaborative, multi-stakeholder approach.

Academic and nonprofit partners such as Colorado State University and Colorado Health Institute, could serve as conversation facilitators and promote ideas that nurture leadership and community outreach and involvement. Local chapters of National Voluntary Organizations Active in Disaster (VOADs) can make connections to larger disaster response non-governmental organizations (NGOs), such as the American Red Cross and United Way, to provide emergency training and response support. For example, a resilience hub in Baltimore received emergency relief funding from the United

Way during the COVID-19 Pandemic so they could keep meeting community resource needs, and later, partnered with the Red Cross to provide free CPR, First Aid, and Stop the Bleed training for volunteers, residents, and staff.

In Colorado, coordination and partnerships across all levels of government can strengthen local resilience hubs, especially in smaller, less resourced communities. Local emergency management, sustainability or resilience offices can convene departments and community partners, support preparedness training and integrate resilience hubs into critical facilities. Larger anchor cities and counties can provide resources, technical expertise, and coordination support to smaller, rural communities, while a multi-city or county task force can enhance regional communication and response efforts. State agencies and offices including the Department of Local Affairs and Emergency Management Office were highlighted for being well-positioned to lead trainings based on common community needs and best practices.

Electric utilities also offer support programs that could be applied to elements of a resilience hub. Xcel Energy's *Community Resilience Initiative* developed microgrids at various community assets with emergency services (see Box 4), and Poudre Valley REA completed a *microgrid pilot in Red Feather Lakes* that provides energy security for critical resources such as fire response, emergency medical services, shelter, broadband, telecoms, food, fuel, water, and more.[44,45]

## Box 4: Community Resilience Initiative Adds Energy Security to Emergency Services

*Seven locations throughout Colorado*

Xcel Energy is one of the primary electric utilities in the North Front Range. The utility's *Community Resilience Initiative* is an example of a public-private partnership and utility-led partnership model that supports critical infrastructure and supplies backup power during a disaster.* Xcel selected seven facilities with emergency services to deploy microgrids with lithium-ion batteries and solar energy: Nederland Community Center, Arvada Center for the Arts and Humanities, National Western Center, Denver Rescue Mission, Denver International Airport, Alamosa Family Recreation Center, and Summit County Middle School. For example, the Arvada Center—a concert and arts venue—was chosen because it was designated as a recovery and shelter hub in the city's disaster recovery plan. By providing 6 MW/15 MWh of energy storage, the microgrids help transform these facilities into community resilience centers that can operate during longer-term power outages. Co-benefits support clean energy transitions and job creation and provide grid benefits like peak reduction and feeder support.


*Source: "Microgrids and electric cul-de-sacs," Big Pivots, updated August 19, 2024, https://bigpivots.com/microgrids-and-electric-cul-de-sacs.*

Xcel launched the initiative with an open application for community partnerships. Commitments for ongoing coordination with local municipalities and community-serving facilities were required, as well as approval from the state Public Utility Commission (PUC) and negotiations with technical components providers, Siemens and Fluence.

The utility aims to learn about developing and operating microgrids through this effort, which builds off their *2017 Panasonic Microgrid* demonstration project.

** Elisa Wood, "Xcel Energy to Build 7 Community Microgrids. Negotiating with Siemens and Fluence," Microgrid Knowledge, January 16, 2020, https://www.microgridknowledge.com/editors-choice/article/11429185/xcel-energy-to-build-7-community-microgrids-negotiating-with-siemens-and-fluence.*

***Best Practices for Success***

1. **Empower community-based leadership** by supporting local organizations in leading the planning and operations—with government, utility, and private sector partners listening and providing support—to ensure hubs meet residents' needs.
2. **Foster collaborative governance and prepare for conflict resolution** by building multi-stakeholder partnerships that leverage diverse resources. Establishing community agreements with clear protocols for communication, decision-making, and conflict resolution can help align diverse stakeholders, including from community, government, and private sectors. Formal agreements like MOUs and creative financing strategies, such as *advance pay*, can support smaller organizations, with nonprofits or local governments acting as fiscal sponsors.[46] Learn more in "Financial Resources" on page 32.

## Table 1: Learn More About Partnership Opportunities

| RESOURCE | SOURCE | DESCRIPTION |
|---|---|---|
| *Inked with Intent* (2023)[1] | Greenlining Institute | This document provides brief guidance on creating memoranda of understanding for collaborative governance. |
| *Resilience Hub Implementation Toolkit* (2022)[2] | Climate Resolve | This action-oriented toolkit developed by Climate Resolve, a Urban Sustainability Directors Network (USDN) Resilience Hub partner, discusses lessons learned from the Boyle Heights resilience hub to support practitioners that desire to implement hubs. It includes information on forming partnerships, identifying infrastructure considerations, and pathways for scaling. |
| *Exploring Potential Resilience Hubs in California*[3] | PSE Health Energy | A partnership between PSE Healthy Energy, Asian Pacific Environmental Network (APEN), and Communities for a Better Environment to identify and develop solar+energy storage resilience hubs across California, using interactive tools to map out vulnerable communities and potential hub locations based on climate risks and infrastructure capabilities. |
| *Enabling Regulatory and Business Models for Broad Microgrid Deployment* (2021)[4] | DOE | Examines essential regulatory and business frameworks for microgrid development, systematically addressing deployment challenges and models to inform research recommendations. |
| *Partner with Purpose* (2020)[5] | Resonance Global | A book on forming effective cross-sector partnerships to tackle complex social and environmental issues, offering practical frameworks and real-life examples to help businesses collaborate for positive impact and shared value creation. |

## LOCATION AND COMPONENTS

The location and components of a resilience hub are foundational to its operational effectiveness and the level of community programming that it can provide before, during, and after climate emergencies.

### *Key Ideas*

- For identifying priority locations for resilience hubs, community input prioritized high social vulnerability and heat exposure with a location accessible to public transportation and outside of the wildfire zone.
- Community engagement is key to identifying an effective resilience hub location—ideally a trusted facility already serving the target residents—while also guiding hub components to ensure they align with local needs and support vulnerable community members.
- No single component is necessary to be considered a resilience hub, and priority components focus on maintaining access to power and water during emergencies. Microgrids are an advanced component that can provide energy continuity for a resilience hub and there are several considerations to take when planning their development.

### *Where are Resilience Hubs Most Needed?*

While developing this toolkit, C2ES partnered with AT&T and IN-CORE to explore how communities can use data mapping tools to support more resourcing and investment in resilience hubs in the North Front Range. Data and mapping tools can help identify where resilience hubs are most needed across the region by analyzing factors such as climate risks (e.g., heat, flooding, wildfires), vulnerable populations, and existing community assets. Tools including environmental justice maps, forward-looking climate data, and critical infrastructure maps allow planners to pinpoint areas with both high vulnerability and limited access to resources. These tools enable more strategic placement of resilience hubs to serve at-risk communities effectively during emergencies. To explore a list of recommended data layers to identify communities and areas that could benefit most from resilience hubs, visit Appendix B: Available Datasets.

### *What Is an Accessible and Effective Location for a Resilience Hub?*

After identifying areas where residents would benefit most, the next step is selecting facilities that can be enhanced or built as resilience hubs. The ideal site is trusted, well-connected to the community, and engaged with vulnerable residents. Collaborating with residents in the planning process ensures the hub is safe, accessible, and culturally inclusive, with features like multi-language signage to maximize support during emergencies.

Suitable facilities vary widely and may be operated by a mix of stakeholders, including:

- buildings owned or operated by community-serving organizations, such as faith-based organizations, food pantries, and cultural centers
- public facilities operated by local governments, such as schools, libraries, and recreation centers
- buildings owned by private entities, such as health clinics, childcare centers, universities, and multi-family housing.

There is no one ideal building type. Location choice depends on multiple considerations like the kinds of desired partnerships (e.g., if the hub will be primarily community-led, then a community-owned and operated building may be best) and the suitability of the existing infrastructure for the community's needs (e.g., if a desired service of the resilience hub is to shelter people, then the building should be equipped with adequate space and facilities for families with children, including multiple bathrooms). Resilience hubs should be staffed with personnel or volunteers who are knowledgeable about the local culture, languages spoken, and values, such as members of a local nonprofit already active within that community.

> Learning about resilience hubs has shifted my perspective, now, I can focus on specific areas to enhance our center's resilience and pursue effective collaborations that will increase our ability to respond to emergencies and support the community.
>
> *—Gloria Kat, Executive Director, The Family Center / La Familia*

### *What are Standard Components of a Resilience Hub?*

Resilience hubs can include various physical components to serve the community during blue and gray skies and while recovering from a disaster. No single component is necessary to be considered a resilience hub, and priority components focus on maintaining access to power and water during emergencies. Some upgrades are costly and can be completed in phases with the support of public resources.

**Resilient communication systems** for a resilience hub should plan for redundancy and include components such as internet access, satellite phones, public Wi-Fi, and amateur or ham radio to ensure connectivity during emergencies. These systems enable real-time information sharing, coordination with first responders, and accessibility for community members, even if primary networks are disrupted.

**Resilient power systems** can include backup power generators, energy storage, and microgrids; they can be essential to ensure that lights and HVAC systems remain operational during power outages. During emergencies, these assets can power medical devices, food and medication refrigeration, phones, and lighting for nighttime gathering. Costs for power upgrades can vary widely, from adding a generator to more sophisticated systems like microgrids. Increasing insulation and energy efficiency can increase human comfort, lower operating costs and eliminate the need for short-term energy storage. A "net-zero energy" building produces as much energy as it consumes, typically through efficiency and renewable energy sources.

**Resilient water systems** can include large-capacity water storage tanks for potable water and rainwater harvesting systems for non-potable uses such as flushing toilets. Further water-saving strategies, such as via low-flow fixtures, graywater reuse, and xeriscaping, are typically more affordable and can help a facility reach *"net-zero water."*[47]

**Climate-resilient materials and design** help mitigate current and future climate conditions. For example, heat-resistant strategies include a reflective or green roof, well-insulated building envelope, efficient cooling and ventilation systems, shade trees, and nature-based solutions.

## Location and Components Considerations for a Wildfire-Ready Resilience Hub

The location of a wildfire-ready resilience hub would ideally be located outside of fire risk zones yet accessible by residents in risk zones, including via multiple marked access routes. Key components could include:

- non-combustible materials such as metal roofing, fiber cement siding, ember-resistant vents, and heat-resistant tempered glass
- air quality protection including air purifiers, HVAC system with air filtration or "wildfire mode," and cleaner air rooms
- backup power supply including batteries or a microgrid that is fire-resistant
- water storage for fire suppression and community use
- redundant communication systems including internet, satellite phones, and public Wi-Fi
- emergency supplies including first aid kits, medical supplies, and fire suppression tools
- defensible space by maintaining sparse landscaping and other non-flammable materials to create a buffer around the hub, supported by features like cast-in-place concrete garden walls, to slow wildfire spread and protect the structure from radiant heat and embers.

Other components of a resilience hub can include:

- **Air filters** provide cleaner air during events like wildfires and poor air quality days and can also make indoor gathering safer during public health emergencies and the cold and flu season. A building's existing HVAC system can be assessed to see if the air filters may be upgraded to a higher *Minimum Efficiency Reporting Value (MERV) rating* (how effectively an air filter captures particles of different sizes, with higher ratings indicating better filtration performance), and some new HVAC systems offer modes for poor air quality days from wildfires and other sources. A standalone air purifier with a carbon and HEPA filters is an affordable way to reduce harmful particulates and smoke in a single room. Developing a "*Clean Room*" is a more sophisticated approach to minimize these pollutants.[48]
- **Weatherized building envelope** includes adding insulation and upgrading windows and doors to reduce heat and cooling loss to the outside.
- **Energy-efficient lighting, HVAC, and appliances** include installing LED bulbs (as little as $5 per bulb), heat pumps ($5,000–25,000 or more), and efficient appliances to reduce energy demands and operational costs over the long term.
- **Transportation infrastructure** such as a bus stop, parking lot, and bike racks, as well as a van service to bring people from the surrounding community into the hub.
- **Americans with Disabilities Act (ADA) features** including ramps, elevators, and accessible restrooms so visitors with different abilities can access and benefit from all hub facilities.
- **Emergency equipment and supplies** for the resilience hub to use for gray skies or to give or loan to residents. These can include PPE, jumper cables, sump pumps, fans, air conditioners, air purifiers, AEDs, misting canopy tents, walkers and wheelchairs, phone chargers, and batteries, among many others.
- **Spaces with co-benefits** such as gardens and other nature-based solutions can increase food security, urban cooling, and rainwater and carbon capture. A learning center can enhance education and employment. A kitchen or food prep area can improve social connections and feed people during prolonged events. Temporary housing, showers and laundry facilities, space for pets and medication storage, and other personal items would support displaced individuals and families.

Costs for building retrofits and hub components vary and depend on the size and features of the hub, programming offered, and the number of people the hub serves (see "Financial Resources" on page 32).

Maintaining essential services during prolonged emergencies (i.e., a week or more) can be a challenge, and hub operators can strive for redundancy when setting up critical systems. Regular equipment testing, maintenance and resupplies are also necessary to avoid unexpected failures during an emergency.

### *How Can Microgrids Be Integrated?*

A microgrid is a high priority for a resilience hub where energy security is essential, such as emergency shelters, medical centers, or food distribution sites, especially in areas prone to outages and extreme weather. A microgrid enhances operational continuity and energy independence, ensuring critical services like lighting, heating, cooling, and communications remain functional. When paired with renewable energy, a microgrid can be self-sustaining, with a control system directing power to essential functions like medical care and refrigeration during grid disruptions.

A basic level 1 microgrid may cost as little as $25,000 with more advanced systems running *$2 million–$5 million per megawatt*.[49,50] Certain microgrids may be eligible for clean energy incentives and grants. For example, the microgrid system for Northside Aztlan Community Center had a total cost of $466,000 and received grant funding from the State of Colorado (see Box 8).

Microgrids require significant effort, coordination, and ongoing maintenance, potentially increasing electricity consumption and costs. However, pairing them with appropriately sized solar systems can offset energy use from battery recharging. Operators must also navigate safety and permitting requirements, which vary by utility and municipality. Partnering with local governments or utilities can streamline the design process, installation, and management (see "Partnership Roles and Models" on page 14).

## Box 5: A Community-Led Hub at Commún's Loretto Heights Campus

*City of Denver, Colorado*

Community-based organization Commún is developing a new resilience hub to proactively foster a "place of belonging and economic vitality" and purposefully located in a neighborhood facing fundamental change from 3,000 new housing units. The *Community Center at Loretto Heights Campus* is slated to open in 2026 and is an example of community-public partnership where the city's Economic Development Office purchased the former student union building to repurpose for community use.

Commún led a rigorous community engagement and design process to learn how the hub could address issues related to climate change, displacement, inequity, food access, and economic mobility. This process was essential to understand community concerns and for amplifying and incorporating local knowledge and expertise, allowing those with lived experience to lead hub development and ensure the facility meets community needs.

The hub will feature resilient power components, including all-electric building systems powered by 100 percent solar with battery storage, with diesel generators to withstand short-term and extended power outages. For climate-resilient materials and design, the building's HVAC system provides cooling, heating, and air filtration, including a wildfire setting to filter smoke. The center can act as a tornado shelter and will capture stormwater to be reused for irrigation. The hub will also feature spaces with co-benefits, such as on-site showers and laundry, and large spaces for gathering and co-working to build community ties. Additional features include a teen center, donation-based grocery store, dining hall, coffee shop, food production and storage, retail space, and Commún offices. In 2024, the effort was awarded a $19.8 million EPA Community Change Grant to fund many of these upgrades.

Artist's rendering of Commún's Loretto Heights Campus.

*Source: Commún*

### *Opportunities in the North Front Range*

Resilience hubs are already helping communities across the region address climate and social risks, and the State of Colorado offers funding and technical resources to further support their development. For example, the Colorado Energy Office and the Colorado Department of Local Affairs are creating a *Community-Informed Critical Infrastructure and Facility Prioritization Process* to help communities identify and prioritize assets to target resilience upgrades.[51] Resilience hub operators operators can apply for multiple state grant programs to support these initiatives and investments. The following section (Financial Resources) provides information on local, state, and federal programs that support hub components, ranging from microgrids to energy efficiency upgrades to microgrids.

For identifying priority locations for resilience hubs, community input prioritized high social vulnerability and heat exposure with a location accessible to public transportation and outside of the wildfire zone. However, tension exists between areas of need versus areas of risk and the desire to locate resilience hubs in safe and centrally accessible areas. Input also emphasized the desire and need to design and locate hubs to support specific socially vulnerable populations, such as mobile home communities and non-English speaking populations.

Local practitioners who informed this toolkit recommended prioritizing access and convenience by selecting facilities where people already go, especially those with multiple transportation options. Practitioners envisioned a "hub in every neighborhood" and "hub and spokes" models with larger hubs connected by resilient corridors (see "Taking a Network Approach" on page 10). Micro-resilience areas could be created at bus stops or pop-ups that provide water, shade, free Wi-Fi or phone charging, and air conditioning in collaboration with faith-based organizations and private businesses such as hotels and shopping malls.

Practitioners noted that water and power supplies are the highest priority physical components for wildfire and heat resilience. They also noted that the potential for wildfire embers and radiant heat to spread necessitates structural and landscape modifications at the scale of entire neighborhoods or communities, as well as individual parcels and buildings like resilience hubs. Planners could look to the *Boulder County Wildfire Partners* certification program for tangible steps to adapt physical infrastructure to withstand and impede the growth of wildfire and contribute to broader community safety.[52] Organizations can also learn from local hubs listed throughout this toolkit for insights and lessons about their experiences with hub features.

Stakeholders also highlighted practical components to increase ongoing community resilience, such as washers, dryers, kitchens, recreational equipment, community gardens, phone charging stations, remote work, coworking, and meeting spaces.

### *Best Practices for Success*

1. **Lead with trust**. A resilience hub should be housed in a trusted, well-used community space like schools, libraries, faith-based centers, or community centers, which often have existing staff and volunteer capacity. Outfitting these familiar facilities with resilience components is often preferable to using a less-trusted site with existing infrastructure, such as a microgrid, but little community connection.

2. **Design for current and future climate conditions**. Local input, data, and mapping tools, as well as local or state staff can help a hub leader assess local risks and vulnerabilities. For example, a heat-ready resilience hub could act as cooling centers and include air conditioning, backup power to maintain cool environments during heatwaves, and shaded areas to protect vulnerable populations. For wildfire risk areas, a hub can integrate fire-resistant building materials and landscaping, advanced detection and suppression systems, safe electrical practices, clear evacuation routes, and create defensible space around the facility.

3. **Consider cultural sensitivities** when selecting hub locations and features so it is perceived as welcoming and safe by all community members. For example, visible law enforcement presence at emergency shelters could deter certain individuals from seeking assistance.

## Table 2: Learn More About Location and Components

| RESOURCE | DESCRIPTION |
|---|---|
| *Resilience Hubs Site Assessment* (NorCal Resilience Initiative, 2021)[6] | Simple check list to understand what resilience features your facility has and reflect on what upgrades could be made. |
| *Guide to Developing Resilience Hubs* (USDN, 2019)[7] | This short introduction and guidance document describes what resilience hubs are, discusses their core components, and helps communities develop new resilience hub projects. It provides several helpful checklists, such as team and partner roles, services and capabilities, and physical components. |
| *Resilience Hub Design Guide* (USDN, 2022)[8] | This set of graphics provides examples of resilience hub layouts in different building types. Physical components include and support services and programming; communications; building and landscape; power systems; and operations. |
| *Houston Resilience Hub Network: Toolkit For Communities* (Houston, 2023)[9] | Includes assessment tools to define a service or study area, conduct a needs assessment for services and programming, and assess an organization's capacity to become a hub. |
| *Resilience Hub Toolkit* (Austin, TX, 2023)[10] | Includes an overview of various hub models (information hubs, warming or cooling centers, food and/or water distribution centers, and shelter-capable facilities) and Resilience Hub Preparedness Checklists. |
| *Emergencies and Indoor Air Quality* (EPA, 2024)[11] | Information on how to prepare for and respond to weather-related and man-made emergencies that affect indoor air quality. |
| *Wildfires and Indoor Air Quality in Schools and Commercial Buildings* (EPA, 2024)[12] | Resources for building owners and managers, school facility managers, public health officials, and emergency managers to reduce smoke concentrations in buildings, including in dedicated cleaner air spaces, during wildfires and prescribed burns. |
| *Extreme Heat and Indoor Air Quality* (EPA, 2024)[13] | Tips and safety precautions to protect your indoor air quality during extreme heat events. |
| *Climate Risk Assessment Resources* (EPA, 2024)[14] | EPA developed a curated table of federal tools that can help applicants and recipients evaluate climate risks and hazards, develop climate-smart projects and consider the impacts of climate change throughout project implementation. |
| *Powering Community Resilience: A Framework For Optimizing Resilience Hub Power Systems* (USDN, 2019)[15] | This technical guidance document provides in-depth information about resilient power systems and hybrid solutions. |

## PROGRAMMING AND OPERATIONS

Effective programming and operations are the heart of a successful resilience hub, and they require ongoing support from partners and stakeholders. Programs should address daily services, year-round resilience, and emergency response and recovery. Community-led programming is crucial for building self-reliance and strengthening local capacity. A hub's location and components, discussed on page 19, can further support its programming and operations.

### *Key Ideas*

- Each resilience hub can offer bespoke programs and services to meet the unique needs of the community it serves and leverage existing resources.
- A resilience hub operates primarily in "blue skies" mode as a community facility, providing daily benefits while fostering emergency preparedness through tailored programming, community engagement, and culturally competent training to build local capacity.
- During and after a disaster, a hub activates into emergency or "gray skies" operations and then recovery mode to communicate essential information, distribute supplies, coordinate with partners, and provide other services like backup power and shelter.

### *What are Operational Modes?*

Resilience hubs have three main modes of operation:

- **Daily operations ("blue skies")**: The hub operates in this mode most of the time by providing regular services to the community.
- **Emergency operations ("gray skies")**: The hub reacts to a disruption, shifting and scaling operations to support immediate community needs. It provides critical information, services, personnel, and supplies for residents and businesses and coordinates with local emergency response efforts.
- **Recovery operations**: The hub continues coordinating with local partners and distributing resources, including information on post-disaster assistance and funding, to support the community's longer-term recovery.

### *What Programming is Essential for Each Operational Mode?*

During **daily operations (blue skies)**, a resilience hub can serve as a *"third space"* beyond home and work, offering programs that improve community well-being, and specifically build disaster preparedness capacity, to ensures the hub and its users are ready to handle disruptions and effectively operate in emergency and recovery modes. Potential programming for blue skies mode includes:

- **Family, Household, and Social-Connection Services**: These can include recreation and fitness opportunities, food services, childcare, after-school programming, and senior activities that provide regular touch points and build trust with community members. A hub can also lend useful equipment to residents via a *Library of Things*. Considerations for the spaces and amenities needed to provide these programs, such as food pantries, community kitchens, laundry, libraries, co-working spaces, and gathering spaces for events, are discussed in "Location and Components" on page 19.
- **Emergency and Disaster Preparedness**: Resilience hubs can enhance community preparedness by offering first aid, CPR, and AED training, along with workshops on disaster preparedness tailored to local climate risks like wildfires, heat waves, or winter storms. Using a "train the trainer" model, community members can lead these courses, strengthening local knowledge and relationships. Hubs can also provide disaster kit preparation, family emergency planning, and CERT (Community Emergency Response Team) training, equipping residents for tasks like light search and rescue, medical operations, and fire safety. Additional workshops can cover evacuation strategies, emergency alerts, utility management (gas, water, electricity), and safety measures for vulnerable populations, ensuring comprehensive readiness for various disaster scenarios.
- **Healthcare**: Hubs provide an opportunity to integrate public health and medical services, including care during disruptions, as highlighted in hubs in Boyle Heights, California, Ward 7 in Washington,

D.C., and Sacramento, California.[53] Services can include public health screenings, vaccinations, case management, and mental health support. Community health workers or promotoras are trusted community members who provide outreach, education, and support, helping connect people to health, social, and community services.

- **Stress and Trauma Management**: Providing guidance and programs to manage stress and mental health can help build psychological safety and resilience before, during, and after a disaster. Trauma-informed programming is an approach that recognizes the impact of trauma on individuals and communities, ensuring services are delivered in a way that promotes safety, healing, empowerment, and trust. This is especially important in communities that have or will experience multiple disasters.
- **Economic Mobility Programming**: Hubs can help support the economic well-being, including job pathway training, of the surrounding community. For example, Commún's Loretto Heights Community Center will include spaces for private hair and nails businesses, as well as provide space for advertising local construction businesses (read more in Box 5).

During **emergency operations (gray skies)**, a resilience hub temporarily shifts its focus to provide the most critical services and meet pressing community needs, including access to power, water, food, and information. Potential programing for gray skies mode includes:

- **Communications**: a hub can be a space to deliver essential information to the community. It can also include translation services and special efforts for hard-to-reach residents. Two-way communication with local government agencies allows hubs to elevate community needs, advise on recommended actions and resource needs, and share on-the-ground details of hazard impacts and service disruptions like power outages. Early warning systems integrated into resilience hubs enhance community preparedness by providing timely, localized alerts and resources to mitigate the impacts of extreme weather events and other emergencies.[54]
- **Food and Water Distribution**: a resilience hub can serve as a food and water distribution center, providing essential supplies, meal services, and safe drinking water to support the community during emergencies and periods of need.
- **Cooling or Heating Center**: during extreme weather, hubs can provide a safe, temperature-controlled space with essential services like hydration, medical support, and community resources to protect vulnerable residents.
- **Refuge or Shelter**: A hub can become a shelter during emergencies by offering supplies and making space for residents to stay overnight, alongside adequate water for bathroom and shower facilities, resilient power for HVAC and lighting systems, food supplies, and accessible transportation.
- **Emergency Supplies**: A hub can distribute supplies such as first aid kits, air conditioning, or purifying units for residents to use and take home in various emergencies. They can also serve as a central coordination point for first responders and aid workers. For example, during the COVID-19 pandemic, resilience hubs in Baltimore partnered with the city's health department and local health clinics to distribute COVID tests, information, and personal protective equipment (PPE).

During **recovery operations**, a resilience hub continues to offer emergency programming to fill gaps in services that have yet to be restored and provide specialized post-emergency resources.

- **Post-disaster Assistance**: A hub is a great place to distribute information and help residents and businesses apply for post-disaster assistance and funding. In Baltimore, one resilience hub served as a post-disaster recovery staging area for response and recovery personnel after a significant flood. For years after the flood, the hub continued to serve as the central location for community convenings with local officials and led advocacy efforts to help the community heal.
- **Education and Technical Assistance**: Immediately following a disaster is a good time to provide and connect residents and businesses with informational resources to prepare for future disruptions and build back better, such as energy efficient heating and cooling, insulation, resilient materials, and on-site energy generation and storage.

## Programming and Operations Considerations for a Wildfire-Ready Resilience Hub

A wildfire-ready resilience hub should be equipped with staff and resources to provide tailored programming and operations in each mode. For example:

**Blue-skies mode:**

- host community education workshops on wildfire preparedness, defensible space, and evacuation planning
- provide workforce training in fire-resistant building practices, fuels management and emergency response skills
- maintain and test critical systems such as HVAC, backup power, and communication equipment
- facilitate ongoing partnerships with local organizations and emergency services for resilience planning.

**Gray-skies mode:**

- activate as a safe refuge, offering cleaner air rooms, backup power, and emergency supplies
- serve as a communication hub for sharing real-time updates, evacuation orders, and safety information
- coordinate with local agencies to streamline emergency response efforts, including resource allocation and staff and volunteer deployment to coordinate logistics, medical aid, and evacuation
- provide access to water for drinking water and fire suppression and distribute emergency kits, N95 masks, fire suppression tools, and residential air purifiers to affected residents.

**Recovery mode:**

- act as a central location for distributing recovery resources, such as food and water
- assist residents and businesses navigate and apply for public recovery resources
- provide mental health services and community support programs for wildfire survivors
- support efforts to build back better with technical assistance and permitting support for fire-resistant design and materials
- host debriefings to gather feedback, assess lessons learned, and update resilience plans.

### *What Roles Can Organizations Play in Programming?*

The hub operator can seek to coordinate across various stakeholders and volunteers to provide programming across all operational modes. Engaging community members will help identify priority programming across modes, as well as empower community-directed programming. Formal partnerships can help define and implement programming, as discussed in Partnership Roles and Models.

Here are examples of roles that key partners can play in hub programming:

- Local Governments can provide training on emergency preparedness, climate action, and sustainability while connecting residents to public services; deploy emergency resources and communicate critical information during disasters.
- Aid Organizations & Volunteer Groups (e.g., local chapters of Red Cross and United Way, and voluntary organizations active in disaster [VOADs]) can offer emergency preparedness, response, and recovery training while coordinating resources and services through task forces, such as *East Maui Ready*.
- State & Federal Agencies can supply guidance, educational materials, and recovery assistance, helping residents and businesses navigate programs like FEMA disaster relief.
- Nonprofits & Private Businesses can integrate workforce development, healthcare, financial literacy, and energy efficiency programs into resilience hubs to support long-term community resilience.
- Electric utilities can educate residents and businesses on ways to reduce utility bills, including incentives and programs for energy efficiency, solar energy, and energy storage.

## Box 6: Serving the Community During the 2025 LA Fires at the Boyle Heights Arts Conservancy

*City of Los Angeles, California*

*The Boyle Heights Arts Conservancy* is a community center in Los Angeles that supports diversity in the creative arts, media, and technology industries. In its blue-skies mode, the conservancy supports the predominantly Latino Boyle Heights community with arts programming, such as job training for formerly incarcerated individuals, bilingual radio programming, youth arts programs, senior services, and training for proactive community recovery preparedness. In its gray-skies mode, the hub provides a safe space with cooling and clean air for community members to take shelter from extreme heat and wildfires.

During the Los Angeles wildfires in January 2025, the conservancy activated gray-skies mode and provided WiFi, power, air conditioning, refreshments, and KN95 masks. The hub welcomed students experiencing school closures and allowed artists impacted by power outages to book creative time in its studios. The conservancy posted communications on social media to let residents know they were open and what programming was being provided (see images). As the fires continued, the conservancy also partnered with Red Cross to offer self-care kits that included masks, hygiene products, and snacks for community members.



Social Media posts from the Boyle Heights Art Conservancy during LA wildwires.

*Source: Boyle Heights Arts Conservancy (@thebhac), "BHAC Resilience Hub and Red Cross have teamed up to distribute Self-Care Kits…," Instagram video, January 21, 2025, https://www.instagram.com/thebhac/reel/DFF48WNpPvB.*

## Box 7: Supporting Recovery after the 2021 Marshall Fire at the Superior Community Center

*Town of Superior, Colorado*

The *Superior Community Center* provides social and recreational support, featuring meeting rooms, a performance area with stadium seating, a library, and a dedicated youth room. The center serves as a hub for resilience and enjoyment, offering wide-ranging and community-led programming from arts and education to leisure and social services seven days a week. The center operates in a repurposed car dealership, taking advantage of flexible space configurations, natural light, and integrated modern technology in an industrial-style building. The center is also the base of operations for the Town's Disaster Preparedness and Recovery and Parks, Recreation and Open Space offices.


Photos from the Superior Community Center

*Source: Superior Community Center*

"We came online 6 months prior to Marshall Fire and were lucky to have this resource that became a hub to the community. We held public meetings, town halls, and policy discussions. Residents needed a place to gather to feel a sense of community while recovering, also to telecommute, use the internet, and charge devices. Town staff were able to help residents fill out forms for FEMA Disaster Assistance and U.S. Small Business Administration Disaster Loans."

*—Allison James, Disaster Preparedness and Recovery Manager, Town of Superior*

### *Programming Opportunities in the North Front Range*

Blue-skies programming should address community needs and mitigate regional hazards like wildfires, heat, and poor air quality, while gray-skies programming can support emergency response by providing safety information and sharing resources like AC units or air purifiers.

The North Front Range is home to many organizations that offer programs to serve local communities and could be leveraged by a resilience hub. Here are several examples of existing local and state support programs:

- VOADs in *Colorado* and *Larimer County*, for example, can offer training during blue skies and communication and coordination support during gray skies emergency operations.
- The *Colorado Community Health Network (CCHN)* could support resilience hub programming by connecting hubs with Community Health Centers, offering expertise, resources, and high-quality care to better serve community health needs, especially for underserved populations.
- Xcel Energy, a local electric utility, offers the *Partners in Energy* program and *toolkits* to help a range of customers, including local governments, faith-based organizations, property owners and tenants, small and medium businesses, and underserved communities develop and implement custom energy plans, collaborate with each other, and communicate with a range of stakeholders.[55,56]

- *Opportunity Now Colorado* offers $85 million in grants to create and expand innovative workforce development efforts across the state.[57] Colorado Workforce Development Council's *Lives Empowered* focuses on enhancing economic mobility for front-line workers in the retail business sector.
- The *Colorado State University (CSU) Climate Initiative* supports community building and engagement and seeks to provide climate services and analysis to Colorado communities.[58]
- During COVID-19, the *Project Protect Food Systems Promotora Network* empowered immigrant and migrant farmworkers throughout Colorado by providing culturally relevant outreach, education, and advocacy to improve their health, safety, and well-being.
- *Larimer Connects* works alongside community members to share information across agencies, communities, and governments before, during, and after emergencies.[59] The program includes "*Community Hubs*" that receive and disseminate communications from the county, with several offering sheltering supplies and microgrids. The county supports blue-skies engagement via newsletters, training for adults and youths, and quarterly meetings between hub leaders. Gray-skies communications focus on incident reports, shelter locations, and volunteer availability, making "safe and well" calls, and use of *Amateur Radio Emergency Service (ARES)*.
- *Boulder County Wildfire Partners* supports collective and personal action to create wildfire-resilient communities across Boulder County. Poudre Fire Authority offers *resources to prevent wildfires and protect homes,* including Home Ignition Zone Assessments (HIZAs) and customized classes about wildfire preparedness.[60]
- The City of Longmont's *Resiliency for All* project enhances representation and addressing barriers of Latino and underserved communities in hazard response and resilience efforts, including providing bilingual emergency resources, are shared with multicultural community partners.
- Additional regional opportunities are discussed in "Partnership Roles and Models" on page 14.

### *Best Practices for Success*

1. **Take advantage of "blue skies" to build capabilities for "gray skies."** Prioritize building communication channels and resident staff capacities and skills during daily operations when the community is not in a crisis. After any disruptions, lessons learned can be integrated into the capability-building process to further enhance community resilience.

2. **Foster community-led and culturally appropriate programming** to ensure trusted spaces for vulnerable residents while strengthening partnerships that elevate community concerns and build trust with local government. Diverse representation in leadership, hiring, and volunteer roles is essential. Engaging underrepresented groups, such as organizations with deep local ties, and providing incentives like compensation, childcare, and leadership opportunities, can foster more inclusive participation. Community ambassadors or promotoras fluent in local languages can share information door-to-door, while events like block parties hosted by local organizations can boost participation. Programs should reflect local culture and demographics, tailoring services to each community's unique needs, whether urban or rural. Partnerships with local businesses and restaurants can enhance cultural relevance and resource availability.

> "As the climate crisis deepens, sustainability professionals are expanding their focus beyond simply reducing greenhouse gas emissions to actively safeguarding their communities amid growing uncertainty. Resilience hubs across Colorado and the nation have proven their effectiveness, not only in protecting communities, but in fostering unity through tailored programs and initiatives that strengthen bonds and enhance collective resilience.
>
> *—Mel Englund, Sustainability Program Manager, City of Englewood*

## Table 3: Learn More About Programing and Operations

| RESOURCE | DESCRIPTION |
|---|---|
| *Examples of Resilience Hubs* (Atlantic Council, 2023)[16] | Overview of resilience hub efforts across the United States and the programming they provide. |
| *Resilience Hub Toolkit* (Austin, TX, 2023)[17] | Includes an overview of various hub models (information hubs, warming or cooling centers, food and/or water distribution centers, and shelter-capable facilities) and Resilience Hub Preparedness Checklists. |
| *Houston Resilience Hub Network: Toolkit For Communities* (Houston, 2023)[18] | Includes assessment tools to define a service or study area, conduct a needs assessment for services and programming, and assess an organization's capacity to become a hub. |
| *Climate Adaptation Planning: Guidance for Emergency Managers* (FEMA, 2024)[19] | This guide is intended for state, local, tribal, and territorial managers to incorporate climate adaptation into emergency management planning efforts. Within it are more resources specific to communities, like the FEMA Resources for Climate Resilience. |
| *Climate Resilience for Healthcare (CR4HC) toolkit* (U.S. Department of Health and Human Services)[20] | This toolkit supports the healthcare sector in incorporating climate change considerations in emergency preparedness and resilience planning. |
| *Communications Materials for Technical Assistance Providers* (EPA, 2024)[21] | The materials on this page can help technical assistance providers convey the importance of adaptation, resilience, and climate justice to the overall success of a project—before, during, and after applying for federal funding. |
| *Communities Together: A Guide for Resilient Community Center Design in Island Communities* (Enterprise Community Partners, 2021)[22] | This guide discusses designing community centers (including options for programming) to serve as educational and socioeconomic development centers throughout the year while also having the capacity to face climate, social, and economic changes. |
| *Community Engagement Toolkit for Emergency Managers* (FEMA, 2024)[23] | This resource for emergency managers helps to implement strategies to address the needs of the entire community. It emphasizes strengthening local partnerships and learning directly from communities to enhance overall resilience. |
| *Engaging Faith-Based and Community Organizations* (FEMA, 2024)[24] | This guide provides a framework for emergency managers to engage with faith-based and community organizations in a sustainable manner. Within it are other culturally important resources, such as the *Heritage Emergency and Response Training* and *Smithsonian Cultural Rescue Initiative*. It includes a six-step engagement model for building resilience with diverse communities. |
| *Austin's Resilience Hub Toolkit* (Austin, 2023)[25] | This toolkit provides a succinct series of guides and checklists for potential resilience hub developers in the City of Austin. The toolkit describes different types of hubs (e.g., information hubs, cooling centers, distribution centers) and describes the questions hub operators should ask themselves for their blue skies, gray skies, and recovery modes. The toolkit also offers an "Organization Preparedness Checklist" to help organizations identify potential gaps in their operations. |

## FINANCIAL RESOURCES

Financial Resources are essential for both short-term upgrades—such as emergency supplies, training, energy retrofits, and microgrids—and long-term needs like programming expansion, maintenance, and building improvements. Beyond public grants, exploring diverse financial mechanisms is key to sustaining and growing a resilience hub.

### *Key Ideas*

- There are many types of public and private funding resources that can be applied to a resilience hub.
- Partners should discuss and develop a diversified funding strategy early, considering the wide range of financial mechanisms beyond public grants.
- Before pursuing grants, it is important to assess your organization's capacity for grant writing and management, and if needed, start by applying for technical assistance.
- Low- or no-cost efforts—like preparedness training, relationship building, and resource sharing—may be equally or even more critical than costly and time-intensive components, such as microgrids.

### *What Are Important Considerations for Developing a Resilience Hub Funding Strategy?*

Develop a funding strategy early, considering available financing options and the full range of planning, construction, retrofit, and operational costs. A realistic financial plan should account for upfront and ongoing expenses, be adaptable to evolving funding landscapes, and align with the organization's type and capacity.

**Lower-cost investments can be some of the most impactful**. Though investing in certain resilience hub components can be expensive and time-intensive, it is important to note that lower-cost components and programming can be immediately impactful, compared to expensive features such as microgrids. This includes leveraging existing resources from public and private organizations for community engagement, capacity building, emergency planning, disaster preparedness, public health, sustainability, and workforce development. Building strong community support and diverse partnerships can support securing financial resources and long-term sustainability of a resilience hub.

**All desired components of a resilience hub do not need to be funded at once.** A phased approach, combined with leveraging existing resources, can reduce the barrier to entry and help build a strong foundation of trust, ensuring that more expensive investments are minimally disruptive, as well as useful to and desired by the community.

**Consider long-term sustainability and replacement costs,** particularly for advanced components such as microgrids. Funding can become a challenge for replacing systems, batteries, and components. If resources are unavailable, decommissioning could occur.

### *What Types of Financial Resources are Available?*

#### Private Resources

Many philanthropic organizations provide flexible funding and financing to nonprofits and local governments. These funds are often tied to specific program areas that may align with the goals of a resilience hub (e.g., community development, public health, economic equality, environmental justice, and climate resilience). *The Funders Network* includes 130 foundations that are focused on creating "communities and regions that are sustainable, prosperous, and just" across the United States.[61]

Community Development Financial Institutions (CDFIs) are unique in their abilities to access, manage, and distribute funds like a bank in some instances and like philanthropy in others. CDFIs could make excellent financing partners for resilience hubs as they are client-facing, mission-focused nonprofit lenders with experience providing underwriting and lending services, managing multiple sources of government and nonprofit contracts, and working with underserved populations and low- to moderate-income (LMI) households. Learn more in *Unlocking Community Resilience: Innovative Strategies to Access Climate Adaptation Funding*.[62]

CDFIs and Green Banks are creating a national financing network for clean energy and climate solutions via three programs: the $14 billion *National Clean Investment Fund (NCIF)*, the $6 billion *Clean Communities Investment Accelerator (CCIA)*, and the $7 billion *Solar for All program*.[63,64,65] These investments will provide low-interest financing and help mobilize private finance for clean energy installations, energy efficiency improvements, and infrastructure upgrades in homes and small businesses, with 70 percent going to low-income and underserved communities.

### State Resources

State financial resources for resilience hubs often come from a combination of grant programs, climate resilience funds, and emergency management allocations. These may include state-administered federal funds, such as FEMA's Hazard Mitigation Grant Program or the Department of Energy's resilience initiatives. Additionally, state agencies focused on public health, sustainability, and environmental protection may offer funding streams for infrastructure upgrades, renewable energy integration, and community preparedness programs. Partnerships with state-affiliated organizations, like Metropolitan Planning Organizations (MPOs) or regional councils of governments, can also unlock funding opportunities, while leveraging support from state-sponsored green banks or revolving loan funds to finance long-term resilience projects.

### Federal Resources

*Note: Information on federal resources are current as of the end of 2024, and programming may change.*

Federal grant and technical assistance programs provide crucial funding for resilience hubs by supporting disaster preparedness, energy security, energy efficiency, and community resilience, with programs historically available through agencies like FEMA, DOE, HUD, and the EPA (see Table 4 and a list with more programs in the Financial Resources Table in Appendix A).

### *Resources for Communities and Organizations in the North Front Range*

Communities across the North Front Range have access to many unique opportunities that can support a resilience hub and components including microgrids. The most notable resources are discussed below, and a list of specific opportunities are included in the Financial Resources Table in Appendix A.

## Table 4: Federal Programs that Support Resilience Hubs and Microgrids

| FOCUS AREA | AGENCY | PROGRAMS | RESOURCE TYPE |
|---|---|---|---|
| Resilient Infrastructure | Federal Emergency Management Agency (FEMA) | *Hazard Mitigation Grant Program*[26]<br>*Building Resilient Infrastructure and Communities*[27]<br>*Pre-Disaster Mitigation Grant Program*[28] | Grants |
| Resilient Infrastructure | Internal Revenue Service (IRS) | *Elective Pay Provision*[29] | Tax Credit* |
| Community Resilience | Environmental Protection Agency (EPA) | *Community Change Grants Program* (not currently active)[30]<br>*Environmental Justice Government to Government Program*[31]<br>*The Environmental Justice Thriving Communities Technical Assistance Centers Program*[32] | Grants and Technical Assistance |
| Hub Locations | Department of Homeland Security (DHS) | *Resilience Hubs Finder*[33] | Informational Tool |
| Community Risks and Resilience | U.S. Global Change Research Program (USGCRP), National Oceanic and Atmospheric Administration (NOAA) | *U.S. Climate Resilience Toolkit*[34] | Informational Tool |

*The IRA's Elective Pay provision enables tax-exempt entities including local governments and nonprofits, to directly benefit from tax credits for clean electricity, fuels, and vehicles, reducing carbon emissions, and more; it can help finance large investments such as microgrids and electric vehicle (EV) chargers. The Alliance for a Sustainable Future offers more information in *Cities Advancing Climate Action: Unlocking the Potential of the IRA* and has forthcoming guidance, Elective Pay Blueprints for Communities, expected to be released in 2025.

## Box 8: The North Front Range's First Government-Led Resilience Hub at the Northside Aztlan Community Center

*City of Fort Collins, Colorado*

*Northside Aztlan Community Center* is a vibrant recreational and cultural hub offering diverse programs, fitness facilities, and community services to support residents of all ages. Owned by the City of Fort Collins and Fort Collins Utilities, the center was upgraded in 2023 to include *a functioning microgrid* with 280 kWh of battery storage and 54 kW of solar panels. This upgrade enhances the center's ability to serve as a resilience hub, providing backup power during emergencies, reducing energy costs during peak periods, and supporting grid stability. The project, with a total cost of $466,000, was funded through multiple sources, including a $200,000 grant from Colorado's Department of Local Affairs' Clean Energy Challenge and matching funds from Fort Collins Utilities. The Center is located near key service providers, including county offices and a food bank. It also has a long history of community involvement and trust, providing community services from cultural events for the Hispanic/Latinx and Indigenous communities to hosting a vaccine clinics during the Covid-19 pandemic. Fort Collins Utilities will use the project to study battery technology for future applications, and efforts are underway to certify the center as a Red Cross evacuation point.


Left: Fort Collins Aztlan Hub Battery Storage Unit; Right: Northside of Aztlan Community Center

*Source: Azrtlan Community Center*

### *Opportunities in the North Front Range*

Colorado has several grant programs that support funding a resilience hub and its components.

- ***Colorado Climate Resilience Challenge*** is a grant program supporting projects that address climate adaptation, climate mitigation, and social equity by targeting the highest-risk vulnerabilities in communities or regions.[66] Projects that effectively integrate these goals will be the most competitive, and several resilience hub projects in the North Front Range have already received funding through this program (see Boxes 1, 2, and 8).
- ***Colorado Microgrids for Community Resilience (MCR) Program*** is a support program offering planning and implementation grants to develop a microgrid. All proposed microgrid projects must strengthen resilience to community-based anchor institutions and/or essential infrastructure, such as a resilience hub. The program's website summarizes additional grants and technical assistance opportunities.
- ***Colorado Commercial Property Assessed Clean Energy (C-PACE)*** is a financing program designed to help commercial property owners implement energy efficiency, renewable energy, and water conservation projects.[67] C-PACE allows property owners to finance these upgrades through a voluntary special assessment, which is repaid as a line item on their property tax bill over an extended period (up to 20 years or more).

- ***Colorado State Revolving Loan Fund*** provides low-interest loans for clean water and drinking water projects, including nature-based and stormwater features that could be integrated into a resilience hub.[68]

Colorado has several state programs to increase local capacity and maximize federal funds coming to the state, which could be useful during the early stages of resilience hub planning (e.g., grant writing, matching funds).

- *Regional Grant Navigators* help local governments identify projects and partnerships to apply for federal grants.[69] There are 14 full-time Navigators across the state, including two supporting communities in the North Front Range, funded by the Colorado Department of Local Affairs. Navigators identify opportunities, review application materials, provide technical support, share resources, and foster regional collaboration.
- *The IIJA Local Match Program* has set aside $10 million in state funds to meet federal grant match requirements, often 20 percent or more, a significant barrier for smaller communities. [70]
- *Colorado Grant Writing and Technical Assistance Program* offers free support for priority projects, including grant writing and project planning (e.g., site assessments, permitting, and design assistance) for federal funding.[71] Eligible applicants should complete the *Grant Writing and Technical Assistance Form* for support.[72] If a grant is unsuccessful, consultants help improve proposals for resubmission, strengthening local capacity and filling regional funding gaps.
- The *Local Community Funding Guide* helps local governments and nonprofit community organizations navigate the funding sources available through various federal and state programs.[73] While not an exhaustive list, this guide is updated frequently as new information becomes available.

A range of potential partners from local government, academic, electric utility, philanthropic, and financial organizations can play a role in providing financial resources for a resilience hub, including:

- **Local governments** can support a resilience hub by applying to public grants on behalf of community-serving organizations and raising additional funds from municipal bonds or establishing dedicated taxes or user fees. For example, the city and county of Denver passed a law to create a Climate Protection Fund from a local sales tax, which raises $40 million annually to accelerate action on climate mitigation, adaptation, and equity projects with a priority for the most vulnerable communities. Organizations in Denver can look for opportunities made available by this fund, including:
  - *City of Denver Renewables and Resilience Incentive Program for Non-Profits:* Denver's Office of Climate Action, Sustainability, and Resiliency (CASR) offers this grant to fund up to 100 percent of the costs associated with installing solar panels, battery storage, and EV charging for Denver-based human service providers.[74]
  - *Denver Clean Air and Cool Home Funding* offers nonprofits and community-based organizations up to $50,000 to mitigate impacts of extreme heat and unhealthy indoor air quality via air AC units, purifiers, and community outreach and engagement.[75]
- **Denver Regional Council of Governments (DRCOG)** was *awarded $199.7 million* from the EPA's Climate Pollution Reduction Grant Program and will be rolling out many new programs to support community engagement, building energy and efficiency upgrades, workforce development, and innovation, with special funding focus on low-income and disadvantaged communities.
- **Energy Outreach Colorado** administers *Nonprofit and Multifamily Programs* for HVAC, energy efficiency, weatherization, and low-flow water fixture upgrades that can be leveraged for resilience hubs.[76]
- **Electric utilities** offer grants, rebates, and support programs that may be leveraged in hub planning construction and programming. For example, Xcel Energy provide several support programs, including the *Business Savings* programs for lighting and energy efficiency and *Renewable Energy* programs for solar energy and battery storage.[77,78] The *Xcel Energy Foundation Focus Area Grants* fund projects with a focus on environmental sustainability, including disaster preparedness.[79] Additional programs and incentives from local electric utilities are discussed in "Partnership Roles and Models" on page 14 and "Programming and Operations" on page 25.
- **Philanthropic organizations** across Colorado provide funding for projects that achieve environmental, climate, and sustainability program priori-

ties. Many of these organizations are members of *Philanthropy Colorado*. For example, The Gates Family Foundation supports solutions to quality-of-life challenges across Colorado, with focus areas including community development and natural resources.[80] *The Denver Foundation* offers an annual *Community Grants Program* with funding priorities that include environment (e.g., energy efficiency, renewable energy, air quality) and economic opportunity (e.g., community wealth-building, workforce development), which could be integrated into a resilience hub.[81] For example, Denver-based Commún successfully received philanthropic funding, among other sources, to develop a resilience hub in the southeast of the city.

- **CDFIs** are active in Colorado, including national *Enterprise Community Partners* and *Mercy Housing*, and could support resilience hubs that align with their community development goals.[82,83] The Impact Development Fund, focused on affordable housing in Colorado, launched the *Disaster Recovery Program* less than six months after the devastating 2021 Marshall Fire in Boulder County to combine multiple public and private funding sources for post-disaster recovery and proactive resiliency and distribute them via one streamlined process to households and businesses that were affected by the fire.[84]
- **Academic institutions** have access to research and development funding and federal agencies such as the National Oceanic and Atmospheric Administration (NOAA) and the National Science Foundation (NSF) are incorporating more emphasis on community engagement and benefits in their funding to universities. Currently, NSF awarded a major investment of up to $160 million over 10 years for the *Colorado-Wyoming Climate Resilience Engine*, which is enabling *new grants to startups and universities* in those states and could help advance technologies that could be tested and implemented in resilience hubs, especially those based within universities.[85]

### *Best Practices for Success*

1. **Assess your organization's capacity for grant managemen**t before seeking out grants, including staff time and expertise that can be made available for grant tracking, writing, and management. It is also important to be aware that many grants are cyclical, competitive, and not always guaranteed. If a capacity gap exists, helpful first steps can be to apply for technical assistance and take a grant writing course.
2. **Increase capacity through partnership** with philanthropic organizations, nonprofits, local governments, and private businesses that can provide capital, fiscal sponsorship, and grant management support. CDFIs and other nonprofit entities can serve as pass-through organizations to manage funding and reporting, reducing administrative burdens for smaller groups. Local governments can apply for public funding, offer technical assistance, and support planning, design, and permitting, helping attract additional implementation funding. By leveraging these partnerships, lower-resourced CBOs and social entrepreneurs can more effectively navigate funding applications, disbursement, and reporting, ensuring long-term sustainability.
3. **Integrate resilience hub program needs into other grants and plans** to complement and leverage existing efforts related to infrastructure upgrades, emergency management, and other ongoing priorities and processes.

### *Learn More*

For a robust list of potential grant opportunities for resilience hubs, please see "Appendix A: Financial Resource Tables" on page 38.

## TOOLKIT PROCESS

Resilience hubs and microgrids are one of seven key action areas identified through the *Climate Resilient Communities Accelerator* that C2ES launched in 2023 to coordinate and accelerate public, private, and community action on wildfire and heat resilience in the North Front Range of Colorado, a region spanning Fort Collins to Denver.[86] Participants discussed how existing community centers and spaces could increase resilience daily and before, during, and after emergencies, including wildfires and extreme heat—and defined the steps that could advance these solutions in the region. In 2024, C2ES hosted a collaborative event series to inform, connect, and empower key stakeholders that can lead or facilitate these solutions to serve communities and vulnerable neighborhoods across the region.


C2ES served as a conversation facilitator, knowledge partner, and lead on the toolkit development. C2ES convened over 65 representatives from local governments, community-based organizations, and a range of public and private organizations that create a supportive ecosystem for thought partnership and varying levels of experience implementing resilience hubs and microgrids.

In June 2024, a virtual session convened participants to learn about these emerging resilience solutions, a range of opportunities and roles to support them, and provide input on the Accelerator process in 2024. In July 2024, an Accelerator workshop brought together a diverse set of leaders to shape the implementation toolkit through collaborative discussions on data mapping tools for resilience hubs, a regional network approach, and the toolkit's themes. In November 2024, a second workshop previewed the draft toolkit and gathered input on the rollout to build awareness among a broader regional audience.

C2ES synthesized stakeholder input and insights from this collaborative series and researched the latest examples and solutions from across the United States to build this toolkit and tailor it to Colorado's North Front Range.

The toolkit was informed by the generous insights and participation from Colorado-based stakeholders from the following organizations. Their participation does not necessarily imply endorsement of the toolkit.

- AECOM
- AT&T
- Bank of America
- Boulder County
- Brendle Group
- City of Boulder
- Cities of Englewood and Sheridan
- City of Fort Collins
- City and County of Denver
- City of Longmont
- City of Louisville
- City of Westminster
- Colorado Department of Local Affairs
- Colorado Energy Office
- Colorado Governor's Office of Climate Preparedness and Disaster Recovery
- Colorado Health Institute
- Colorado Resiliency Office
- Colorado State University
- Commún
- Denver Regional Council of Governments
- Kaiser Permanente
- Impact Development Fund
- The Family Center/La Familia
- Larimer County
- Longmont Economic Development Partnership
- Office of U.S. Congressman Joe Neguse
- Schneider Electric
- The Big SandBox
- Town of Erie
- Town of Superior
- U.S. Department of Energy (DOE)
- U.S. Department of Housing and Urban Development (HUD)
- Upstate Colorado Economic Development
- WSB
- Xcel Energy

# APPENDIX A: FINANCIAL RESOURCE TABLES

*Note: these lists are presented in alphabetical order, are not exhaustive, and all funding opportunities are subject to change.*

## TABLE A.1: Colorado state grants and technical assistance programs

| PROGRAM NAME (LEAD ORGANIZATION) | ELIGIBLE ACTIONS | ELIGIBILITY | KEY DETAILS |
|---|---|---|---|
| *ADA Accommodation Fund (Colorado DHR)*[35] | **Construction and Components**: ADA upgrades. | All state agencies can request funding. | The fund will cover physical accommodation requests for new and existing employees, members of the public, and other accessibility modifications. Agencies can request funds through an open form, which provides cost buckets for users to choose from starting at less than $500 and up to more than $10,001. |
| *Building Decarbonization Program (Denver Regional Council of Governments)*[36] | **Planning**: technical assistance.<br><br>**Programming and Operations**: workforce development. | Member governments of the Denver Regional Council of Governments are eligible for this program. | This program funds projects that aim to cut emissions, train workers for electrification, and support building efficiency and electrification. Over 47% of funds will be focused on low-income and disadvantaged communities. There is $34.8 million available in subawards, covering activities such as direct staff capacity, permitting support, and strategic policy advancement. Contact: Maddy Nesbit, Senior Planner, *mnesbit@drcog.org*. |
| *Climate Resilience Challenge (Colorado Resiliency Office)*[37] | **Planning**: solar and storage feasibility studies, technical assistance.<br><br>**Construction and Components**: solar and storage/ microgrids, energy efficiency upgrades, supplies and equipment, shelter, climate-resilient infrastructure upgrades, nature-based solutions. | Projects that develop and adopt a Climate Resilience Plan or Climate Action Plan, implement a climate adaptation or mitigation projects within Colorado, are eligible. | The deadline for the 2025 cycle is from November 1, 2024, to December 1, 2025. This is a competitive grant (funded by the Colorado Department of Local Affairs), with a 25% match required for construction projects and a 10% match required for planning projects. The maximum request is $2 million. Contact your regional manager for more information: *https://dlg.colorado.gov/regional-managers*. |

| PROGRAM NAME (LEAD ORGANIZATION) | ELIGIBLE ACTIONS | ELIGIBILITY | KEY DETAILS |
|---|---|---|---|
| *Colorado Water Plan Grant Program (Colorado Water Conservation Board)*[38] | **Planning**: technical assistance.<br><br>**Construction and Components:** supplies and equipment, water supply and storage, food and agriculture.<br><br>*Note: This program supports collaborative action around water development, conservation, and community building.* | Government and private entities within the state are eligible. Eligible government entities include municipalities, districts, enterprises, counties, and State of Colorado agencies. Eligible private entities include mutual ditch companies, non-profit corporations, and partnerships. | This is an annual grant funded by the Colorado Water Conservation Board. Annual application deadlines are July 1 and December 1. This is a competitive grant, and no match is required. Contacts: *lauren.duncan@state.co.us* (Lauren Duncan, Arkansas Basin); *ashley.garrison@state.co.us* (Ashley Garrison, Colorado, Gunnison, and Yampa/White Green Basins); *jacqueline.daoust@state.co.us* (Jackie Daoust, Metro, South Platte, and North Platte Basins); and *laura.spann@state.co.us* (Laura Spann, Rio Grande and Southwest). |
| *Energy/Mineral Impact Assistance Fund Grant (EIAF) (Colorado Department of Local Affairs)*[39] | **Construction and Components**: supplies and equipment, solar and storage / microgrids, shelter, climate-resilient infrastructure. | Municipalities, counties, school districts, special districts, and other political subdivisions and state agencies can apply. In order to be accepted into an EIAF grant cycle, applicants must contact their Department of Local Affairs Regional Manager prior to submitting any application and must be "ready to go." | This program assists political subdivisions that are socially and/or economically impacted by the development, processing, or energy conversion of minerals and mineral fuels. The program's intent is to promote sustainable community development and increase livability and resilience of communities through strategic investments in asset-building activities. Funding Round 5 closed in December 2024; it is uncertain if there will be a 2025 cycle. Contact: *Regional Manager*. |
| *Environmental Justice Grant Program (Colorado Department of Public Health and Environment)*[40] | **Planning**: technical assistance<br><br>**Construction and Components:** solar and storage/ microgrids, energy and efficiency upgrades. | All projects will measure, prevent, or reduce pollution to protect or restore the environment. Projects can focus on a range of topics from air quality to industrial contamination. Non-profits, local governments, Tribal governments, and for-profit organizations are eligible. | This provides $3 million in funding to support up to ten two-year projects to help communities disproportionately impacted by pollution and climate change. It is uncertain if there will be a 2025 cycle. Contact: *cdphe_ej@state.co.us*. |

| PROGRAM NAME (LEAD ORGANIZATION) | ELIGIBLE ACTIONS | ELIGIBILITY | KEY DETAILS |
|---|---|---|---|
| *Microgrids for Community Resilience (MCR) Program (Colorado Energy Office)*[41] | **Construction and Components:** solar and storage / microgrids. | All utilities, local governments, and public/non-profit community anchor institutions serving Colorado communities are eligible to apply for the construction/ implementation funding through the MCR Program. | This grant program, funded by the Colorado Department of Local Affairs, is a competitive grant. A match is not required for all applicants, but for rural cooperative utilities or municipal utilities, a one-third match is required. Larger entities may need to provide matching funds of 33% or 100%. Planning grants have a maximum award of $75,000 per applicant. Construction grants have a maximum award of $2.5 million per applicant. The grant had a rolling deadline until December 2024; it is uncertain if there will be a 2025 cycle. Contacts: Julia Masters, MCR Program Manager (*julia.masters@state.co.us*) or Marguerite Harden, Local Resiliency Manager (*marguerite.harden@state.co.us*). |
| *Regional Grant Navigator Program (Colorado Governor's Office)*[42] | **Planning**: technical assistance. | Local governments, Tribes, and communities within Colorado can reach out to their Regional Grant Navigator. | This program serves as grant matchmakers that assist with finding, applying, and implementing federal infrastructure grants, specifically the Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA). Contact: Alyssa Dinberg, *alyssa.dinberg@state.co.us* . |
| *Rural Economic Development Initiative (Colorado Department of Local Affairs)*[43] | **Planning**: technical assistance.<br><br>**Construction and Components:** supplies and equipment.<br><br>**Programming and Operations**: workforce development. | All applications must create and retain jobs, either directly or indirectly. The most successful applications to this program are from counties with fewer than 50,000 people, and from communities with fewer than 25,000 people. This initiative is specific to Colorado. | This initiative by the Colorado Department of Local Affairs helps rural communities diversify their economies and become more resilient. It is a competitive grant, and no match is required. The new cycle will open in 2025. The total amount awarded during the 2023–24 cycle was $780,000. Contact: Katie Guibert at *kate.guibert@state.co.us*. |
| *State Revolving Fund (Colorado Department of Public Health and Environment)*[44] | **Construction and Components:** shelter, stormwater resilience upgrades, water supply and storage. | Organizations and businesses within the state are eligible. Registered for-profit businesses and non-profit organizations are eligible. | This is a program by the Colorado Department of Public Health and Environment that offers loans with very low interest rates. The deadline for the 2025 cycle was June 30, 2024. Contact: Alex Hawley, Grants and Loans Unit Manager at *alex.hawley@state.co.us* or *cdphe_grantsandloans@state.co.us*. |

| PROGRAM NAME (LEAD ORGANIZATION) | ELIGIBLE ACTIONS | ELIGIBILITY | KEY DETAILS |
|---|---|---|---|
| *Supplemental Environmental Project (SEP) Program (Colorado Department of Public Health and Environment)*[45] | **Construction and Components:** solar and storage/ microgrids, energy efficiency upgrades, climate-resilient infrastructure upgrades.<br><br>Programming and Operations: preparedness training, operations and staff. | A SEP must create measurable environmental impacts, benefit the area impacted by environmental violations, and must not require a media nexus or be any project that a regulated entity has previously initiated or is legally required to implement. | SEPs are projects that benefit the environment or public health, funded through environmental enforcement actions. Most enforcement settlements include monetary penalties and, in some cases, may be used to mitigate a portion of a penalty. Contact Alex Scherer, SEP Coordinator *alex.scherer@state.co.us*. |

## Table A.2: Private financial support programs

| PROGRAM NAME (LEAD ORGANIZATION) | ELIGIBLE ACTIONS | ELIGIBILITY | KEY DETAILS |
|---|---|---|---|
| *Movement Infrastructure Grant (Mosaic)*[46] | **Planning**: technical assistance.<br><br>**Construction and Components**: shelter. | Diverse activists and organizations dedicated to strengthening infrastructure to address environmental challenges are eligible. | These Movement Infrastructure Grants by Mosaic help organizations advance the IRA, IIJA, J40, and 30 x 30. The grants are competitive, and no match is required. In 2023, $9.6 million was awarded. |
| *Technical Assistance Fund (Clean Energy Group)*[47] | **Planning**: solar and storage feasibility studies, technical assistance.<br><br>**Construction and Components**: solar and storage / microgrids, energy efficiency upgrades, shelter. | Projects must directly serve low-income populations and/or Black, Indigenous, People of Color (BIPOC) communities. The Clean Energy Group is committed to awarding 50% of Technical Assistance Fund support to advance the work of BIPOC-led organizations. | This fund, led by the Clean Energy Group, is competitive. No match is required. Applications are accepted on a rolling basis. A typical grant is $9,500, but additional funding up to $15,000 may be available for more complex projects. Contact Marriele Mango, Project Director: *marriele@cleanegroup.org*. |
| *Wildfire Resilience Funders (Climate Resilience Fund)*[48] | **Construction and Components**: shelter, climate-resilient infrastructure upgrades | This is not a grant, but rather a potential coalition to reach out to see what available funds may exist related to wildfire resilience. Anyone may reach out to the Wildfire Resilience Funders. | This coalition—which is part of the Climate Resilience Fund—does not provide funding but may be useful for connecting applicants to funding opportunities. Contact website form: *https://www.climateresiliencefund.org/contact-us/*. |

## Table A.3: Federal grants and technical assistance programs

*Note: the following information is current as of the end of 2024, and programming may change.*

| PROGRAM (ORGANIZATION) | SUPPORT ACTIONS RELATED TO RESILIENCE HUBS | ELIGIBLE APPLICANTS | ADDITIONAL DETAILS |
|---|---|---|---|
| *American-Made Challenges* (U.S. DOE)[49] | **Construction and Components**: solar, energy storage/ microgrids, energy efficiency upgrades, supplies and equipment, climate-resilient infrastructure upgrades, water supply and storage, food and agriculture. | Private entities (for-profit and non-profit organizations), non-federal government entities (e.g., states, counties, tribes, and municipalities), academic institutions, community-based organizations, national laboratories, and individuals, depending on the challenge. | Deadlines vary by challenge. The challenges support participants with training, connections, teaming, mentoring, and technical assistance with prize pools ranging from $420,000 to $52.5 million. |
| *Building Resilient Infrastructure and Communities (BRIC) (FEMA)*[50] | **Planning**: technical assistance.<br><br>**Construction and Components**: energy efficiency upgrades, supplies and equipment, shelter, climate-resilient infrastructure upgrades.<br><br>**Programming and Operations**: preparedness training. | Any public utilities across the nation are eligible. Private non-profit and private for-profit utilities may be eligible if the local government applies on their behalf. Eligible applicants also include states and territories that have had a major disaster declaration in the last seven years or are federally recognized tribes that are located entirely or partially in such states. | This annual grant is competitive and generally requires a 25% match, or a 10% match for Economically Disadvantaged Rural Communities (EDRCs). Contact State Hazard Mitigation Officers for more information: *https://www.fema.gov/grants/mitigation/state-local-territorial-governments/state-contacts* |
| *Civic Innovation Challenge (NSF)*[51] | **Planning**: solar and storage feasibility studies, technical assistance.<br><br>**Construction and Components**: solar and storage/microgrids, energy efficiency upgrades, supplies and equipment, climate-resilient infrastructure upgrades, water supply and storage, food and agriculture.<br><br>**Programming and Operations**: preparedness training, operations and staff, workforce development. | Any community-university partnerships in one of two focus areas (building climate-resilient communities and bridging the gap between essential resources and services and community needs) are eligible. | This NSF grant is competitive, and no match is required. Budgets for Stage 1 Planning Grants are up to $75,000 and Stage 2 Full Awards are up to $1,000,000. Contact David Corman, Program Director: *dcorman@nsf.gov*. |

| PROGRAM (ORGANIZATION) | SUPPORT ACTIONS RELATED TO RESILIENCE HUBS | ELIGIBLE APPLICANTS | ADDITIONAL DETAILS |
|---|---|---|---|
| *Clean Energy to Communities Program (C2C) (US DOE)*[52] | **Planning**: technical assistance. | Eligibility depends on program type. This generally includes local governments, Tribes, community-based organizations, utilities, and universities. | This program provides communities with expertise and tools to achieve their clean energy goals through in-depth partnerships, peer-learning cohorts, and expert match. Contact: *C2C@nrel.gov* |
| *Climate Smart Communities Initiative (NOAA)*[53] | **Construction and Components:** supplies and equipment, shelter, nature-based solutions, climate-resilient infrastructure upgrades.<br><br>**Programming and Operations**: preparedness training, operations and staff. | Eligible communities must have fewer than 250,000 residents, though cross-jurisdictional projects that benefit up to 500,000 residents will also be considered. The applicant must include a local or regional government entity and a community-based organization (CBO) working together. The local or regional government entity can be a town, city, county, Tribe, district, regional government, or special planning commission. The CBO should represent historically underrepresented populations in the project area. This is a national opportunity. | This initiative by the Climate Resilience Fund provides $1 million to communities impacted by the climate crisis to collaborate with adaptation professionals and advance resilience plans. The grant is competitive, but no match is required. Contact form on website: *https://climatesmartcommunity.org/contact-us/* |
| *Community Microgrid Assistance Partnership (C-MAP)*[54] | **Planning**: technical assistance.<br><br>**Construction and Components**: energy reliability, microgrids, energy and energy efficiency upgrades. | Eligible applicants include nonprofits, state and local governments, and federally recognized tribes. A portion of an eligible community microgrid must be located in an area at high risk of electrical outages. | This partnership offers technical support and funding for microgrids to communities and regional collaboratives. Contact: *cmap@nrel.gov* |
| *Elevtive Pay Provision (IRS)*[55] | **Construction and Components**: microgrids, electric vehicle (EV) chargers, clean electricity, fuels, vehicles, reducing carbon emissions, and more. | Tax-exempt entities, including local governments and nonprofits. | This tax credit allows tax-exempt entities to receive direct payments for qualifying clean energy tax credits, effectively turning them into refundable credits. The Alliance for a Sustainable Future offers more information in *Cities Advancing Climate Action: Unlocking the Potential of the IRA* and has forthcoming guidance, Elective Pay Blueprints for Communities, expected to be released in 2025. |

| PROGRAM (ORGANIZATION) | SUPPORT ACTIONS RELATED TO RESILIENCE HUBS | ELIGIBLE APPLICANTS | ADDITIONAL DETAILS |
|---|---|---|---|
| *Environmental Justice Thriving Communities Technical Assistance Centers Program (EPA)*[56] | **Grant Support**: training and other assistance to build capacity for navigating federal grant application systems, developing strong grant proposals, and effectively managing grant funding.<br><br>**Planning**: technical assistance.<br><br>**Programming and Operations**: guidance on community engagement, meeting facilitation, and translation and interpretation services for limited English-speaking participants. | Local and Tribal governments and community-based organizations. | This is a competitive grant by the EPA that provides two years of no-cost technical assistance for communities to develop transportation projects. Communities in Colorado can *apply for technical assistance here*. The International City/County Management Association is a national EJ TCTAC that will serve Region 8 (serving Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) until a Region 8-focused EJ TCTAC is selected. |
| *Current Funding Opportunities (Heat.gov)*[57] | **Planning**: technical assistance.<br><br>**Construction and Components**: supplies and equipment, shelter, nature-based solutions, water- and energy-efficiency upgrades, climate-resilient infrastructure upgrades.<br><br>All specific to extreme heat. | There are various funding opportunities, each with different eligibility guidelines. | This page (published by the National Integrated Heat Health Information System) highlights federal funding opportunities related to heat resilience. |
| *Green and Resilient Retrofit Program (HUD)*[58] | **Construction and Components:** energy efficiency upgrades, climate resilient infrastructure, retrofit activities. | Eligibility is based on properties assisted under the Project-Based Rental Assistance (PBRA) program, including properties that converted under the Rental Assistance Demonstration (RAD) Program, Housing for the Elderly program and the Housing for Persons with Disabilities program | There are three cohorts of funding: elements, leading edge, and comprehensive, that award varying amounts to either climate resilience measures, ambitious certifications, or recapitalization investments, respectively. |

| PROGRAM (ORGANIZATION) | SUPPORT ACTIONS RELATED TO RESILIENCE HUBS | ELIGIBLE APPLICANTS | ADDITIONAL DETAILS |
|---|---|---|---|
| *Hazard Mitigation Grant Program (HMGP) (FEMA)*[59] | **Planning**: solar and storage feasibility studies.<br><br>**Construction and Components**: solar and storage / microgrids, energy efficiency upgrades, climate-resilient infrastructure upgrades. | Any national public utility and private non-profit is eligible. Private for-profit utilities may be eligible if the local government applies on their behalf. | All applications for this grant must be submitted within 12 months of a federally declared disaster. There is a federal match of 75%, and the remaining 25% is the responsibility of the sub-applicant. If the sub-applicant is disadvantaged, a 10% match is required. Contact State Hazard Mitigation Officers: *https://www.fema.gov/grants/mitigation/state-local-territorial-governments/state-contacts* |
| *Pre-Disaster Mitigation Grant Program (FEMA)*[60] | **Grant Support**: offers an online Mitigation eGrants Resource Collection.<br><br>**Planning**: Risk assessments, community engagement, and the development of comprehensive plans that integrate resilient infrastructure, such as microgrids and emergency communication systems, to address vulnerabilities and enhance disaster preparedness.<br><br>**Construction and Components**: supplies and equipment, shelter, climate-resilient infrastructure upgrades.<br><br>**Programming and Operations**: preparedness training. | Eligible projects and entities include those identified by Congress in the FY24 DHS Appropriations Act's Joint Explanatory Statement (JES) (for Division C of the Further Consolidated Appropriations Act, 2024 [Pub. L. No 118-47]) in the table starting on page 59 entitled "Homeland Security Community Project Funding/Congressionally Directed Spending." | This FEMA grant is competitive, with no match required. The goal of this program is to help communities implement cost-effective measures to reduce the risk from future natural hazards, while also reducing reliance on federal funding from future disasters. Contact: *MTeGrants@fema.dhs.gov* |
| *Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs (SBA)*[61] | **Planning**: technical assistance. | For-profit companies in the United States, owned and controlled by U.S. citizens or permanent residents, with fewer than 500 employees are eligible. Most applicants have less than 10 employees. | These programs are competitive, non-dilutive funding initiatives that help small businesses with research and development, especially in the realm of technological innovation. These are competitive grants. |

## APPENDIX B: AVAILABLE DATASETS

Data analysis and mapping tools can help identify where resilience hubs can provide critical value across the region by analyzing factors such as climate risks (e.g., heat, flooding, wildfires), vulnerable populations, and existing community assets. Tools including environmental stressor maps, forward-looking climate data, and critical infrastructure maps allow planners to pinpoint areas with both high vulnerability and limited access to resources. By overlaying data on community needs, mobility, and existing infrastructure, these tools enable more strategic placement of resilience hubs to serve at-risk communities effectively during emergencies.

Several data layers are available to help identify Colorado communities and areas that could benefit the most from resilience hubs. These layers include: social vulnerability and accessibility and climate resilience indicators (see Table B).

During a Climate Resilient Communities Accelerator event in the summer of 2024, local practitioners participated in a discussion exercise to consider where resilience hubs could provide the most value. Using ClimRR-produced maps provided by AT&T, the participants identified additional data that could be beneficial to decision-making, such as existing community centers and facilities, public transit lines, built and paved surfaces, tree canopy, awarded government funding, grid reliability, air conditioning, age of building stock, immigrant and refugee population, mobile homes, language, unhoused population, flood risk, food access, and air quality. Some of these data are available from the Denver Regional Council of Governments' *Regional Data Catalogue* which includes datasets on boundaries, transportation, planning, demographics and employment, built environment, natural environment, and imagery and elevation to support regional analysis and decision-making.[87] The City and County of Denver's *Open Data Catalog* provides public data and tools on boundaries, environment, demographics, public safety, parks, education, transportation, and health.[88] Communities can also review *Xcel Energy Wildfire Risk Zones Map*.[89] Note: *Colorado Wildland Urban Interface* (WUI) areas were deemed less helpful due to outdated data, though it could still inform specific mitigation efforts for certain resilience.[90]

Breakout group from the July 2024 C2ES Climate Resilient Communities Accelerator Workshop.

*Source: C2ES*

## Table B: Recommended Datasets

| KEY AREA | DATA LAYER AND SOURCE | DESCRIPTION AND POTENTIAL USE | LINK |
|---|---|---|---|
| Social vulnerability & accessibility | Colorado EnviroScreen score<br><br>(Colorado Department of Public Health and Environment) | Colorado EnviroScreen is a mapping tool that identifies areas in the state with higher pollution and environmental challenges where agencies can prioritize resources and efforts and empower communities to advocate for improved conditions. This data set shows disproportionately impacted areas that could benefit from a resilience hub based on five components: environmental exposures, environmental effects, climate vulnerability, sensitive population, and demographics. | *Online mapper*[62] |
| | Population and housing unit density<br><br>(Colorado Department of Public Health and Environment) | This layer helps identify the number of residents and households in an area that could be served by a resilience hub. | *Online mapper*[63] (*Link to GIS layers*)[64] |
| Climate resilience indicators | Heat Index, Temperature Maximums and Minimums, Degree Days, Fire Weather Index, Total and No Precipitation, and Wind Speed Averages (ClimRR) | The National Map Explorers show current and future projected climate conditions. | *Online mapper*[65] (users can also *access ClimRR data layers directly* through ArcGIS online)[66] |

### Box B: Supporting Data-Informed Local Solutions with AT&T's Climate Resilient Communities Initiative

*City of Longmont, Colorado*

AT&T partnered with FEMA and Argonne National Laboratory to build the *Climate Risk and Resilience Portal (ClimRR)*, a free tool with forward-looking, actionable data about future climate hazards such as heat, wildfire risk, rainfall and wind speeds.* ClimRR is designed to help communities, businesses, government entities and others better understand and address future climate threats.

In 2024, AT&T led a *collaborative effort with the City of Longmont* to supplement a local heat mapping study. AT&T engaged *Project IN-CORE* to work with the city to produce a heat analysis and identify neighborhood-level heat mitigation strategies. This project was part of *AT&T's Climate Resilient Communities Initiative*, which is supporting several cities and counties across the United States in using the ClimRR data to better understand and address climate-related hazards.† In addition to providing analyses and ClimRR training, AT&T contributed $15,000 to the Longmont Community Foundation to support mitigation initiatives, helping low-income residents—especially vulnerable seniors—access air conditioners.

"The data analysis was hugely helpful and complementary to our existing work. It was also a good opportunity to bring together folks from across our organization to discuss heat specifically. We will use this tool to help prioritize and guide heat mitigation efforts, seek funding for implementation, and to inform decision-making and infrastructure improvements to address extreme heat."

*– Lisa Knoblauch, Sustainability Manager, City of Longmont*

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## APPENDIX C: POLICY AND PLANNING TOOLS

Local planners and policymakers can align policies and planning tools to remove potential barriers and create a supportive environment for resilience hubs and microgrids. Below are some of the tools and actions that emerged in the development of this toolkit.

- **Integrated Planning**: Planners and state and local leaders can incorporate resilience hubs and microgrids into local comprehensive plans, hazard mitigation plans, climate adaptation strategies, and other public plans. Adopted public goals and guidance can support resilience hubs by aligning funding, policies, and planning efforts to enhance community preparedness, streamline permitting, and ensure hubs meet regional climate adaptation and equity priorities. For example, at the state level, the *2020 Colorado Resiliency Framework* specifies a strategy (B16) to "Grow a Network of Resiliency Hubs: Support the development of regional state-of-the-art resiliency hubs that serve as community centers for education, services, and community capacity. Provide access to food, shelter, power, and other critical services during emergencies."[91]
- **Zoning and Building Codes**: Policymakers can update local zoning and *building codes* to support resilience hubs and microgrids by incorporating provisions for renewable energy, wildfire-resistant materials and development practices, and solar-ready designs. Colorado Energy Office offers free technical assistance for jurisdictions planning to adopt any of the 2021 or 2024 International Codes if they also adopt the 2021 IECC, the Colorado Model Electric Ready and Solar Ready Code, and other advanced energy code amendments.[92] Federal programs like DOE's *Building Energy Codes Program* and *FEMA BRIC's 2023 Building Code Plus-Up* grants offer technical assistance to encourage updated code adoption.[93,94]
- **Incentives and Funding**: Policymakers can integrate hubs and microgrids into local budgets, state and federal grants, tax incentives, and public-private partnerships. For example, a ballot initiative in Denver created the $40 million annual *Climate Protection Fund* that is now supporting the development of hubs in the city and providing required matching funding for state and federal grants.[95]
- **Streamlined Processes**: Planning, zoning, building, and other municipal departments can work together to create expedited permitting and approval processes. Municipal staff and other stakeholders can advocate to the Public Utilities Commissions (PUCs) to advance policies that streamline microgrid integration in resilience hubs by supporting distributed energy systems, net metering, and interconnection standards.

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### About the Climate Resilient Communities Accelerator

The *Climate Resilient Communities Accelerator* was launched by C2ES to complement and support existing climate resilience programs, enhance local adaptive capacity, and scale across multiple U.S. regions to elevate policy gaps and opportunities to federal lawmakers.*

In 2023, the Accelerator convened a range of public, private, and community leaders for a two-part series to identify regional wildfire and heat resilience needs and opportunities in Colorado's North Front Range. Building on the first year's success identifying a path forward and *seven key action areas*, in 2024 the effort convened and activated stakeholders around several identified areas, building regional adaptive capacity and amplifying local voices to federal policymakers.

More details on the 2023 convenings, including the stakeholder engagement process, current and projected wildfire and heat impacts, shared regional vision for a prosperous future, and seven key action areas can be found in *Accelerating Resilience: Wildfire and Heat Strategies for Colorado's North Front Range*.† Insights and leading programs from these convenings also informed the creation of a new brief from the Alliance for a Sustainable Future with case studies from Colorado: *Unlocking Community Resilience: Innovative Strategies to Access Climate Adaptation Funding*.‡

### About C2ES

The *Center for Climate and Energy Solutions (C2ES)* is an independent, non-profit "think and do tank" founded in 1998 as the Pew Center on Global Climate Change. C2ES is known worldwide as a thought leader and trusted convener on climate change and energy issues.

Our *climate resilience program* leverages deep expertise in policy and local solutions, relationships with businesses, and a proven track record of convening regional roundtables. In the face of increasing climate impacts, C2ES advances new resilience strategies, provides leading policy analysis, and brings stakeholders together to build broad support for action and investment.

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