



COLORADO

Resiliency & Recovery Office

Governor John W. Hickenlooper



Colorado Resiliency Working Group 2016 Annual Plan Review

May 05, 2017

Together. A Stronger Colorado.

Table of Contents

| | |
|---|------|
| Introduction..... | 1 |
| What is the Colorado Resiliency Working Group?..... | 2 |
| The 2016 Annual Plan..... | 3 |
| 2016 Annual Plan Project Selection..... | 4 |
| 2016-2017 Projects..... | 6-18 |

Introduction

The State of Colorado is committed to building a resilient future through collaboration, coordination, and innovation. As part of this commitment, the [Colorado Resiliency Framework](#), the State’s resiliency roadmap, calls for an annual plan and report to provide Coloradans with information about progress towards the implementation of the priorities and strategies identified in the Framework. The [2016 Colorado Resiliency Working Group Annual Plan](#), the State’s first annual plan, outlined how the Colorado Resiliency Working Group (CRWG) would begin to implement strategies to meet the State’s resiliency goals. Throughout the year, each of the CRWG’s six sector teams carried out resiliency-focused projects that build resiliency in day-to-day State activities.

Project outcomes are presented in this Annual Resiliency Report, and serve as the basis for the development and implementation of the 2017 Annual Plan.

For more information about Colorado’s resiliency efforts, please visit www.ColoradoUnited.com or email gov_crro@state.co.us.

What is the Colorado Resiliency Working Group?

In the wake of the devastating September 2013 floods, the State of Colorado formed the Colorado Resiliency Working Group (CRWG). Made up of State, local and federal agencies, the CRWG not only improved flood recovery coordination efforts, but also served as the steering committee for the creation of the Colorado Resiliency Framework, the roadmap for incorporating resiliency as a standard daily business practice across the State.

With the adoption of the Colorado Resiliency Framework in 2015, the Governor formalized the CRWG as the leadership team and coordinating body of the State's ongoing resiliency efforts. For more information on the CRWG, its structure, and specific roles, please visit the [CRWG's page on the Colorado United](#) website.

Roles

Resiliency is a shared responsibility across State agencies to preserve, protect, and promote what makes Colorado special. The purpose of the Colorado Resiliency Working Group is to serve as a dedicated team to:

- Enhance cross-agency collaboration and communication;
- Integrate resiliency measures into agency policies and plans;
- Develop sector-specific action plans;
- Monitor and measure progress;
- Identify funding resources; and
- Educate partners and constituents.

Membership

The CRWG is an inclusive body designed to holistically navigate Colorado's resiliency efforts and is composed of representatives from the following agencies and partners:

| State Agencies | Federal Partners |
|---|---|
| Colorado Department of Human Services | Department of Homeland Security |
| Colorado Department of Local Affairs | Department of Housing and Urban Development |
| Colorado Department of Natural Resources | Economic Development Administration |
| Colorado Department of Public Health and Environment | Environmental Protection Agency |
| Colorado Department of Public Safety | Federal Emergency Management Agency |
| Colorado Department of Transportation | Federal Highway Administration |
| Colorado Energy Office | National Renewable Energy Laboratory |
| Colorado Office of Economic Development and International Trade | |
| Colorado Office of Information Technology | |
| Colorado Resiliency and Recovery Office | |

2016 Annual Plan Project Selection

In the fall of 2015, CRWG sector teams began the process of identifying strategies from the Colorado Resiliency Framework that could be further developed into actionable projects for 2016. The intent of this process was to lay the groundwork for further CRWG efforts, using these initial projects to build a foundation for long-term, innovative, and impactful efforts that advance Colorado's resiliency.

To identify which strategies should be prioritized for the first CRWG Annual Plan, sector teams used the **Resiliency Prioritization Criteria** from the State's Framework to analyze potential projects and determine what actions would maximize resiliency impact with limited resources. For the 2016 Annual Plan, sector teams gave particular focus to the Cross-Sector Benefits, Economic Benefit-Cost, Harmonization with Existing Activities criteria, along with the ability to complete (or make significant advancements) by the end of 2016.

Resiliency Prioritization Criteria

Co-Benefits: Provide solutions that address problems across multiple sectors creating maximum benefit

High Risk and Vulnerability: Ensure that strategies directly address the reduction of risk to human well-being, physical infrastructure, and natural systems

Economic Benefit-Cost: Make good financial investments that have the potential for economic benefit to the investor and the broader community both through direct and indirect returns

Social Equity: Provide solutions that are inclusive with consideration to populations that are often most fragile and vulnerable to sudden impacts due to their continual state of stress

Technical Soundness: Identify solutions that reflect best practices that have been tested and proven to work in similar regional context

Innovation: Advance new approaches and techniques that will encourage continual improvement and advancement of best practices serving as models for others in Colorado and beyond

Adaptive Capacity: Include flexible and adaptable measures that consider future unknowns of changing climate, economic, and social conditions

Harmonize with Existing Activity: Expand, enhance, or leverage work being done to build on existing efforts

Long-Term and Lasting Impact: Create long-term gains to the community with solutions that are replicable and sustainable, creating benefit for present and future generations

2016-2017 Projects

This section provides a summary description of each project in the 2016 CRWG Annual Plan, followed by project achievements and identified actions for next steps and continued maintenance. For more detailed project descriptions, along with information on lead/supporting agencies, project funding and funding sources, and how the project addresses the nine Prioritization Criteria, please consult the [2016 Annual Plan](#).

Hazards and Land Use Planning Guide

Sector: Community

The “Planning for Hazards: Land Use Solutions for Colorado” guide and website supports Colorado communities to prepare for and mitigate multiple hazards by integrating resilience and hazard mitigation principles into plans, codes and standards related to land use and the built environment. The guide provides detailed, Colorado-specific information about how to assess a community’s risk level to hazards as well as specific land use planning tools and strategies for reducing a community’s risk. These planning tools and strategies include addressing hazards in plans and policies, strengthening incentives, protecting sensitive areas, improving site development standards, improving buildings and infrastructure, and administration and procedures. As future funding opportunities become available, this project will include a training and implementation component that enables pilot communities to receive dedicated assistance in order to implement the steps and strategies of the Planning for Hazards guide in their land use plans and policies.

Status, Accomplishments, and Impacts

The Community Sector published the Planning for Hazards: Land Use Solutions for Colorado Guide and published the accompanying website (www.planningforhazards.com) in March 2016. The Planning for Hazards Guide has reached a wide and varied audience, having been presented at 11 conferences and on one webinar, reaching over 425 attendees. Since its launch, the Planning for Hazards website has been used over 2000 times by over 1400 unique users from around the world.

The Planning for Hazards Guide can be used by local governments of all sizes and adapted to meet their unique context and needs. Examples from Colorado and across the country are referenced to demonstrate where strategies have successfully been implemented and model code language is provided to be adapted by local governments to meet their unique context and needs. Further, the guide can be used over time and as conditions change to reduce hazard risks through changes to land use policies and regulations.

Colorado communities are also beginning to utilize the Planning for Hazards Guide in local planning processes (e.g., Central City Disaster Resiliency Master Plan).



PLANNING FOR HAZARDS
Land Use Solutions for Colorado

MARCH 2016

2016-2017 Projects

The guide is receiving praise for its approach to help communities integrate hazard mitigation efforts into planning processes: “FEMA Region VIII is impressed with the way in which the Planning for Hazards: Land Use Solutions for Colorado guide presents the most effective types of mitigation solutions for communities that want to reduce their risk to natural hazards. The guide goes beyond the typical advice to assess risks and consider structural projects by presenting actual examples of land use regulatory tools on an easy-to-use website. We can’t wait to share this with our other states and national partners.” - Margaret Doherty, Community Planner Region VIII – Mitigation, FEMA

Next Steps and Future Plans

The success of the Planning for Hazards Guide has prompted the development of a pilot project that will operationalize the process outlined in the guide and demonstrate how communities can use land use strategies to reduce the risk of damage or destruction from hazards such as floods and wildfires. The Town of Milliken and City of Manitou Springs were selected to participate as pilot communities in this project for 2017-2018. The implementation project consists of several work sessions to determine the community’s risk to hazards and to select land use strategies that will reduce the community’s exposure to high risk hazards. Both communities will receive consulting services to develop and implement the selected land use strategies through codes, regulations, programs, or incentives. This project will result in the development and distribution of workbooks for facilitators and participants that can guide any community in Colorado or elsewhere through the same work sessions as the pilot communities.

Additionally, the Department of Local Affairs (DOLA) has contracted with the University of Colorado Denver’s Colorado Center for Sustainable Urbanism (CCSU) to maintain and update the Planning for Hazards website, and with Clarion Associates to provide additional model codes in an effort to keep the guide comprehensive and current. CCSU is seeking funding to support the long-term stewardship of the Guide website, and DOLA is supporting them in this effort in order to ensure that the Planning for Hazards Guide can be available to Colorado communities for years to come. Efforts to continue to publicize the Planning for Hazards Guide and website and educate local governments through articles and presentations are planned in 2017.

Local Government Financial Resiliency Education

Sector: Community

Financial stability is critical for creating a resilient community. This project provides education and guidance to local governments on how to plan for financial resilience, such as planning for revenue disruption. Being prepared for revenue impacts and disruption is critical for local governments because there is an impact to the services and amenities they provide to their communities (particularly vulnerable populations), including potable water, sanitation, transportation, health services, education, infrastructure, etc.

Status, Accomplishments, and Impacts

Over the course of the year, financial resilience education was integrated into DOLA’s Budget 101 workshops. DOLA conducted five of these workshops in summer 2016, reaching 35 local governments. A handout on developing a financially resilient local government was created, with resources including those developed by the Government Finance Officers Association.

Next Steps and Future Plans

The project team will post the handout to DOLA’s Community Development Office’s hazards/resilience page to help local governments build more flexibility in their budgets to account for disaster risk and resilience.

2016-2017 Projects

Economic Resiliency Study

Sector: Economic

The Colorado Office of Economic Development and International Trade (OEDIT) partnered with the Business Research Division of the Leeds School of Business at the University of Colorado Boulder to conduct an economic resiliency study for Colorado communities in order to understand what makes some communities in Colorado thrive, while others fail to retain population and sustain economic growth. The study provides communities with the opportunity to utilize lessons learned to inform their own economic development strategies. Sharing information regarding economic best practices across Colorado will empower communities to adopt best practices and lessons learned to bolster their long-term economic resiliency.

Status, Accomplishments, and Impacts

To carry out the study, a research team first examined economic data analytics from communities throughout Colorado to identify communities that are economically thriving. The project team then traveled to select counties throughout the State to conduct focus groups with community leaders. The goal of these focus groups was to understand other factors promoting or inhibiting resiliency that may not be apparent in the numerical data. The research team also evaluated economic metrics such as population and demographics, employment and industry diversity, value add, educational attainment, and natural and man-made assets. Lastly they developed in-depth case studies to explore why certain communities are able to thrive, the decisions that led to their success, and takeaways for other communities.

On November 4, 2016 the project team released the [Rural Economic Resiliency in Colorado: Study of Factors Impacting Resiliency](#) report.

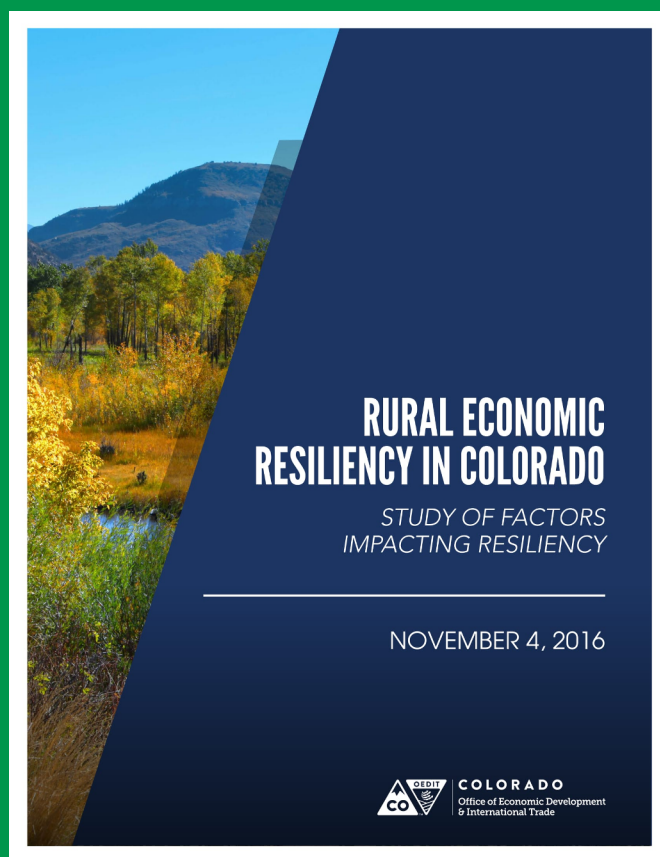
Next Steps and Future Plans

OEDIT has been highlighting the study in recent presentations and webinars to share their findings, and will be travelling across the state to share best practices and lessons learned that rural communities can apply. The study's results will also be used to inform OEDIT's strategy for strengthening community resilience moving forward.

Project Title: SBDC Resiliency Counseling

Sector: Economic

Small businesses are vital to the success of a local community. Those that address their resiliency will be more likely to rebound faster from a disaster, which in turn, can drastically help a local economy rebound. The Small Business Development Center (SBDC) network provides resiliency counseling services to small businesses across Colorado. The SBDC network is also the organization responsible for administering the Community Development Block Grants Disaster Recovery (CDBG-DR) funds to small businesses, enabling business owners to obtain disaster recovery assistance and resiliency counseling in one location. Through CDBG-DR funding, the SBDCs that cover the presidentially-declared disaster areas will provide resiliency counseling to small businesses.



2016-2017 Projects

Businesses that have been counseled in the area of resiliency have the ability to rebound faster from a disaster, as businesses with a resiliency plan in place at the time of a disaster generally experience less of an overall loss than compared to those without an existing resiliency plan. This helps local economies across Colorado to be more resilient in the face of changing conditions.

Status, Accomplishments, and Impacts

Throughout 2016, the SBDC provided 305 hours of business counseling to small businesses in disaster-impacted communities. This counseling led to the creation of 20 new jobs and helped retain 260 jobs. The program also led to \$16,400,207 in capital formation through new grants and loans to these businesses.

Next Steps and Future Plans

OEDIT has instituted a more efficient process by contracting directly with consultants rather than through the local SBDC center, which will improve the reporting and reimbursement processes. Training started in January 2017, and OEDIT continues to bring businesses on that were affected by the 2013 floods to prevent future property loss and avoid losses from closures.

Community Inclusion Mapping

Sector: Health and Social

Community inclusion mapping helps to identify strengths and vulnerabilities pertaining to health and social services, including resources, assets and populations. The community inclusion maps can also be used to support the assessment of needed community programs and resources, and encourage population analysis to ensure outreach materials about health and social services are available in all appropriate languages within each community. Community inclusion mapping is also useful to identify and prepare for community-unique vulnerabilities, providing communities the opportunity to incorporate vulnerable populations into risk mapping.

This project builds off of existing community inclusion maps from the Colorado Department of Public Health and Environment (CDPHE) to include, adding new resources to the maps, and developing guidance and resources to help local governments access data on vulnerable populations.

Status, Accomplishments, and Impacts

In January 2016, an updated format of the maps was rolled out. Users have provided feedback that they have found the new format much easier to navigate and use. The maps have received almost 1500 visits in the last 6 months, with 60% of visits coming from new users.

In 2016, features added to the maps website, or resources developed related to the maps, include:

- Data updates including current health care facilities and 2011-2015 American Community Survey demographic data;
- Exercises and case studies to support visitors' familiarity with using and applying the data in the maps;
- Early Child Care Facilities through Colorado Department of Human Services' Office of Early Child Care;
- Change over Time maps that document demographic shifts happening in Colorado over the past 10 years;
- A Regional Opportunity Index and a Disability Resource Index that identifies areas of the state whose demographics or resource access specific indicate opportunities to engage community inclusion; and
- Links to other mapping efforts related to community inclusion, including HUD's affordable housing resources and CDPHE's Behavioral Risk Factor Surveillance System community small-area estimates.

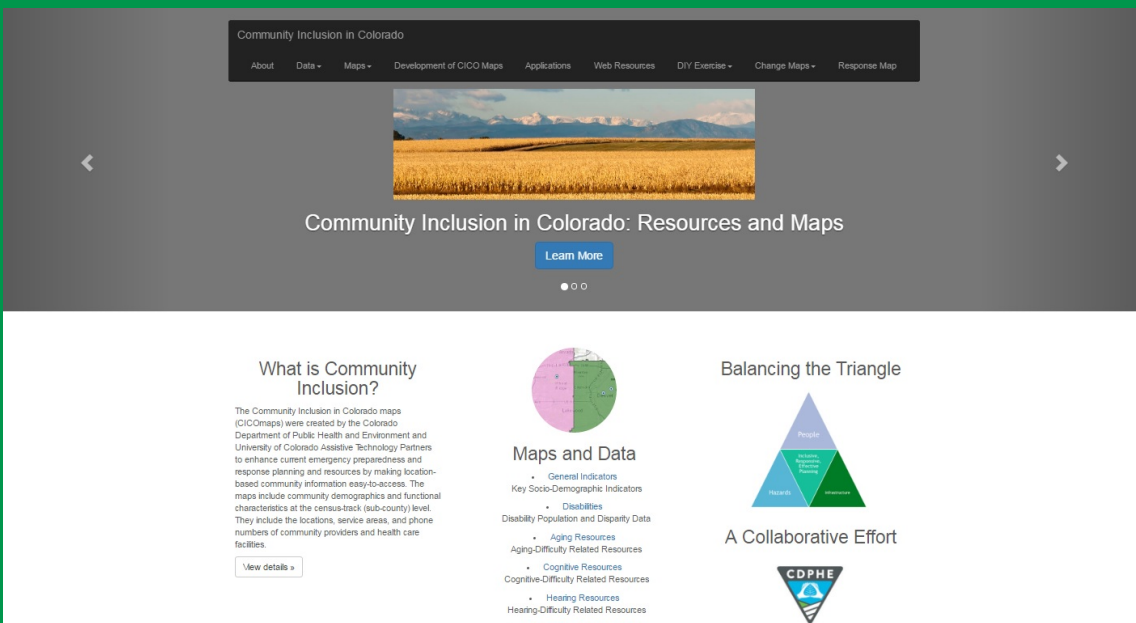
2016-2017 Projects

The map training was included as a 2016-2017 Public Health Emergency Preparedness grant activity. In 2016, 16 trainings were hosted by webinar or in-person across the all-hazards regions in the state, engaging over 225 participants. The trainings reached public health, emergency management, hospital, behavioral health, tribal partners and other emergency/community partners.

The feedback from participants of this year's trainings will guide future efforts for the maps. Participants have expressed interest in data around communication technology and isolation (i.e. rural access to broadband, media regions, etc.), transient populations (seasonal workers, tourists, etc.) and more refugee and immigrant resources.

In addition to supporting public health emergency preparedness grant efforts, the Community Inclusion Maps have been included as a resource for the upcoming 2017 Full Scale Public Health Emergency Dispensing Exercise. Connected to other community inclusion efforts, the maps encourage planning, partnership and emergency systems evaluation with a people-centered focus.

The maps have also been identified as a resource by CDPHE's Joint Risk Assessment tool, Colorado Information Marketplace, North Central All-Hazards Region Emergency Management (ESF-5) Committee, and several local emergency operations plans.



Next Steps and Future Plans

The Community Inclusion Maps will be featured in an upcoming [2017 Preparedness Summit](#) presentation by the Office of Emergency Preparedness and Response about tools and resources that support medical countermeasure operations readiness. Community Inclusion is also featured in the MCM 5-year focus area, for which the maps will be a valuable tool.

Other future efforts anticipated for the map include ongoing training (with three dates already scheduled in 2017), a child/youth story map, a feedback widget whereby users can provide updated location/name information about resources provide in the maps, and ongoing outreach to other statewide information and referral partners for community level data.

2016-2017 Projects

Resiliency Education Modules

Sector: Health and Social

Past education efforts with community benefits have proven to be successful in ingraining socially conscious initiatives, such as recycling and concepts of social justice. In an effort to increase resiliency and develop a long-lasting propensity toward resiliency, the Health and Social Sector Working Group, in partnership with the University of Colorado Denver (UCD) School of Education, initiated a two-year process to develop resiliency teaching modules to be implemented in Colorado schools.

By providing education through the school systems, this program seeks to increase the reach of resiliency efforts to younger generations, including vulnerable populations that may not typically have access to resiliency resources. By building resiliency awareness with students, the State will, by extension, reach the families of these students.

The Health and Social Sector is working with the UCD and other academic partners over the next two years to provide subject matter content and expertise, and the School of Education will develop the curriculum and make the training module available to local school districts, home-schooling families and private schools. Over the next two years, the resilience module will be developed in accordance with STEM (science, technology, engineering and math) principles and the latest in social science research and literature.

Status, Accomplishments, and Impacts

One of the first tasks the project team addressed was developing the parameters for the resiliency education modules - the appropriate age group for this education, the format (e.g. formal classroom curricula and after-school club activities), the size and scope of the modules, etc. To aid in this discussion, the project group added faculty from UCD to the team for their knowledge and expertise on youth education and engagement. The team determined that it would focus 6-8 graders, with the possibility of expanding into high schools at a later time. The modules should be designed to train the youth to become citizen scientists - addressing community resiliency by integrating climate science, social science, and technology (mapping). This effort will take a 2-phased approach:

- *Phase 1:* In order to capture youth views on the topic of disaster resilience, the project team would start by working with youth to develop a model of how they conceptualize disaster and community resilience, and what they prioritize in their communities through a process of discovery. The emphasis would be on capturing youth perspectives on community risk. Components of the program include:
 - Having youth map their own local environments using open-source GIS platforms;
 - Exploring the connection between natural and built environments -- developing an understanding of how local ecologies support communities, and by integrating comprehensive human-environment interaction, students will explore how building ecological resistance can buffer against extreme events and how this, in turn, improves community resilience;
 - Researching past disasters, understanding how we learn from these to prepare and prevent future catastrophe; and
 - Listening sessions with youth to capture what resiliency means to them.

The project team will create a standard program of these activities and others that could be implemented in other schools or community programs.

- *Phase 2:* Develop a model curriculum module that could be incorporated across all school subjects and curricula, using the information garnered from youth in Phase 1 to guide the content and youth priorities.

2016-2017 Projects

Next Steps and Future Plans

To help develop the mapping portion of this project, the team recruited a UCD graduate student who will help develop the online mapping platform as part of her master's degree capstone project. The team will continue to pursue funding and partnership opportunities to advance the project and begin developing the modules.

Spring Creek Apartments

Sector: Housing

The Longmont community lost significant housing during the 2013 floods and became a center for flood-impacted families who lost their homes in Boulder County. The flood impacted 10,505 units in Boulder County.

Spring Creek Apartments is a 60-unit affordable senior development located on a 2.0 acre parcel in the Prairie Village subdivision in Longmont. The property, managed by the Longmont Housing Authority, serves extremely low income senior households at 30% and 40% the Area Median Income (AMI).

This project provides affordable housing for very low-income seniors, a particularly vulnerable population with a high need for permanent, affordable housing in Boulder County's very tight rental market. The project's focus on wellness and active senior living will help residents with health issues, increase their ability to age in place, and reduce resident turnover. It also benefits the local economy by creating 141 jobs and generating more than \$1.5 million in tax revenue for the community.

Status, Accomplishments, and Impacts

Construction of this 60 unit senior housing project was completed, and the grand opening was celebrated, on October 12, 2016. The property achieved full occupancy in December 2016, including individuals displaced by the floods.

The Boulder County Long Term Flood Recovery Group supported this development as a priority project for recovery, assisting to house those displaced by the 2013 floods. Constructed in the Prairie Village subdivision in Longmont, Spring Creek Apartments serves residents aged 55 and older with household incomes at or below 30% and 40% of the Area Median Income. The 52 one-bedroom and eight two-bedroom units are owned and operated by Longmont Housing Authority.

This housing development addresses the risk of homelessness for low-income seniors and impacts to housing from the 2013 floods, providing residents affordable homes, decreasing the instances of rent-burden among the growing senior population. The new units replace a portion of those lost during the 2013 floods, most of which were units affordable to low- and very low-income households. Built to Enterprise Green Communities and ENERGY STAR standards, the new senior units increase the market area's stock of sustainable affordability for low- and very low-income seniors.

Next Steps and Future Plans

The project team will evaluate and document best practices and lessons learned for future resilient housing efforts.

2016-2017 Projects

Falcon Ridge Apartments

Sector: Housing

Larimer County sustained significant damage to its affordable housing stock during the 2013 flood, and in the previous year's High Park wildfire. The flood alone impacted 1,534 homes in the county, destroying 19 and damaging another 1,515. To complicate matters, the flood also cut off transportation access to the town of Estes Park from both Lyons and Loveland, preventing many workers in those nearby towns from getting to their jobs in Estes Park.



Falcon Ridge provides much needed affordable housing in Estes Park, while also providing new opportunities for low-income families and individuals to live affordably and work in the tourism-fueled community. It is a 48-unit affordable housing project, with four units at 30% Area Median Income (AMI), 10 units at 40% AMI, 14 units at 50% AMI, and 20 units at 60% AMI. The project is also located in close proximity to medical and dental facilities, a pharmacy, and Crossroads Ministries which provides emergency assistance and a foodbank.

This affordable housing development reduces the vulnerability of the community's low-income families and individuals to homelessness and health challenges, and provides opportunity for them to live affordably and work in Estes Park. It also benefits the local economy through the creation of 113 jobs and generation \$1.2 million in tax revenue.

Status, Accomplishments, and Impacts

The the first phase of construction was completed in January 2016 and the first 12 units were occupied in May. Final construction was completed shortly thereafter, and the grand opening of Falcon Ridge Apartments was celebrated on July 14. The property achieved full occupancy of the 45 units in August 2016.

Constructed in The North End neighborhood on land owned by the Estes Park Housing Authority since 2002, Falcon Ridge Apartments provides the community with affordable apartment and townhome style homes, built to Enterprise Green Communities standards. The income-restricted property includes 16 one-bedroom, 23 two-bedroom, and six three-bedroom units, providing new housing opportunities for low-income families and individuals in a flood-impacted area who seek to live and work in the same community.

The Town of Estes Park strongly supported this development as part of its plan for economic development and the Larimer and Estes Valley Long-term Recovery Groups both supported this development to assist in housing those displaced by the 2013 floods.

Next Steps and Future Plans

The project team will evaluate and document best practices and lessons learned for future resilient housing efforts.

Both housing projects in this plan provided preference for disaster impacted households in their initial lease-up. These projects were designed to increase community resilience through the development of additional affordable, housing in disaster-impacted communities and to replace those units lost in the disaster. Projects serving

2016-2017 Projects

very-low income households are typically not financially feasible without an allocation from the highly competitive 9% LIHTC and soft sources such as HOME funds. By leveraging the time-sensitive CDBG-DR with State Tax Credits to fund the development of affordable housing in disaster impacted communities, the State and the Colorado Housing and Finance Authority (CHFA) were able to provide an environment for developers to build truly affordable projects using 4% Low-Income Housing Tax Credits (LIHTC) and Private Activity Bonds. Recovering communities were able to improve the resiliency of their affordable housing stock for current and future generations of Colorado residents. A community's stock of affordable housing that is both energy efficient, and physically located and designed to withstand natural disasters, greatly improves its resiliency in the wake of such an event because those individuals and families displaced by the damage or destruction to their current home are more quickly able to be re-housed, without displacing lower-income households in the process. A healthy stock of affordable housing with some vacancies improves community resiliency by lessening the burden on the market to house potential future displaced households.

Interagency Coordination Project

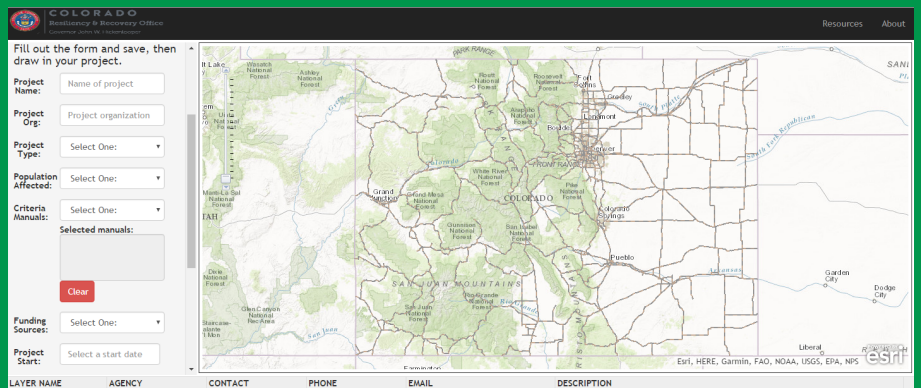
Sector: Infrastructure

The flood recovery process provided Colorado with an opportunity to establish and streamline interagency coordination processes to enhance project outcomes. The Infrastructure Sector worked to institute, memorialize and enhance coordinated interagency approach to project planning, design and implementation. Potential tools to enhance coordination include a checklist(s) of the agencies that should be informed of future project planning, design and construction and identification of a single point of contact within each State agency that can serve as an infrastructure resiliency representative.

Having standard project checklists and agency representatives can enhance collaboration and effective communication between agencies, while providing opportunities for multi-benefits and leveraging of funding sources.

Status, Accomplishments, and Impacts

Through the evaluation of potential coordination options, the team initiated development of an interactive online tool to serve as the checklist that could be utilized at the onset of an infrastructure project. The user would input their project location and general information and then be notified of surrounding critical infrastructure and agencies that needed to be made aware of the proposed infrastructure project. The Sector collected data, identified points of contact and worked with the Governor's Office of Information Technology to develop the tool. There is currently a working draft of the online platform that will be finalized by June of 2017.



The Interagency Coordination Project integrates the planning efforts of infrastructure owners and creates a network of communication at the onset of a project. The increased communication and knowledge of surrounding infrastructure allows for collaboration in design and in the case of emergency response.

Next Steps and Future Plans

It is the Infrastructure Sector's goal for the online tool to be continuously evolving as more data and information becomes available, and to potentially even be used as a cross-sector tool. In addition, the Infrastructure sector plans to enhance the interdisciplinary reach of the tool, which is outlined in the 2017 CRWG Annual Plan.

2016-2017 Projects

Resiliency Best Practices Project

Sector: Infrastructure

Consistent standards across State agencies can provide an opportunity for a unified approach to incorporating resiliency in projects. The Infrastructure Sector compiled and reviewed the existing standards and policies of multiple State agencies, and during the review, highlighted current resilient practices, determined inconsistencies and looked for opportunities to incorporate more resilient policies and procedures across agencies. To reduce duplicate efforts, this project seeks out any best practices or lessons learned, including from a Colorado Department of Local Affairs' funded project that the [Boulder County Collaborative](#) is undertaking to establish resiliency performance standards for CDBG-DR projects.

As part of this project, the Infrastructure Sector will prepare a final document that will identify current infrastructure standards and practices that already have resiliency incorporated; provide recommendations to include or expand resilient elements within the current standards and criteria; highlight any inconsistencies between standards of the various State agencies; and incorporate appropriate findings from local and State efforts to develop Resilience Performance Standards for the CDBG-DR infrastructure program.

Status, Accomplishments, and Impacts

Within the Colorado Resiliency Framework, the Infrastructure Sector summarized one of the major challenges for the State of Colorado as a lack of design standards and common understanding of resilience concepts. There is no shared understanding of resiliency, which causes communication gaps amongst stakeholders, including State and local governments, regional planning authorities, residents, community-based organizations, and businesses. In addition, throughout the recovery efforts of the 2013 flood events in Colorado gaps in existing infrastructure criteria manuals and standards were encountered.

The goal of this project is to compile and review the existing standards and policies of multiple State agencies, highlighting current resilient practices, determining inconsistencies across the various state agencies, and looking for opportunities to incorporate more resilient policies and procedures. The team collected a broad range of existing infrastructure guidelines and evaluated them for resilience criteria. The team utilized the data to develop draft best practices document, and is in the process of reviewing, updating, and finalizing the final document.

Next Steps and Future Plans

The Infrastructure Sector will continue to fill the gaps as more is learned about where current criteria falls short or situations in which the current criteria does not apply. It is the Infrastructure Sector's hope that this project will serve as a link between resources that provides a set of recommendations of resilient practices to take into consideration when implementing an infrastructure project or as updates to criteria are made.

Erosion Hazard and Debris Flow Identification Process

Sector: Watersheds and Natural Resources

Much of the damage experienced during the September 2013 flooding occurred outside the mapped regulatory floodplain. Identifying erosion hazard and debris flow areas will help communities and citizens make informed decisions about where to locate future development, protect property and lives, and enhance water quality and river function.

2016-2017 Projects

The Colorado Water Conservation Board (CWCB), with support from a multi-agency technical team developed a program for mapping erosion hazard areas. The Colorado Geological Survey, following a similar multi-agency approach, identified debris flow areas. This program helps with the protection of public health, safety, welfare and property by encouraging protected stream corridors. The program also helps reduce property loss and damage, promote river planning and management on a watershed scale, reduce public expenditures for disaster response and recovery, protect riparian habitat and encourage multiple uses of riparian areas.

The CWCB will develop technical standards, conduct studies for communities requesting mapping and provide regulatory guidance for erosion hazard areas. Once initial research has been conducted and a draft strategy has been identified, pilot studies will be conducted to refine the methodology.

At the conclusion of the pilot studies, technical standards and best practices for mapping erosion hazard areas will be created with the assistance of a technical expert panel. The CWCB will also provide regulatory guidance for communities to use when regulating development in erosion hazard areas.

Status, Accomplishments, and Impacts

To date the State has prepared draft technical and regulatory guidance documents available at <http://coloradohazardmapping.com/hazardMapping/phaseOneErosionMapping>. These guidance documents provide local and State agencies with best practices for land use and development in hazard zones in Colorado. They explain the regulatory systems that communities across the country have adopted when managing hazard areas, which Colorado communities could adapt and adopt. Lastly, they explore potential incentives within the National Flood Insurance Program's Community Rating System that encourage floodplain management in communities that exceed the Program's minimum standards.

The CWCB continues to coordinate with various State agencies including the Department of Local Affairs, the Colorado Geological Survey, the Colorado Department of Transportation, and the State Watershed Resiliency Working Group throughout this process.

Next Steps and Future Plans

Pilot studies are set to begin early 2017, and study areas were determined at the end of March 2017. Map products, final regulatory and technical documents, and a model land use code will be available for distribution by the end of June 2018.

Currently the team is reviewing the modeled debris flow susceptibility extents for Jefferson and Douglas Counties. After they are reviewed, the map production process will begin. El Paso County is scheduled to be reviewed in the coming months.

The screenshot shows the Colorado Hazard Mapping & Risk MAP Portal. The header includes the Colorado Water Conservation Board logo and the portal title. Below the header is a navigation menu with links to Portal Home, Projects, News & Announcements, Interactive Map, FAQs, Twitter, Community Rating System, CO EWP, and Lidar Request. The main content area is titled "Colorado Hazard Mapping & Risk MAP Portal" and includes a search bar. Below the search bar is a list of project categories with brief descriptions and progress indicators:

- CO Hazard Mapping**: The Colorado Hazard Mapping Program aims to provide a mitigation and land use framework in areas likely to be affected by future flooding, erosion, and debris flow.
- Floodplain Mapping** (in progress): Preparation of updated hazard information for the streams most affected by the September 2013 flooding in the Big Thompson & St. Vrain watersheds as well as the South Platte River.
- Erosion Mapping** (in progress): The identification of fluvial hazard zones (FHZ) to identify lands most vulnerable to fluvial hazards in the near term.
- Debris Flow Mapping** (in progress): Boulder County earth flow and debris/mud flow mapping study, based on the large-scale precipitation events of September 2013.
- Colorado Risk MAP**: The vision of Colorado's Risk MAP Program is to deliver...

The map on the right shows a geographical view of Colorado with various hazard zones highlighted in orange and yellow. Key locations like Denver, Boulder, and Colorado Springs are marked. The map also shows major rivers like the South Platte River and the Front Range.

2016-2017 Projects

Implementation of Flood-Affected Watershed Coalition Master Plans

Sector: Watersheds and Natural Resources

The 2013 floods caused hundreds of millions of dollars in damages to multiple watersheds. A resilient approach to dealing with these damages is to restore stream corridors in a way that connects land and water while protecting life and property. This project supports the development and growth of watershed coalitions representing multiple stakeholders in the flood-affected watersheds.

Watershed coalitions are coordinating implementation of projects and recommendations laid out in their watershed master plans. These projects will restore ecological processes of rivers, while also enhancing flood control, improving water quality, increasing recreation and access to the river, promoting watershed health and protecting infrastructure.

This project will be an expansion of existing support to watershed coalitions in implementing their master plans. Throughout 2016, this project aimed to accomplish the following:

- Holistically administer and coordinate grant funding for planning and implementation of projects identified in the watershed master plans;
- Provide technical assistance through the CDBG-DR Watershed Program and Natural Resources Conservation Service's Emergency Watershed Protection Program (NRCS EWP) to watershed coalitions to build capacity and support project implementation; and
- Coordinate multi-State agency involvement and planning for future support.

Status, Accomplishments, and Impacts

The CDBG-DR Watershed Resilience Pilot Program has awarded over \$12.3 million in river restoration funding across 10 watershed coalitions to complete projects from watershed master plans.

11 small-scale sites are being constructed from seven coalition master plans as part of the CDBG-DR Watershed Resilience Pilot Program demonstration round of projects, which will wrap up June 2017.

The CDBG-DR Watershed Resilience Pilot Program awarded \$3.2 million in matching funds for EWP projects. \$30 million of implementation agreements have been submitted for the NRCS EWP program. This represents nearly 50% of the program funding.

Next Steps and Future Plans

Currently, approximately \$5-6 million of improvements are in the ground with that program, with a peak of construction activity anticipated during the summer and fall of 2017.

Statewide Prioritization Plan for Hazard Mapping

Sector: Watersheds and Natural Resources

The Colorado General Assembly authorized the Colorado Hazard Mapping Program through Senate Bill 15-245. The Program provides funding to develop new floodplain mapping for areas affected by the 2013 flood, modernize floodplain maps in Colorado counties that currently have no digital maps, develop an erosion zone identification process with corresponding pilot projects, and develop debris flow zone delineations in select areas. The work also includes data collection including field survey and LiDAR technology.

In anticipation of the need to continue all three aspects of the Program throughout the entire state of Colorado, the Watershed and Natural Resources (W&NR) Sector undertook a statewide prioritization plan to guide future

2016-2017 Projects

implementation as funding becomes available. Prioritization factors in people and assets at risk, need, available data, cost, and partnering and leveraging opportunities. The work was performed by the W&NR Sector through the formation of a Prioritization Subcommittee, comprised of members of the sector and any outside advisors.

Status, Accomplishments, and Impacts

In September 2016, the Watershed and Natural Resources subcommittee completed and delivered its prioritization plan to the Colorado Resiliency and Recovery Office (CRRO). The prioritization plan establishes a roadmap to move priorities and strategies forward over the course of the next five years. The Hazard Mapping Program has been a tremendous step in the right direction as it has enabled Colorado to align resiliency efforts statewide investing State dollars, rather than relying on Federal funds. The plan outlines the prioritization and needed resources for floodplain mapping, debris flow and landslide hazard mapping, and riverine erosion hazard mapping.

Next Steps and Future Plans

The CRRO and the Watersheds and Natural Resources Sector will evaluate opportunities to integrate the prioritization into future funding requests, either through federal grants or annual departmental efforts.

COResiliency Resource Center

Sector: Multiple

The Colorado Resiliency and Recovery Office (CRRO), with support from partner agencies, seeks to develop a hub for resiliency knowledge and resources in Colorado. Central to this effort is the COResiliency Resource Center (Resource Center), which the CRRO will develop over the next few years. The Resource Center is to be an online, interactive first-stop-shop for advancing a resilient Colorado.

Through a variety of training modules (webinars), case studies, templates and model plans, grant information, etc, the Resource Center provides critical tools for communities and their stakeholders to improve their resiliency by developing an understanding of what resiliency is and why it's important, creating local resiliency frameworks, and integrating resiliency into planning processes. The Resource Center is aimed at a variety of audiences, including local government agencies, elected officials, community organizations, the private sector, and individual resiliency champions.

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Status, Accomplishments, and Impacts

In November 2016, the CRRO launched the first rendition COResiliency Resource Center at www.coresiliency.com. The Resource Center currently includes the Understand and Plan section as a first step in empowering communities to develop resiliency frameworks, policies, and plans to reduce their risk to shocks and stresses.

Since its launch, the site has seen more than 1600 visits (as of May 2017) from users across the US and internationally.

Next Steps and Future Plans

The Resource Center will continue to be developed on a regular basis as new materials, best practices, and resources become available. The Act section is currently under development, and when completed, will provide best practices, guidance, and other resources for implementing resiliency projects and integrating resiliency planning into local plans,

2016-2017 Projects

policies, and day-to-day activities. It will include tools such as a resiliency grants database, case studies, and links to key implementation resources. As part of the Act section, CRRO will work with other State agencies to use their expertise in developing material on energy, economic development, critical infrastructure, and the role of the private sector, among others.

The CRRO is currently in the process of developing case studies, or profiles of resiliency in action. These case studies will showcase resiliency stories at the local and state level, highlighting best practices and lessons learned, and demonstrating replicability here in Colorado and beyond. The Resource Center has a form available for visitors to submit their ideas for future case studies.

Enhanced State Hazard Mitigation Plan Roadmap Phase I

Sector: Multiple

Phase 1 of the Enhanced Plan Roadmap determines if the State would be eligible for enhanced State Hazard Mitigation Plan (SHMP) status and will identify what steps the State would have to take and maintain to achieve that status. Enhanced plan status would result in the State receiving an extra 5% in Hazard Mitigation Grant Program (HMGP) funding post-disaster.

This project will produce a brief summary document describing the State's existing activities and capabilities in order to provide incentive and a tangible guide to determine the potential for meeting relevant FEMA enhanced SHMP requirements. Further, a strategic workplan for all agencies within Colorado will be developed that consists of straightforward, attainable actions, along with associated timelines and responsible parties.

These are necessary in order to request enhanced plan status during the next State plan update. Enhanced SHMP status is reviewed and granted at the discretion of FEMA Headquarters. In addition, this project will enhance the State's efforts by documenting existing activities and capabilities and providing insight into what steps would be necessary to achieve enhanced plan status. Currently, only 12 states in the country have achieved enhanced plan status.

Status, Accomplishments, and Impacts

The Colorado Enhanced State Hazard Mitigation Plan (E-SHMP) planning project Phase I Road Map report project was completed in September 2016. This report will be utilized as a method to identify current strengths and potential gaps toward achieving Enhanced State Hazard Mitigation Plan status. States that have and maintain Enhanced Plan status demonstrate commitment to a State-wide mitigation strategy, and earn additional post-disaster mitigation funds.

Next Steps and Future Plans

The Division of Homeland Security and Emergency Management (DHSEM) received funds from FEMA on February 7, 2017 for the actual Phase II State Enhanced Plan Update. Based on FEMA Standard and Enhanced Plan requirements, and Phase I findings, DHSEM has developed a Scope of Work and related documents for procurement. A Request for Proposal will be released in May 2017, with consultant selection and contracting complete in August 2017.

DHSEM has maintained communication with the State Hazard Mitigation Team and other stakeholders via e-mail, teleconference, and in-person workshop meetings throughout 2016 as part of completing Phase I tasks, as well as a part of entering the Phase II planning process. The planning period will continue through June 15, 2018.

DHSEM has hired temporary staff dedicated to the E-SHMP project, and directed current staff to focus on best practices and achieving success of the Enhanced State Plan Update, as well as to identify a method for maintenance and demonstration of Enhanced Plan status requirements to FEMA over the annual review and five-year plan cycle.



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