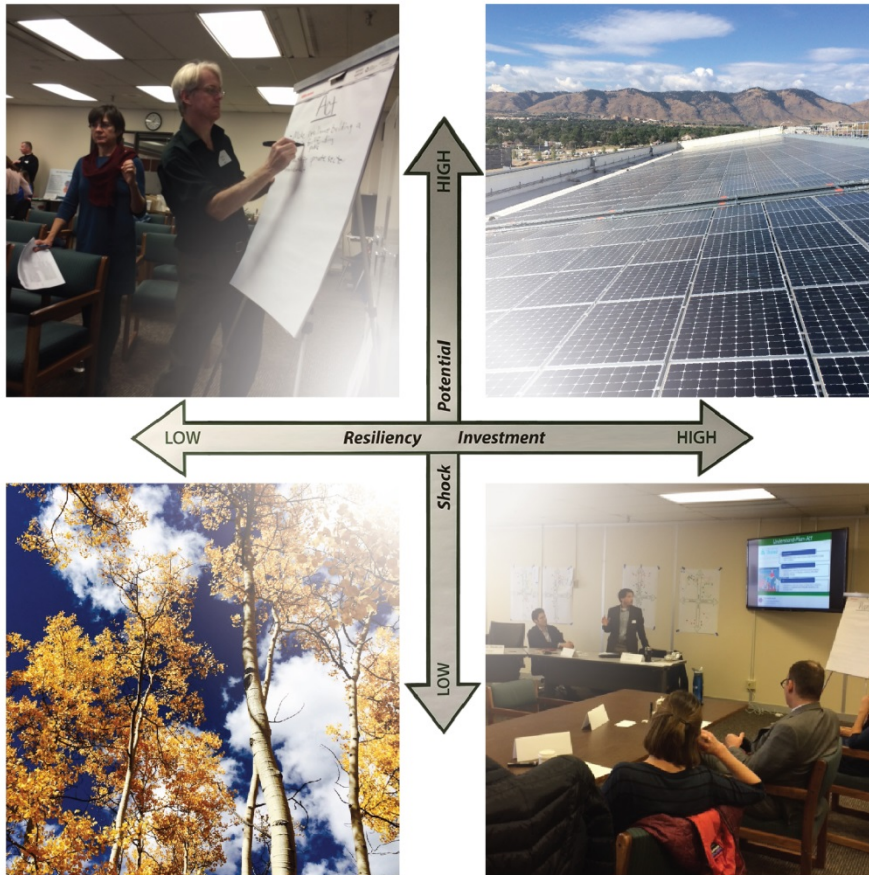




COLORADO

Resiliency & Recovery Office

Governor John W. Hickenlooper



Resiliency Stakeholder Strategy Session Report & Recommendations

Convened by the
Colorado Resiliency and Recovery Office
February 3, 2016

Together. A Stronger Colorado.

Acknowledgements

The CRRO would like to sincerely thank all participants who attended this strategy session and provided candid input on what Colorado needs to build a culture of resilience, and how the CRRO can work to empower local, state and non-governmental efforts. This session represents the continuation of many conversations to solicit input and ensure the State of Colorado's efforts meet the needs of Colorado communities. Specifically, we would like to thank our Ecology and Environment, Inc. facilitation team, and the following participants:

Name	Agency/Organization
Daniel Alexander	FEMA Headquarters
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Mackenzie Boli	City of Boulder/Resilience Americorps
Alexander Dane	National Renewable Energy Laboratory
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Eliza Hotchkiss	National Renewable Energy Laboratory
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Anne Miller	Colorado Department of Local Affairs
Joe O'Keefe	U.S. Department of Homeland Security
Johnny Olson	Colorado Department of Transportation
David Padrino	Governor's Office
Debra Perkins-Smith	Colorado Department of Transportation
Ryan Pietramali	FEMA Region 8
Dale Rademacher	City of Longmont
Garry Sanfacon	Boulder County
Barry Smith	Eagle County
Bill Wenk	Wenk Associates
Patricia Williams	Colorado Emergency Preparedness Partnership

Resiliency Stakeholder Strategy Session Report & Recommendations Executive Summary

Disasters have impacted Colorado in the past and they will continue to occur, population is growing, conditions are changing, and there are great things about Colorado we want to protect, preserve and enhance.

The Colorado Resiliency and Recovery Office (CRRO) convened 18 stakeholders from federal, state, local government, non-government organizations and the private sector. All participants were asked to provide their professional perspective throughout their discussions to support CRRO and the State of Colorado's efforts to develop and implement the COResiliency Program. The day-long session was held on February 3, 2016, and professionally designed and facilitated by Ecology and Environment, Inc., with additional support provided by CRRO and Colorado Department of Local Affairs (DOLA) staff. A variety of facilitation methods were utilized throughout the day to encourage cross-disciplinary engagement and outcomes. The methods and outcomes from each segment of the day are summarized in this report under the following session discussion topics and outcomes:

- Future Resiliency Aspirations
- CRRO Vision and Progress To-date
- Potential Local and State Level Resiliency Actions
- Current Conditions - Future Targets
- COResiliency Program: Taking Action and Measuring Success
- Leveraging Partnerships for Long-term Success

After the all-day session, the E&E facilitation team and the CRRO reviewed and analyzed stakeholder input and identified key themes. The input and key themes led to the following recommendations for the development of the COResiliency Program and for the State's coordinated resiliency efforts moving forward:

1. **Make resiliency a criterion for state public funding.** Leveraging existing public dollars to achieve multiple benefits will maximize outcomes.
2. **Integrate resiliency into all state agency policies and programs.** Working in collaboration to integrate resiliency into programs and policies will send a clear and united message to federal and local governments, and private sector.
3. **Incentivize private sector involvement.** Fostering public - private partnerships could advance best practices in multiple areas from design and construction to new technologies and business.
4. **Increase investment in resiliency strategies, systems and development practices.** Investment activity that prevents or reduces impact provides lasting benefits and high returns in losses avoided.
5. **Create a Resiliency Hub.** Advancing resiliency within state agencies, in communities across the state and through stronger partnerships with the private sector and the federal government is a full-time effort that requires a constant champion and centralized resources.

A detailed analysis of each of these recommendations is provided at the end of this report.

A few common themes for the day included:

- Create cross-disciplinary systems
- Imbed and sustain a culture of resiliency
- Engage the private sector
- Instill resiliency as a multi-level governmental responsibility

The more the CRRO leads with our ears, the better off we will be!

Opening Session

The CRRO set the discussion context for participants at the beginning of the day: *Disasters have impacted Colorado before and will continue to happen, population is growing, conditions are changing, and there are great things about Colorado we want to protect, preserve and enhance.*

During the introductory session the objectives of the day were also provided to participants:

- Engage partners and end users in the COResiliency Program development
- Identify barriers and opportunities for implementation of resiliency actions
- Identify innovative strategies for leveraging resources and partnerships

In addition to CRRO's objectives for the day, the participants shared their future aspirations for resiliency efforts as summarized below. Their aspirations include:

- Share information between disciplines and coordinate interaction with the public
- Educate local government land use planners on their role in resilience planning
- Enhance private sector engagement
- Create a template for broader rollout of regional resiliency assessments
- Co-brand resilience efforts with private sector partners

- Continue and expand current local resiliency capacity building, engagement efforts and funding
- Change the culture to make cross-sector work common practice
- Use watershed restoration as a catalyst for economic development through bridging of professions/ disciplines
- Encourage private sector participation with a broader spectrum of public finance options
- Expand public understanding of resiliency to advocate for resiliency policies
- Integrate resiliency concepts into state agency capital projects such as public facilities or transportation
- Reinforce social cohesion
- Leverage federal programs (like those from FEMA) to support resilience efforts in Colorado
- Change the FEMA culture to support resilience (going beyond response and recovery)
- Leverage federal programs through improved coordination to better support local and state programs for more resilient outcomes
- Commit to involving the entire community in the design of more resilient infrastructure
- Evolve grant funded resiliency positions to become self-sustaining
- Create a solid foundation of cross-sector collaboration that expands local partnerships
- Incorporate resilience into our everyday work and lives



CRRO Vision & Progress to-date

The CRRO provided participants with a short presentation on the State's vision for resiliency and progress made to date as background to inform discussions.

Colorado is consistently named one of the most desirable places to live in the United States. That designation is no mistake. We have a quality of life that attracts people to our state due to our strong economy, active lifestyle and scenic beauty. Colorado is expected to continue to grow at a rapid pace, with a projected 47% increase in population between 2010 and 2040. This growth also means that a larger population may be at risk to future hazards.

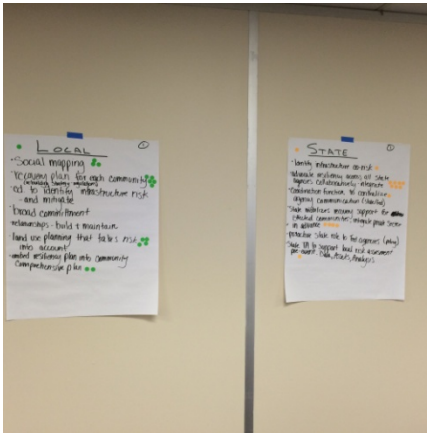
Colorado history shows that we are not immune to disasters. Since 2010, 1,250 homes have been destroyed by wildfires, while floods have caused nearly \$4 billion in damages. Observed trends and changes in climate indicate that disasters will become more frequent and intense in the future.

With an understanding of these converging factors, Colorado communities and the State of Colorado have made it a priority to take action to reduce vulnerability and do everything possible to prevent the next disaster from inflicting the same impacts as past disasters. More importantly, Colorado and its communities are taking action to adapt and thrive while overcoming challenges and maintaining quality of life, healthy growth, durable systems and conservation of resources for present and future generations.

The State and local communities have made significant progress in our collective resiliency efforts. On May 28, 2015, Governor Hickenlooper adopted the Colorado Resiliency Framework (Framework). A first of its kind initiative nationally, the Framework establishes a vision and definition of resiliency for Colorado, identifies guiding principles, outlines specific strategies that the State commits to implement, and seeks to empower a culture of resilience throughout the state.

The State's commitment to implementing the Framework is well underway. Colorado will release its first Framework Annual Plan in the Spring of 2016 with an exciting set of projects designed to build a strong foundation for our long-term resiliency efforts.

Additionally, we have partnered with three of the most impacted counties from recent disasters - Larimer, Boulder and El Paso counties - to pilot a local resiliency planning process during 2015 and 2016. The process brought together stakeholders from local jurisdictions, non-profits, watershed coalitions and the private sector to evaluate existing conditions, analyze shocks and stresses and to identify a broad and integrated range of strategies to build resilience locally and regionally. The result of the process are plans, guided by the Colorado Resiliency Framework, that provide a unified vision for action on a regional basis, and set the stage for coordinated implementation of resiliency projects and initiatives at the local level.



This workshop brought together 18 persons with diverse and significant expertise in the resilience arena, including experts from federal and state agencies, as well as local government and the private sector.

The road to resilience can also have its turns. Though the State and our local partners did not receive additional funding from the National Disaster Resilience Competition, the pilot local plans informed Colorado’s ambitious application and helped us to “shoot for the stars.” The plans and the NDRC process helped to forge and strengthen lasting relationships, set a clear vision for resilience from a local perspective, and added additional clarity to Colorado’s need for a stable and sustainable funding source for resilience building efforts. Through the NDRC process, the COResiliency

Program was born. The NDRC result does not signify that the work is finished; rather, it is just beginning.

Moving forward, the CRRO and the State of Colorado seek to support projects and efforts that invest in:

- Networks and neighborhoods
- Integrated planning for action
- Our collective understanding of current and future risk and vulnerability
- Policies to reduce vulnerability from hazards
- Innovative capital projects that address both shocks and stresses

- Partnerships across sectors and communities to holistically advance resilience

This strategy session provides the CRRO with meaningful input to further refine and advance the COResiliency Program concept. It is the next important step in an ongoing conversation. As they have from the onset of Colorado’s resiliency efforts, partners will serve an essential ongoing role in advising, supporting and helping to implement the Framework and the COResiliency Program.

Creating a Resilient Colorado

The first discussion of the day focused on where the group believes Colorado’s resiliency should be in five years and what actions need be taken to get there. Groups of 2-3 persons engaged in discussions around these topics, reported their recommendations and then the full group was asked to prioritize actions at both the state and local levels. The outcomes are summarized below. Many of the identified actions and themes were further built upon in subsequent sessions.

Potential Local Resiliency Actions:

- Embed resiliency plans and policies into comprehensive plans (e.g., Longmont)
- Conduct land use planning that takes risk into account
- Develop stakeholder and social network maps to identify what local resources are available
- Educate on how to identify and mitigate infrastructure risk
- Create a vision for resiliency and a culture of commitment
- Understand, maintain and expand upon the relationships that have been built following the recent disasters
- Create a recovery plan in every jurisdiction
- Establish regulations that can be activated as needed in time of crisis (e.g. building moratoria, permitting)
- Create a broad local resiliency plan, then integrate the local resiliency plan into policies and daily business, then implement the vision through projects and other actions (i.e. Maslow’s Hierarchy approach)

Priority Local Resiliency Actions

Embed resiliency into land use and comprehensive plans

Create a vision for resiliency and a culture of commitment

Develop social network maps

Priority State Resiliency Actions

Collaborate and integrate resiliency across agencies

Advance the mutual aid model and enhance it with private sector partnerships

Create a vision for resiliency and a culture of commitment

Potential State Level Resiliency Actions

- Advocate for, collaborate on, and integrate resiliency across all state agencies
- Provide continued support for the creation and maintenance of mutual aid agreements for providing cross-jurisdictional support and sharing knowledge and resources during and after emergencies
- Develop private sector partnerships that have the potential to expand local and state resources and, in return, lead to increased company brand value (i.e. the companies are positively perceived by their markets as being active, engaged partners in resiliency in Colorado)
- Provide a forum to capture lessons learned from previously impacted communities to help communities that have not yet experienced disasters
- Coordinate all agencies (state and federal) involved in recovery and long-term resiliency through a centralized resiliency hub
- Identify infrastructure risks, vulnerabilities and interdependences
- Utilize state technical capacity to support local risk assessment (e.g. create hydrologic models before an event)
- Identify and document local and state needs for federal resiliency support to strategically improve advocacy efforts and expand the level of support

Current Conditions – Future Targets

The purpose of the current conditions session was to correlate the level of stress or shock probability against current and future targets for investment to determine gaps or areas with the largest shift required to meet priority needs over the next five years. Two groups, one focused on Stress and the other on Shocks, were created for participation in a quadrant exercise as depicted in Figures 1 and 2 on page 5. The quadrants provide spectrums for assessing a high/low range of stress level or shock potential mapped against a high/low range of investment existing or required to

mitigate these shocks or stresses. The following section includes two components: first, the summarized outcomes of each stress/shock breakout group; second, the full group report and polling process with a more in-depth analysis that examines why the various topics landed where they did on the full group quadrants.

Participants noted that context would be very important in order to understand the outcomes of this session. The vast differences between how urban and rural areas are affected by shocks and stresses was discussed along with the

proportional variations in investments required across sectors.

For example, a smaller shift in amount of investment in some sectors such as community or health and social could move the impact bar significantly; whereas, the amount of investment needed to implement an infrastructure, watershed or affordable housing activity may be much greater in total dollar amounts.

The outcomes of these group exercises provided some strong correlations and conclusions that informed the remainder of the day.

Stress Quadrant Group

The Stress group assessed stress levels in each of the six Framework sectors: economic, community, health and social, infrastructure, housing, and watersheds and natural resources. Each participant was first asked to identify the current correlation between stresses and investment levels within the State of Colorado (in the image, dots represent where individual stakeholders felt this correlation currently lies). Then, as a group, they were asked to identify where each stress should be on the quadrant in five years and corresponding levels of investment required to get there (group consensus is denoted by an X). The outcomes are depicted in Figure 1 and summarized below, with an analysis provided under the full group assessment section.

- **Economic** (red) is the only stress category that was located in the lower half of the quadrant (i.e. is associated with lower stress levels) and is thought to remain similar in the future with only slightly higher levels of investment toward resiliency activities.
- **Community** (dark green) is at a high stress level but is expected to go down significantly in five years assuming a high investment is made.
- **Health & Social** (yellow) has the largest gap between where it is currently viewed by the group and where it is anticipated in five years; the anticipated investment is correspondingly viewed to be high to achieve that outcome.
- **Infrastructure** (blue) is the only category with investment level staying in the low end of the quadrant yet with moderate to high levels of stress remaining.
- **Housing** (orange) is placed on the high end of the stress scale with the expectation of stress remaining high even with more investment to ensure the situation does not worsen.
- **Watersheds & Natural Resources** (light green) has the most diverse range (though all within the upper half of the stress quadrant, including off the low end of the chart); investment is viewed as ranging from very low to moderately high.

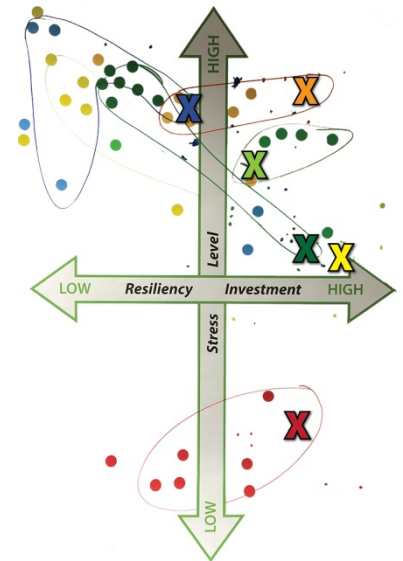


Figure 1

Shocks Group Quadrant

The Shocks group assessed levels of shock potential in each of four areas: wildfire, drought, flood and human-caused. Each participant was asked to identify the potential for each shock correlated against investment levels and where they should be in five years. Figure 2 depicts the outcome from the group that is summarized below with an analysis provided under the full group assessment section.

- **Wildfire** (red) is considered the highest potential current shock area; it is expected to decrease slightly over 5 years with a moderate level of investment anticipated.
- **Drought** (yellow) is viewed as a moderate- to high-level of potential shock with some reduction expected to occur over 5 years through an expected higher level of investment.
- **Flooding** (blue) has a moderate- to high- level of shock potential that is expected to change very little over the next 5 years. The investment level is, on average, expected to go down as interest wanes from the recent disasters.
- **Human-caused** (green) - the potential for these types of wide ranging shocks is viewed as low with investment expected to decrease.

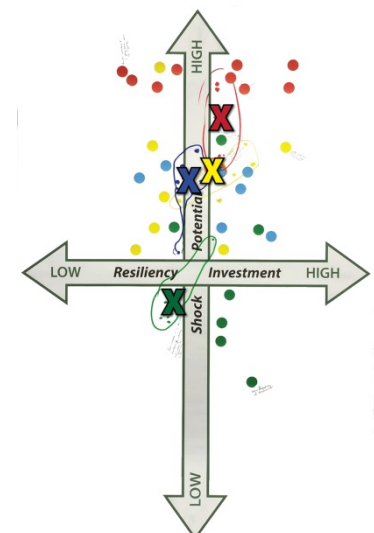


Figure 2

Stress: Full Group Assessment

Following the break-out group exercises, the full group was asked to share their rationale for the conclusions reached during their quadrant exercises. Then, a final poll was taken to prioritize where each person felt the State should be focused. Figures 3 and 4 depict the outcomes from this poll, showing where the State should focus for each category over the next five years. A summary of these full group discussions is also presented below.

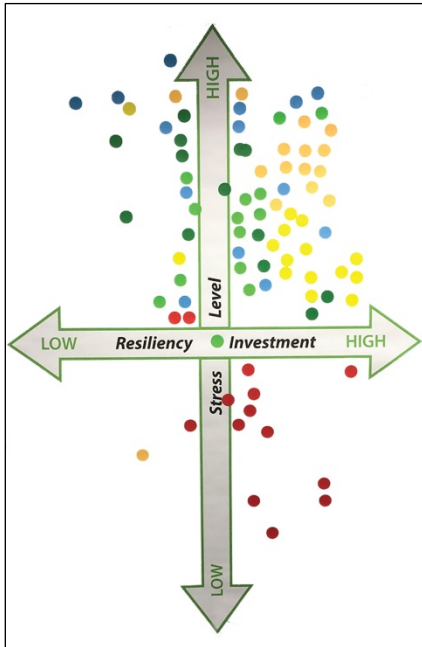


Figure 3

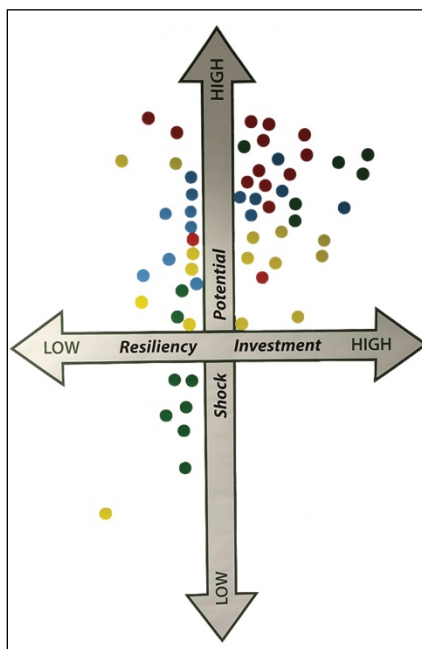


Figure 4

- Economic:** Currently, Colorado is at a low level of economic stress, especially in urban areas due to a high level of economic diversity that reduces the potential for big, sudden swings based on commodity prices or other stimuli. Investment needs to continue at a moderate level to maintain this lower stress level. There is a wide disparity in the ability of businesses to recover with a need to invest in planning to ensure rapid recovery from any natural disaster shock. Diverse, urban economies and larger businesses are viewed as being more resilient to shocks; whereas, small businesses and rural communities are often more vulnerable with the potential to experience closures and long lasting impacts when protective measures and systems aren't in place. The group felt that a strong economy is the best defense as it creates the ability to invest more in resiliency.

Group Poll: lower right quadrant - high investment to maintain lower stress (lower right)

- Community:** The group discussed the need for ongoing and increased community engagement, as well as the need for land use and transportation plans with clear implementation strategies that integrate resiliency as a core principle. Additionally, the risk-informed land use regulations were identified as a fundamental resilience building tool for communities. A lack of these land use practices, which is the case in some communities - both urban and rural - in Colorado, creates a very high level of stress. There was group consensus around the need for more investment in and support for risk-informed land use planning. The group also noted the

reality of what little can be done without these types of lasting local controls, policies and implementation of strategies.

Group Poll: split between moderate to high investment and moderate to high stress (upper half)

- Health and Social:** While there are strong connections and networks across many communities, there are large (and growing) vulnerable populations with limited social connections or access to resources that are often difficult to identify; this makes it hard to fully understand the scale of the challenge and type of support needed. The health and social stress level is expected to remain high, possibly due to expected population growth, and investment should include education and non-capital resources.

Group Poll: high investment to achieve moderate level of stress (upper right)

- Infrastructure:** Infrastructure is a broad category that includes multiple components: transportation, utilities, water supply, wastewater treatment, stormwater management, energy, hazardous materials, defense facilities and assets, and many others. Considerations for this sector include criticality, community connectivity, co-risk and redundancies, along with aging of infrastructure. There are not currently enough resources placed in existing budgets to implement what needs to be done to enhance resilience. Progress in building resilience takes more time for infrastructure than other sectors due to the long timelines and high cost of infrastructure improvements. Smart spending,

resilient land use planning and leveraging investments for multiple benefits will be critical in improving infrastructure resilience. Private infrastructure was also noted as an area of concern requiring outreach and education.

Group Poll: split between levels of investment and moderate to high stress (upper half)

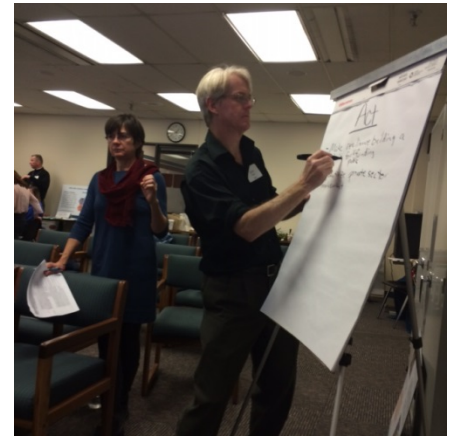
- **Housing:** The Denver metro area is trying to integrate income diversity into density plans to address the growing issue of affordability and availability. Communities throughout Colorado lack adequate housing stock, infrastructure and investment to meet the fast growing demand. The housing and infrastructure sectors should work together to address the importance of connectivity because traditional infrastructure is not the only solution for access to housing. While housing is needed throughout Colorado, the potential solutions for the Front Range urban corridor area are very different from other smaller cities and rural areas. Increasing levels of investment will only manage to maintain current stress levels so

that they do not worsen. With the growth in population this area will be difficult to significantly reduce stress.

Group Poll: high investment to avoid even higher stress (high upper right)

- **Watershed and Natural Resources:** Watersheds and forests remain highly stressed areas contributing to water quality, wildfire, flood, channel migration and erosion challenges. Improving forest and watershed health has a high cost with a counterbalance of long-range, lasting and multiple benefits. Federal, state and local agencies are investing in wildfire fuel mitigation and public education, though the need far exceeds available resources. Partners have also made significant progress in building capacity and addressing post-wildfire impacts. Forest disease, such as beetle kill, is a growing issue - destroying the health of forests that make them more vulnerable to shocks. Population growth needs to be factored into the planning that is already taking place in this sector.

Group Poll: moderate to high stress with moderate investment, no clear consensus (upper half)



Facilitators worked with small groups to solicit input.

Shocks – Full Group Assessment

- **Wildfire:** Wildfire frequency has increased in recent years and, though Colorado's ability to respond to and fight wildfires is high, comparatively little resources are available for mitigation efforts. There are some federal and state programs directed toward homeowner responsibility that communities, including Boulder County and El Paso County, have leveraged. The biggest impacts to housing and infrastructure are likely to occur in the Wildland Urban Interface, though long-term watershed impacts can take place in more geographically remote areas as well. The long-

term nature of forest, soil and watershed impacts from wildfire further complicate the recovery process. For example, a number of wildfire impacted households from disasters in the last five years are still not moving back to impacted areas due to ongoing risk from scarred landscape, high cost of rebuilding or the cost of insurance in a higher risk area. The group also expressed concern that droughts could result in the reduction of water supplies in remote areas, which could impede firefighting capacity.

Group Poll: highest level of stress and investment needed (upper right)

- **Drought:** Huge investments are being made in storage, supply and redundancy that is reflected in higher water bills. Development of the Colorado Water Plan is a big advancement; however, members of the group pointed out that there will be an ongoing, significant need for investment. Agriculture industry is probably the most adaptable to drought conditions. The ski industry is slowly adapting, with the summer season now generating more revenue than winter over the past few years. Water conservation efforts are progressing, but not fast enough to absorb a doubling of

population. These efforts need to combine with land use management that matches growth to available resources. Investment in drought mitigation will likely stay similar to what it is today because we already recognize water resources as an issue and the population is growing. The Colorado Water Plan sets a path forward that should be followed and built on.

Group Poll: potential is moderate-high with a split in investment between moderate to high (upper half)

- **Flooding:** There has been significant investment made to address flooding as a result of the recent disasters. Some communities, especially those located in the Urban Drainage and Flood Control District of Longmont and Fort Collins, have been very proactive in floodplain management. Inadequate stormwater infrastructure is an issue throughout the state that is

exacerbating the flooding potential. It is important to prevent risky development in the first place through land use planning practices. There are a number of available tools, including conservation easements, land acquisition and greenway corridors. Where feasible, property acquisition aimed at removing vulnerable housing from harm's way can be a lower-cost investment with high returns as compared to structural solutions. It was recommended that more streamlined and standardized land use policy throughout the state would provide a more consistent approach and support local decision making. Five years from now there will be significantly less federal funding compared to 2016; flood recovery and mitigation work will peak. The reality is that public investment will decrease. However, maintaining a strong level of future investment and

maximizing currently available resources will sustain momentum.

Group Poll: split across moderate to high stress with moderate level of investment (upper half)

- **Human-caused Hazards:** Investment in protection from human-caused hazards tends to be high, and while human caused hazards have a lower probability, they have the potential for high consequences including human life, economic and psychological impacts. Leveraging these investments to include co-benefit strategies would work to meet multiple purposes and expand overall impact (i.e., critical infrastructure protection).

Group Poll: split from moderately low to high potential with investment mostly moderate (split across all three quadrants except lower right)

COResiliency Program: Taking Action and Measuring Success

This session was designed to give participants the opportunity to comment on the specific types of resources and activities provided through COResiliency, and the most appropriate metrics to evaluate projects and progress of the State's efforts. Each of the two aspects of the session are summarized below.

Taking Action: Throughout the development of the Framework, the pilot local resiliency planning process and the HUD National Disaster Resilience Competition (NDRC) application development, CRRO heard from communities the need for resources to help better *Understand, Plan for and Act on* resilience. To introduce the

concept, the session began with a presentation by the CRRO on these three stages of community resiliency building, matched with the type of resources and information needed to support communities in advancing resiliency. Groups were then formed for each topic to discuss three key questions:

- What are the most effective ways the State can engage communities throughout Colorado?
- How do we best communicate and educate the value of resilience thinking?
- What resources are needed for communities and the State of Colorado to be successful?

Each group identified the top three actions needed within each area that were reported to the larger group, which then prioritized actions across all areas. The following reflects the actions identified by each group in order of priority.

- **Understand:** Educate a broad range of stakeholders about what resiliency is and why it matters.
 - Develop a “What’s in it for me?” communications piece for public sector, non-profits and private sector
 - Create a Resiliency Hub within the state to provide a central place for resources
 - Establish a database and tool to analyze the data; this would help improve risk assessments and to disseminate information to communities
 - Provide alternative pathways for construction if/when scenarios for incorporating resiliency
- **Plan:** Develop tools/resources that empower communities to develop resiliency plans or integrate resiliency into other planning efforts.

- Integrate resiliency into state agency plans and programs, and across agencies
- Provide resiliency planning support to local communities
- Create a sustainable funding source for local and state resiliency planning efforts
- Include resiliency in relevant plans and evaluate cost/benefit
- Incentivize the private sector as a partner and identify barriers in regulation
- **Act:** Provide technical and eventually financial support for implementation of resiliency projects.
 - Make resilience a core criterion for state public funding
 - Leverage private sector partnerships and investment
 - Remove policy barriers and coordinate across public agencies on an ongoing basis
 - Provide resources and support to break down silos across sectors
 - Identify a resiliency coordinator for each state agency to provide dedicated focus

- Leverage non-public financing for projects

Measuring Success: This session initiated a dialog with participants to consider ways in which projects could be holistically evaluated to inform priority investments and how best to quantitatively measure long-term success. The pilot local resiliency planning process led to the identification of three integrated COResiliency Program areas that together are intended to holistically build resilience. Discussion groups were broken out by each of the three proposed program areas:

- **Resiliency Community Building:** Achieving resilience begins with building a culture of resilience by investing in and empowering Coloradans through grassroots engagement and education.
- **Risk Management:** Interactive risk analysis, mapping and land use tools to build resilience into the community development process.
- **Capital Investments:** Innovative capital projects that address critical shocks and stresses, reduce risk, and build and enhance long-term regional resilience.

Priority State Actions to Advance Resiliency

Make resilience-building a criterion for state public funding

Incentivize private sector involvement

Integrate resiliency into state agency plans and programs, and across agencies

Create a Resiliency Hub

Create a sustainable funding source for planning

The groups each briefly discussed the following questions as a means of addressing types of measures:

- Innovation
- Multiple Benefits
- Leveraging
- Adaptation Strategies

The National Disaster Resiliency Competition (NDRC) required applicants, including the State, to conduct a benefit cost analysis of projects based on four areas: resiliency, economic, environmental and social. While these categories served as a good framework for the NDRC, the ability to accurately and consistently evaluate projects in these areas does not provide the best approach for the variety of project types that Colorado seeks to support. However, the indicators developed for NDRC purposes were useful to initiate a discussion on what metrics would best serve the long-term interests of measuring the State's resiliency success over time. Using the indicator worksheets as a

guide, input was solicited on these questions:

- How would you measure success?
- What indicators or measures would apply?
- What measures are missing from this sheet?
- What measures require clarification or would be hard to measure effectively?
- What should the top three priority indicators be for the CRRO/State in their program category? By measure topic?

The exercise and discussion required significantly more time than was available to reach any clear conclusions; however, it did begin an important dialog on how to make good project investments that would have maximum value and returns to society. A few ideas from this discussion are listed below and a more comprehensive set of notes are being examined by the CRRO as it addresses this need.

Resiliency Community Building:

- First identify attributes of a resilient community, in order to develop appropriate metrics
- Volunteerism is a good metric for community engagement and cohesion
- Number of local resiliency plans - or plans with resiliency concepts integrated - adopted

Risk Management:

- Criticality built into measurements
- Economic diversity measurement
- Property value retention

Capital Investment:

- Generate a concept for resiliency ROI
- Apply a criticality score to project evaluation
- Identify existing capital flows and generate predictive analysis to inform investment

Leveraging Partnerships for Long-term Success

The final session of the day focused on leveraging existing resources and relationships. Three groups were randomly formed and a World Café facilitation approach was used to rotate the groups to each of three discussion areas:

- Inter-agency and cross jurisdiction collaboration (Collaboration)
- Public funds of all types from all levels of government (Investment)
- Public Private Partnerships (P3)

With each rotation, the new group built on the discussions from previous discussion to develop an in-depth response to three core questions:

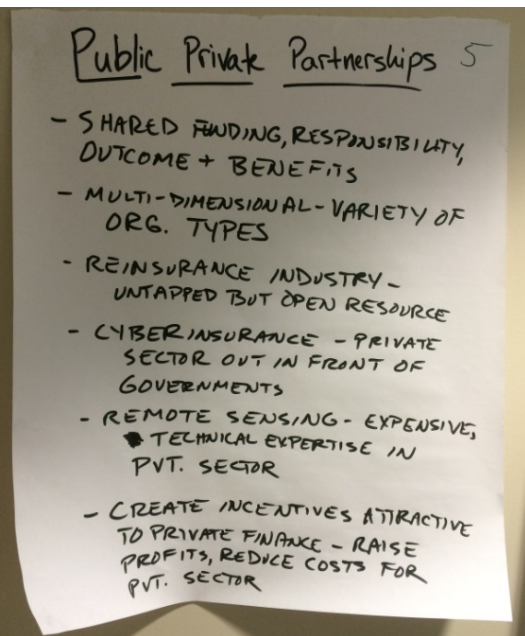
- What are good examples in this area?

- How could we better leverage this type of relationship or investment area?
- What type of activity is best suited to this type of investment?

Facilitators for each topic area summarized the outcome of three rounds of discussion with the full group to solicit additional input to determine:

- Is anything missing?
- What role could you or others play to improve leveraging?
- Where is there the most opportunity/need for improvement?
- Where should the CRRO focus its efforts related to leveraging to grow more resources and impact?

The intent of this session was to look for creative ways to leverage higher value and returns from limited resources through smarter investments, leveraged partnerships, multiple-benefit strategies and other ways that would expand the impact of existing resources. The following is a consolidation of the key ideas and themes from this session with an emphasis given to those concepts that tied back to the earlier discussions on priorities related to shocks and stresses.



Inter-agency and Cross-Jurisdictional Collaboration

There are many great examples of collaboration in areas related to resiliency that should be encouraged, learned from and expanded on. This area focused on how to create higher value through transfer of knowledge and best practices, efficiency improvement through collaboration and other non-funding ways to create higher value and impact. Several good examples of collaboration exist across multiple agencies and organizations. Building on those successes, the following ideas were suggested to expand collaboration across jurisdictions and agencies:

- Engage Councils of Government and Metropolitan Planning Organizations in resiliency to align with their long-term visioning efforts
- Explore feasibility of unique approaches such as resiliency special districts or “zones”
- Increase cross-sector collaboration, e.g., integrated water management plans
- Establish a peer-to-peer network of communities that have been through disasters to support similar type communities on why resiliency is important
- Partner with Colorado Municipal League, Colorado Counties Inc., and the Special District Association to educate and leverage their membership

Public Investment

Limited public dollars create the need for smarter investments for higher returns. These discussions were similar to collaboration and P3; however, they were focused specifically on how to get higher value from the dollars and programs in existence. Again, there are several good examples of high value

being gained from public investment that were noted in the discussion. Building on this assessment of existing examples, along with understanding barriers, the following ideas were generated to better leverage public investments either through efficiency, larger impact or improving access to other funds:

- Expand, coordinate and align advocacy and funding requests to federal agencies
- Make informed (and better) investments through use of planning and analysis that is tailored for action
- Create a culture of resiliency that understands and advocates for public (and other) investment
- Advance multi-purpose infrastructure, e.g., river restoration is also public recreation and economic development
- Partner with the engineering community to identify barriers (often based on outdated standards) or opportunities for innovation in design and implementation practices
- Understand the consequence of loss in any sector
- Align the administration of resilience between state agencies
- Establish expertise at the State to support review of (federal) grant applications that improves probability of success
- Create a sustainable funding source for resiliency actions that is statewide, flexible and adaptable over time
- Fund low-dollar, higher-risk projects that serve to advance innovation to leverage high returns
- Identify regional resilience representatives or tech support teams

- Conduct risk assessments and then fill the gaps based on the biggest needs

Public/Private Partnerships

The P3 discussion was focused specifically on how to leverage partnerships and relationships with the private sector. While the private sector came up within the other group discussions, this focus area explored creative ways to engage the private sector, starting with creating a common understanding on what is a P3 and why it is beneficial. The key ideas and outcomes are:

- Establish peer-to-peer learning opportunities within private sector
- Engage professional associations in high-level strategy sessions from the onset
- Explore enabling legislation at state and local levels to encourage P3s
- Create a resilience tax credit for infrastructure or housing, similar to LIHTCs
- Explore and leverage the market for innovative finance tools such as resilience bonds and impact investing
- Partner with utilities on distributed power generation
- Develop sample standardized resiliency language for construction RFPs
- Engage the reinsurance industry
- Engage nonprofit funders to integrate resiliency into their funding portfolio
- Engage mortgage lenders to expand or add resilience promoting products
- Expand training within the trades through the design and construction associations
- Engage small businesses through Chamber associations and SBDCs

Leveraging - Group Response:

Following the report-out from all focus areas, the full group was engaged one final time to assist with identifying priorities for the CRRO and the State and what they could do to advance the ideas generated.

What should the CRRO's priorities be to advance leveraging?

- Aggressively advocate to federal government and congressional delegation for funding support to Colorado
- Work to include resiliency in every (relevant) plan that is done at state and local levels
- Remain vigilant in seeking innovative financing
- Advance actions that integrate resiliency into state programs and funding
- Partner with legal community to understand P3 best practices
- Look for state and federal partnering opportunities
- Create a roster of financial “wizards” to help with bank engagement and public private strategies
- Serve as a clearinghouse for resiliency funding opportunities
- Support and facilitate collaboration, e.g., Colorado Resiliency Working Group
- Advocate for private sector committee on Homeland Security Advisory Council

What did participants say they could do to promote leveraging?

- Continue to integrate resiliency into daily work, and comprehensive and local plans
- Explore how energy districts can address resiliency
- Advocate for CRRO role and provide information about a foundation interested in resiliency
- Advance the understanding of resilience within local groups
- Integrate resiliency into state agency project selection and programming activities
- Serve as a proving ground for city/neighborhood applications
- Build social cohesion in local areas
- Serve as a communication link between federal and state agencies regarding state needs and what the federal government can provide
- Ensure that resiliency ideas are on the front end of recovery operations
- Work with economic development community (state, local, private) to integrate the private sector and resiliency investments



Closing Round

The participants provided feedback on the value of their day and how they would like to be engaged moving forward. A few summary themes are provided below.

Today's value:

- Amazed at talent in Colorado and its leadership
- Re-engaged to creatively think outside the box
- Expanded ideas about what state agencies can do
- Integrated thinking and added perspective due to the diversity of the group
- Raised an understanding of multiple levels of work and interdependencies
- Elevated the need for a coordinating entity
- Reinforced a commitment to work with agencies in the room
- Broadened the perspective of what is happening throughout state

How would participants like to be engaged going forward?

- Serve as a source and point of contact for FEMA
- Use Colorado as model and test bed
- Bring focus and facilitate forward movement
- Provide perspective
- Look for partner opportunities
- Share lessons learned
- Shape approaches and goals



Resiliency Stakeholder Strategy Session Recommendations

The stakeholder strategy session that is summarized in this report resulted in a few key themes and recommendations from participants that are based on concepts which repeatedly showed up in some form as a priority during various group report outs and discussions. Through the brief report that follows, the CRRO seeks to capture input as accurately and completely as possible. However, it does not do full justice to the extensive discussions and deep thought that stakeholders provided throughout the day. The facilitation team captured stakeholder input on newsprint and through detailed notes. This information will continue to be used as a reference for the CRRO as it develops more detailed plans for the COResiliency Program and works with other state agencies to advance resiliency actions across the state. The following recommendations (which are not listed in order of priority), are based on analysis of stakeholder input, are directed to the State of Colorado’s collective resiliency efforts and will also be used by the CRRO to guide the development of the COResiliency Program.

<i>Recommendation Topics</i>
Public funding criteria
Public-private partnerships
State policies and programs
Public investment
Resiliency Hub

- 1. Make resilience a criterion for state public funding.** Leveraging existing public dollars to achieve multiple benefits and maximize outcomes is the first place to find “new” money. All state funding resources should be working in sync with goals that include resiliency as a factor in making good investment decisions. Where possible, barriers to resilient outcomes should be identified and removed. The State has the potential to influence the market toward increased resiliency by building principles from the Framework into its evaluation criteria. This approach could also create a model for the private sector and other public entities to follow.
- 2. Integrate resiliency into all state agency policies and programs.** All state agencies, through the Colorado Resiliency Working Group, should work in collaboration to integrate resiliency into their programs and policies. This goes beyond funding criteria to ensuring that state agencies are working in tandem and with a consistent level of support for resiliency to send a clear and united message to federal and local governments, and private sector.
- 3. Incentivize private sector involvement.** The private sector is viewed as a high-value, untapped resource with mutual interest in advancing resiliency throughout the state. Whether it is the tourism industry, real estate developers and insurers, engineering firms or small businesses - many private sector businesses bring a wealth of knowledge, may be at risk, or have a strong interest in community

stewardship and could realize the potential for significant value add through increased engagement in resiliency efforts. Fostering public - private partnerships could advance best practices in multiple areas, from design and construction to new technologies and business. Similar to other complex challenges, partnerships in resilience could drive the market toward new innovative solutions and potential new business opportunities.

- 4. Increase investment in resiliency and mitigation strategies, systems and development practices.** Investment activity that prevents or reduces impact provides lasting benefits and high returns in losses avoided. The COResiliency Program concept provides an opportunity for innovative and new market strategies. New market strategies often require public support to reduce investment risk until these new strategies and their benefits are proven and accepted in the market as having value. Through COResiliency’s strategic investments in the following priority areas, Colorado would be positioned to be a market leader and to proactively take action that breaks the state out of the constant disaster response and recovery cycle.

a. **Wildfire and drought mitigation strategies.**

Recent observed trends and the scientific community both point to a future reality of intensified drought cycles and water shortages that degrade forest health and increase the risk of wildfires. Colorado’s continuing brisk pace of growth may intensify those challenges. Current federal government spending tends to focus more on investment in response and recovery rather than mitigation and resiliency. The State has the potential to lead the way in applying holistic mitigation and adaptation strategies that recognize the interconnection between these growing issues and their impact on society and the state’s economy. All efforts should be closely coordinated with the Colorado Water Plan and include local entities working on both drought and flood mitigation.

b. **Health & Social networks and systems.** The growth in Colorado’s population potentially creates an increasing burden on health, social and education systems which serve as the foundation of most communities and their ability to easily recover from sudden shocks. These systems must expand in proportion to population growth through education, planning and implementation of strategies that build a culture of resilience throughout Colorado.

c. **Affordable housing development that is designed and constructed for resiliency.** Significant population growth is predicted for Colorado that will increase the strain on an already short supply of affordable housing options. A coordinated effort across all entities engaged in housing development, and the continued integration of resiliency concepts, would ensure that any new or rehabilitated housing is located, designed and constructed in a manner that reduces stress on communities, reduces vulnerability when disasters do strike, and creates investments that will endure over time as future shocks occur. Through enhanced public-private partnerships, COResiliency can serve as a resource to further integrate resilient design into affordable housing efforts.

d. **Flood mitigation and resiliency strategies.** Watersheds are an asset that provide economic, environmental, recreational and cultural benefits to communities throughout Colorado. However, the 2013 floods put into stark terms the risks faced by Colorado communities from flooding. At the same time, the resources dedicated to flood

recovery from federal, state and local agencies have not only helped to build back communities, they have provided the opportunity for innovations in risk reduction and resiliency that will benefit Colorado in the years ahead. As the funding from the recovery decreases, it will be important to sustain momentum and continue to invest in the watershed resilience and flood mitigation work being conducted by the State, local entities, watershed coalitions and others. Green infrastructure and other nature-based best practice solutions that leverage rivers as assets should be the new standard. The State should prioritize investment in areas where there is local support for resilient land use practices and codes that work in conjunction with resilient design practices to advance best practices. The State should also continue to empower and share local efforts to strengthen land use practices that improve alignment between resiliency principles and land use codes in all localities. Just as the cycle of drought, fires and flooding will continue, so should the integration of investment in mitigation efforts that tie these solutions together.

5. **Create a Resiliency Hub.** Advancing resiliency within state agencies, in communities across the state and through stronger partnerships with the private sector and the federal government is a full-time effort that requires a constant champion and centralized resources. Changing practices and behavior is not easy, it takes time and diligence with continual coaching and coordination of efforts to make progress. A state-based Resiliency Hub would not pre-empt the work of others in this area; it would coordinate, leverage and support the efforts of all. The form and function of the Hub should include resources on best practices and others materials to grow knowledge and actions. Through a coordinated communications and education effort, citizens would come to understand “what’s in it for me,” why they should take action, and know what to do at the individual level. The Hub should also serve as a resource to seek funding and advocate for best in class resiliency projects and programs. The need for resiliency action will be ongoing and cannot be sidelined until the next big disaster. Making resiliency an integrated part of the culture of Colorado will take a generation and beyond, due to the continual inflow of new people and new generations of leadership. A state Resiliency Hub would be a constant that everyone could count on as the world changes quickly around them.



COLORADO
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