



**ECONOMIC RECOVERY & RESILIENCY PLAN**  
FOR SANDOVAL, BERNALILLO, VALENCIA, TORRANCE, & SOUTHERN SANTA FE COUNTIES

# Appendix

JUNE 2022



# ECONOMIC RECOVERY & RESILIENCY PLAN

FOR SANDOVAL, BERNALILLO, VALENCIA, TORRANCE, & SOUTHERN SANTA FE COUNTIES

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# EXISTING PLANNING DOCUMENTS

The Mid-Region has several existing planning documents that address resiliency issues and hazard mitigation management. Those documents were reviewed as part of the economic conditions and natural and man-made hazard assessments. Many of the documents are critical additional

resources and address resiliency challenges in their respective areas. *“Figure 1. Priority Threats and Challenges”* lists those documents and their focus areas and links them to their source. Most of the documents listed here also identify goals and strategies that supplement this Plan’s goals

**FIGURE 1. EXISTING AND RELATED PLANNING DOCUMENTS**

Plan Name	Description	Link	Last Update
<b>Economic Development</b>			
Comprehensive Economic Development Strategies (CEDS)	A blueprint for growing a regional, local, collaborative economy. It is a living document, adjusted annually and reevaluated fully every five years. The process builds leadership, enhances cooperation, and fosters public ownership and enthusiasm.	<a href="https://www.mrcog-nm.gov/357/Five-Year-Economic-Development-Strategy-">https://www.mrcog-nm.gov/357/Five-Year-Economic-Development-Strategy-</a>	2020
Sandoval County Economic Development Action Strategy	The goal of this study is to provide an in-depth assessment of the competitive position of Sandoval County and its labor shed and to recommend target industries on which the SEA can most effectively focus its activities.	<a href="https://www.sandovalcountynm.gov/wp-content/uploads/2021/03/Economic-Development-Action-Strategy-FINAL-2019-1.pdf">https://www.sandovalcountynm.gov/wp-content/uploads/2021/03/Economic-Development-Action-Strategy-FINAL-2019-1.pdf</a>	2019
Torrance - Estancia Valley Economic Development Association Annual Report	An annual report of the economic development for the Torrance - Estancia Valley area. It summarizes organizational activity, projects from the prior year, jobs that the EVDA has recruited and assisted with, income/expense graphs, and budget presentations.	<a href="https://evedanm.com/wp-content/uploads/2019/06/2018-annual-report.pdf">https://evedanm.com/wp-content/uploads/2019/06/2018-annual-report.pdf</a>	2018
New Mexico Statewide Plan (Executive Summary) “Empower and Collaborate - New Mexico’s Economic Path Forward”	A summary of findings and recommendations from the Center of Innovations Strategy and Policy to reimagine New Mexico’s approach to economic development, beginning with building the capabilities necessary to facilitate statewide collaboration on common goals, like economic growth, inclusion, and workforce readiness	<a href="https://eddstateplan.com/">https://eddstateplan.com/</a>	2021
Building on the Past, Facing the Future: Renewing the Creative Economy of New Mexico	A report by the UNM Bureau of Business and Economic Research assessing New Mexico’s massive Arts and cultural sector that provides analysis and recommendations for its improvement and growth.	<a href="https://www.newmexicoculture.org/assets/files/reports/dca-bber-report.pdf">https://www.newmexicoculture.org/assets/files/reports/dca-bber-report.pdf</a>	2014
Albuquerque Economic Development’s 2021 and Beyond	This strategic plan identifies opportunities to build a diverse, competitive, and sustainable economy. The plan provides focus areas and associated objectives and strategies. The strategies were developed based on research as well as active engagement and input from a broad range of the public, private and civic.	<a href="https://www.abq.org/wp-content/uploads/2022/01/AED103_2021StrategicPlan_FINAL_Web.pdf">https://www.abq.org/wp-content/uploads/2022/01/AED103_2021StrategicPlan_FINAL_Web.pdf</a>	2021
City of Albuquerque Economic Development’s THRIVE 2021 Plan	THRIVE 21 is a post-pandemic economic recovery plan for the City of Albuquerque. It identifies strategies to improve the economy towards a healthy, resilient, innovative, and vibrant economy.	<a href="https://www.cabq.gov/economicdevelopment/documents/ed_thrive-report-edits-final-digital-01.pdf">https://www.cabq.gov/economicdevelopment/documents/ed_thrive-report-edits-final-digital-01.pdf</a>	2021

**FIGURE 1. EXISTING AND RELATED PLANNING DOCUMENTS**

Plan Name	Description	Link	Last Update
Southern Torrance County Economic Development Plan	<i>This plan creates a vision for the economies of communities in southern Torrance County. It integrates the region's strengths, weaknesses, opportunities, threats, and economic development goals for southern Torrance County. These specific projects help achieve those goals and the resources available to support the projects.</i>	<a href="https://www.torrancecountynm.org/uploads/Downloads/Grant%20Coordinator/Southern%20Torrance%20County%20Economic%20Development%20Plan%202020.pdf">https://www.torrancecountynm.org/uploads/Downloads/Grant%20Coordinator/Southern%20Torrance%20County%20Economic%20Development%20Plan%202020.pdf</a>	
<b>Hazard Mitigation Plans</b>			
New Mexico State Hazard Mitigation Plan	<i>A cooperative plan between state agencies discussing the process used to identify, profile, and assess natural hazards in New Mexico, and the actions that should be taken to mitigate them.</i>	<a href="https://drought.unl.edu/archive/plans/GeneralHazard/state/NM_2018.pdf">https://drought.unl.edu/archive/plans/GeneralHazard/state/NM_2018.pdf</a>	2018
Albuquerque/ Bernalillo County 2022 Hazard Mitigation Plan	<i>A comprehensive plan to reduce or eliminate long-term risk to people and property from disasters or hazard events and maintain the participating jurisdictions' eligibility for certain federal disaster assistance.</i>	<a href="https://www.cabq.gov/office-of-emergency-management/resources/hazard-mitigation-plan">https://www.cabq.gov/office-of-emergency-management/resources/hazard-mitigation-plan</a>	2022
State of NM All Hazard Emergency Operations Plan	<i>A comprehensive plan to establish the New Mexico Emergency Operations System which organizes the state's response to emergencies and disasters while providing for the safety and welfare of its citizens. It sets forth lines of authority, responsibilities and organizational relationships, and shows how all actions will be coordinated among the State of New Mexico and federal and local governments.</i>	<a href="https://www.animallaw.info/sites/default/files/New%20Mexico%20All%20Hazard%20Emergency%20Response%20Plan.pdf">https://www.animallaw.info/sites/default/files/New%20Mexico%20All%20Hazard%20Emergency%20Response%20Plan.pdf</a>	2013
Sandoval County Natural Hazards Mitigation Plan	<i>This plan identifies a roadmap for greater disaster resistance inline with the character and needs of the community and region. Risk and capability assessments, hazard types, mitigation goals, actions/projects, and monitoring are included in this plan.</i>	<a href="https://www.sandovalcountynm.gov/wp-content/uploads/2019/10/NationalHazardsMitigationPlan2019.pdf">https://www.sandovalcountynm.gov/wp-content/uploads/2019/10/NationalHazardsMitigationPlan2019.pdf</a>	2019
Valencia County Comprehensive Emergency Management Plan	<i>A comprehensive plan that outlines actions to be taken by local government officials and cooperating private or volunteer organizations to prevent avoidable disasters and reduce the vulnerability of Valencia County residents to any natural, technological, and/or man-made emergency or disasters that may strike, establish capabilities for protecting citizens from the effects of disasters, respond effectively to the actual occurrence of disasters, and provide for recovery in the aftermath of any major emergency or disaster involving extensive damage within the county.</i>	<a href="https://www.co.valencia.nm.us/171/Emergency-Management">https://www.co.valencia.nm.us/171/Emergency-Management</a>	2014
Torrance County Hazard Mitigation Plan	<i>This Plan analyzes natural hazards presenting the greatest threat to Torrance County. It aims to organize people and resources to produce long-term and recurring benefits that help break the repetitive cycle of disaster loss. The plan includes a detailed characterization of relevant natural hazards; a risk assessment; a set of goals, objectives, and actions; and a detailed strategy for implementation and monitoring results.</i>	<a href="https://espassociates-my.sharepoint.com/personal/nslaughter_espassociates_com/_layouts/15/onedrive">https://espassociates-my.sharepoint.com/personal/nslaughter_espassociates_com/_layouts/15/onedrive</a>	2016
Santa Fe County Hazard Mitigation Plan	<i>This plan aims to guide and coordinate mitigation activities and decisions for local land use policy in the future. Risk and capability assessments, hazard types, mitigation goals, actions/projects, and monitoring are included in this plan.</i>	<a href="https://www.santafecountynm.gov/media/files/">https://www.santafecountynm.gov/media/files/</a>	2016

**FIGURE 1. EXISTING AND RELATED PLANNING DOCUMENTS**

Plan Name	Description	Link	Last Update
<b>Water Resource</b>			
Bernalillo County Water Conservation Plan FY21-25	This is an update to the Bernalillo County Water Conservation Plan to promote the efficient and responsible use of the County's water resources. It takes into consideration current data on water use in Bernalillo County, an evaluation of the components of the existing Water Conservation Program, current best practices in water efficiency, and stakeholder input.	<a href="https://www.bernco.gov/public-works/public-works-services/water-wastewater-stormwater/water-conservation-program/">https://www.bernco.gov/public-works/public-works-services/water-wastewater-stormwater/water-conservation-program/</a>	
Los Lunas Forty Year Plan to Acquire and Hold Water Rights	A plan that describes the water needs of Los Lunas through 2050 and details where water supplies will come from, and what needs to be done to insure those supplies. The plan was intended to support the Village's application for a comprehensive water rights permit.	<a href="https://www.loslunasnm.gov/DocumentCenter/View/8981/Forty-Year-Plan-to-Acquire-and-Hold-Water-Rights?bidId=">https://www.loslunasnm.gov/DocumentCenter/View/8981/Forty-Year-Plan-to-Acquire-and-Hold-Water-Rights?bidId=</a>	
Estancia Basin Regional Water Plan	A plan that provides new and changed information related to water planning in the Estancia Basin region and to evaluate projections of future water supply and demand for the region using a common technical approach applied to all 16 planning regions statewide. Accordingly, this regional water plan (RWP) update summarizes key information in the 1999 and 2010 plans and provides updated information regarding changed conditions and additional data that have become available.	<a href="http://www.ose.state.nm.us/Planning/RWP/Regions/13_Estancia/2016/Reg%2013_Estancia%20Basin%20Regional%20Water%20Plan%202016_November%202016.pdf">http://www.ose.state.nm.us/Planning/RWP/Regions/13_Estancia/2016/Reg%2013_Estancia%20Basin%20Regional%20Water%20Plan%202016_November%202016.pdf</a>	2016
Valencia County Flood Insurance Study	Revises and updates information on the existence and severity of flood hazards in the geographic area of Valencia County, New Mexico. Aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the communities in their efforts to promote sound floodplain management.	<a href="https://www.loslunasnm.gov/DocumentCenter/View/992/Flood-Insurance-Study">https://www.loslunasnm.gov/DocumentCenter/View/992/Flood-Insurance-Study</a>	2010
<b>Wildfire</b>			
Bernalillo East Mountain Community Wildfire Protection Plan Update	An update to the previous plan. Discusses the current objectives and strategies for fire mitigation and fighting and addresses "current" conditions and policies, hazards, communication, public land, thinning and prescribed fires, preparations, and other topics.	<a href="https://www.emnrd.nm.gov/sfd/wp-content/uploads/sites/4/2015_EastMountainCWPPcomplete.pdf">https://www.emnrd.nm.gov/sfd/wp-content/uploads/sites/4/2015_EastMountainCWPPcomplete.pdf</a>	
Torrance County Community Wildfire Protection Plan Update	An updated plan to address the ongoing wildfire threat to communities in the County; it provides recommendations to abate catastrophic wildfires and minimize their impacts to communities. Public education forms an important component of this plan as an attempt to highlight common misconceptions of fire risk. The importance of public education and outreach in conjunction with recommended physical actions to reduce hazardous fuels are outlined in this plan.	<a href="http://www.claunchpinto.org/projects/wildfire-protection/2016_update-torrance-county.pdf">http://www.claunchpinto.org/projects/wildfire-protection/2016_update-torrance-county.pdf</a>	2016
Valencia County Community Wildfire Protection Plan	Valencia County Community Wildfire Protection Plan (VCCWPP) addresses hazards and risks of wildland fire throughout Valencia County (hereafter referred to as the County) and makes recommendations for fuel reduction projects, public outreach and education, structural ignitability reduction, and fire response capabilities. Meant to assist in protecting human life and reducing property loss due to wildfire	<a href="https://www.swca.com/sites/default/files/valencia_county_cwpp_final_draft_0.Pdf">https://www.swca.com/sites/default/files/valencia_county_cwpp_final_draft_0.Pdf</a>	2018

**FIGURE 1. EXISTING AND RELATED PLANNING DOCUMENTS**

Plan Name	Description	Link	Last Update
<b>Other Planning Documents</b>			
Sandoval County Comprehensive Plan	A statement intended to govern development decisions on lands subject to Sandoval County. Establishes a framework for future decisions regarding land use, transportation, and public services.	<a href="https://www.sandovalcountynm.gov/wp-content/uploads/2017/06/cprk.pdf">https://www.sandovalcountynm.gov/wp-content/uploads/2017/06/cprk.pdf</a>	
Valencia County Comprehensive Plan	A policy guide that documents existing conditions across Valencia County, as well as long term needs and priorities, and can be used to inform investment choices and decisions around land use and development proposals. This Plan focuses primarily on unincorporated portions of Valencia County and the services provided by the County government. However, the document considers trends and economic activity in places such as Los Lunas and Albuquerque that affect Valencia County residents.	<a href="https://www.co.valencia.nm.us/325/Comprehensive-Plan">https://www.co.valencia.nm.us/325/Comprehensive-Plan</a>	2022
Torrance County Comprehensive Plan	This plan places its emphasis on regional land use activities and their impacts on the area's economy, character, and governmental functions. It guides decisions making concerning the public programs and projects that affect the development of Torrance County.	<a href="https://www.mrcog-nm.gov/DocumentCenter/View/3124/Torrance-County-Comprehensive-Plan-August-2003-PDF">https://www.mrcog-nm.gov/DocumentCenter/View/3124/Torrance-County-Comprehensive-Plan-August-2003-PDF</a>	2003
2015 Santa Fe County Sustainable Growth Management Plan	This Plan provides a comprise direction for planning, environmental protection, public facilities and services, fiscal planning, land use, housing, resource conservation, renewable energy and green development policies, administrative regulation, and development application processes.	<a href="https://www.santafecountynm.gov/media/files/">https://www.santafecountynm.gov/media/files/</a>	2015
Bernalillo County Comprehensive Plan	This plan details the courses of action for urban conservation, development, and environmental management. It aims to promote harmonious and healthy development within Bernalillo County, and the cities within.	<a href="https://www.bernco.gov/planning/wp-content/uploads/sites/58/2021/04/CompPlan-Complete-010914.pdf">https://www.bernco.gov/planning/wp-content/uploads/sites/58/2021/04/CompPlan-Complete-010914.pdf</a>	2013

# SUPPORTING ECONOMIC DATA

## VALENCIA CLUSTER

**FIGURE 3. VALENCIA CLUSTER HOUSEHOLD INCOMES**

2019 ANNUAL INCOME CATEGORY	NUMBER OF HOUSEHOLDS	PERCENT OF HOUSEHOLDS
<b>VALENCIA CLUSTER</b>		
<i>Less than \$25,000</i>	6,481	27.02%
<b>\$25,000 - \$34, 999</b>	2,569	10.71%
<b>\$35,000 - \$49,999</b>	3,468	14.46%
<b>\$50,000 - \$74,999</b>	4,664	19.45%
<b>\$75,000 - \$99, 999</b>	2,912	12.14%
<b>\$100,000 - \$124,999</b>	1,577	6.58%
<b>\$125,000 - \$149,999</b>	1,065	4.44%
<i>over \$150,000</i>	1,247	5.2%
<b>STATE OF NEW MEXICO</b>		
<i>Less than \$25,000</i>	203,511	26.08%
<b>\$25,000 - \$34, 999</b>	84,129	10.78%
<b>\$35,000 - \$49,999</b>	104,113	13.34%
<b>\$50,000 - \$74,999</b>	136,030	17.43%
<b>\$75,000 - \$99, 999</b>	89,860	11.52%
<b>\$100,000 - \$124,999</b>	60,219	7.72%
<b>\$125,000 - \$149,999</b>	35,207	4.51%
<i>over \$150,000</i>	67,180	8.61%

Source: Census Data aggregated by: 2015-2019 Data

**FIGURE 4. VALENCIA CLUSTER OCCUPATIONS**

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>13,295</b>	<b>53.2%</b>	<b>61.70%</b>	<b>0.86</b>
Management	2,364	9.5%	10.70%	0.93
Business/Financial	1,033	4.1%	4.50%	0.80
Computer/Mathematical	401	1.6%	2.60%	0.53
Architecture/Engineering	354	1.4%	2.20%	0.70
Life/Physical/Social Sciences	187	0.7%	1.70%	0.78
Community/Social Services	504	2.0%	2.40%	1.11
Legal	225	0.9%	1.20%	0.75
Education/Training/Library	1,188	4.8%	6.70%	0.75
Arts/Design/Entertainment	252	1.0%	1.90%	0.56
Healthcare Practitioner	1,644	6.6%	7.00%	1.05
Sales and Sales Related	2,186	8.7%	9.40%	0.90
Office/Administrative Support	2,957	11.8%	11.40%	0.89
<b>Blue Collar</b>	<b>6,817</b>	<b>27.3%</b>	<b>20.40%</b>	<b>1.28</b>
Farming/Fishing/Forestry	164	0.7%	0.80%	0.88
Construction/Extraction	2,320	9.3%	6.10%	1.72
Installation/Maintenance/Repair	1,239	5.0%	3.50%	1.61
Production	681	2.7%	3.20%	0.46
Transportation/Material Moving	2,413	9.7%	6.80%	1.59
<b>Services</b>	<b>4,886</b>	<b>19.5%</b>	<b>17.90%</b>	<b>1.17</b>
Healthcare Support	1,297	5.2%	4.30%	1.93
Protective Service	874	3.5%	2.80%	1.59
Food Preparation/Serving	1,002	4.0%	4.90%	0.91
Building Maintenance	1,290	5.2%	3.90%	1.33
Personal Care/Service	423	1.7%	1.80%	0.47
<b>Total</b>	<b>24,998</b>	<b>100%</b>		

Source: Esri 2021

**FIGURE 5. VALENCIA CLUSTER BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

BUSINESS (NAICS DESCRIPTION)	NUMBER	PERCENT
<i>Agriculture, Forestry, Fishing &amp; Hunting</i>	7	0.5%
<i>Mining</i>	1	0.1%
<i>Utilities</i>	7	0.5%
<i>Construction</i>	96	6.8%
<i>Manufacturing</i>	30	2.1%
<i>Wholesale Trade</i>	40	2.9%
<i>Retail Trade</i>	234	16.7%
<i>Motor Vehicle &amp; Parts Dealers</i>	31	2.2%
<i>Furniture &amp; Home Furnishings Stores</i>	4	0.3%
<i>Electronics &amp; Appliance Stores</i>	2	0.1%
<i>Bldg Material &amp; Garden Equipment &amp; Supplies Dealers</i>	24	1.7%
<i>Food &amp; Beverage Stores</i>	35	2.5%
<i>Health &amp; Personal Care Stores</i>	19	1.4%
<i>Gasoline Stations</i>	18	1.3%
<i>Clothing &amp; Clothing Accessories Stores</i>	14	1.0%
<i>Sport Goods, Hobby, Book, &amp; Music Stores</i>	11	0.8%
<i>General Merchandise Stores</i>	20	1.4%
<i>Miscellaneous Store Retailers</i>	30	2.1%
<i>Nonstore Retailers</i>	26	1.9%
<i>Transportation &amp; Warehousing</i>	29	2.1%
<i>Information</i>	30	2.1%
<i>Finance &amp; Insurance</i>	88	6.3%
<i>Central Bank/Credit Intermediation &amp; Related Activities</i>	49	3.5%
<i>Securities, Commodity Contracts &amp; Other Financial</i>	5	0.4%
<i>Insurance Carriers &amp; Related Activities</i>	34	2.4%
<i>Real Estate, Rental &amp; Leasing</i>	83	5.9%
<i>Professional, Scientific &amp; Tech Services</i>	87	6.2%
<i>Legal Services</i>	20	1.4%
<i>Management of Companies &amp; Enterprises</i>	0	0%
<i>Administrative &amp; Support &amp; Waste Management &amp; Remediation</i>	33	2.4%
<i>Educational Services</i>	38	2.7%
<i>Health Care &amp; Social Assistance</i>	137	9.8%
<i>Arts, Entertainment &amp; Recreation</i>	27	1.9%
<i>Accommodation &amp; Food Services</i>	111	7.9%
<i>Accommodation</i>	10	0.7%
<i>Food Services &amp; Drinking Places</i>	101	7.2%
<i>Other Services (except Public Administration)</i>	191	13.6%
<i>Automotive Repair &amp; Maintenance</i>	45	3.2%
<i>Public Administration</i>	75	5.3%
<i>Unclassified Establishments</i>	59	4.2%
<b>Total</b>	<b>1,403</b>	<b>100%</b>

Source: Esri forecasts for 2021 and 2026.

**FIGURE 6. VALENCIA CLUSTER INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<i>Agriculture/Forestry/Fishing</i>	378	1.5%	1.80%	1.15
<i>Mining/Quarrying/Oil &amp; Gas</i>	139	0.6%	2.00%	1.2
<i>Construction</i>	3,220	12.9%	7.30%	1.74
<i>Manufacturing</i>	915	3.7%	4.00%	0.35
<i>Wholesale Trade</i>	418	1.7%	1.70%	0.68
<i>Retail Trade</i>	2,891	11.6%	10.90%	1.2
<i>Transportation/Warehousing</i>	1,683	6.7%	3.80%	1.43
<i>Utilities</i>	141	0.6%	1.00%	0.67
<i>Information</i>	211	0.8%	1.40%	0.44
<i>Finance/Insurance</i>	1,106	4.4%	3.40%	0.90
<i>Real Estate/Rental/Leasing</i>	438	1.8%	1.70%	0.86
<i>Professional/Scientific/Tech</i>	1,087	4.3%	8.20%	0.52
<i>Management of Companies</i>	27	0.1%	0.00%	1
<i>Admin/Support/Waste Management</i>	855	3.4%	3.40%	0.87
<i>Educational Services</i>	2,195	8.8%	10.40%	0.91
<i>Health Care/Social Assistance</i>	4,044	16.2%	16.50%	1.07
<i>Arts/Entertainment/Recreation</i>	423	1.7%	1.70%	1.06
<i>Accommodation/Food Services</i>	1,468	5.9%	6.90%	1.05
<i>Other Services (Excluding Public)</i>	1,169	4.7%	5.30%	1.02
<i>Public Administration</i>	2,191	8.8%	8.40%	1.83
<b>Total</b>	<b>24,999</b>	<b>100%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026.

## NATIVE AMERICAN COMMUNITIES CLUSTER

FIGURE 7. NATIVE AMERICAN COMMUNITIES OCCUPATIONS

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>2,581</b>	<b>55.9%</b>	<b>61.70%</b>	<b>0.90</b>
Management	436	9.4%	10.70%	0.92
Business/Financial	182	3.9%	4.50%	0.76
Computer/Mathematical	48	1.0%	2.60%	0.33
Architecture/Engineering	88	1.9%	2.20%	0.95
Life/Physical/Social Sciences	58	1.3%	1.70%	1.44
Community/Social Services	158	3.4%	2.40%	1.89
Legal	37	0.8%	1.20%	0.67
Education/Training/Library	289	6.3%	6.70%	0.98
Arts/Design/Entertainment	90	1.9%	1.90%	1.06
Healthcare Practitioner	267	5.8%	7.00%	0.92
Sales and Sales Related	328	7.1%	9.40%	0.73
Office/Administrative Support	600	13.0%	11.40%	0.98
<b>Blue Collar</b>	<b>1,024</b>	<b>22.0%</b>	<b>20.40%</b>	<b>1.03</b>
Farming/Fishing/Forestry	54	1.2%	0.80%	1.50
Construction/Extraction	353	7.6%	6.10%	1.41
Installation/Maintenance/Repair	159	3.4%	3.50%	1.10
Production	175	3.8%	3.20%	0.64
Transportation/Material Moving	283	6.1%	6.80%	1.00
<b>Services</b>	<b>1,015</b>	<b>22.0%</b>	<b>17.90%</b>	<b>1.31</b>
Healthcare Support	237	5.1%	4.30%	1.89
Protective Service	201	4.4%	2.80%	2.00
Food Preparation/Serving	239	5.2%	4.90%	1.18
Building Maintenance	180	3.9%	3.90%	1.00
Personal Care/Service	158	3.4%	1.80%	0.94
<b>Total</b>	<b>4,620</b>	<b>100%</b>		

Source: Esri 2021

**FIGURE 8. NATIVE AMERICAN  
COMMUNITIES BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

<b>BUSINESS (NAICS DESCRIPTION)</b>	<b>NUMBER</b>	<b>PERCENT</b>
<i>Agriculture, Forestry, Fishing &amp; Hunting</i>	0	0%
<i>Mining</i>	0	0%
<i>Utilities</i>	0	0%
<i>Construction</i>	2	0%
<i>Manufacturing</i>	0	0%
<i>Wholesale Trade</i>	0	0%
<i>Retail Trade</i>	10	10.9%
<i>Motor Vehicle &amp; Parts Dealers</i>	1	0%
<i>Furniture &amp; Home Furnishings Stores</i>	1	1.6%
<i>Electronics &amp; Appliance Stores</i>	0	0%
<i>Bldg Material &amp; Garden Equipment &amp; Supplies Dealers</i>	1	1.6%
<i>Food &amp; Beverage Stores</i>	2	3.1%
<i>Health &amp; Personal Care Stores</i>	1	1.6%
<i>Gasoline Stations</i>	2	1.6%
<i>Clothing &amp; Clothing Accessories Stores</i>	0	0%
<i>Sport Goods, Hobby, Book, &amp; Music Stores</i>	0	0%
<i>General Merchandise Stores</i>	0	0%
<i>Miscellaneous Store Retailers</i>	1	1.6%
<i>Nonstore Retailers</i>	1	0%
<i>Transportation &amp; Warehousing</i>	5	4.7%
<i>Information</i>	4	3.1%
<i>Finance &amp; Insurance</i>	2	1.6%
<i>Central Bank/Credit Intermediation &amp; Related Activities</i>	2	1.6%
<i>Securities, Commodity Contracts &amp; Other Financial</i>	0	0%
<i>Insurance Carriers &amp; Related Activities</i>	0	0%
<i>Real Estate, Rental &amp; Leasing</i>	5	4.7%
<i>Professional, Scientific &amp; Tech Services</i>	1	1.6%
<i>Legal Services</i>	0	0%
<i>Management of Companies &amp; Enterprises</i>	0	0%
<i>Administrative &amp; Support &amp; Waste Management &amp; Remediation</i>	2	1.6%
<i>Educational Services</i>	9	3.2%
<i>Health Care &amp; Social Assistance</i>	25	26.6%
<i>Arts, Entertainment &amp; Recreation</i>	4	3.1%
<i>Accommodation &amp; Food Services</i>	4	4.7%
<i>Accommodation</i>	1	1.6%
<i>Food Services &amp; Drinking Places</i>	3	3.1%
<i>Other Services (except Public Administration)</i>	9	7.8%
<i>Automotive Repair &amp; Maintenance</i>	0	0%
<i>Public Administration</i>	28	21.9%
<i>Unclassified Establishments</i>	3	4.7%
<b>Total</b>	<b>114</b>	<b>100%</b>

Source: Esri forecasts for 2021 and 2026.

**FIGURE 9. NATIVE AMERICAN COMMUNITIES INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<i>Agriculture/Forestry/Fishing</i>	87	1.9%	1.80%	1.46
<i>Mining/Quarrying/Oil &amp; Gas</i>	32	0.7%	2.00%	1.40
<i>Construction</i>	389	8.4%	7.30%	1.14
<i>Manufacturing</i>	178	3.9%	4.00%	0.37
<i>Wholesale Trade</i>	43	0.9%	1.70%	0.36
<i>Retail Trade</i>	516	11.2%	10.90%	1.15
<i>Transportation/Warehousing</i>	90	1.9%	3.80%	0.40
<i>Utilities</i>	35	0.8%	1.00%	0.89
<i>Information</i>	26	0.6%	1.40%	0.33
<i>Finance/Insurance</i>	65	1.4%	3.40%	0.29
<i>Real Estate/Rental/Leasing</i>	93	2.0%	1.70%	0.95
<i>Professional/Scientific/Tech</i>	161	3.5%	8.20%	0.43
<i>Management of Companies</i>	2	0%	0.00%	0
<i>Admin/Support/Waste Management</i>	110	2.4%	3.40%	0.62
<i>Educational Services</i>	443	9.6%	10.40%	0.99
<i>Health Care/Social Assistance</i>	826	17.9%	16.50%	1.19
<i>Arts/Entertainment/Recreation</i>	245	5.3%	1.70%	3.31
<i>Accommodation/Food Services</i>	204	4.4%	6.90%	0.79
<i>Other Services (Excluding Public)</i>	145	3.1%	5.30%	0.67
<i>Public Administration</i>	928	20.1%	8.40%	4.19
<b>Total</b>	<b>4,618</b>	<b>100%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026.

# SANDOVAL CLUSTER

FIGURE 10. SANDOVAL CLUSTER OCCUPATIONS

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>2,949</b>	<b>60.9%</b>	<b>61.70%</b>	<b>0.98</b>
Management	544	11.2%	10.70%	1.10
Business/Financial	363	7.5%	4.50%	1.47
Computer/Mathematical	60	1.2%	2.60%	0.40
Architecture/Engineering	71	1.5%	2.20%	0.75
Life/Physical/Social Sciences	40	0.8%	1.70%	0.89
Community/Social Services	238	4.9%	2.40%	2.72
Legal	26	0.5%	1.20%	0.42
Education/Training/Library	278	5.7%	6.70%	0.89
Arts/Design/Entertainment	71	1.5%	1.90%	0.83
Healthcare Practitioner	213	4.4%	7.00%	0.70
Sales and Sales Related	360	7.4%	9.40%	0.76
Office/Administrative Support	685	14.1%	11.40%	1.06
<b>Blue Collar</b>	<b>1,129</b>	<b>23.3%</b>	<b>20.40%</b>	<b>1.09</b>
Farming/Fishing/Forestry	6	0.1%	0.80%	0.12
Construction/Extraction	580	12.0%	6.10%	2.22
Installation/Maintenance/Repair	115	2.4%	3.50%	0.77
Production	164	3.4%	3.20%	0.58
Transportation/Material Moving	264	5.4%	6.80%	0.89
<b>Services</b>	<b>767</b>	<b>15.8%</b>	<b>17.90%</b>	<b>0.94</b>
Healthcare Support	154	3.2%	4.30%	1.19
Protective Service	149	3.1%	2.80%	1.41
Food Preparation/Serving	190	3.9%	4.90%	0.89
Building Maintenance	176	3.6%	3.90%	0.92
Personal Care/Service	98	2.0%	1.80%	0.56
<b>Total</b>	<b>4,845</b>	<b>100%</b>		

Source: Esri 2021

**FIGURE 11. SANDOVAL CLUSTER BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

BUSINESS (NAICS DESCRIPTION)	NUMBER	PERCENT
Agriculture, Forestry, Fishing & Hunting	4	0.8%
Mining	1	0.2%
Utilities	4	0.8%
Construction	37	7.0%
Manufacturing	16	3.0%
Wholesale Trade	16	3.0%
Retail Trade	95	18%
Motor Vehicle & Parts Dealers	9	1.7%
Furniture & Home Furnishings Stores	1	0.2%
Electronics & Appliance Stores	1	0.2%
Bldg Material & Garden Equipment & Supplies Dealers	11	2.1%
Food & Beverage Stores	15	2.8%
Health & Personal Care Stores	9	1.7%
Gasoline Stations	14	2.7%
Clothing & Clothing Accessories Stores	2	0.4%
Sport Goods, Hobby, Book, & Music Stores	3	0.6%
General Merchandise Stores	7	1.3%
Miscellaneous Store Retailers	10	1.9%
Nonstore Retailers	13	2.5%
Transportation & Warehousing	11	2.1%
Information	12	2.3%
Finance & Insurance	27	5.1%
Central Bank/Credit Intermediation & Related Activities	22	4.2%
Securities, Commodity Contracts & Other Financial	1	0.2%
Insurance Carriers & Related Activities	4	0.8%
Real Estate, Rental & Leasing	20	3.8%
Professional, Scientific & Tech Services	30	5.7%
Legal Services	3	0.6%
Management of Companies & Enterprises	0	0%
Administrative & Support & Waste Management & Remediation	7	1.3%
Educational Services	21	4%
Health Care & Social Assistance	37	7.0%
Arts, Entertainment & Recreation	6	1.1%
Accommodation & Food Services	58	11%
Accommodation	13	2.5%
Food Services & Drinking Places	45	8.5%
Other Services (except Public Administration)	48	9.1%
Automotive Repair & Maintenance	10	1.9%
Public Administration	54	10.2%
Unclassified Establishments	23	4.4%
<b>Total</b>	<b>527</b>	<b>100%</b>

Source: Esri forecasts for 2021 and 2026.

**FIGURE 12. SANDOVAL CLUSTER INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<i>Agriculture/Forestry/Fishing</i>	54	1.1%	1.80%	0.85
<i>Mining/Quarrying/Oil &amp; Gas</i>	52	1.1%	2.00%	2.20
<i>Construction</i>	696	14.4%	7.30%	1.95
<i>Manufacturing</i>	219	4.5%	4.00%	0.42
<i>Wholesale Trade</i>	70	1.4%	1.70%	0.56
<i>Retail Trade</i>	431	8.9%	10.90%	0.92
<i>Transportation/Warehousing</i>	133	2.7%	3.80%	0.57
<i>Utilities</i>	57	1.2%	1.00%	1.33
<i>Information</i>	50	1%	1.40%	0.56
<i>Finance/Insurance</i>	247	5.1%	3.40%	1.04
<i>Real Estate/Rental/Leasing</i>	70	1.4%	1.70%	0.67
<i>Professional/Scientific/Tech</i>	376	7.8%	8.20%	0.95
<i>Management of Companies</i>	2	0.1%	0.00%	0
<i>Admin/Support/Waste Management</i>	159	3.3%	3.40%	0.85
<i>Educational Services</i>	417	8.6%	10.40%	0.89
<i>Health Care/Social Assistance</i>	681	14.1%	16.50%	0.93
<i>Arts/Entertainment/Recreation</i>	106	2.2%	1.70%	1.38
<i>Accommodation/Food Services</i>	317	6.5%	6.90%	1.16
<i>Other Services (Excluding Public)</i>	165	3.4%	5.30%	0.74
<i>Public Administration</i>	575	11.2%	8.40%	2.33
<b>Total</b>	<b>4,845</b>	<b>100%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026.

## **EAST I-40 CLUSTER**

**FIGURE 13. EAST I-40 CLUSTER OCCUPATIONS**

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>5,414</b>	<b>67.50%</b>	<b>61.70%</b>	<b>1.09</b>
Management	990	12.30%	10.70%	1.21
Business/Financial	421	5.20%	4.50%	1.02
Computer/Mathematical	233	2.90%	2.60%	0.97
Architecture/Engineering	319	4.00%	2.20%	2
Life/Physical/Social Sciences	51	0.60%	1.70%	0.67
Community/Social Services	172	2.10%	2.40%	1.17
Legal	76	0.90%	1.20%	0.75
Education/Training/Library	597	7.40%	6.70%	1.16
Arts/Design/Entertainment	153	1.90%	1.90%	1.06
Healthcare Practitioner	810	10.10%	7.00%	1.6
Sales and Sales Related	728	9.10%	9.40%	0.94
Office/Administrative Support	864	10.80%	11.40%	0.81
<b>Blue Collar</b>	<b>1,541</b>	<b>19.20%</b>	<b>20.40%</b>	<b>0.9</b>
Farming/Fishing/Forestry	62	0.80%	0.80%	1
Construction/Extraction	527	6.60%	6.10%	1.22
Installation/Maintenance/Repair	267	3.30%	3.50%	1.06
Production	214	2.70%	3.20%	0.46
Transportation/Material Moving	471	5.90%	6.80%	0.97
<b>Services</b>	<b>1,071</b>	<b>13.30%</b>	<b>17.90%</b>	<b>0.8</b>
Healthcare Support	410	5.10%	4.30%	1.89
Protective Service	175	2.20%	2.80%	1
Food Preparation/Serving	174	2.20%	4.90%	0.5
Building Maintenance	205	2.60%	3.90%	0.67
Personal Care/Service	107	1.30%	1.80%	0.36
<b>Total</b>	<b>8,026</b>	<b>100.00%</b>		

Source: Esri 2021

**FIGURE 14. EAST I-40 CLUSTER BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

BUSINESS (NAICS DESCRIPTION)	NUMBER	PERCENT
<i>Agriculture, Forestry, Fishing &amp; Hunting</i>	4	0.70%
<i>Mining</i>	1	0.17%
<i>Utilities</i>	6	1.05%
<i>Construction</i>	37	6.45%
<i>Manufacturing</i>	16	2.79%
<i>Wholesale Trade</i>	21	3.66%
<i>Retail Trade</i>	100	17.42%
<i>Motor Vehicle &amp; Parts Dealers</i>	13	2.26%
<i>Furniture &amp; Home Furnishings Stores</i>	4	0.70%
<i>Electronics &amp; Appliance Stores</i>	2	0.35%
<i>Bldg Material &amp; Garden Equipment &amp; Supplies Dealers</i>	8	1.39%
<i>Food &amp; Beverage Stores</i>	12	2.09%
<i>Health &amp; Personal Care Stores</i>	5	0.87%
<i>Gasoline Stations</i>	12	2.09%
<i>Clothing &amp; Clothing Accessories Stores</i>	2	0.35%
<i>Sport Goods, Hobby, Book, &amp; Music Stores</i>	1	0.17%
<i>General Merchandise Stores</i>	9	1.57%
<i>Miscellaneous Store Retailers</i>	18	3.14%
<i>Nonstore Retailers</i>	14	2.44%
<i>Transportation &amp; Warehousing</i>	18	3.14%
<i>Information</i>	13	2.26%
<i>Finance &amp; Insurance</i>	23	4.01%
<i>Central Bank/Credit Intermediation &amp; Related Activities</i>	11	1.92%
<i>Securities, Commodity Contracts &amp; Other Financial</i>	2	0.35%
<i>Insurance Carriers &amp; Related Activities</i>	10	1.74%
<i>Real Estate, Rental &amp; Leasing</i>	32	5.57%
<i>Professional, Scientific &amp; Tech Services</i>	44	7.67%
<i>Legal Services</i>	7	1.22%
<i>Management of Companies &amp; Enterprises</i>	0	0.00%
<i>Administrative &amp; Support &amp; Waste Management &amp; Remediation</i>	12	2.09%
<i>Educational Services</i>	18	3.14%
<i>Health Care &amp; Social Assistance</i>	50	8.71%
<i>Arts, Entertainment &amp; Recreation</i>	8	1.39%
<i>Accommodation &amp; Food Services</i>	38	6.62%
<i>Accommodation</i>	8	1.39%
<i>Food Services &amp; Drinking Places</i>	30	5.23%
<i>Other Services (except Public Administration)</i>	73	12.72%
<i>Automotive Repair &amp; Maintenance</i>	17	2.96%
<i>Public Administration</i>	34	5.92%
<i>Unclassified Establishments</i>	26	4.53%
<b>Total</b>	<b>574</b>	<b>100</b>

Source: Esri forecasts for 2021 and 2026.

**FIGURE 15. EAST I-40 CLUSTER INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
Agriculture/Forestry/Fishing	153	1.90%	1.80%	1.46
Mining/Quarrying/Oil & Gas	76	0.90%	2.00%	1.8
Construction	682	8.50%	7.30%	1.15
Manufacturing	375	4.70%	4.00%	0.44
Wholesale Trade	121	1.50%	1.70%	0.6
Retail Trade	763	9.50%	10.90%	0.98
Transportation/Warehousing	263	3.30%	3.80%	0.7
Utilities	128	1.60%	1.00%	1.78
Information	117	1.50%	1.40%	0.83
Finance/Insurance	267	3.30%	3.40%	0.67
Real Estate/Rental/Leasing	95	1.20%	1.70%	0.57
Professional/Scientific/Tech	908	11.30%	8.20%	1.38
Management of Companies	0	0.00%	0.00%	0
Admin/Support/Waste Management	231	2.90%	3.40%	0.74
Educational Services	767	9.60%	10.40%	0.99
Health Care/Social Assistance	1,503	18.70%	16.50%	1.24
Arts/Entertainment/Recreation	151	1.90%	1.70%	1.19
Accommodation/Food Services	268	3.30%	6.90%	0.59
Other Services (Excluding Public)	588	7.30%	5.30%	1.59
Public Administration	571	7.10%	8.40%	1.48
<b>Total</b>	<b>8,027</b>	<b>100.00%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026.

# TORRANCE CLUSTER

FIGURE 16. TORRANCE CLUSTER OCCUPATIONS

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>311</b>	<b>61.8%</b>	<b>61.70%</b>	<b>1</b>
Management	77	15.3%	10.70%	1.50
Business/Financial	33	6.6%	4.50%	1.29
Computer/Mathematical	5	1.0%	2.60%	0.33
Architecture/Engineering	1	0.2%	2.20%	0.10
Life/Physical/Social Sciences	15	3.0%	1.70%	3.33
Community/Social Services	11	2.2%	2.40%	1.22
Legal	7	1.4%	1.20%	1.17
Education/Training/Library	58	11.5%	6.70%	1.80
Arts/Design/Entertainment	10	2.0%	1.90%	1.11
Healthcare Practitioner	20	4.0%	7.00%	0.63
Sales and Sales Related	42	8.3%	9.40%	0.86
Office/Administrative Support	32	6.4%	11.40%	0.48
<b>Blue Collar</b>	<b>119</b>	<b>23.7%</b>	<b>20.40%</b>	<b>1.11</b>
Farming/Fishing/Forestry	26	5.2%	0.80%	6.50
Construction/Extraction	27	5.4%	6.10%	1
Installation/Maintenance/Repair	6	1.2%	3.50%	0.39
Production	24	4.8%	3.20%	0.81
Transportation/Material Moving	36	7.2%	6.80%	1.18
<b>Services</b>	<b>73</b>	<b>14.2%</b>	<b>17.90%</b>	<b>0.87</b>
Healthcare Support	15	3.0%	4.30%	1.11
Protective Service	21	4.2%	2.80%	1.91
Food Preparation/Serving	10	2.0%	4.90%	0.45
Building Maintenance	12	2.4%	3.90%	0.62
Personal Care/Service	15	3.0%	1.80%	0.83
<b>Total</b>	<b>503</b>	<b>100%</b>		

Source: Esri 2021

**FIGURE 17. TORRANCE CLUSTER BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

BUSINESS (NAICS DESCRIPTION)	NUMBER	PERCENT
Agriculture, Forestry, Fishing & Hunting	1	1.2%
Mining	0	0%
Utilities	1	1.2%
Construction	2	2.4%
Manufacturing	1	1.2%
Wholesale Trade	3	3.6%
Retail Trade	10	11.9%
Motor Vehicle & Parts Dealers	1	1.2%
Furniture & Home Furnishings Stores	0	0%
Electronics & Appliance Stores	0	0%
Bldg Material & Garden Equipment & Supplies Dealers	1	1.2%
Food & Beverage Stores	0	0%
Health & Personal Care Stores	1	1.2%
Gasoline Stations	2	2.4%
Clothing & Clothing Accessories Stores	0	0%
Sport Goods, Hobby, Book, & Music Stores	0	0%
General Merchandise Stores	1	1.2%
Miscellaneous Store Retailers	3	3.6%
Nonstore Retailers	1	1.2%
Transportation & Warehousing	7	8.3%
Information	2	2.4%
Finance & Insurance	1	1.2%
Central Bank/Credit Intermediation & Related Activities	0	0%
Securities, Commodity Contracts & Other Financial	0	0%
Insurance Carriers & Related Activities	1	1.2%
Real Estate, Rental & Leasing	0	0%
Professional, Scientific & Tech Services	3	3.6%
Legal Services	0	0%
Management of Companies & Enterprises	0	0%
Administrative & Support & Waste Management & Remediation	0	0%
Educational Services	6	7.1%
Health Care & Social Assistance	10	11.9%
Arts, Entertainment & Recreation	2	2.4%
Accommodation & Food Services	7	8.3%
Accommodation	3	3.6%
Food Services & Drinking Places	4	4.8%
Other Services (except Public Administration)	13	15.5%
Automotive Repair & Maintenance	2	2.4%
Public Administration	14	16.7%
Unclassified Establishments	1	1.2%
<b>Total</b>	<b>84</b>	<b>100%</b>

Source: Esri forecasts for 2021 and 2026

**FIGURE 18. TORRANCE CLUSTER INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<i>Agriculture/Forestry/Fishing</i>	64	12.7%	1.80%	9.77
<i>Mining/Quarrying/Oil &amp; Gas</i>	0	0%	2.00%	0
<i>Construction</i>	49	9.7%	7.30%	1.31
<i>Manufacturing</i>	8	1.6%	4.00%	0.15
<i>Wholesale Trade</i>	3	0.6%	1.70%	0.24
<i>Retail Trade</i>	56	11.1%	10.90%	1.14
<i>Transportation/Warehousing</i>	24	4.8%	3.80%	1.02
<i>Utilities</i>	5	1.0%	1.00%	1.11
<i>Information</i>	5	1.0%	1.40%	0.56
<i>Finance/Insurance</i>	25	5.0%	3.40%	1.02
<i>Real Estate/Rental/Leasing</i>	2	0.4%	1.70%	0.19
<i>Professional/Scientific/Tech</i>	14	2.8%	8.20%	0.34
<i>Management of Companies</i>	0	0%	0.00%	0
<i>Admin/Support/Waste Management</i>	13	2.6%	3.40%	0.67
<i>Educational Services</i>	76	15.1%	10.40%	1.56
<i>Health Care/Social Assistance</i>	44	8.7%	16.50%	0.58
<i>Arts/Entertainment/Recreation</i>	6	1.2%	1.70%	0.75
<i>Accommodation/Food Services</i>	25	5.0%	6.90%	.089
<i>Other Services (Excluding Public)</i>	24	4.8%	5.30%	1.04
<i>Public Administration</i>	60	11.9%	8.40%	2.48
<b>Total</b>	<b>503</b>	<b>100.00%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026

## ALBUQUERQUE METRO CLUSTER

**FIGURE 19. ALBUQUERQUE METRO CLUSTER OCCUPATIONS**

OCCUPATION	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
<b>White Collar</b>	<b>234,618</b>	<b>67.80%</b>	<b>61.70%</b>	<b>1.1</b>
Management	38,408	11.10%	10.70%	1.09
Business/Financial	19,146	5.50%	4.50%	1.08
Computer/Mathematical	11,638	3.40%	2.60%	1.13
Architecture/Engineering	9,253	2.70%	2.20%	1.35
Life/Physical/Social Sciences	6,576	1.90%	1.70%	2.11
Community/Social Services	9,043	2.60%	2.40%	1.44
Legal	5,617	1.60%	1.20%	1.33
Education/Training/Library	22,904	6.60%	6.70%	1.03
Arts/Design/Entertainment	6,955	2.00%	1.90%	1.11
Healthcare Practitioner	29,370	8.50%	7.00%	1.35
Sales and Sales Related	33,441	9.70%	9.40%	1
Office/Administrative Support	42,267	12.20%	11.40%	0.92
<b>Blue Collar</b>	<b>53,858</b>	<b>15.60%</b>	<b>20.40%</b>	<b>0.73</b>
Farming/Fishing/Forestry	349	0.10%	0.80%	0.12
Construction/Extraction	17,008	4.90%	6.10%	0.91
Installation/Maintenance/Repair	9,639	2.80%	3.50%	0.9
Production	7,530	2.20%	3.20%	0.31
Transportation/Material Moving	19,332	5.60%	6.80%	0.92
<b>Services</b>	<b>57,593</b>	<b>16.60%</b>	<b>17.90%</b>	<b>0.99</b>
Healthcare Support	13,974	4.00%	4.30%	1.48
Protective Service	8,444	2.40%	2.80%	1.09
Food Preparation/Serving	17,352	5.00%	4.90%	1.14
Building Maintenance	11,668	3.40%	3.90%	0.87
Personal Care/Service	6,155	1.80%	1.80%	0.5
<b>Total</b>	<b>346,069</b>	<b>100.00%</b>		

Source: Esri 2021

**FIGURE 20. ALBUQUERQUE METRO CLUSTER BUSINESS COUNTS BY NAICS LOCATED IN CLUSTER**

BUSINESS (NAICS DESCRIPTION)	NUMBER	PERCENT
Agriculture, Forestry, Fishing & Hunting	63	0.24%
Mining	20	0.08%
Utilities	23	0.09%
Construction	1,886	7.30%
Manufacturing	886	3.43%
Wholesale Trade	816	3.16%
Retail Trade	3,698	14.32%
Motor Vehicle & Parts Dealers	481	1.86%
Furniture & Home Furnishings Stores	201	0.78%
Electronics & Appliance Stores	144	0.56%
Bldg Material & Garden Equipment & Supplies Dealers	316	1.22%
Food & Beverage Stores	391	1.51%
Health & Personal Care Stores	343	1.33%
Gasoline Stations	142	0.55%
Clothing & Clothing Accessories Stores	373	1.44%
Sport Goods, Hobby, Book, & Music Stores	259	1.00%
General Merchandise Stores	270	1.05%
Miscellaneous Store Retailers	547	2.12%
Nonstore Retailers	231	0.89%
Transportation & Warehousing	323	1.25%
Information	607	2.35%
Finance & Insurance	1,338	5.18%
Central Bank/Credit Intermediation & Related Activities	549	2.13%
Securities, Commodity Contracts & Other Financial	258	1.00%
Insurance Carriers & Related Activities	531	2.06%
Real Estate, Rental & Leasing	1,425	5.52%
Professional, Scientific & Tech Services	2,953	11.44%
Legal Services	760	2.94%
Management of Companies & Enterprises	15	0.06%
Administrative & Support & Waste Management & Remediation	881	3.41%
Educational Services	761	2.95%
Health Care & Social Assistance	2,968	11.50%
Arts, Entertainment & Recreation	514	1.99%
Accommodation & Food Services	1,864	7.22%
Accommodation	213	0.82%
Food Services & Drinking Places	1,651	6.39%
Other Services (except Public Administration)	3,080	11.93%
Automotive Repair & Maintenance	611	2.37%
Public Administration	578	2.24%
Unclassified Establishments	1,390	5.38%
<b>Total</b>	<b>25,819</b>	<b>100</b>

Source: Esri forecasts for 2021 and 2026.

**FIGURE 21. ALBUQUERQUE METRO CLUSTER INDUSTRY EMPLOYMENT**

INDUSTRY	EMPLOYED	PERCENT	NM PERCENT	LOCATION QUOTIENT (COMPARED TO US)
Agriculture/Forestry/Fishing	1,687	0.50%	1.80%	0.38
Mining/Quarrying/Oil & Gas	890	0.30%	2.00%	0.6
Construction	24,573	7.10%	7.30%	0.96
Manufacturing	13,693	4.00%	4.00%	0.38
Wholesale Trade	6,631	1.90%	1.70%	0.76
Retail Trade	38,039	11.00%	10.90%	1.13
Transportation/Warehousing	11,952	3.50%	3.80%	0.74
Utilities	2,130	0.60%	1.00%	0.67
Information	6,284	1.80%	1.40%	1
Finance/Insurance	14,778	4.30%	3.40%	0.88
Real Estate/Rental/Leasing	6,193	1.80%	1.70%	0.86
Professional/Scientific/Tech	34,086	9.80%	8.20%	1.2
Management of Companies	220	0.10%	0.00%	1
Admin/Support/Waste Management	13,792	4.00%	3.40%	1.03
Educational Services	35,180	10.20%	10.40%	1.05
Health Care/Social Assistance	62,319	18.00%	16.50%	1.19
Arts/Entertainment/Recreation	5,886	1.70%	1.70%	1.06
Accommodation/Food Services	24,231	7.00%	6.90%	1.25
Other Services (Excluding Public)	19,683	5.70%	5.30%	1.24
Public Administration	23,829	6.90%	8.40%	1.44
<b>Total</b>	<b>346,076</b>	<b>100.00%</b>	<b>100.00%</b>	

Source: Esri forecasts for 2021 and 2026.

# INDUSTRY DIVERSIFICATION TARGETS

Economic diversification is an essential aspect of economic resilience. An economy with a diversified business sector – activity and employment spread out over many industries, and business types are less susceptible to severe economic contraction during a disaster. Because any disaster will strike an economy unevenly, having a more diversified economy means the whole will be better able to survive a shock to the system.

Core industries or those with high percentages of employment and/or are particularly specialized, are listed in the table below by community cluster. Government/Public Administration is the one core industry shared by every community cluster. Other common core industries include Healthcare/Social Assistance (5), Retail Trade (4), and Construction (4).

**FIGURE 22. CORE INDUSTRIES**

CLUSTER	CORE INDUSTRY	% OF EMPLOYEES	LQ	# OF BUSINESSES
<b>Central Metro</b>	Retail Trade	11%	1.13	3,698
	Healthcare/Social Assistance	18%	1.19	2,968
	Educational Services	10.2%	1.05	761
	Government/Public Administration	6.9%	1.44	578
	Professional/Scientific/Tech	9.8%	1.2	2,953
	Accommodation & Food Service	7%	1.25	1,864
<b>Sandoval</b>	Construction	14.2%	1.92	38
	Utilities	1.2%	1.33	4
	Arts/Entertainment/Recreation	2.2%	1.38	6
	Healthcare/Social Assistance	14.9%	.99	38
	Government/Public Administration	11.2%	2.33	54
<b>East I-40</b>	Agriculture/Forestry/Fishing	1.9%	1.46	4
	Utilities	1.6%	1.78	6
	Professional/Scientific/Tech	11.3%	1.38	44
	Healthcare/Social Assistance	18.7%	1.24	50
	Government/Public Administration	7.10%	1.48	34
<b>Torrance</b>	Agriculture/Forestry/Fishing	12.7%	9.77	1
	Construction	9.7%	1.31	2
	Retail Trade	11.1%	1.14	10
	Educational Services	15.1%	1.56	6
	Government/Public Administration	11.9%	2.48	14
<b>Valencia</b>	Construction	12.9%	1.74	96
	Transportation/Warehousing	6.7%	1.43	29
	Retail Trade	11.6%	1.2	234
	Healthcare/Social Assistance	16.2%	1.07	137
	Government/Public Administration	8.8%	1.83	75
<b>Native American Communities</b>	Agriculture/Forestry/Fishing	1.9%	1.46	0
	Construction	9.5%	1.28	0
	Retail Trade	11.9%	1.23	7
	Real Estate/Rental/Leasing	2.7%	1.29	3
	Healthcare Social Assistance	19.5%	1.29	17
	Arts/Entertainment/Recreation	5.8%	3.62	2
	Government/Public Administration	14.7%	3.06	14

Source: Esri forecasts for 2021 and 2026.

Note: Farming and agricultural industries may be located outside of the clusters and may therefore not be counted as industries located within the cluster.

For these community clusters, a large government/public administration employment concentration is tied to a less diversified overall economy. In this respect, the Native American Communities Cluster is the least diversified with 14.7% of employees working in public administration and an LQ of 3.06, and the metro is the most diversified with 6.9% working in public administration and an LQ of 1.44. At face value, this makes sense. The Native American Communities Cluster primarily encompasses rural parts of the state, while the metro cluster mainly comprises the Albuquerque MSA - the largest in the state.

There are many reasons to strive for a more diversified economy. An economy that is not reliant on one or two core industries for the bulk of its economic activity is inherently more resilient. Exploring the internal and external threats to the Mid-Region's largest core industries sheds more light on the need for diversification. Here internal threats originate from within the community or have a basis in actions undertaken by the state. In contrast, external threats originate outside the community or outside of the state and are generally those businesses and leaders from within the community have little control over.

## Internal Threats

1. *Government/Public Administration – vulnerable to have available and qualified workforce and ability to pay qualified workers what the private sector can afford.*
2. *Healthcare/Social Assistance – vulnerable to lack of adequate workforce and overcrowding*
3. *Retail Trade – vulnerable to changing tastes, trends, and demographics and a constrained workforce*
4. *Construction – Very cyclical. Rises and falls with the health of the economy and demand for new infrastructure, buildings, and housing.*

## External Threats

1. *Government/Public Administration – very vulnerable to economic downturns like the 2008 recession*
2. *Healthcare/Social Assistance – health crisis put big strains on the system. Another pandemic could cripple sectors of the healthcare industry*
3. *Retail Trade – vulnerable to an economic downturn or recession, supply chain disruptions, and inflation*
4. *Construction – Also very vulnerable to an economic downturn or recession, supply chain disruptions, and inflation*

The threats to these core industries are very similar. That is why concentrating on economic diversification as a resilience initiative is in the best interest of the Mid-Region as a whole and the community cluster areas in particular.

## DIVERSIFICATION TARGETS BY CLUSTER

A more diversified economy enables greater participation, greater activity, and overall more significant opportunities for the residents and businesses while at the same time helping to make communities more resilient against disasters and downturns. Where a community chooses to target diversification efforts depends on existing assets, capabilities, competitive positions, and the ability to capitalize on the opportunity. These target industries were chosen based on community input, stakeholder interviews, past economic development planning activity, and research. Each industry is described briefly below.

**Life Sciences/Biosciences** - The State of New Mexico has included this industry as one of its strategic targets. The metro cluster includes many bioscience assets, including the Health Sciences

Center at UNM - a state center of excellence for Bioscience, the Bioscience Center, NM Bioscience Authority, Sandia Science & Tech Park, and Innovate ABQ. A growing startup scene is also attracting internal and external investors.

**Space/Aerospace** - a definitive space cluster is growing with substantial support from the Air Force Research Laboratory (AFRL). Additionally, organizations like Q Station, the NM International Trade Alliance, New Space New Mexico, and CNM are all working to capitalize on the opportunity the space industry presents in the Mid-Region.

**Intelligent/Advanced Manufacturing** - This target encompasses many different types of businesses. A key player in the Mid-Region is Intel, which has recommitted to the region and is expanding its presence. In addition, Intel has spurred a cluster of semiconductor support businesses that operate all along the semiconductor supply chain in the Mid-Region. Other resources include Fuse maker space, the New Mexico Manufacturing Extension Partnership, CNM, UNM, Que Lab, Sandia National Labs, and the Air Force Research Lab.

*Note: Intelligent/Advanced Manufacturing is defined as research collaboration and technology commercialization that contributes to advanced manufacturing by NMEDD.*

**Film, Television, and Media** - Spurred by one of the most generous tax incentives in the industry, New Mexico has seen a dramatic rise in film productions over the past five years. In addition, recent investments by Netflix and NBC Universal in the Mid-Region have cemented the region as the industry's epicenter.

**Tech** - The Mid-Region has an opportunity to expand the tech workforce through existing programs offered at UNM and CNM. In addition, this tech workforce can be mobilized for outsourced development teams - reshoring those jobs overseas and creating opportunities for rural parts of the region.

**Outdoor Recreation** - The State of New Mexico sees great promise in the outdoor recreation industry and has created the Outdoor Recreation Division to oversee its development in the state. There are numerous areas in the Mid-Region with exceptional natural beauty and rugged appeal. Capitalizing on those areas while still maintaining their peace and charm is key goal of the State Economic Development Department.

**Renewable Energy** - The Mid-Region has abundant renewable energy resources, especially wind and solar. Wind energy has played a particularly prominent role in the region with recent investments by Pattern Energy in the Western Spirit Wind project and Avangrid Renewables in the La Joya Wind Farm - both operating in Torrance County. The potential for renewable energy production is only limited by the capacity to deliver that energy by transmission lines throughout the western US, especially to California.

**Sustainable & Value Added Agriculture** - A strong regional agricultural tradition includes everything from ranching to small organic farms. Beer, wine, and spirits also play an essential role in this sector, with micro breweries, wineries, and small spirit distillers throughout the region - attracting locals and tourists alike. While arguably the oldest industry on the list, there is still ample opportunity to expand economic activity and opportunity within this sector by concentrating on lifting up small farmers, producers, and manufacturers. The recent legalization of recreational cannabis also plays a role in this sector. However, it is yet to be seen if the growing and cultivation of cannabis will take hold in the region owing to its relatively high water needs.

**Data Centers** - Facebook's most recent data center in Valencia county is probably the highest-profile data center in the region. The energy infrastructure (renewable) is taking shape, and the region can offer data centers looking to open in the region a portfolio of renewable energy options. Still, high-speed data transmission remains an issue, as well as water resources required to run and maintain these facilities. In the long-run,

# ECONOMIC RECOVERY & RESILIENCY PLAN

FOR SANDOVAL, BERNALILLO, VALENCIA, TORRANCE, & SOUTHERN SANTA FE COUNTIES

data centers can offer communities needed investments in infrastructure improvements and other partnerships along with temporary infusions of cash into industries like construction, but they are generally not large employers.

**Transportation & Logistics** - the region has rail, air, and road infrastructure needed for this sector to grow. Recent investments in the region by prominent companies like Amazon show a promising future in expanding the sector. This industry is also experiencing rapid technological changes as the need to transition to cleaner fuel types and different modes of transportation become imperative. The region’s innovation engines can significantly shape and grow this industry in the near term.

**Tourism (non-gaming)** - especially for the Native American Communities Cluster, building a tourism sector separate from gaming is a vital diversification goal. The pandemic showed how vulnerable gaming is to health-related disasters, especially when they involve infectious diseases. In addition, the Native American Communities Cluster areas are rich in outdoor recreation and cultural tourism opportunities. Often these can work hand in hand with the gaming industry offering outdoor or cultural tourism opportunities for visitors to the casino to extend their total stay.

**Sovereignty initiatives (healthcare/dental clinics, etc.)** - Pueblos can work to leverage their sovereign advantages to diversify the economy apart from gaming and convenience stores. For

**FIGURE 23. DIVERSIFICATION TARGETS BY CLUSTER**

CLUSTER	INDUSTRY
<b>Central Metro</b>	<i>Life Sciences / Biosciences</i>
	<i>Space &amp; Aerospace</i>
	<i>Film, Television, &amp; Media</i>
	<i>Tech</i>
	<i>Intelligent/Advanced Manufacturing</i>
<b>Sandoval</b>	<i>Outdoor Recreation</i>
	<i>Film, Television, &amp; Media</i>
	<i>Tech - Natural Resource Management Tech.</i>
	<i>Renewable Energy</i>
	<i>Sustainable &amp; Value Added Agriculture</i>
	<i>Data Centers</i>
<b>East I-40</b>	<i>Tech</i>
	<i>Outdoor Recreation</i>
	<i>Film &amp; Media</i>
<b>Torrance</b>	<i>Film &amp; Media</i>
	<i>Sustainable &amp; Green Energy</i>
	<i>Sustainable &amp; Value Added Agriculture</i>
<b>Valencia</b>	<i>Transportation/Logistics (Global Trade)</i>
	<i>Manufacturing (Intelligent Manufacturing)</i>
	<i>Life Sciences/Bioscience</i>
	<i>Outdoor Recreation</i>
<b>Native American Communities</b>	<i>Tourism – non gaming (eco, agro, cultural)</i>
	<i>Outdoor recreation</i>
	<i>Sovereignty initiatives (healthcare/dental clinics, etc.)</i>
	<i>Film &amp; Media</i>

example, healthcare presents an opportunity in this instance because tribal health centers are able to collect more from Medicare per patient than a non-tribal health center. Another example is Nambe Pueblo's recent opening of a Tesla store (though Nambe is not part of the Mid-Region).

## **EXAMPLES FROM OTHER RESILIENCE PLANS**

### **1. Establishing a Business Recovery Center**

A business recovery center is a one-stop shop to provide local, state and federal resources and services for businesses after a catastrophic event. During the pandemic, business recovery centers were very popular and have been established across the country. Because their services are tailored to address business needs, they typically are established separately from the FEMA disaster recovery centers to avoid confusion with individuals needing social services. For more information, visit: <https://restoreyoureconomy.org/main/establishing-a-business-recovery-center/>

#### **RESOURCE: EXISTING BUSINESS RECOVERY CENTERS AROUND THE COUNTRY**

Washington County, OR - [https://www.co.washington.or.us/Support\\_Services/Finance/GrantManagement/CARES/business-recovery-centers.cfm](https://www.co.washington.or.us/Support_Services/Finance/GrantManagement/CARES/business-recovery-centers.cfm)

Clackamas County, OR <https://www.clackamas.us/business/business-recovery-centers>

Placer County, CA

<https://www.placer.ca.gov/7524/Business-Assistance>

### **1. Diversification**

- *Dovetails with existing CEDS*
- *Diversified economies naturally less impact by shocks/disasters*
- *Same broad industries often targeted – outdoor rec, bioscience, manufacturing*
- *Entrepreneurship also often mentioned*

#### **EXAMPLES**

*Interesting – “Van-life work hubs” in the Pacific Northwest; land investment campaign to profit from climate refuges in the Buffalo, NY area; Value added fish processing in Great Lakes region of Wisconsin*

## **Network Creation**

A Roadmap For Economic Resilience – Bay Area Council Economic Institute. Create a platform for public-private collaboration on regional economic strategy <http://www.bayareaeconomy.org/files/pdf/BACEI-RES-Report.pdf>

Mountainland Region (Utah) COVID-19 Economic Recovery and Resilience Plan. Establish a business roundtable by size and sector that provides a pulse on current business needs. Connect these needs to resources as they come available. Leverage the roundtable participants to identify the best method for announcing new recovery initiatives. <https://mountainland.org/static/files/MEDD%20COVID-19%20Economic%20Recovery%20%26%20Resilience%20Plan.pdf>

# NATURAL / MAN-MADE HAZARDS ASSESSMENT

This section examines natural and man-made hazards and summarizes how natural and man-made hazards impact the Mid-Region. It details previous disasters and the hazards identified for the region. Finally, it identifies a potential consequence analysis for each hazard to illustrate the potential impact on the Mid-Region. This assessment guided the selection of Priority Areas.

## **REGIONAL VS. CLUSTER-SPECIFIC HAZARDS SUMMARY**

Hazards that occur uniformly across the region, and therefore have no cluster-specific variation include the following:

- Drought
- Extreme Weather Events
- Extreme Heat
- Severe Winter Storms
- Thunderstorms
- Tornadoes
- High Winds
- Invasive Species/Biodiversity Loss
- Infectious Diseases

These hazards have little or no pattern to their occurrence and therefore, no specific Community Cluster is more at risk than another.

Hazards that do not occur uniformly or occur in certain spatially defined areas include the following:

- **Dam Failure** - The largest concentration of high-hazard dams in the region can be found in the Central ABQ Metro Cluster.
- **Earthquakes** - The entire planning area is located in an area of higher risk of earthquakes than many other parts of the State. Socorro

County has one of the highest concentrations of previous earthquake occurrences in the State. Therefore, it can be inferred that the Valencia Cluster could be more at risk of earthquake impacts than other clusters in the region.

- **Volcanoes** - Volcanic activity in New Mexico has long been dormant but is not extinct. Volcano fields are scattered across the region and while the whole region would be exposed to potential volcanic impact, those clusters located closer to volcanic fields or dormant volcanoes would be at higher risk
- **Flood/Flash Flood** - Flood risk varies across all community clusters. FEMA flood maps depict many of the areas at risk, but unmapped flood risk areas also exist. Because of the greater concentration of vulnerability in general in the ABQ Metro Cluster, it is likely that cluster contains the greatest flood risk vulnerability; however, there are also more localized areas of concentrated vulnerability located in other clusters.
- **Soil Movement (Land Subsidence, Expansive Soils)** - Land subsidence and expansive soils occur in areas where soils display certain characteristics, and the entire region falls in a medium/medium-high risk to both hazards. More specific areas can be found by reviewing maps found in the local and State hazard mitigation plans.
- **Wildfire** - The region's greatest concentration of wildfire risk areas can be found in the ABQ Metro and Valencia Cluster because of the density and intensity of the built environment. However, more remote clusters are also at risk and could potentially suffer greater impacts than more urbanized areas.

## PREVIOUS DISASTER DECLARATIONS

Presidential Disaster Declarations, for the communities in the Mid-Region are declared by the President of the United States under the authority of the Robert T. Stafford Relief and Emergency Assistance Act. FEMA then manages the entire process, including making Federally-funded activities available in declared areas; coordinating emergency rescue and response efforts; providing emergency resources; and providing other related activities/funding in the process of aiding citizens and local governments in a nationally-declared disaster.

The Mid-Region communities are exposed to multiple hazards and have experienced hundreds of hazard events. Some disasters have caused millions of dollars in losses and casualties and numerous major Federal disasters and emergency Declarations. [“Figure 24. Major Disaster Declarations Since 1973 In The Mid-Region”](#)

identifies the major Federal Disaster Declarations in the region since 1973.

There have been fifteen Federal Disaster Declarations in the Mid-Region since 1973. These disasters were caused by varying combinations of flooding, severe storms, winter weather, snow melt and mudslides. The most recent disaster declaration was declared due to the on-going COVID-19 pandemic and wildfires in 2022 .

Additionally, there have been four Emergency Declarations, fourteen Fire Management Assistance declarations and three Fire Suppression authorizations provided by the Federal government for the region.

## HAZARDS IDENTIFICATION

Upon a review of the hazard mitigation plans for the region, including the State of New Mexico Hazard Mitigation Plan, research of past hazard events, review of disaster declarations and upon consideration of the full range of natural hazards

FIGURE 24. MAJOR DISASTER DECLARATIONS SINCE 1973 IN THE MID-REGION

<i>Bernalillo County</i>						X	X				X				X	X
<i>Sandoval County</i>	X				X	X		X	X	X	X	X	X		X	X
<i>Santa Fe County</i>	X	X				X						X		X	X	X
<i>Torrance County</i>			X	X		X		X			X				X	X
<i>Valencia County</i>	X						X								X	
	<b>1973</b>	<b>1979</b>	<b>1985</b>	<b>1995</b>	<b>1999</b>	<b>2000</b>	<b>2004</b>	<b>2006</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2013</b>	<b>2014</b>	<b>2014</b>	<b>2020</b>	<b>2022</b>
	Severe Storms, Snow Melt and Flooding	Severe Storms, Snow Melt and Flooding	Severe Storms, Snow Melt and Flooding	Severe Winer Storms	Severe Ice Storms, Flooding and Heavy Rains	Severe Forest Fire	Severe Storms and Flooding	Severe Storms and Flooding	Flooding	Flooding	Severe Storms and Flooding	Severe Storms, Flooding, and Mudslides	Severe Storms and Flooding	Severe Storms and Flooding	COVID-19 Pandemic	Wildfires

Source: Federal Emergency Management Agency (FEMA)

suggested under the FEMA planning guidance, the following list of hazards was identified for consideration in this plan:

- **Biodiversity**
- **Dam Failure**
- **Drought**
- **Earthquakes**
- **Extreme Weather Events**
  - > *Extreme Heat*
  - > *Severe Winter Storms*
  - > *Thunderstorms*
  - > *Tornadoes*
  - > *High Winds*
- **Volcanoes**
- **Flood/Flash Flood**
- **Invasive Species**
- **Soil Movement**
  - > *Land Subsidence*
  - > *Expansive Soils*
- **Wildfire**
- **Infectious Diseases**

## **HAZARD PROFILES AND VULNERABILITY IMPACTS**

### **Biodiversity Loss**

Biodiversity is a measure of genetic, species, and ecosystem variation. Biodiversity generally tends to cluster in hotspots and has been increasing through time, but it will likely slow in the future as a primary result of deforestation. It encompasses the evolutionary, ecological, and cultural processes that sustain life. New Mexico is rich in biodiversity, with approximately 4,538 known species. Across plants and vertebrate animals, New Mexico has the 4th highest native species richness of any U.S. State.

There are several online resources available to track and analyze the biodiversity of New Mexico. These online databases are listed in [“Figure 25. New Mexico Biodiversity Resources”](#)

The period since the emergence of humans has displayed an ongoing biodiversity reduction

and an accompanying loss of genetic diversity. Named the Holocene extinction, the reduction is primarily caused by human impacts, particularly habitat destruction. New Mexico is no exception to biodiversity loss.

### **LOCATION AND SPATIAL EXTENT**

Biodiversity loss covers a large area and cannot be confined to any geographic or political boundaries. New Mexico can be divided by several distinct river basins. The map in [“Figure 26. New Mexico Major River Basins”](#) shows the nine distinct major river basins. The Mid-Region is located in the Middle Rio Grande Basin, extending approximately from Cochiti Lake downstream to San Acacia. It covers approximately 3,060 square miles in central New Mexico, which includes a ground-water basin composed of the Santa Fe Group aquifer system.

### **HISTORICAL OCCURRENCES**

According to the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES), nature is declining globally at rates unprecedented in human history – and the rate of species extinctions is accelerating. The average abundance of native species in most major land-based habitats has fallen by at least 20%, with most of the loss occurring since 1990<sup>1</sup>. The five direct drivers of change in nature with the largest relative impacts so far are:

- ***Changes in land and sea use***
- ***Direct exploitation of organisms***
- ***Climate change***
- ***Pollution***
- ***Invasive alien species***

For New Mexico, the New Mexico Game and Fish Wildlife Management and Fisheries Management Division report a total of 116 species and subspecies that are included on the 2020 list of threatened and endangered New Mexico wildlife, the list comprising of 2 crustaceans, 25 mollusks, 22 fishes, 6 amphibians, 15 reptiles, 32 birds, and 14 mammals.

<sup>1</sup> <https://ipbes.net/news/Media-Release-Global-Assessment>

**CLIMATE CHANGE**

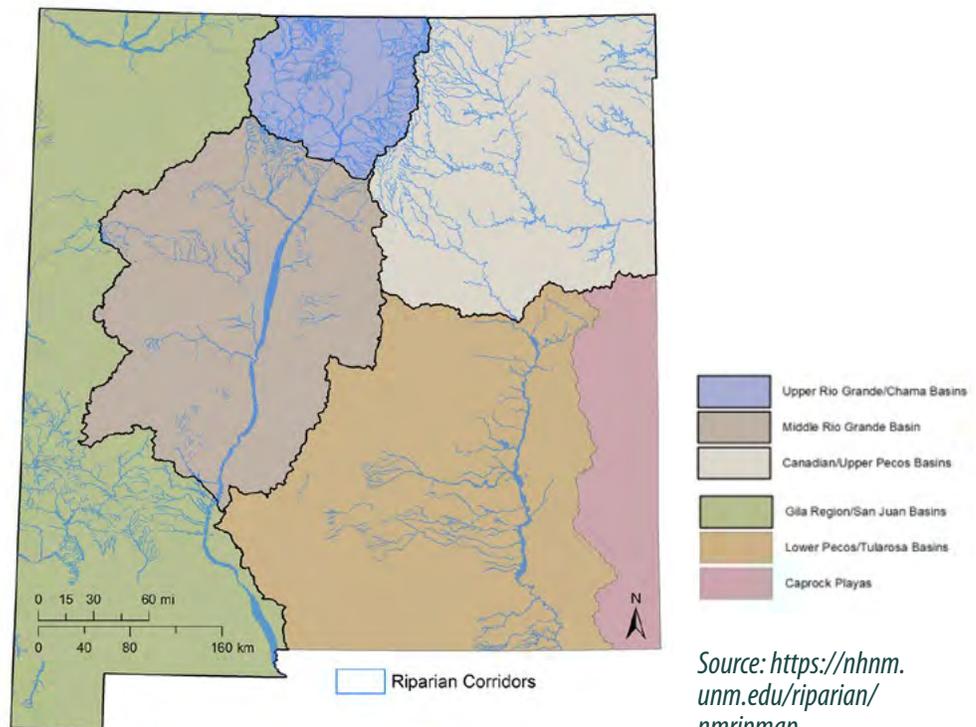
The rapid decline of biodiversity and changes in climate are intertwined; they share underlying direct and indirect drivers, can have cascading and complex effects that impact people’s quality of life,

and compromise societal goals. Biodiversity loss is driven by other recognized hazards in the Mid-Region like drought, wildfire, and extreme weather events that can displace species and rapidly change the environment.

**FIGURE 25. NEW MEXICO BIODIVERSITY RESOURCES**

DATABASE	DESCRIPTION	ONLINE SOURCE	RESPONSIBLE AGENCY
<b>State Wildlife Action Plan (SWAP)</b>	A web portal to search for the conservation needs and opportunities for New Mexico wildlife and their habitat. It is based on the SWAP, a non-regulatory planning document that provides a high-level overview of the status of species and habitats in New Mexico.	<a href="https://nmswap.org/">https://nmswap.org/</a>	New Mexico Department of Game and Fish
<b>New Mexico Rare Plant Conservation Strategy</b>	Developed to protect and conserve New Mexico’s rare and endangered plant species and their habitats and to avoid federal listing.	<a href="https://nhnm.unm.edu/botany/nm_rare_plant_conservation_strategy">https://nhnm.unm.edu/botany/nm_rare_plant_conservation_strategy</a>	New Mexico Energy, Minerals, and Natural Resources Department (EMNRD); Rare Plant Conservation Partnership (NMRPCP)
<b>New Mexico Crucial Habitat Assessment Tool (NMCHAT)</b>	A conservation information system for energy development planners, natural resources managers, and conservation practitioners to better incorporate wildlife values, sensitive animals and plants, and important ecosystem features into land use decision-making to reduce conflicts and surprises.	<a href="http://nmchat.org/">http://nmchat.org/</a>	New Mexico Department of Game and Fish; Natural Heritage of New Mexico at UNM; Western Association of Fish and Wildlife Agencies

**FIGURE 26. NEW MEXICO MAJOR RIVER BASINS**



## Dam Failure

Any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam’s primary function is considered a dam failure. A catastrophic dam failure is characterized by a sudden, rapid, and uncontrolled release of impounded water. The sudden release of water may result in downstream flooding affecting life, property, and agriculture. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, or acts of terrorism can cause dam failures. The sudden release of the impounded water can occur during a flood that overtops or damages a dam, or it can occur on a clear day if the dam has not been properly constructed or maintained. Dam failures can occur anywhere there is a dam, but the threat from dam failures can increase as existing dams age. In New Mexico, floodplain maps do not include a dam breach inundation map where applicable because the probability of occurrence is not the same. Therefore, downstream residents can be unaware of the potential dangers.

The Office of the State Engineer (OSE) Dam Safety Bureau regulates the design, construction, reconstruction, modification, removal, abandonment, inspection, operation, and maintenance of dams 25 feet or greater in height

with more than 15 acre-feet of storage or dams that store 50 acre-feet or more with at least six feet in height. Dams that fall below these height and storage criteria are considered non-jurisdictional dams. While the Office of the State Engineer does not regulate non-jurisdictional dams, the Office of the State Engineer can exercise authority over a non-jurisdictional dam if it is considered unsafe, and a threat to life or property.

Standard practice among Federal and State dam safety offices is to classify a dam according to the potential impact a dam failure (breach) or mis-operation (unscheduled release) would have on downstream areas. The hazard potential classification system categorizes dams based on the probable loss of human life and the impacts on economic, environmental and lifeline facilities.

### LOCATION AND SPATIAL EXTENT

According to the 2016 National Inventory of Dams, there are 60 dams in the Mid-Region; 42 are classified as high hazard potential, 1 is classified as intermediate hazard potential, and 16 are classified as low hazard potential. The remaining dam is listed as undetermined.

The Mid-Region contains a few notable dams, which are described further below:

**FIGURE 28. DAM HAZARD POTENTIAL CLASSIFICATIONS**

<i>Hazard Classification</i>	<i>Description</i>	<i>Quantitative Guidelines</i>
<b>Low</b>	<i>Interruption of road service, low volume roads Less than 25 vehicles per day</i>	<i>Less than 25 vehicles per day</i>
	<i>Economic Damage</i>	<i>Less than \$30,000</i>
<b>Intermediate</b>	<i>Damage to highways, Interruption of service</i>	<i>25 to less than 250 vehicles per day</i>
	<i>Economic Damage</i>	<i>\$30,000 to less than \$200,000</i>
<b>High</b>	<i>Loss of human life*</i>	<i>Probable loss of 1 or more human lives</i>
	<i>Economic Damage</i>	<i>More than \$200,000</i>
	<i>*Probable loss of human life due to breached roadway or bridge on or below the dam</i>	<i>250 or more vehicles per day</i>

- *Cochiti Dam on the Rio Grande in Sandoval County is a large dam that created Cochiti Lake and is maintained by the U.S. ACE. According to the 2018 State HMP the dam is located near Pueblo de Cochiti, approximately 50 miles upstream from Albuquerque, New Mexico.*
- *Jemez Canyon Dam on the Jemez River is located on the Santa Ana Pueblo in Sandoval County, upstream from Albuquerque. It created the Jemez Canyon Lake and is maintained by the U.S. ACE.*

### **HISTORICAL OCCURRENCES**

Although there are a high number of dams within the Mid-Region, there have been no known dam incidents and/or failures involving notable property damage. The 2018 State HMP reports that one dam failure occurred in Bernalillo County at the Renaissance Detention Basin in 1987.

### **CLIMATE CHANGE**

At this time, there has not been a definitive link between long-term, changing weather patterns and an increase or decrease in the frequency or severity of dam failures in the State of New Mexico. A 2018 Colorado-New Mexico Regional Extreme Precipitation Study examined climate change in estimating extreme precipitation for dam safety. The study suggests that Probable Maximum Precipitation (PMP) estimates used for the design of dams may not account for higher volumes of precipitable water (PW) in a future warmer atmosphere. As the climate continues to warm, there is potential for more extreme precipitation events. These events could result in large inflows to existing reservoirs and earthen levees, potentially exceeding their designed capacity. Levees along arroyos and rivers are of particular concern for the region. In addition to extreme precipitation events, burn scars heighten the risk of flooding for levees, as many require urgent repair.

## CONSEQUENCE ANALYSIS

FIGURE 27. CONSEQUENCE ANALYSIS - DAM FAILURE

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>Sudden failure of a dam can cause significant short-term damage and long-term damage. Short term, crops, livestock, and agricultural infrastructure can be destroyed. Long-term water supply for irrigation and livestock water can be eliminated. The potential also exists that an approved irrigation water supply in compliance with the Food Safety and Modernization Act can be contaminated by floodwaters causing the crops to not be certified for market or consumption.</i>
Health and Safety of the Public	<i>Many of the impacts associated with a dam failure are the same as those that would be related to a flood event. However, the primary difference for members of the public in the case of a dam failure is that often citizens who a dam failure might impact may believe themselves to be protected from flood events as a result of the dam and, therefore, may not be anticipating the event. That belief can lead to more deadly consequences if a dam fails suddenly.</i>
Health and Safety of Responders	<i>Similar to the issues associated with the flood hazard, responders would be impacted by a dam failure as they may be forced to attempt to assist citizens who have become trapped in their homes or in flood waters. In addition, responders may have difficulty accessing homes or other structures where they need to provide support, and their lives and well-being will likely be put at risk if they are forced to assist in a flooded area</i>
Continuity of Operations	<i>Continuity of operations is intended to ensure that essential functions can continue to be carried out or resume during and following a disaster. Impacts of dam failure include flooding, road closures, damage to critical facilities, contaminated water, and food shortages, which can substantially restrain the ability to continue regular operations such as government functions and emergency response.</i>
Delivery of Services	<i>Delivery of services in the area could be impacted if infrastructure is damaged or destroyed.</i>
Property, Facilities, Infrastructure	<i>Many downstream buildings, critical facilities, and infrastructure located in inundation areas can be damaged or destroyed depending on the dam's size and the failure's severity.</i>
Environment	<i>Environmental effects from a dam failure would be similar to those of a flash flood: erosion downed vegetation, and loss of habitat. In addition, certain dams associated with mining activities could have environmental impacts that may need to be considered.  Although the dam failure itself would likely disrupt habitats in the short term, in some sense, a dam failure may restore the environment to a more natural state by allowing the river to return to its natural course and flow. That is to say, the absence of a dam may be a long-term boon to the local environment.</i>
Economic Condition	<i>The economic costs of a dam failure could be significant as there will likely be a high economic cost for the owner of the structure (whether it is privately or publicly owned) to rebuild or reconstruct the dam. If a dam fails, the owner may also need to rebuild the new structure to a higher standard to prevent future failures. Suppose the dam was involved in electricity production. In that case, the failure will result in the owner's revenue loss. This could impact local utilities and result in temporary power outages (although most communities do not rely solely on hydroelectric power, so this is less likely). Many dams are also used to create recreational lakes, and when this type of dam fails, that recreational resource will be lost, which in turn may reduce tourism and visitors to the area and impact property values in and around the lake.</i>
Public Confidence	<i>Public confidence would likely be severely impacted. The public expects the government to regulate the safety of dams.</i>

# Drought

## OVERVIEW

Drought is a condition of climatic dryness that reduces soil moisture, water, or snow levels below the minimum necessary for sustaining plant, animal, and economic systems. Drought conditions are usually not uniform over the entire state. Local and regional differences in weather, soil condition, geology, vegetation, and human influence need to be considered when assessing the impact of drought on any particular location.

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. [“Figure 29. Drought Classification Definitions”](#) presents definitions for these types of droughts.

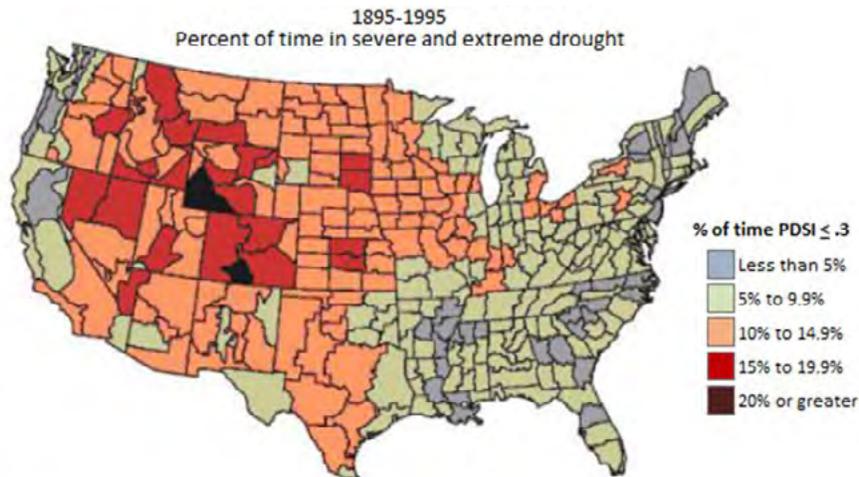
The Palmer Drought Severity Index (PDSI) is based on observed drought conditions and range from -0.5 incipient dry spell) to -4.0 (extreme drought). As evident in [“Figure 30. Palmer Drought Severity Index Summary”](#), drought affects most areas.

The Palmer Drought Index is used to assess the extent of drought by measuring the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the current month dependent upon the current weather patterns plus the cumulative patterns of previous months. The

**FIGURE 29. DROUGHT CLASSIFICATION DEFINITIONS**

<b>Meteorological Drought</b>	<i>A period of substantially diminished precipitation duration and/or intensity. The commonly used definition of meteorological drought is an interval of time, generally, on the order of months or years, during which the actual moisture supply at a given place consistently falls below the climatically appropriate moisture supply.</i>
<b>Hydrologic Drought</b>	<i>Inadequate soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought usually occurs after or during meteorological drought, but before hydrological drought and can affect livestock and other dry land agricultural operations.</i>
<b>Agricultural Drought</b>	<i>Deficiencies in surface and subsurface water supplies. It is measured as stream flow, snow pack, and as lake, reservoir, and groundwater levels. There is usually, a delay between lack of rain or snow and less measurable water in streams, lakes, and reservoirs. Therefore, hydrological measurements tend to lag behind other drought indicators.</i>
<b>Socioeconomic Drought</b>	<i>Measured as stream flow, snow pack, and as lake, reservoir, and groundwater levels. There is usually, a delay between lack of rain or snow and less measurable water in streams, lakes, and reservoirs. Therefore, hydrological measurements tend to lag behind other drought indicators.</i>

**FIGURE 30. PALMER DROUGHT SEVERITY INDEX SUMMARY**



hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. [“Figure 31. Usdm Drought Classifications”](#) Describes the classification descriptions.

## LOCATION AND SPATIAL EXTENT

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. According to the Palmer Drought Severity Index, the Mid-Region area has a relatively high risk of drought hazards compared to the rest of the United States.

## HISTORICAL OCCURRENCES

Data from the U.S. Drought Monitor and the New Mexico Drought Task Force were used to ascertain historical drought events in the Mid-Region. Since 2001, the most prolonged drought duration (D1-D4) in New Mexico lasted 329 weeks, beginning in May 2001 and ending in August 2007.

New Mexico relies on both groundwater and surface water sources, but about 87 percent of New Mexico’s public water supply comes from ground water<sup>2</sup>. Heavy dependence on groundwater exacerbates the growing issue of water availability during drought in New Mexico.

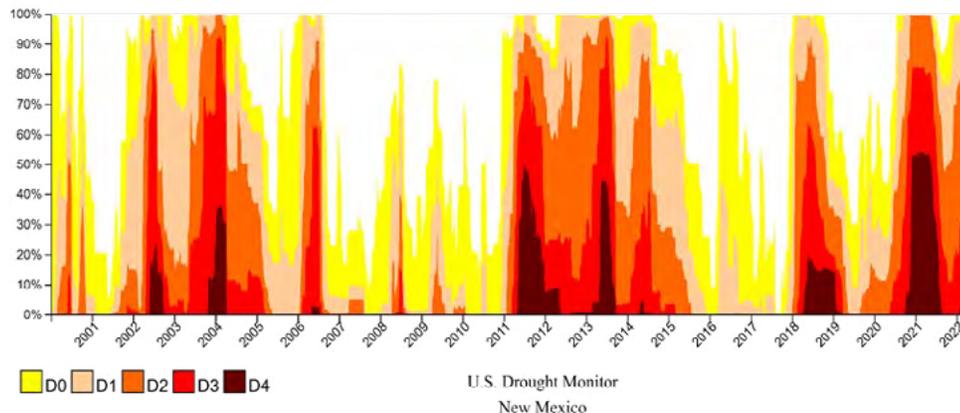
<sup>2</sup> <https://tinyurl.com/4kjkta6f>

**FIGURE 31. USDM DROUGHT CLASSIFICATIONS**

<b>D0</b>	<b>Abnormally Dry</b>	<ul style="list-style-type: none"> <li>- Soil moisture is low</li> <li>- Fire danger increases</li> </ul>
<b>D1</b>	<b>Moderate Drought</b>	<ul style="list-style-type: none"> <li>- Livestock need supplemental feed and water</li> <li>- Burn bans and firework restrictions begin</li> </ul>
<b>D2</b>	<b>Severe Drought</b>	<ul style="list-style-type: none"> <li>- Pasture yield is limited; producers sell livestock</li> <li>- Irrigated crops are stunted; dryland crops are brown</li> <li>- Dust storms occur</li> <li>- Abundance and magnitude of wildfires may increase; fuel mitigation practices are in effect</li> <li>- Wildlife feeding patterns change</li> <li>- Well water decreases</li> </ul>
<b>D3</b>	<b>Extreme Drought</b>	<ul style="list-style-type: none"> <li>- Livestock are suffering; producers are selling herds; feed costs are high; emergency CRP grazing is authorized; crop yields are low</li> <li>- Fire danger is extreme</li> </ul>
<b>D4</b>	<b>Exceptional Drought</b>	<ul style="list-style-type: none"> <li>- Federal lands begin to close for fire precautions; burn bans increase</li> <li>- Bears encroach on developed areas; migratory birds change patterns</li> <li>- No surface water is left for agriculture, farmers use private wells</li> <li>- Rio Grande and other large rivers are dry</li> </ul>

Source: <https://tinyurl.com/4u9sfhfk>

**FIGURE 32. NEW MEXICO DROUGHT MONITOR (2000-2022)**



Source: <https://www.drought.gov/states/new-mexico>

## CLIMATE CHANGE

The frequency, duration, and intensity of episodic drought will likely increase in the presence of warmer mean annual temperatures due to long-term, changing weather patterns. It is important to note that climate change impacts will increase vulnerability to several natural hazards, including drought. As the population of the State increases, so does water usage/withdrawal, which is distributed among nine categories, including public water supply, domestic, irrigated agriculture, livestock, commercial, industrial,

mining power, and reservoir evaporation. The New Mexico Office of State Engineers collects water use data for these nine categories. According to the Office of the State Engineer, irrigated agriculture accounts for more than 78% of water usage. The population changes and increased awareness of drought conditions and climate variability are addressed in the New Mexico State Water Plan, which was updated in 2013. Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacted people and ecosystems in the Southwest.

**FIGURE 33. CONSEQUENCE ANALYSIS DROUGHT**

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>Drought is one of the most devastating conditions for the agriculture industry. Food and fiber production is adversely affected in every way during a drought. This is compounded by the fact that many crops are annual, and one season lost can be bankrupting.</i>
Health and Safety of the Public	<i>Droughts can lead to increased wildfires; prolonged drought can exacerbate health problems related to low water supplies and poor water quality; health problems related to dust.</i>
Health and Safety of Responders	<i>Drought as a hazard alone does not impact responders to a large degree; however, increased wildfire risk coupled with limited water supply makes it more challenging for responders to fight fires and puts responders at greater risk.</i>
Continuity of Operations	<i>Drought would have minimal impacts on the continuity of operations due to the relatively long warning time that would allow for plans to be made to maintain continuity of operations. Therefore, normal operations would very likely be able to continue throughout the event, and there would likely be little change to the program's management overall.</i>
Delivery of Services	<i>Impacts on delivery of services due to drought are expected to be minimal except for any dependence on water.</i>
Property, Facilities, Infrastructure	<i>Water Use: Drought can affect the region's water supply for residential, commercial, institutional, industrial, and government-owned areas. Drought can reduce the water supply in wells and reservoirs. Local or state governments often institute water restrictions when drought conditions persist with no relief. This may impact personal property to some degree, though generally, these restrictions are meant to protect life safety by ensuring adequate drinking water supplies for consumption and other critical purposes.  Irrigation: Drought would affect irrigation and outdoor landscaping efforts around residential, commercial, institutional, industrial, and government-owned land. Water conservation strategies can limit the amount of water used to maintain the aesthetic environment around buildings, businesses, and areas such as golf courses. This would include automatic and non-automatic spray irrigation systems, hose-end sprinklers, handheld hoses, bucket watering, drip irrigation, athletic field irrigation, swimming pools, car washing, pressure washing, and reuse water.</i>
Environment	<i>Drought may lead to pollution of water sources as a result of a lack of rainwater to dilute industrial and agricultural chemical runoff. This poses a risk to plants and animals and makes maintaining a clean drinking water supply challenging. Lack of water reaching the soil may also cause the ground to be dry and unstable. As a result, erosion can increase, and loss of topsoil can be severe if a high-intensity rain falls on ground lacking a ground cover of plants. As a result of these environmental impacts, habitats may be degraded through a loss of wetlands, lake capacity, and vegetation.</i>
Economic Condition	<i>Drought can have a detrimental effect on the agricultural and agribusiness industry sectors. Extreme drought also has the potential to depress local businesses and industries such as landscaping, recreation and tourism, and public utilities. Nursery and landscape businesses can also face significant losses from a drought. Losses include reduction of output and sales of crops, reduction in plant sales, and an increase in watering costs. This can lead to the closing of many business locations, laying-off employees, and increases in the bankruptcy filing. The manufacturing industry would also be significantly impacted by long-term drought events based on the level of water usage and dependence. Reductions in available water can reduce manufacturing productivity or even temporarily close key manufacturing facilities (source: <a href="http://www.drought.gov">www.drought.gov</a>).</i>
Public Confidence	<i>Although the general public may be subject to water restrictions during extreme drought events, it is unlikely that public confidence in the state's governance would be impacted severely as a result of a drought.</i>

## Earthquake

### OVERVIEW

Earthquakes are defined as sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the surface. This movement forces the gradual building and accumulation of energy. Eventually, the strain becomes so great that the energy is abruptly released, causing the shaking at the earth's surface, which we know as an earthquake. Roughly 90 percent of all earthquakes occur at the boundaries where plates meet, although earthquakes can occur entirely within tectonic plates. Earthquakes can affect hundreds of thousands of square miles; cause damage to property measured in the tens of billions of dollars; result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area.

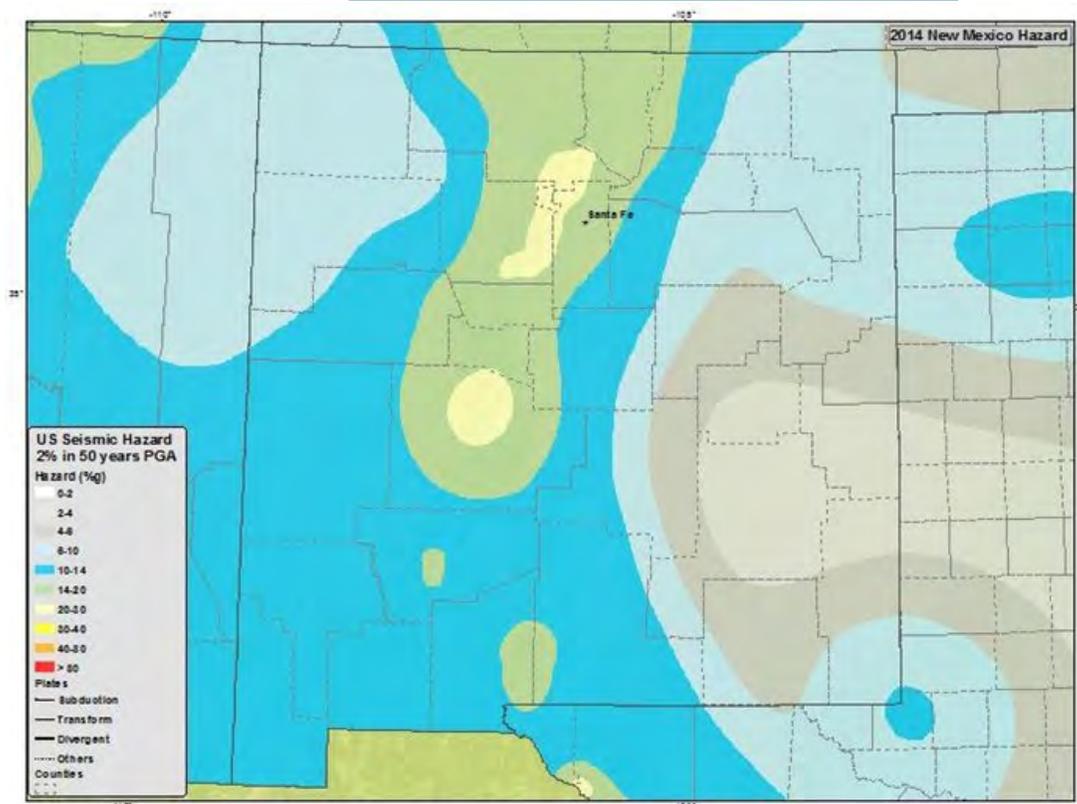
The greatest earthquake threat in the United States is along the central and western states'

tectonic plate boundaries and seismic fault lines. Much of New Mexico's historical seismicity has been concentrated in the Rio Grande Valley between Socorro and Albuquerque. About half of the earthquakes of intensity VI or greater (MMI) occurred in the State between 1868 and 1973 being centered in this region.

### LOCATION AND SPATIAL EXTENT

Several major fault lines in the Rio Grande rift occur within 10 miles of several New Mexico cities. Studying their past activity is critical to understanding their potential for future earthquakes and ground. "[Figure 34. New Mexico Earthquake Hazard Map](#)" illustrates relative seismic risk in New Mexico. There has been a clustering of earthquake activity around the cities of Socorro and Albuquerque. Additionally, significant amounts of high-magnitude seismic activity have been recorded in the northeast area of the State.

**FIGURE 34. NEW MEXICO EARTHQUAKE HAZARD MAP**



Source: FEMA

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude or a 32-fold increase in energy. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using roman numerals, ranging from “I” corresponding to imperceptible (instrumental) events to “XII” for catastrophic (total destruction). A detailed description of the Modified Mercalli Intensity Scale of earthquake intensity and its correspondence to the Richter Scale is given in [“Figure 35. Richter Scale”](#).

[“Figure 36. Modified Mercalli Intensity Scale Of Earthquakes”](#) shows the intensity level associated with the world, based on the national USGS and Global Earthquake Model (GEM). The Global Earthquake Model Global Seismic Hazard Map depicts the geographic distribution of the Peak Ground Acceleration (PGA) with a 10% probability of being exceeded in 50 years. The data represents the probability that the ground motion will reach a certain level during an earthquake. The map was created by collating maps computed using national and regional probabilistic seismic hazard models developed by various institutions and projects and by GEM Foundation scientists. This indicates that the region as a whole exists within an area of low to moderate seismic risk.

**FIGURE 35. RICHTER SCALE**

<b>RICHTER MAGNITUDES</b>	<b>EARTHQUAKE EFFECTS</b>
<b>&lt; 3.5</b>	<i>Generally, not felt, but recorded.</i>
<b>3.5 – 5.3</b>	<i>Often felt, but rarely causes damage.</i>
<b>5.4 – 6.0</b>	<i>At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.</i>
<b>6.1 – 6.9</b>	<i>Can be destructive in areas up to about 100 kilometers across where people live.</i>
<b>7.0 – 7.9</b>	<i>Major earthquake. Can cause serious damage over larger areas.</i>
<b>8 or &gt;</b>	<i>Great earthquake. Can cause serious damage in areas several hundred kilometers across.</i>

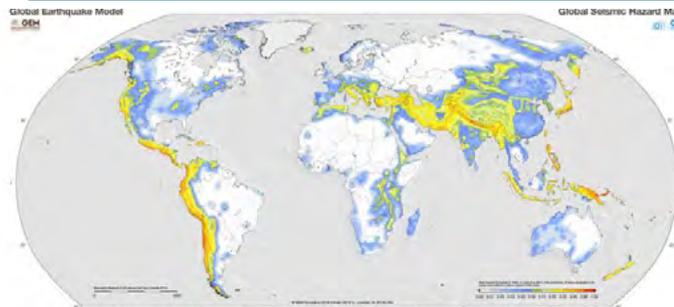
Source: Federal Emergency Management Agency

**FIGURE 36. MODIFIED MERCALLI INTENSITY SCALE OF EARTHQUAKES**

SCALE	INTENSITY	DESCRIPTION OF EFFECTS	CORRESPONDING RICHTER SCALE MAGNITUDE
I	Not felt	Not felt except by a very few under especially favorable conditions.	
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.	< 4.2
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects over-turned. Pendulum clocks may stop.	< 4.8
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.	< 5.4
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken	< 6.1
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.	
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.	< 6.9
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.	< 7.3

Source: Federal Emergency Management Agency

**FIGURE 37. FIGURE 6: PEAK ACCELERATION WITH 10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS**



Source: Global Earthquake Model, 2018

## HISTORICAL OCCURRENCES

Several of the strongest earthquakes recorded in the 2018 State Plan (earthquakes over 4.5 on the Richter Scale) have occurred in the Bernalillo and/or Tarrant County or are close enough to be felt throughout the planning area. Sandoval and Valencia County did not list any earthquake occurrences in their previous hazard mitigation plans. According to the U.S. GS Earthquake Catalog, the MRCOG has experienced 92 earthquake events (over 2.5 on the Richter Scale) and 15 major earthquake events (over 4.5 on the Richter Scale) since 1893<sup>3</sup>.

[“Figure 38. Modified Mercalli Intensity Scale Of Earthquakes”](#) briefly describes some of the significant earthquake events in the Mid-Region.

The historic area of seismicity includes most of New Mexico’s major population and transportation centers. The record of damaging earthquakes in the state does not support extreme earthquake mitigation measures. However, the lack of serious earthquake damage in the past should not be interpreted as evidence that such damage will not occur in the future.

<sup>3</sup> <https://earthquake.usgs.gov/earthquakes/search/>

**FIGURE 38. MODIFIED MERCALLI INTENSITY SCALE OF EARTHQUAKES**

DATE	LOCATION	INTENSITY (MMI)	DESCRIPTION
<b>September 7, 1893</b>	Los Lunas and Sabinal; Tarrant County	<b>VII</b>	<i>The maximum intensity of VII caused several buildings to collapse in Los Lunas. Older structures had been impacted by previous earthquakes which has left them vulnerable to future earthquakes. The center of the disturbance was Sabinal.</i>
<b>May 28, 1918</b>	Cerrillos; Tarrant County, Bernalillo County	<b>VII - VIII</b>	<i>One of New Mexico’s strongest earthquakes caused plastered ceilings and chimneys to fall. The earthquake threw people off their feet, and a “heavy break in the surface of the earth at the edge of town” was noted</i>
<b>December 12, 1935 – January 4, 1936</b>	Belen, Tarrant County; Bernalillo County	<b>VII</b>	<i>The Belen Swarm consisted of at least 81 shocks on 24 different days at or near Belen. Eighteen shocks of this swarm with intensity V or greater were clustered around Belen. After-shocks were felt in Albuquerque, Magdalena, Los Lunas, and Socorro. Only minor damage related to cracked foundations, falling ceiling plaster, and items on shelves in grocery stores falling over were reported.</i>
<b>November 6, 1947</b>	San Antonito, Zamora; Tarrant County	<b>VI</b>	<i>This was the first earthquake report from the Sandia Mountains (located northeast of Albuquerque). It resulted in minor shaking and minor property damage.</i>
<b>August 3, 1955</b>	Dulce, Tarrant County; Bernalillo County	<b>V</b>	N/A
<b>January 23, 1961</b>	Dulce, Albuquerque; Bernalillo County, Tarrant County	<b>V</b>	N/A
<b>January 4, 1971</b>	Albuquerque; Bernalillo County	<b>VI</b>	<i>Maximum intensity VI in Albuquerque caused minor damages, principally in the west and northwest sections of the city. Cracked walls and plaster, broken windows, and damage to fallen objects were reported. The University of Albuquerque reported damages estimated at \$30,000 to \$40,000, much of it due to breakage and spillage of chemicals at the chemistry laboratories in St. Francis Hall.</i>

Source: USGS Earthquake Catalogue

## CLIMATE CHANGE

Currently, there is no definitive link between long-term, changing weather patterns and an increase or decrease in the frequency or severity of earthquake activity in the State of New Mexico. However, the most significant climate variable that could change fault stress loads is surface water in the form of rain and snow. Similarly, changes in stress loads on Earth’s crust from periods of drought can be significant. Another climate-related phenomenon that is believed to have connections

to tectonic processes is glaciation. The retreat of a glacier can reduce stress loads on Earth’s crust, impacting the movement of subsurface magma. Several studies support these correlations in microseismicity.

Although the link with climate change and its impact on the frequency of earthquakes is limited, future vulnerability to potentially devastating earthquake conditions may be exacerbated by aging infrastructure.

**FIGURE 39. CONSEQUENCE ANALYSIS - EARTHQUAKES**

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>In an earthquake, agriculture and food processing facilities may be damaged along with critical infrastructure that supports those operations. Damage to production agriculture is limited although damaged infrastructure (such as to roads or irrigation) could impact transport of agricultural goods and services or ability to grow certain crops.</i>
Health and Safety of the Public	<i>Earthquakes in New Mexico generally are not high impact events that cause injury or death as most are moderate in terms of impacts. The public typically experiences some shaking in these events and the greatest threat to health and well-being is often from objects falling, from shelves or off walls.</i>
Health and Safety of Responders	<i>There would be little impact on responders in the event of an earthquake, because New Mexico is only likely to experience a moderate earthquake magnitude. Since there would be minimal damage to structures and infrastructure, responders would likely not be impacted in their ability to respond to an earthquake. If there were any major collapses of buildings or infrastructure however, responders will need to take care when accessing these structures in case they have become structurally unstable and unsafe. It should also be noted that because earthquakes can knock items such as candles off shelves or damage gas lines, fires are possible directly after an event. This may cause additional emergency calls for responders and create a burden on response operations.</i>
Continuity of Operations	<i>During and after an earthquake, continuity of operations could relatively easily be maintained and there would likely be little disruption to services or operations during an event. The most likely impact may be downed communication networks which could cause interruptions to normal operations.</i>
Delivery of Services	<i>Service delays could be anticipated to operations within or near the damaged areas if infrastructure is impacted.</i>
Property, Facilities, Infra-structure	<i>Earthquakes can cause widespread damages to buildings and infrastructure. Some buildings or bridges can be condemned. Water and gas lines as well as dams may rupture/fail.</i>
Environment	<i>There would be very minor impacts to the environment following a significant earthquake that is felt in the region with a moderate intensity. Secondary effects from the damage of key resources mentioned above (e.g. utility systems) could impact the environment, but the probability of this type of situation is very small. For instance, a ruptured pipeline could release dangerous materials that could damage the surrounding environment, but the likelihood of an earthquake causing this in the region is relatively low.</i>
Economic Condition	<i>There are several sources of economic loss typically associated with an earthquake including property damage and business interruption costs; cost to repair public transportation, communication, or utility systems; and debris removal costs.</i>
Public Confidence	<i>Not impacted by the event itself, but may be damaged if the response to an event is poor.</i>

## Extreme Weather Events

This section will assess extreme heat, severe winter storms, thunderstorms, tornadoes, and high winds.

## Extreme Heat

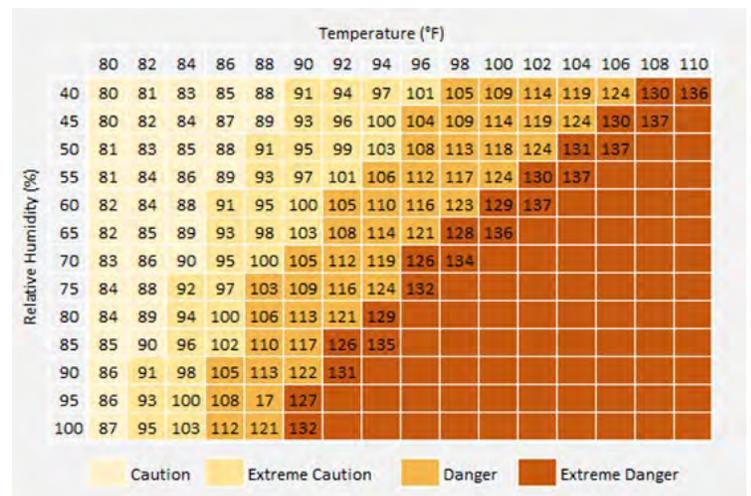
### OVERVIEW

Extreme heat may occur when temperatures hover 10 degrees or more above the average high temperature for the region and last for several weeks. Humid conditions, which add to the discomfort of high temperatures, occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can also lead to dust storms and low visibility. A heat wave combined with drought can be hazardous and have severe economic consequences on a community.

According to the National Oceanic and Atmospheric Administration, heat is the number one weather-related killer among natural hazards, followed by frigid winter temperatures. The National Weather Service (NWS) devised the Heat Index to better inform the public of heat dangers. The Index Chart, shown in “[Figure 40. Nws Heat Index Chart](#)” used air temperature and humidity to determine the heat index or apparent temperature. “[Figure 41. Heat Disorders Associated With Heat Index Temperature](#)” shows the risks associated with different heat index temperatures. Some populations, such as the elderly and young, are more susceptible to heat dangers than other segments of the population.

In addition, NOAA has seventeen metropolitan areas participating in the Heat Health Watch/Warning System to better inform and warn the public about heat dangers. A Heat Watch is issued when conditions are favorable for an excessive heat event in the next 12 to 48 hours. A Heat Warning is issued when an extreme heat event is expected in the next 36 hours. Furthermore, a warning is issued when the conditions are occurring, are imminent, or have a high likelihood of occurrence. Urban areas that participate in

FIGURE 40. [NWS HEAT INDEX CHART](#)



Source: NOAA, National Weather Service

FIGURE 41. [HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE](#)

HEAT INDEX TEMPERATURE	INTENSITY (MMI)
80°- 90°	Fatigue is possible with prolonged exposure and/or physical activity.
90°- 105°	Sunstroke, heat cramps, and heat exhaustion are possible with prolonged exposure and/or physical activity.
105°- 130°	Sunstroke, heat cramps, or heat exhaustion are likely, and heat stroke is possible with prolonged exposure and/or physical activity.
130° or higher	Sunstroke, heat cramps, and heat exhaustion are likely, and heat stroke is possible.

the Heat Health Watch/Warning System because urban areas are at greater risk of heat effects. Stagnant atmospheric conditions trap pollutants, thus adding unhealthy air to excessively hot temperatures. In addition, the “urban heat island effect” can produce significantly higher nighttime temperatures because asphalt and concrete (which store heat longer) gradually release heat at night.

## Severe Winter Storms

Severe winter weather has significant snowfall, ice, and/or freezing rain, with the quantity of precipitation variable by elevation. According to the National Weather Service, heavy snowfall is four inches or more in 12 hours, six or more inches in 24 hours in non-mountainous areas, and 12 inches or more in 12 hours or 18 inches or more in 24 hours in mountainous regions. Winter storms vary in size and strength and include heavy snowfalls, blizzards, freezing rain, sleet, ice storms, blowing and drifting snow conditions, and extreme cold.

Most winter precipitation in New Mexico is associated with Pacific Ocean storms as they move across the State from west to east. As the storms move inland, moisture falls on the coastal and inland mountain ranges of California, Nevada, Arizona, and Utah. Then, if conditions are right, the remaining moisture falls on the slopes of New Mexico's high mountain chains.

Severe winter weather can vary in size and strength and include heavy snowstorms, blizzards, ice storms, freezing drizzle or rain, sleet, and blowing or drifting snow. Extremely cold temperatures accompanied by strong winds result in potentially lethal wind chills.

## Thunderstorms

Thunderstorms are produced when warm, moist air is overrun by dry, cool air. As the warm air rises, thunderheads form and cause strong winds, lightning, hail, and heavy rains. Atmospheric instability can be caused by surface heating or upper tropospheric (>50,000 feet) divergence. Rising air parcels can also result from airflows over mountainous areas. Generally, the former "air mass" thunderstorms form on warm-season afternoons and are not severe. However, the latter "dynamically-driven" thunderstorms, which typically form in association with a cold front or other regional atmospheric disturbance, can become severe, producing strong winds, frequent lightning, hail, downburst winds, heavy rain, and occasional tornadoes.

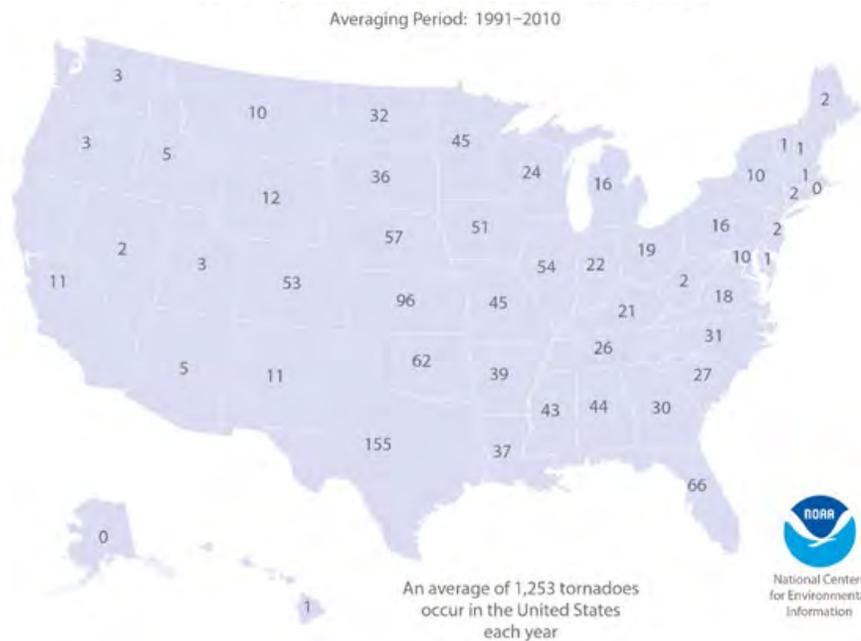
All areas of the State have thunderstorms. According to the National Weather Service (NWS), the thunderstorm season in New Mexico begins over the high plains in the eastern part of the State in mid to late April, peaks in May and June, declines in July and August, and then drops sharply in September and October. In the western part of the State, thunderstorms are infrequent during April, May, and June, increase in early July and August, and then decrease rapidly in September. Over the central mountain chain, thunderstorms occur almost daily during July and August, especially over the northwest and north central mountains.

Severe thunderstorms are reported each year in nearly all New Mexico counties. The NWS definition of a severe thunderstorm is a thunderstorm with any of the following attributes: downbursts with winds of 58 miles (50 knots) per hour or greater (often with gusts of 74 miles per hour or greater), hail 0.75 of an inch in diameter or greater, or a tornado. Typical thunderstorms can be three miles wide at the base, rise to 40,000-60,000 feet into the troposphere, and contain half a million tons of condensed water.

## Tornadoes

A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to 300 mph. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning ordinarily harmless objects into deadly missiles. Each year, an average of over 1,200 tornadoes are reported nationwide, resulting in an average of 56 deaths and 1,500 injuries. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air, forcing the warm air to rise rapidly. According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas, and Florida, respectively. Although the Great Plains

**FIGURE 42. FIGURE 8: TORNADO ACTIVITY IN THE UNITED STATES**



Source: NOAA, National Weather Service

region of the Central United States does favor the development of the most significant and most dangerous tornadoes (earning the designation of “tornado alley”), Florida experiences the most tornadoes per square mile of all States (SPC, 2002). “[Figure 42. FIGURE 8: TORNADO ACTIVITY IN THE UNITED STATES](#)” shows tornado activity in the United States based on the number of recorded tornadoes per 10,000 square miles.

Tornado magnitudes were determined in 2005 and later were determined using the Enhanced Fujita Scale.

## High Winds

While high winds are commonly associated with severe thunderstorms, hurricanes, and nor’easters, they may also occur due to differences in air pressures, such as when a cold front passes across the area. High winds are defined as winds exceeding 50-60 mph. Strong winds can damage buildings and uproot trees but can also produce

areas of blowing dust that can reduce visibility, making road travel hazardous. High-wind events often have a westerly component. During the Spring months, two factors work in tandem to create strong winds. By March or April, the polar jet stream has started migrating northward but can still often influence the southwest U.S., such that wind speeds increase dramatically with height. Meanwhile, the sun’s angle increases in the sky, creating more significant heating near the earth’s surface. The heated surface air rises to a greater depth of the atmosphere during these spring months, often between 7,500 and 10,000 feet above the surface. The rising air mixes with stronger winds aloft, resulting in stronger and turbulent winds mixing down to the surface. In addition, strong surface pressure gradients can enhance surface winds. High wind events across New Mexico can also occur with strong surface fronts, especially those that affect the eastern plains.

**FIGURE 43. HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE**

EF-SCALE NUMBER	INTENSITY PHRASE	3 SECOND GUST (MPH)	TYPE OF DAMAGE DONE
0	Gale	65-85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
1	Moderate	86-110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations.
2	Significant	111-135	Considerable damage. Roofs tore off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; Roof and some walls are torn off well-constructed houses; trains overturned; most trees uprooted.
3	Severe	136-165	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown, and large missiles generated.
4	Devastating	166-200	Substantial frame houses are lifted off foundations and carried considerable distances to disintegrate; automobile-sized missiles fly through the air over 100 meters; trees are debarked; steel re-enforced concrete structures are badly damaged.

## Historical Occurrences

### EXTREME HEAT

The National Centers for Environmental Information database did not report any extreme heat events for the Mid-Region. According to records, over the past 50 years, there has been a rise in the average July and summer temperatures, especially in Albuquerque.

### SEVERE WINTER STORMS

The State of New Mexico experiences severe winter storm events annually. According to the NCEI database, the Mid-Region has experienced 263 severe winter weather events since 1997, which resulted in 5 deaths and \$2.94 million in property damages.

### THUNDERSTORMS

The NCEI data recorded 836 severe thunderstorm events for the Mid-Region since 1957 (this search

included thunderstorm wind, hail, and lightning events). These events resulted in \$42.95 million in property damages and \$410 thousand in crop damages across the four counties.

Severe weather is difficult to predict precisely in pattern, frequency, and degree of severity. The impact from thunderstorm events (thunderstorm, hail, and lightning) has been moderate, with localized flooding occurring from severe thunderstorms and minor damage from lightning, and moderate to heavy damage to specific locations from hail. Highly vulnerable populations include those in mobile home parks, recreational vehicles, and aged or dilapidated housing, but no area is safe.

### TORNADOES

New Mexico experiences mostly weak, short-lived tornadoes. Strong tornadoes, while rare, are possible and occur once every ten years. Seventy-five percent of severe storms with tornadoes occur in eastern New Mexico and are most likely

between April and July. The only fatality reported from NCEI in the Mid-Region happened on October 10, 1974, in Valencia County, when one person died near Chimney Rock. The latest data from the NCEI database shows that 42 tornado events have occurred in the Mid-Region since 1954. These events have caused over \$2 million (2022 value) in property damages.

**HIGH WINDS**

The National Centers for Environmental Information (NCEI) database recorded 861 high wind events for the Mid-Region since 2009. These events resulted in \$29.091 million in property damages and \$10,701 in crop damages.

**CLIMATE CHANGE EXTREME HEAT**

According to the NWS Heat Index, New Mexico averages 20 days a year classified as dangerous or extremely dangerous. By 2050, the state is projected to face twice as many days, almost 40 a year. Additionally, the typical number of heat wave days in New Mexico is projected to increase from slightly less than 15 to more than 50 days a year. [“Figure 47. Regional Summer Warming Rates.”](#)

[“Since 1970”](#) illustrates how much summer warming has increased across nine climate regions of the U.S. as defined by NCEI. The Southwest has experienced the fastest warming summers, with temperatures rising at a rate of more than 0.6 F per decade – of more than 2.6 F overall – since 1970.

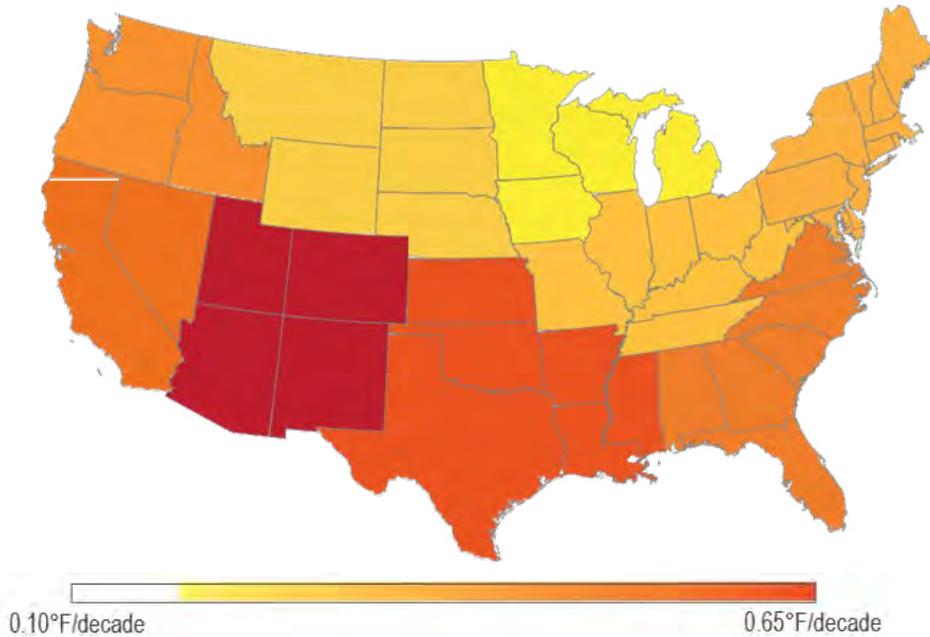
Summers in the U.S. have been warming since 1970. But on average, across the country, cities are even hotter and have been getting hotter faster than adjacent rural areas. This is because the buildings, roads, and other infrastructure that comprise urban environments typically make cities hotter than surrounding rural areas. This condition of a hotter metropolitan area than its surroundings is known as an urban heat island. [“Figure 45. Regional Summer Warming Rates Since 1970”](#) demonstrates an urban heat island temperature profile.

**FIGURE 44. HEAT DISORDERS ASSOCIATED WITH HEAT INDEX TEMPERATURE**

DATE	LOCATION	EVENT DESCRIPTION
<b>October 10, 1974</b>	Canoncito (now Tohajiilee); Bernalillo County, Sandoval County	The Canoncito tornado produced golf ball-sized hail and ripped through the village of Canoncito, killing a 2-week-old baby girl and injuring eight others. Three trailer homes were destroyed, and up to 10 other homes were damaged. The storm caused \$1,438,722 (2022 value) in property damages.
<b>April 12, 1987</b>	Bosque Farms (South of Albuquerque); Bernalillo County	An F0 tornado touched down 15 miles south of Albuquerque at Bosque Farms, downing trees, damaging shingles, and bending a basketball backboard on a metal pipe so that the top was five feet from the ground. The storm caused \$62,437 (2022 value) in property damages.
<b>June 29, 1987</b>	Bernalillo County; Albuquerque	A F0 tornado touched down at the state fairgrounds in Albuquerque. It destroyed a few horse stalls. Its classification as a tornado is based on eyewitness accounts, and cinder blocks were thrown from 20 to 100 feet. The storm caused \$6,243 (2022 value) in property damages.
<b>September 13, 1988</b>	Bernalillo County; Bernalillo	A F1 tornado occurred near Bernalillo. A 75,000-pound crane was moved off its foundation. Damage to the crane was estimated at around 100,000 dollars. The storm caused \$624,275 (2022 value) in property damages.

Source: National Center for Environmental Information

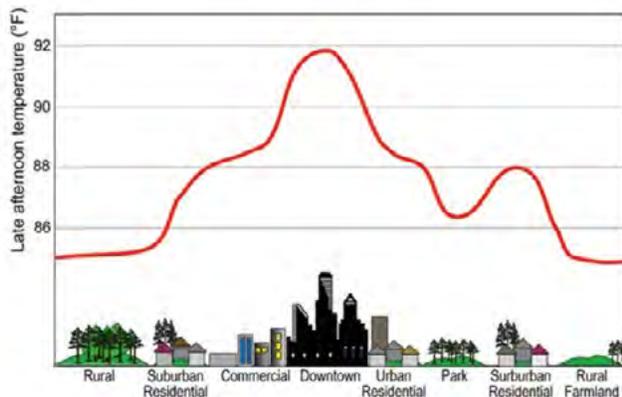
**FIGURE 47. REGIONAL SUMMER WARMING RATES SINCE 1970**



Source: NOAA, National Weather Service

According to a report by Climate Central, the top ten cities with the most intense summer urban heat islands (average daily urban-rural temperature differences) over the past ten years include Albuquerque at 5.9 F<sup>4</sup>. In addition, increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacted people and ecosystems in the Southwest.

**FIGURE 45. REGIONAL SUMMER WARMING RATES SINCE 1970**



Source: Climate Central

## SEVERE WINTER STORMS

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack, the amount of snow accumulates over winter. Between 2001 and 2010, the flow in the Southwest's major waterways – the Sacramento – San Joaquin River systems, the Colorado River, the Rio Grande, and rivers in the Great Basin – was 5 to 37 percent lower than average for the twentieth century<sup>5</sup>. As a result, late winter and spring snowpacks are projected to decline. This and the resulting reductions in runoff and soil moisture are expected to make the water supplies for the Southwest's cities, agriculture, and ecosystems even scarcer.

Across the Southwest, the capacity of snow to store water is crucial to managing water, and climate change risk disrupting the vital source of New Mexico's water supply. In 2015, for the fifth year in a row, New Mexico experienced drought due to diminished snowfall in the mountains. In addition, higher temperatures will reduce the

snowpack and promote earlier snowmelt in the headwaters of New Mexico’s major rivers, resulting in sharply lower levels of available water at critical times of the year.

**THUNDERSTORMS**

As average temperatures increase over time, this generally will result in higher extreme temperatures and more warming in the atmosphere. The additional heat in the atmosphere could result in more frequent extreme weather events. Lightning tends to occur with warmer temperatures due to heat energy that fuels storm clouds.

**TORNADOES**

At the time, there has not been a definitive link between long-term, changing weather patterns and an increase or decrease in the frequency or severity of tornadoes in the State of New Mexico. Challenges remain that recent clearer attribution includes limited data collection methods, high

year-to-year variability, difficulty modeling key physical elements that help tornadoes form, and directly modeling tornadoes due to their small size.

Despite these challenges, studies have found a few trends in the U.S. by using portions of the record that are more reliable, like data for powerful tornadoes. Although the number of days with tornadoes has fallen, other trends are increasing, including outbreaks with 30 or more tornadoes in one day, the density of tornado clusters, and the strength of tornadoes.

**HIGH WINDS**

There has not been a definitive link between long-term, changing weather patterns and an increase or decrease in the frequency or severity of high wind events in the State of New Mexico. Climate models and projects often ignore wind, despite its potential to signal and accelerate climate disruptions.

4 <http://assets.climatecentral.org/pdfs/UrbanHeatIsland.pdf>

5 <https://www.ucsusa.org/sites/default/files/attach/2016/04/Climate-Change-New-Mexico-fact-sheet.pdf>

**CONSEQUENCE ANALYSIS**

**FIGURE 46. CONSEQUENCE ANALYSIS - EXTREME HEAT**

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>Extreme heat can affect crops, livestock, and those working in and around agriculture production areas. Heat can also affect agriculture transportation because some commodities are perishable, and movement of those products must occur more expeditiously in extreme heat.</i>
Health and Safety of the Public	<i>Extreme heat can have severe public health impacts. Often the elderly and very young are susceptible to the most detrimental impacts, but heat stroke and exhaustion can plague anyone. People who are overweight, overexert during work or exercise, and those who are ill or on certain medications are also at greater risk of suffering from heat-related illness. Risks from exposure to extreme heat include heat cramps, heat exhaustion, heat stroke, and death. Many of the impacts of extreme heat on people result from heat exhaustion or improperly functioning air conditioning units. Injuries and death have resulted from extreme heat events. Individuals who work or spend time outdoors can suffer dehydration and death from high temperatures.</i>
Health and Safety of Responders	<i>Extreme heat can affect responders, who are often more susceptible to heat stroke and exhaustion due to their work. This work forces police and emergency medical providers to be exposed to the elements, physically exert themselves, or wear heavy personal protective equipment. In these cases, responders could be negatively impacted by extreme heat and must protect themselves and prepare accordingly.</i>
Continuity of Operations	<i>Extreme heat would likely have little impact on the continuity of operations as the warning time is usually long and direct impacts on large numbers of personnel or other resources necessary to maintain operations are unlikely. However, if air conditioning systems in operations centers break down due to overuse, operations could be interrupted or forced to move to secondary facilities.</i>

**FIGURE 46. CONSEQUENCE ANALYSIS - EXTREME HEAT**

SUBJECT	POTENTIAL IMPACTS
Delivery of Services	Any local/regional power failures could impact delivery of services as a result of extreme heat.
Property, Facilities, Infrastructure	Extreme heat would likely have a minor effect on the built environment. However, high temperatures could strain infrastructures such as power generation and water systems due to higher demand. During periods of extreme heat, air conditioning units work harder and require more electricity, making brownouts and blackouts possible if needs exceed generation. Extreme heat can also cause transportation infrastructure such as roads, bridges, railways, and runways to buckle, crack, or shatter.
Environment	The environment would be impacted by extreme heat as many plants and animals that cannot withstand the heat may die off, and crops and livestock may be impacted by unusually high temperatures, resulting in death or illness. Heat waves can also contribute to higher levels of air pollution since air becomes stagnant and traps emitted pollutants, often causing increased surface ozone levels.
Economic Condition	An extreme heat event could potentially negatively impact the economy in the short term as the public may be advised to stay indoors, causing them to reduce overall spending negatively. Additionally, extreme heat events can decrease worker productivity, as high temperatures can result in reduced energy, loss of concentration, and heat-related illness. This can cause disruptions to the regular working of the local economy. Extended periods of extreme heat may also disrupt the local economy if agricultural, dairy, and livestock production declines, resulting in income loss for farmers and other related industries and increased consumer prices.
Public Confidence	A heat wave or extreme heat event would have minimal effects on public confidence as these events are frequent, and the public likely understands the potential impacts. However, suppose an extreme heat event results in many illnesses and fatalities. In that case, government organizations may be accused of failing to prepare properly or respond to the threat, and public confidence could suffer.

**FIGURE 48. CONSEQUENCE ANALYSIS - SEVERE WINTER STORMS**

SUBJECT	POTENTIAL IMPACTS
Agriculture	Typically, there is some advance notice of a pending cold front and potential winter storm impacts. However, even with that, the effects can be devastating to agriculture, particularly the milk industry. The milk industry has timed inputs and outputs, and closed roads can severely impact that industry.
Health and Safety of the Public	Winter weather most often impacts people indirectly and has differing impacts in different areas of the region. Winter weather can create dangerous driving conditions by limiting driver visibility or creating slick conditions that make maneuverability difficult. Loss of power can create very cold conditions for residents, making it difficult to stay warm. Residents may try to heat their home using alternative means, which runs the risk of carbon monoxide poisoning caused by improperly ventilated heating sources. In addition, dangerously cold temperatures increase the risk of wind chill, frostbite, and hypothermia.
Health and Safety of Responders	Responders in severe winter weather face various hazards, including slick or icy roads that could cause accidents if they attempt to respond quickly to an emergency, as is often the case. The chances of crashed emergency vehicles and responders' injuries are always possible but increase during a winter storm due to difficult driving conditions. Winter weather can also make it difficult to access more rural areas if roads are snowed/iced over, and emergency vehicles cannot pass through.
Continuity of Operations	Generally, continuity of operations can be maintained during a winter weather event in the region. However, winter weather can potentially affect power transmission as the weight of ice and snow can cause trees and limbs to fall and damage transmission lines. Winter precipitation can also freeze roadways or create slick conditions that make it difficult for emergency management employees to get to work. As a result, operations will likely be disrupted during a winter weather event.
Delivery of Services	Facilities that cannot be reached or if supply lines are blocked, widespread disruption of delivery of services may result.

**FIGURE 48. CONSEQUENCE ANALYSIS - SEVERE WINTER STORMS**

SUBJECT	POTENTIAL IMPACTS
<p><i>Property, Facilities, Infrastructure</i></p>	<p><i>One of the region’s primary identified impacts of winter weather is the disruption of utilities. Utilities at risk of being affected include telephone, internet, cable, and water. Newspaper reports typically cite trees falling on electrical wires—and trees that have already been damaged from previous incidents that fall during a winter storm—or the stress caused by ice accumulation as the leading causes for power outages. Damage to this infrastructure is one of the significant consequences of a winter weather event in the region. It can lead to life-threatening situations if the public cannot utilize central heating systems to keep warm during the concurrent cold weather that often accompanies winter weather.</i></p> <p><i>Winter weather also has the potential to create hazardous driving conditions leading to accidents on roadways. This can create significant problems for emergency workers. Accidents can cause highways to become “large parking lots,” as well as cause motorists to strand their vehicles, making it difficult for emergency workers to reach those who need assistance. In general, major and local roadways become severely impacted when temperatures drop, making pre-treatment solutions ineffective. Transportation impacts can be minimized during early- and late-season events when paved surfaces can warm sufficiently to prevent winter precipitation accumulation. Winter weather can also cause delays and cancellations of flights at airports in the state due to slick conditions on runways. There is also the potential of a loss of power that can close airports.</i></p>
<p><i>Environment</i></p>	<p><i>Winter weather has an impact on the environment through the clearing of roadways. Snow on the roads can pick up contaminants from chemicals and oil products in traffic, as well as the salt mixture that is used to de-ice the roads. These contaminants can be carried to nearby waterways, which contaminates water sources and is absorbed by groundwater. In addition, vegetation can be damaged by these storm types, which harms habitats and may threaten wildlife.</i></p>
<p><i>Economic Condition</i></p>	<p><i>In winter weather, there is a high potential for business and office closures, modified business and office hours, and cancellation or postponement of sporting and other planned events in the region. This can be attributed to poor road conditions (including icy and slick conditions) that result in fewer people using the roads to get to their destination or a loss of power and heat that result in a loss of operations at specific facilities. In general, absenteeism is higher during winter weather events as many employers rightly encourage employees to stay home and avoid potential injury in unsafe driving conditions. Although any significant weather event can cause absences at work, workers are more likely to be absent because of bad weather during the winter months. Winter weather tends to impact much larger areas and makes travel difficult throughout much more of the transportation network.</i></p>
<p><i>Public Confidence</i></p>	<p><i>Winter storms are an expected event in the region. Still, a slow response such as road clearing or restoration of utilities can cause an erosion of the public’s confidence in the government.</i></p>

**FIGURE 49. CONSEQUENCE ANALYSIS - THUNDERSTORMS**

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>Agriculture operations are often prone to damage through thunderstorms. Lightening causes fires, animal and human strikes, and high winds and hail can ruin livestock and crop production.</i>
Health and Safety of the Public	<i>Thunderstorms are generally associated with several other hazards, such as high wind and flooding, the latter caused by torrential rain. As such, the public could be impacted in several ways by a thunderstorm event. For example, high wind can cause trees to fall and potentially result in injuries or death, and rising floodwaters can lead to drowning or other serious injuries. Although often not as severe as tornadoes, the impacts on the public from thunderstorms can be significant, especially in the long run.</i>
Health and Safety of Responders	<i>Responders are generally not affected by thunderstorms, although it should be noted that they could be impacted in the same ways as the public. Otherwise, responders could be affected by road blockages caused by downed trees or floodwaters, which would ultimately reduce their response time.</i>
Continuity of Operations	<i>In general, continuity of operations can be maintained as these thunderstorm events are relatively common. Thunderstorm events often affect power which ultimately may impact operations. However, thunderstorms are typically not large enough to severely affect normal operations, and their impacts do not reach far enough to disrupt the continuity of operations at the regional level.</i>
Delivery of Services	<i>Little to no impacts are anticipated, except for facilities that may be damaged or have power failures during an event.</i>
Property, Facilities, Infrastructure	<i>Building materials determine how well a structure can withstand tornado-force winds. Buildings that use structural steel, reinforced concrete, or load-bearing masonry have the best chance of withstanding a severe thunderstorm in the region. Homes constructed of wood or manufactured material are most at risk. Non-engineered structures in the region are far more vulnerable than engineered buildings to damage from thunderstorm winds. It is also notable that materials well-tied to all other building components are more likely to survive extreme thunderstorm events. The magnitude of the event will determine the extent of damage and impacts that are felt throughout the region. These impacts can include structural failure, debris damage, and loss of facility functionality.</i>
Environment	<i>Thunderstorms can impact crops and the natural environment through high wind and flooding. Flooding can kill plants and animals and contaminate drinking water for animals and humans. High wind can harm forests by bringing down trees and causing fires from downed power lines that impact the environment.</i>
Economic Condition	<i>Economic impacts from thunderstorm events can be far-reaching as the damages can be widespread, affecting both homes and businesses. In addition, damages can result in business and economic disruption throughout the recovery process.</i>
Public Confidence	<i>Not impacted by thunderstorm events but may be damaged if the response to an event is poor.</i>

**FIGURE 50. CONSEQUENCE ANALYSIS - TORNADOES**

SUBJECT	POTENTIAL IMPACTS
<i>Agriculture</i>	<i>Agriculture infrastructure, such as grain silos and windmills, are most vulnerable to tornadoes due to their height. Livestock and crop losses have been recorded in the past as well.</i>
<i>Health and Safety of the Public</i>	<i>Because it is hard to predict where a tornado will touch down, it cannot be said which areas of the population are most vulnerable. However, injuries and deaths resulting from tornadoes are the most significant impacts. They are most likely to occur to those living in mobile homes or older homes that have not been built to current design standards.</i>
<i>Health and Safety of Responders</i>	<i>Responders could be critically affected by tornado events as the onset is often very rapid and unpredictable, thereby putting response personnel potentially in harm's way. Many responders may be out in the open while on duty when a tornado forms, and they may be caught in a dangerous position as a result. Due to the unpredictability of such events, the response may also be hindered post-event as responders may be unable to access those that have been affected, and they are unable to enter affected areas safely.</i>
<i>Continuity of Operations</i>	<i>Tornadoes could significantly impact the continuity of operations as personnel may be harmed and critical resources damaged or destroyed. In many ways, since the impacts of a tornado are unpredictable, it is also difficult to predict and plan for the appropriate ways to ensure continuity of operations. Although local emergency managers are usually prepared for such an event, disruption of operations will likely occur to some degree if the event is large enough and spurs multiple tornadoes across the region.</i>
<i>Delivery of Services</i>	<i>Little to no impacts are anticipated, except for facilities that may be damaged or during an event.</i>
<i>Property, Facilities, Infrastructure</i>	<i>Building materials determine how well a structure can withstand tornado-force winds. Buildings that use structural steel, reinforced concrete, or load-bearing masonry have the best chance of withstanding a tornado event in the region. Homes constructed of wood or manufactured material are most at risk. Non-engineered structures in the region are far more vulnerable than engineered buildings to damage from tornado winds. It is also notable that materials well-tied to all other building components are more likely to survive extreme wind events. The magnitude of the tornado will determine the extent of damage and impacts felt throughout the county. These impacts can include structural failure, debris damage, and loss of facility functionality.</i>
<i>Environment</i>	<i>Downed trees and other forms of vegetation are often one of the most visible impacts on the environment from a tornado. Additionally, building material or other debris can be carried or thrown at great distances by wind and spread out in unexpected places such as natural areas. Coordinated cleanup efforts after a tornado can include the removal of debris, but much debris ends up remaining in the local habitat. Finally, if the tornado impacts hazardous materials facilities, these may release dangerous chemicals into the environment that can cause long-term harm.</i>
<i>Economic Condition</i>	<i>A tornado can impact any area of the region at any time, bring significant property damage costs to individual citizens, and disrupt the regular functioning of the local economy. After past events, there has been a substantial halt to many economic activities, and financial losses to businesses have often been high. Likewise, the loss of power can also interrupt local economies and negatively impact the daily functioning of business activities.</i>
<i>Public Confidence</i>	<i>Tornadoes are often likely to affect public confidence due to their destructive and highly visible impacts.</i>

**FIGURE 51. CONSEQUENCE ANALYSIS - HIGH WINDS**

SUBJECT	POTENTIAL IMPACTS
<i>Agriculture</i>	<i>Agriculture infrastructure, such as grain silos and windmills, are most vulnerable to tornadoes due to their height. Livestock and crop losses have been recorded in the past as well.</i>
<i>Health and Safety of the Public</i>	<i>Injuries and deaths have occurred in the State due to tornadoes. There is no reason to expect that the impacts will not continue.</i>
<i>Health and Safety of Responders</i>	<i>Responders face the same impacts as the public.</i>
<i>Continuity of Operations</i>	<i>Little to no impacts are anticipated, except for facilities that may be damaged or during an event.</i>
<i>Delivery of Services</i>	<i>Little to no impacts are anticipated, except for facilities that may be damaged or during an event.</i>
<i>Property, Facilities, Infrastructure</i>	<i>High-wind events can cause minor damage to the total destruction of facilities and infrastructure, depending on the size of the event. Extensive damages can occur.</i>
<i>Environment</i>	<i>Downed trees and other forms of vegetation are often one of the most visible impacts on the environment from a high wind event. Additionally, building material or other debris can be carried or thrown great distances by wind and spread out in unexpected places such as natural areas. Coordinated cleanup efforts can include the removal of debris, but much debris ends up remaining in the local habitat. Finally, if a high wind event impacts hazardous materials facilities, these may release dangerous chemicals into the environment that can cause long-term harm.</i>
<i>Economic Condition</i>	<i>High wind events do not generally disrupt the local economy unless a more significant event, such as a tornado or straight-line wind, occurs.</i>
<i>Public Confidence</i>	<i>Not impacted by the event itself, but may be damaged if the response to an event is poor.</i>

# Volcanoes

## OVERVIEW

A volcano is an opening in the Earth's crust that allows molten rock, gases, and debris to escape to the surface. During a volcanic eruption, lava and other debris can flow up to 100 mph, destroying everything in its path. Volcanic ash can travel hundreds of miles and cause severe health problems. Such hazards can impact areas hundreds or thousands of miles from the volcano, with the potential for significant health and economic impacts. Volcanic products are typically named according to clast (particle) size, which can range from meters down to microns in size. "Tephra" is used as a catch-all term to describe all erupted clasts regardless of size, while "ash" describes particles of less than 2 mm in size. During an eruption, most tephra will fall to the ground around the volcano. This can load buildings' roofs and obscure road markings, making travel difficult. The loading of tephra on leaves can lead to the burial of plants or the stripping of branches from trees, resulting in a significant impact on agriculture. Ash is made up of small, sharp, angular fragments of glass and other volcanic rock; due to its abrasive nature, volcanic ash can cause damage to aircraft. Various gases can be emitted by active volcanoes before, during, or after an eruptive event and can cause multiple health hazards locally. People can be exposed to harmful volcanic gases by breathing them in or through contact with the skin and eyes. Volcanoes are classified as active, dormant, or extinct. Active volcanoes have a recent history of eruptions and are likely to erupt again. Dormant volcanoes have not erupted for a long time but are expected to erupt again. Extinct volcanoes are not expected to erupt in the future.

## LOCATION AND SPATIAL EXTENT

The Rio Grande rift is segmented into a series of basins, the Albuquerque basin being one of them. It is bounded on the north by the La Bajada fault, which defines the southern margin of the Española basin, and to the south by the Socorro constriction. "[Figure 53. MAP OF RIO GRANDE RIFT VOLCANOES](#)" on page 58 illustrates the Rio Grande rift and volcanoes located in the basins.

Volcanism is distributed throughout the Albuquerque basin, and the Albuquerque volcanoes are only one among several young volcanic features near Albuquerque. Although most of these volcanic areas consist of dark, relatively low silica and somewhat fluid basalt lava flow and scoria eruptions, andesitic and more silicic compositions are represented in some volcanic centers, especially at depth within the rift valley basin fill.

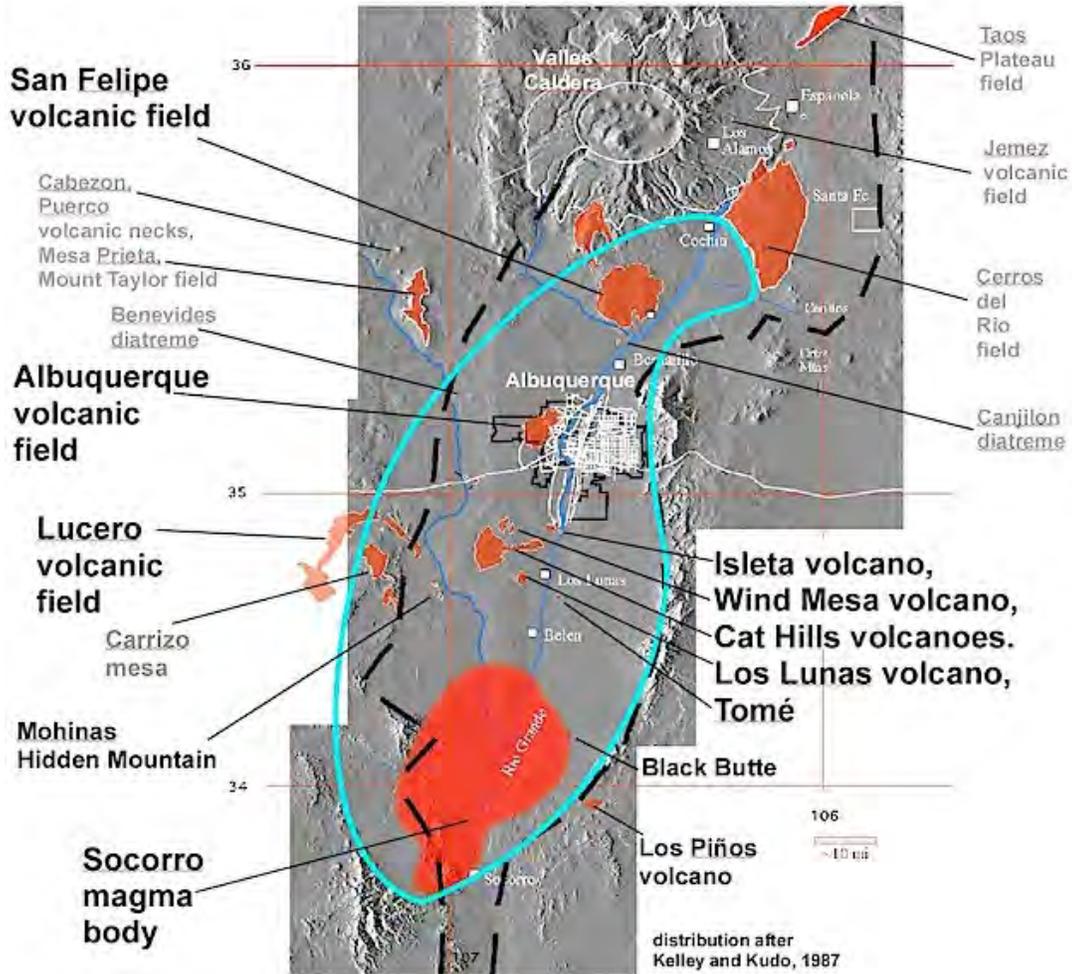
## HISTORICAL OCCURRENCES

Although there are no active volcanoes in New Mexico, many dormant volcanoes are preserved in the State. Dormant volcanoes in New Mexico include Mount Taylor, the Jemez Mountains, the Albuquerque volcanoes, and the Capulin volcano. Lava flows near Grants and Carrizozo are the youngest volcanic flows in the State (about 3000 years old and 5,000 years old, respectively)<sup>6</sup>. The area around Albuquerque remains potentially active, mainly because of its location in the Rio Grande rift. A new volcano could erupt somewhere within the rift, if not along the Albuquerque Volcanoes.

One of the larger earthquake swarms in New Mexico occurred in 1972 beneath the volcanoes. There is no particular evidence that this was new magma moving up a crack. Instead, the earthquake swarm may have been re-adjustments of dikes and faults at great depth as the deeper portions of the dike continue to cool and contract.

<sup>6</sup> <https://geoinfo.nmt.edu/faq/volcanoes/>

FIGURE 53. MAP OF RIO GRANDE RIFT VOLCANOES



Source: <https://www.nmnaturalhistory.org/volcanoes/albuquerque-basin-volcanic-field>

## CLIMATE CHANGE

According to the USGS, volcanoes can impact climate change. During major explosive eruptions huge amounts of volcanic gas, aerosol droplets, and ash are injected into the stratosphere. Volcanic gases like sulfur dioxide can cause global cooling, while volcanic carbon dioxide, a greenhouse gas, has the potential to promote global warming. The most significant climate impacts from volcanic injections into the

stratosphere come from the conversion of sulfur dioxide to sulfuric acid, which condenses rapidly in the stratosphere to form fine sulfate aerosols. The aerosols increase the reflection of radiation from the Sun back into space, cooling the Earth's lower atmosphere or troposphere<sup>7</sup>. Due to the dormant nature of the volcanoes marking the Rio Grande Rift there is little concern of volcanic activity affecting climate change.

<sup>7</sup> <https://www.usgs.gov/programs/VHP/volcanoes-can-affect-climate>

## CONSEQUENCE ANALYSIS

FIGURE 52. CONSEQUENCE ANALYSIS - VOLCANOES

SUBJECT	POTENTIAL IMPACTS
<i>Agriculture</i>	<i>Ashfall can have severe effects on crop growth and livestock. Fluorine poisoning and death can occur in livestock that grazes on ash-covered grass. The thickness of the ash layer can cause die-off in crops when ash thickness is greater than 100-150 mm (4-6 in).</i>
<i>Health and Safety of the Public</i>	<i>If an eruption occurs, volcanic ashfall rarely endangers human life directly. However, larger eruptions can cause significant impacts on public health, including potential deaths.</i>
<i>Health and Safety of Responders</i>	<i>Responders face the same impacts as the public.</i>
<i>Continuity of Operations</i>	<i>Little to no impacts are anticipated, except for facilities that may be damaged or during an event.</i>
<i>Delivery of Services</i>	<i>Little to no impacts are anticipated, except for facilities that may be damaged or during an event.</i>
<i>Property, Facilities, Infrastructure</i>	<i>Ash can damage buildings, ranging from minor cosmetic damage to building exteriors to catastrophic structural damage in extreme cases.</i>
<i>Environment</i>	<i>Volcanoes can cause significant environmental changes, especially in cases of larger eruptions.</i>
<i>Economic Condition</i>	<i>Volcanic eruptions can greatly impact the economic base (businesses) and individuals can lose everything, and recovery may require substantial investment.</i>
<i>Public Confidence</i>	<i>Not impacted by the event itself, but may be damaged if the response to an event is poor.</i>

## Flood/Flash Flood

### OVERVIEW

Flooding is the most frequent and costly natural hazard in the United States and is a hazard that has caused more than 10,000 deaths since 1990. Nearly 90 percent of presidential disaster declarations result from natural events where flooding was a major component.

The water accumulation within a water body results in overflowing excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body susceptible to flooding.

Floods generally result from excessive precipitation and can be classified under two categories: general floods, precipitation over a given river basin for an extended time along with storm-induced wave action, and flash floods, the product of heavy localized rainfall in a short period over a given location. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surface.

Slow-moving thunderstorms cause most flash flooding or heavy rains associated with hurricanes and tropical storms. However, flash flooding events may also occur from a dam or levee failure within minutes or hours of heavy rainfall or from a sudden release of water held by a retention basin or other stormwater control facility. Although flash flooding occurs most often along mountain streams, it is also common in urbanized areas where much of the ground is covered by impervious surfaces. Floodplain boundaries are designated and routinely updated through Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) reports and identified on Flood Insurance Rate Maps (FIRMs) according to various flood hazard zone designations. Flood

hazard zone designations will depend upon local conditions and the date when the map was issued, but all will show the 100-year or base floodplain (1-percent annual chance) and areas of the 500-year floodplain (0.2-percent annual chance).

Flash flooding is the second most significant weather hazard in New Mexico. New Mexico ranks 10th in the Nation in flash flood deaths per capita, using statistics based on storm data from 2006 - 2012. The flash flooding problem stems from several factors. During the summer (June through August), thunderstorm frequency in certain parts of New Mexico is among the highest in the Nation. Excessive moisture during the summer can lead to significant volume runoffs enhanced by the terrain.

### LOCATION AND SPATIAL EXTENT

There are areas in the Mid-Region that are susceptible to flood events. Special flood hazard areas in the Mid-Region were mapped using Geographic Information System (GIS) and FEMA Digital Flood Insurance Rate Maps (DFIRM). This includes Zone A (1-percent annual chance floodplain), Zone AE (1-percent annual chance floodplain with elevation), and Zone X500 (0.2 percent annual chance floodplain).

It is important to note that while FEMA digital flood data is recognized as the best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood-related losses often do occur outside of delineated special flood hazard areas.

### HISTORICAL OCCURRENCES

The Mid-Region has experienced numerous flood/flash flooding events in each county. The NCEI database reports a total of 146 flood/flash flood events with seven deaths, over \$27 million in property damage, and over \$4 million in crop damage.

## CLIMATE CHANGE

Flash floods are associated with short-duration, high-intensity rainfall events that affect New Mexico yearly. A vast majority of flash floods accompany slow-moving thunderstorms during the monsoon season. While there has not been a definitive link between long-term, changing weather patterns and the frequency of flash flood

events associated with thunderstorms in the State of New Mexico, a greater number of significant wildfires owing to an increase in the frequency, duration and intensity of drought would contribute to a higher likelihood of potentially devastating burn scar flash flooding in parts of the State. Additionally, flooding impacts from snowmelt runoff along tributaries of main stem rivers could shift to earlier in the runoff season

## CONSEQUENCE ANALYSIS

FIGURE 54. CONSEQUENCE ANALYSIS - FLOOD/FLASH FLOOD

SUBJECT	POTENTIAL IMPACTS
Agriculture	<i>Flooding and flash flooding can devastate the agriculture industry and destroy crops, livestock, and agricultural infrastructure. In addition, flooding can impact irrigation systems by changing existing water channels. Irrigation water compliant with the Food Safety and Modernization Act can be contaminated by floodwaters and, in turn, contaminate crops, making them unfit for consumption.</i>
Health and Safety of the Public	<i>During flood events, people are often stranded and have to be rescued by first responders. Often lives are lost, or people are injured. Even when injuries and fatalities are avoided, the impact on the public can be significant as many people will be forced into shelters or need to find temporary lodging. They may be unable to return to their homes and find them uninhabitable. Another significant impact on the public can be the deteriorating health conditions that result from flooding. After floodwaters recede, homes and personal property covered in water may become infested with mold, creating serious health risks. Additionally, waterborne diseases can be pervasive in areas impacted by flooded sewer and water systems. Mosquitoes and other carriers of illnesses often thrive in post-flood conditions, increasing the chances of transmitting vector-borne diseases.</i>
Health and Safety of Responders	<i>Responders are often affected by flooding because floods can trap people in their homes or other locations, forcing responders to put their lives at risk to return individuals to safety. Respondents in flood situations face blocked roads and difficulty safely protecting citizens. Water rescues can be some of the most dangerous as rapidly moving flood waters are difficult to navigate. Rescuers are typically at high risk of loss of life or personal injury during flood events, especially compared to other types of natural hazards.</i>
Continuity of Operations	<i>Flooding can impact the continuity of operations by knocking out power sources and preventing emergency management personnel from doing their job. Floods typically impact the continuity of operations by disrupting normal operations. Impacts would be felt most severely at a localized level as flooded areas experience the most disruption.</i>
Delivery of Services	<i>Delivery of services could be impacted for weeks in more significant flood events.</i>
Property, Facilities, Infrastructure	<i>A flood event could impact many buildings and structures, but critical infrastructure and key resources (CIKR) are critical to identify and protect. When these facilities are located in flood-prone areas, there is a substantial risk to the essential functions of government, such as law enforcement and medical care. This also includes any assets, systems, and networks vital to the continued operation of government services, such as power generation facilities, transmission infrastructure, and road networks. The incapacitation or destruction of these resources would have a debilitating and costly effect on many aspects of the state's normal operations. Often water and wastewater are some of the most impacted infrastructures. Since these types of infrastructure deal directly with water, they have often located in the most flood-prone areas and are severely impacted during flood events. When these facilities or infrastructure are flooded, it complicates recovery and affects people unable to utilize typical water sources for drinking, sanitation, and other everyday uses. In addition, personal property such as homes and businesses have been impacted to a large degree by past flooding events and are a significant concern in future flooding events.</i>

**FIGURE 54. CONSEQUENCE ANALYSIS - FLOOD/FLASH FLOOD**

SUBJECT	POTENTIAL IMPACTS
<i>Environment</i>	<i>Long-term severe impacts are possible due to the severe contamination often found in flood waters. Fortunately, flash flooding passes quickly and does not linger. However, the strong forces of the water can cause massive amounts of erosion and divert natural waterways.</i>
<i>Economic Condition</i>	<i>As was seen in the region in 2006, communities can have severe economic losses in the form of infrastructure damages and business shutdowns. A variety of economic impacts could result from a large-scale flood event. Flooding and flash floods can impact agricultural production, cause the shutdown of businesses, and even permanent closures. FEMA indicates that almost 40 percent of small businesses never reopen after a disaster. This is due to the severe damage that only small amounts of flood waters can cause. The business shutdown can be devastating, specifically to small, rural communities that rely on them as economic drivers.</i>
<i>Public Confidence</i>	<i>Flood events often impact public confidence, especially when affected individuals don't have flood insurance and are not covered by their home insurance policy. This can create public relations issues for the government and a loss of public confidence.</i>

# Invasive Species

## **OVERVIEW**

Invasive species can be plants, animals, and other living organisms (i.e., microbes). Invasive species can be any non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Human actions are the primary means of invasive species' introductions. These species can lead to the extinction of native plants and animals, destroy biodiversity, and permanently alter habitats. The cost to control invasive species and the damages they inflict upon the property, and natural resources in the U.S. is estimated at \$137 billion annually<sup>8</sup>.

Non-native species introduce conservation challenges to New Mexico's economy, environment, human, animal, or plant health.

## **AQUATIC INVASIVE SPECIES (AIS)**

Aquatic Invasive Species (AIS) is any non-native plant, animal, or pathogen that can harm the economy, environment and human health, or plant health. The New Mexico Department of Game and Fish, along with state, federal, and private partners, are working diligently to stop the spread of AIS. Of particular concern is the invasion of the zebra and quagga mussels. The spread of these mussels poses a risk to native species and to all water-based recreation, including boating municipal water supplies, hydroelectric power generation, and irrigation for farming and agriculture.

## **CHRONIC WASTING DISEASE**

Chronic Wasting Disease (CWD) is a prion disease that affects deer, elk, reindeer, sika deer, and

moose. It may take over a year before an infected animal develops symptoms, including drastic weight loss, stumbling, listlessness, and other neurological symptoms. CWD was first identified in captive deer in a Colorado research facility in the late 1960s and in wild deer in 1981<sup>9</sup>. Once CWD is established in an area, the risk can persist in the environment. Therefore, the affected areas are likely to continue to expand.

According to the N.M. Department of Game and Fish, the first confirmed case of CWD in New Mexico was confirmed in 2002. Since 2002, CWD was detected in 59 deer and elk as of January 1, 2018. Animals with CWD included harvested animals submitted by hunters, animals collected because they were found ill or otherwise abnormal, and animals captured specifically for surveillance testing from high-risk sites<sup>10</sup>.

## **WHIRLING DISEASE**

Whirling disease is a parasite that can cause severe affliction in some species of trout and salmon. The disease may not directly kill trout, but severely affected young trout often develop debilitating deformities of the skull and spinal column or display the erratic tail-chasing behavior from which the disease gets its name. Rainbow trout are particularly susceptible, and other varieties of salmonids differ in degrees of resistance. Whirling disease is native to European brown trout populations. However, during the 1950s, the fish was imported to the U.S., where the native fish species had no natural resistance to the parasite.

New Mexico first detected the disease in their rainbow trout population in the Summer of 2004<sup>11</sup>. According to the New Mexico Department of Game and Fish, Lisboa Springs Hatchery was

8 [https://defenders.org/sites/default/files/publications/new\\_mexico.pdf](https://defenders.org/sites/default/files/publications/new_mexico.pdf)

9 <https://www.cdc.gov/prions/cwd/index.html>

10 <https://www.cdc.gov/prions/cwd/index.html>

11 <https://www.wildlife.state.nm.us/fishing/fishing-regulations/whirling-disease/>

using river water in some raceways, and trout transfers to the Seven Springs and Parkview hatcheries. This appeared to have spread the disease. In response, an estimated 225,000 fish were destroyed. The department intends to aggressively eradicate sources of the disease at state-run hatcheries and continue to monitor hatcheries for infestation. Hatchery-grown rainbow trout are stocked in 173 New Mexico waters.

## **LOCATION AND SPATIAL EXTENT**

Invasive species cover a large area and cannot be confined to any geographic or political boundaries. New Mexico has been invaded by several harmful exotic species, particularly weeds. The USDA National Invasive Species Information Center provides online databases about invasive species in New Mexico and resources and organizations with interest in the prevention, control, or eradication of invasive species at: <https://www.invasivespeciesinfo.gov/us/new-mexico>.

The Center for Invasive Species and Ecosystem Health Early Detection and Distribution Mapping System (EDDMapS) tracks the number of invasive species by county in the U.S. The total number of species reported from the EDDMapS database is 523 invasive species, as illustrated in [“Figure 55. Invasive Species For Mid-Region”](#) (which includes insects, diseases, plants, and animals).

## **CLIMATE CHANGE**

Increase in temperature, rainfall, humidity and drought can facilitate the spread and establishment of invasive species. Extreme climatic events resulting from climate change such as floods, droughts and wildfires can transport invasive species to new areas and decrease the resistance of habitats to invasions.

**FIGURE 55. INVASIVE SPECIES FOR MID-REGION**

COUNTY	NUMBER OF SPECIES
<i>Bernalillo County</i>	189
<i>Sandoval County</i>	180
<i>Torrance County</i>	87
<i>Valencia County</i>	67

## Soil Movement

### LAND SUBSIDENCE

Land subsidence is the loss of surface elevation and affects nearly every State. Land subsidence has several causes, such as:

- *Underground fluid withdrawal.*
- *The collapse of subsurface caverns.*
- *The collapse of underground mines.*
- *Hydro compaction of collapsible soils.*
- *Compaction of organic soils.*

Subsidence can occur uniformly over large areas or as localized sinkholes. Wide-area compaction commonly occurs when large amounts of groundwater have been withdrawn from certain types of rocks, such as unconsolidated fine-grained sediments. The sediments compact because the water is partly responsible for bearing the weight of overlying sediments. When the water is withdrawn, the sediment compacts. Subsidence may occur abruptly or over many years. It can occur uniformly over large areas or as localized sinkholes.

In areas where many communities rely on pumped groundwater, such as New Mexico, Colorado, Arizona, Utah, Nevada, and California, major aquifers include compressible clay and silt that can compact when the groundwater is pumped. This is especially the case in regions where the aquifer is confined (over-pressured). Increased groundwater demand from population growth may likely accelerated.

### EXPANSIVE SOILS

Expansive soil is soil or clay (such as montmorillonite or bentonite) that is prone to expansion or shrinkage due directly to variation in water volume. Expansive soils swell when exposed to large amounts of water and shrink when the water evaporates. This continuous cycle of wet to dry soil keeps the soil in perpetual motion causing structures built on this soil to sink or rise unevenly,

often requiring foundation repair. Expansive soils are comprised of minerals (incredibly fine particles) with little to no organic material and thus incredibly viscous, proving difficult to drain. Rapid alluvial deposition from high suspended load flows can lead to collapsible deposits in semi-arid and drier regions. Prerequisites require heightened high plasticity or shrink-well clay content (greater than 10%) with a well-mixed suspended load during a deposition. While collapsible alluvial deposits are made of sand- and silt-sized grains, muddy gravel deposits can be collapsible; bridging between clasts by water-sensitive clays can support coarse clasts. Additionally, clay-sized alluvial deposits can form a box-work structure after rapid deposition and can collapse on wetting, similar to collapsible soils in marine mudstones.

### LOCATION AND SPATIAL EXTENT

#### *LAND SUBSIDENCE*

Land subsidence typically covers a large area and cannot be confined to any geographic or political boundaries. Water supply for the metropolitan areas within the Albuquerque Basin historically has been met nearly exclusively by groundwater withdrawals from the Santa Fe Group aquifer, resulting in water-level declines in the aquifer system<sup>12</sup>.

### EXPANSIVE SOILS

Expansive soils typically cover a large area and cannot be confined to any geographic or political boundaries.

### HISTORICAL OCCURRENCES

#### *LAND SUBSIDENCE*

The Albuquerque Bernalillo County Water Utility Authority (ABCWUA) drinking water supply was almost exclusively sourced from groundwater

<sup>12</sup> [https://geoinfo.nmt.edu/publications/openfile/downloads/500-599/593/OFR-593\\_Report.pdf](https://geoinfo.nmt.edu/publications/openfile/downloads/500-599/593/OFR-593_Report.pdf)

within the Albuquerque Basin before 2008. The San Juan-Chama Drinking Water Project (SJCDWP) provided surface-water resources to augment the groundwater supply in 2008, reducing groundwater pumping in the Albuquerque Basin. According to the USGS, a study on land subsidence in the Albuquerque Basin does not show substantial subsidence.

## *EXPANSIVE SOILS*

Expansive soils can range from inches to feet, occur over the course of days or months, and have led to up to \$10 million in damage in New Mexico as of 1992. Damage occurs episodically, with entire small towns and housing developments affected and multiple homes condemned. Climate Change.

## **CLIMATE CHANGE**

### *LAND SUBSIDENCE*

While data does not show any substantial land subsidence in the Mid-Region, if groundwater is continually pumped out of the ground due to extended periods of droughts, increasing extreme heat events, and larger urban populations relying on it for their water needs, land subsidence could happen in the future.

### *EXPANSIVE SOILS*

As expansive soils have the potential for undergoing significant movement with soil moisture changes, they may impact the stability of structures. The effect of climate change on soil moisture needs to be predicted so that provisions can be made to respond effectively to the challenges of climate change associated with expansive soils. New Mexico is particularly vulnerable due to its semi-arid climate. Extreme temperature increases and rainfall reductions are expected to cause increased changes in soil moisture content from those at present.

# Wildfire

## OVERVIEW

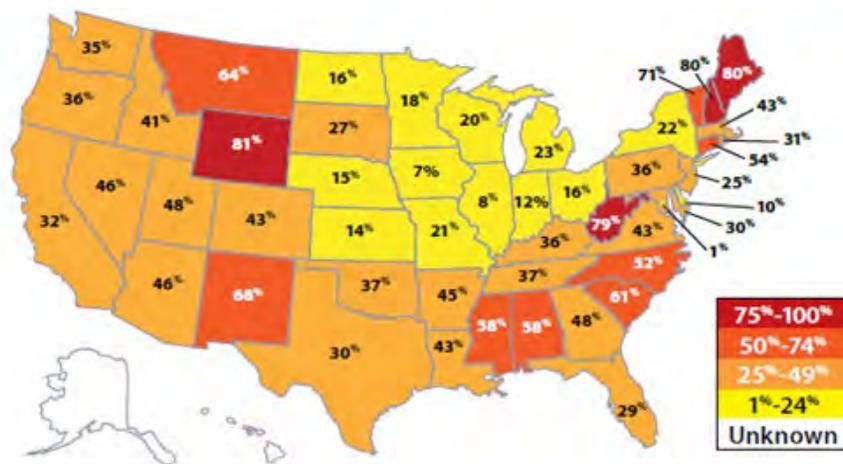
A wildfire is defined as an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but human factors cause most fires. Over 80 percent of forest fires are started by negligent human behavior, such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause of wildfires is lightning. Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings. Many individual homes and cabins, subdivisions,

resorts, recreational areas, organizational camps, businesses, and industries are located within high wildfire hazard areas. Furthermore, the increasing demand for outdoor recreation places more people in wildlands during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

## LOCATION AND SPATIAL EXTENT

Every state has a Wildland Urban Interface (WUI), which is the rating of the potential impact of wildfires on people and their homes. The WUI is not a fixed geographical location but rather a combination of human development and vegetation where wildfires have the most significant potential to result in negative impacts. Nationally, one-third of all homes lie in the WUI, which is a growing danger. [“Figure 57. Percent Of Total Homes In The Wildland Urban Interface”](#) illustrates each state’s percent of total homes located in the WUI. Based on the data from the U.S. Department of Agriculture, 68% of

**FIGURE 57. PERCENT OF TOTAL HOMES IN THE WILDLAND URBAN INTERFACE**



Source: US Department of Agriculture

homes in New Mexico lie within the WUI. Every community cluster is at risk of wildfire; several factors, such as drought conditions or high fuel levels on the forest floor, may make a wildfire more likely. Furthermore, areas in the urban-wildland interface are particularly susceptible to a fire hazards as populations border formerly undeveloped areas.

## **HISTORICAL OCCURRENCES**

Information from the SWCC was used to ascertain historical wildfire events. The SWCC reported that a total of 41,730 events that burned a total of 6,993,813 acres that impacted an area greater than 1 acre have occurred throughout New Mexico from 1990 to 2015<sup>13</sup>.

## **CLIMATE CHANGE**

Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and

ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas. Between 1970 and 2003, warmer and drier conditions increased burned area in western U.S. mid-elevation conifer forests by 650%. Climate outweighed other factors in determining burned area in the western U.S. from 1916 to 2003. Winter warming due to climate change has exacerbated bark beetle outbreaks by allowing more beetles, which normally die in cold weather, to survive and reproduce. Wildfire risk is increased in stands of conifers with dry needles and in areas with extensive dead and down trees. More wildfire is projected as climate change continues, including a doubling of burned area in the southern Rockies<sup>14</sup>.

<sup>13</sup><https://pubs.usgs.gov/sir/2017/5057/sir20175057.pdf>

<sup>14</sup><http://nca2014.globalchange.gov/report/regions/southwest>

## **CONSEQUENCE ANALYSIS**

**FIGURE 56. CONSEQUENCE ANALYSIS - WILDFIRE**

SUBJECT	POTENTIAL IMPACTS
Agriculture	<p><i>Of all the hazards, wildfire is the most concerning for agricultural interests. Crops can be destroyed, agriculture commodities in storage can be destroyed, grazing land and the animals using it can be destroyed and agriculture infrastructure is vulnerable.</i></p> <p><i>Agriculture producer lives have been lost combating wildfire.</i></p>
Health and Safety of the Public	<p><i>There are a number of potential public health and safety concerns from a wildland fire in the region including loss of life and injury due to severe burns. Health hazards from smoke caused by wildland fires can include breathing difficulties and worsening of chronic breathing and/or cardiovascular disease. Smoke and air pollution pose a risk for children, the elderly, and those with respiratory and cardiovascular problems.</i></p>
Health and Safety of Responders	<p><i>Responders are often at great risk when responding to wildfire, especially firefighters who are responsible for putting out the blaze. All response personnel are potentially at risk when dealing with a wildfire, as changing winds and a number of other factors can often cause a fire to spread rapidly. Although many areas of the state are urbanized and are not at a high risk to wildfire, moderately-developed rural areas that are located in the wildland urban interface may require response personnel to be ready to act. Like the general public, first responders are also at risk for exposure to dangers from the initial incident and after-effects such as smoke inhalation and/or heat stroke. However, their risk is often more prominent as they are often in the middle of an incident through their responsibilities as a responder.</i></p>
Continuity of Operations	<p><i>Since wildfire often moves quickly and can affect infrastructure that is important to maintaining continuity of operations, there is some level of concern for maintaining continuity. However, operations in more urban areas will probably not be impacted in a major way. Local continuity of operations in rural areas is much more susceptible to the impacts of a wildfire.</i></p>

**FIGURE 56. CONSEQUENCE ANALYSIS - WILDFIRE**

SUBJECT	POTENTIAL IMPACTS
<i>Delivery of Services</i>	<i>Service delays are anticipated to operations within or near the fire areas.</i>
<i>Property, Facilities, Infrastructure</i>	<p><i>Wildland fires have the potential to substantially burn forested areas as well as private residences. Damage and destruction to state, county, private, and municipal structures and facilities are major losses that are attributed to wildland fires. Private residences and communities that are located within the Wildland Urban Interface (WUI) are particularly susceptible to the threat. Population increases in WUI areas, for example, can create significant challenges for firefighters and residents.</i></p> <p><i>Many new homes are constructed without considering community wildland fire planning. This creates neighborhoods with limited accessibility, flammable building construction, and landscaping. A lack of fire-wise planning can also greatly increase the probability of a wildland fire occurrence with more homes and emergency personnel being threatened.</i></p> <p><i>All types of private property may suffer losses from wildfires. This includes business properties, homes, vehicles, and livestock. Damage to capital goods and equipment as well as evacuation expenses and other losses are directly related to fire and smoke damage. Additional potential losses include building and landscape maintenance expenses, firefighting equipment purchases, and fire-related business closures. Additional post-fire losses include cleanup, rehabilitation and repair expenses, equipment and capital goods replacement, drinking water pollution, smoke damage, deflated real estate values, and an increase in fire insurance premiums.</i></p>
<i>Environment</i>	<p><i>Wildland fires have the potential to damage or destroy forage on grazing lands, secondary forest products destruction, and/or degradation and loss of wildlife habitat on public lands. On private lands, vegetation losses could include agricultural crops that are either burned or impacted by wildland fire smoke. Indirect losses could include loss of growing stock as well as irrigation systems. Another potential loss includes damage and destruction to a wide variety of common or protected habitats in the state. Finally, the release of smoke from wildfires can pollute the air and reduce air quality.</i></p> <p><i>It should also be noted, however, that wildfires are a naturally occurring element of the environment and have played an important part in the development of many ecosystems in that they are regenerative and provide vital nutrients for the soil which can help sustain a forest habitat and all of the organisms living within it. Therefore, although there are some negative impacts of wildfire, there are also some positive impacts on the environment.</i></p>
<i>Economic Condition</i>	<i>Given the fact that a number of homes, businesses, and infrastructure are located in areas that could be impacted by wildfire, there could be some significant economic impacts of a wildfire in the state. If homes or businesses are burned, the cost of rebuilding could be substantial. Impacts to agricultural crops are another economic loss that the state could face in the event of a wildland fire.</i>
<i>Public Confidence</i>	<i>Wildfire tends to create some issues with public confidence because of the very visible impacts that the fire has on the community.</i>

## Infectious Disease

### OVERVIEW

Infectious or communicable diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites, or fungi; the diseases can spread, directly or indirectly, from one person to another. Zoonotic diseases are infectious diseases of animals that can cause disease when transmitted to humans. The impact of infectious disease can range from mild effects of the common cold to the extreme lethality of pneumonic plague or anthrax. The public health system in the United States was developed largely as a response to the often urgent need to respond to or prevent outbreaks of infectious diseases. Through public health methods of disease reporting, vaccinations, vector control, and effective treatments, most infectious diseases are well controlled in the United States and the Mid-Region. However, control systems can fail, and when people come together from locations outside the State, outbreaks can occur even in the most modern of communities.

The threats discussed in this section usually do not occur regularly, though some are more frequent. The diseases described do not originate from intentional exposure (such as through terrorist attacks) but present significant issues and concerns for the public health community.

Infectious diseases have affected New Mexico for many years. The 1918 influenza pandemic (also referred to as “The Spanish Flu”) was the most severe pandemic in recent history for the State of New Mexico. The Spanish Flu (1918 – 1920) was detected in New Mexico in the Fall of 1918, where the disease spread to Albuquerque, infected 923 people, and caused 167 deaths<sup>15</sup>. The State has also suffered outbreaks of diphtheria, malaria, typhoid, and chronic diarrhea due to poor sanitation conditions in the early twentieth century.

### LOCATION AND SPATIAL EXTENT

Extent is challenging to measure for infectious disease events as the extent is largely dependent on the type of disease and its effect on the population. However, the extent can be somewhat defined by the number of people impacted, which depending on the type of disease, could number in the tens of thousands within the State.

### HISTORICAL OCCURRENCES

The most recent disaster declaration for the Mid-Region is the COVID-19 pandemic. The COVID-19 or novel coronavirus pandemic began in December 2019 and was declared a pandemic in March 2020. As of March 28, 2022, there have been 517,206 confirmed cases of COVID-19 in New Mexico. The epidemic curve for COVID-19 in New Mexico is displayed in “Figure 59. EPIDEMIC CURVE FOR NEW MEXICO”.

Of these cases, 200,889 were located in the Mid-Region, totaling 2,451 fatalities. Because of the high fatalities rate directly associated with the COVID-19 pandemic – this infectious disease is the deadliest hazard for the Mid-Region.

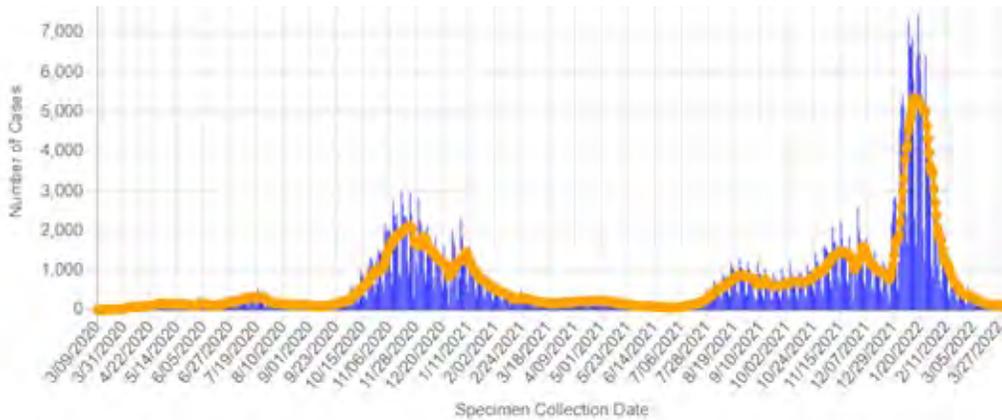
*“Figure 60. Covid 19 Cases In Mid-Region”* illustrates the number of cases and fatalities for all four counties as of March 28, 2022.

### CLIMATE CHANGE

Climatic conditions are becoming increasingly suitable for the transmission of multiple infectious diseases by directly affecting the biological features of pathogens and their vectors and indirectly favoring transmission through the modification of ecosystems and changes in human behavior. Rising temperatures and increased precipitation can promote an array of infectious diseases.

<sup>15</sup> <https://www.albuqhistsoc.org/programs/ahs-2020-2021-programs/the-spanish-flu-pandemic-in-new-mexico-1918-1920/>

**FIGURE 59. EPIDEMIC CURVE FOR NEW MEXICO**



Source: <https://cvprovider.nmhealth.org/public-dashboard.html>

**FIGURE 60. COVID 19 CASES IN MID-REGION**

COUNTY	NUMBER OF CONFIRMED CASES	NUMBER OF FATALITIES
Bernalillo County	146,359	1,742
Sandoval County	33,357	396
Torrance County	2,669	52
Valencia County	18,504	261
<b>TOTAL</b>	<b>200,889</b>	<b>2,451</b>

Argonne National Lab developed the County Economic Impact Index (CEII) to track near real-time impacts to local economies during the COVID-19 pandemic. It also provides insights into economic recovery over time. A CEII value of 1

indicates that a county’s economy is in the same position as it was in January 2020, while scores below 1 indicate that it is worse off and scores greater than 1 indicate that it has grown.

**FIGURE 61. COVID 19 CASES IN MID-REGION**

AREA	CEII 04/2020	CEII 04/2021	CEII 04/2022
New Mexico	0.96	0.97	0.976
Bernalillo County	0.93	0.98	1.002
Sandoval County	0.92	0.99	1.026
Torrance County	0.91	0.96	0.983
Valencia County	0.92	0.98	1.005

Source: National Economic Resilience Data Explorer (NERDE) - <https://www.anl.gov/dis/national-economic-resilience-data-explorer-nerde>

**FIGURE 62. COVID 19 CASES IN MID-REGION**

AREA	# OF NEW APPLICATIONS	YOY % INCREASE
New Mexico	24,292	34%
Bernalillo County	9,872	33.5%
Sandoval County	1,505	38.6%
Torrance County	133	371%
Valencia County	621	33%

Source: US Census Business Formation Statistics 2021 business applications - <https://www.census.gov/econ/bfs/index.html>

## CONSEQUENCE ANALYSIS

FIGURE 58. CONSEQUENCE ANALYSIS - INFECTIOUS DISEASE

SUBJECT	POTENTIAL IMPACTS
Agriculture	N/A
Health and Safety of Responders	<p><i>During a disease outbreak, responders can expect an increased workload and should practice a higher level of precaution toward exposure than they would normally. Plans exist for first responders and health care professionals to address the needs of such situations. Communication between these agencies regarding plans and procedures maximizes the efficiency and effectiveness of these combined efforts. Responders are more likely to be impacted by an infectious disease since they will be working directly with those affected to help treat the disease (especially EMS personnel). This will make them more susceptible to becoming infected. As such, it is critical that they wear the appropriate personal protective equipment to minimize their risk and ensure they can continue providing the care and assistance needed to help the public.</i></p>
Continuity of Operations	<p><i>Continuity of operations may be impacted if those employed in governmental or other key roles are impacted by the disease or public health threat and cannot perform their regular duties. Although plans are in place to ensure continuity of operations, a large-scale event or one that has significant impacts on operational-level staff could negatively affect the continuity of operations. Since many diseases are spread through contact with others infected, a disease event could rapidly disable those working to carry out routine operations. Due to their proximity to one another and the need to communicate and coordinate daily, it is essential to reduce the spread of disease among key personnel once an outbreak has been identified.</i></p>
Delivery of Services	<p><i>Service delays are anticipated for operations in communities affected by infectious disease outbreaks.</i></p>
Property, Facilities, Infrastructure	<p><i>An infectious disease would likely have little direct impact on the built environment itself as the disease would not affect the structural stability of any buildings or infrastructure. However, the infectious disease would significantly impact the functioning of many structures operating at a high capacity during an infectious disease event, especially medical care facilities.</i></p> <p><u>Hospitals and Medical Care Facilities</u></p> <p><i>The primary impacts for hospitals/medical facilities during disease outbreaks are an increase in patients and the spread of disease within hospitals. Those affected by the disease will likely make their way to a medical care facility, and it may be necessary to implement quarantines or other measures to reduce the risk of the disease spreading. Hospitals and other medical care facilities should have plans to deal with such a scenario and reduce the risk of spreading the disease to medical care providers whose workload may be increased as individuals infected with the disease may require treatment.</i></p>
Environment	<p><i>The environmental impact depends on the particular biological substance or disease being transmitted to animal or plant life or if it can be distributed through the water supply. If the infectious disease can be transmitted to other species, species populations could be significantly negatively impacted. Since animal life does not have the same capacity as humanity to understand the spread of disease and reduce transmission rates, the disease may spread more quickly through animal populations and cause larger-scale loss of life.</i></p>
Economic Condition	<p><i>One of the more significant economic impacts in the region involves absenteeism at local businesses, which could have a considerable impact as the absence of several employees at a small business could force temporary shutdowns or reduced hours of availability. There would also likely be an impact on the local government budget as officials try to respond to the disease and assist those impacted.</i></p> <p><i>City centers and downtown areas tend to be where large masses of people congregate and thus may be where the likelihood of disease spread is more prominent. Many people may realize this and avoid these key economic hubs, resulting in reduced revenue and negatively impacting the economy overall. Additionally, large events in communities across the region may have to be canceled if the outbreak is large enough or has the potential to spread easily and quickly. This would also reduce revenue for many local economies.</i></p>

**FIGURE 58. CONSEQUENCE ANALYSIS - INFECTIOUS DISEASE**

SUBJECT	POTENTIAL IMPACTS
Public Confidence	Public health outbreaks may impact public confidence in government organizations. The public's confidence level is based upon societal expectations, media influence, and past experience following other outbreaks. An effective response to the outbreak can help to guide public confidence toward a favorable level. Collaboration with media outlets can also assist in keeping the public informed and helping to protect them from exposure.

## **NATIONAL BEST PRACTICES**

Best practices in resilience planning are methods that have been determined to be the most effective and practical means of promoting community resilience or are strategies recommended for the communities in the Mid-Region to implement. The momentum for resilience planning at the national level is very high, and many tools and best practices are available to assist communities with conducting successful resilience planning processes and identifying and implementing resilience projects. Many of those resources have been mentioned in this section as well.

### **US CLIMATE RESILIENCE TOOLKIT**

The U.S. Climate Resilience Toolkit is a website designed to help people find and use tools, information, and subject matter expertise to build climate resilience. The Toolkit offers information from across the U.S. federal government in one easy-to-use location.  
<https://toolkit.climate.gov/>

### **FEMA MITIGATION IDEAS**

FEMA's Mitigation Ideas publication aims to provide a resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing the risk of natural hazards and disasters.  
[https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas\\_02-13-2013.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf)

### **BUILDING RESILIENT INFRASTRUCTURE AND COMMUNITIES (BRIC) PROGRAM**

The Building Resilient Infrastructure and Communities (BRIC) Program provides federal funds to states, territories, tribal governments, and local communities for pre-disaster mitigation activities. BRIC aims to shift the federal focus from reactive disaster spending to research-supported, proactive investment in community resilience. Significant funding is available nationwide with a current cap of \$50 million Federal Share per project.

BRIC incentivizes infrastructure projects, projects that mitigate risk to one or more FEMA lifelines, and/or projects that incorporate nature-based approaches. For example, potential construction projects could include dam upgrades.

*Source:* <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/about>

### **REHABILITATION OF HIGH HAZARD POTENTIAL DAM (HHPD) GRANT AWARDS**

The Rehabilitation of High Hazard Potential Dam (HHPD) Grant Awards provide technical, planning, design, and construction assistance in the form of grants for the rehabilitation of eligible high hazard potential dams. The State Administrative Agency or an equivalent state agency is suitable for the grant in a state or territory with an enacted dam safety program.

*Source:* <https://www.fema.gov/emergency-managers/risk-management/dam-safety/rehabilitation-high-hazard-potential-dams/awards>

## **NATIONAL DAM SAFETY STATE ASSISTANCE GRANT PROGRAM**

The primary purpose of the National Dam Safety Program (NDSP) State Assistance Grant Program is to provide financial assistance to the states for strengthening their dam safety programs. The states use NDSP funds for dam safety training, increase in the number of dam inspections, increase in the submittal and testing of EAPs, more timely review and issuance of permits, and improved coordination with state emergency preparedness officials.

*Source: <https://www.fema.gov/emergency-managers/risk-management/dam-safety/grants>*

## **PLANNING AND DROUGHT**

*Source: <https://www.planning.org/publications/report/9026898/>*

### *CASE STUDY: MESCALERO APACHE TRIBE ADAPTS TO A WARMER AND DRIER CLIMATE*

The Sacramento Mountains – home of the Mescalero Apache Tribe (MAT) in southern New Mexico - are experiencing a shift to a warmer and drier climate. Local meteorological records reveal three of the area’s worst ten droughts and some of the region’s highest temperatures have occurred since 2011. In addition, monsoon season is arriving later in the year, and the average duration and frequency of monsoon rains are decreasing.

The Sovereign Nation Service Corps (SNSC) have developed a composting program, a recycling program, and xeriscaping demonstration areas with drought-tolerant native plant species. The exotic, landscaped plants will be replaced with species of pine trees, yucca, sage, juniper, and Indian rice grass. This improvement will (1) reduce the maintenance expenses associated with traditional landscaped grass, (2) economic savings through reduced demand, and (3) enable the tribe to conserve a precious resource – water.

*Source: [https://www7.nau.edu/itep/main/tcc/Tribes/sw\\_mescalero](https://www7.nau.edu/itep/main/tcc/Tribes/sw_mescalero)*

### *CASE STUDY: WATER UTILITY PLANS FOR CLIMATE UNCERTAINTY – DENVER, COLORADO*

Colorado’s winter snowpack is one of its leading drinking water sources. However, with Colorado projected to warm by at least 2.5-degree Fahrenheit by mid-century, changes in snowpack and snowmelt timing could raise significant concerns for the state’s drinking water supply. Changes in increased temperatures affect streams, rivers, and reservoir operations and increase the water needs for crops, landscaping, and natural vegetation in the semi-arid state.

One of the challenges for water utility planning that considers climate change is that climate model output usually describes projected temperature and precipitation values. However, translating this information into streamflow information water utilities usually use requires additional expertise and customized tools. Denver Water initiated with Joint Front Range Climate Change Vulnerability Study. The research team explored how changes in temperature and precipitation could impact the natural water system. In the models, a simple 5-degree Fahrenheit increase in temperature resulted in a 20 percent loss of supply. Using this model data, Denver Water helped found the Water Utility Climate Alliance – a group of 10 national water utilities that serves 43 million people – whose goals are to develop a solid understanding of climate science and adaptation, and then work with scientists to address their needs.

*Source: <https://toolkit.climate.gov/case-studies/water-utility-plans-climate-uncertainty>*

## **FLOOD/FLASH FLOOD**

### *SUBDIVISION DESIGN AND FLOOD HAZARD AREAS*

*<https://www.planning.org/publications/report/9112664/>*

### *PLANNING THE WILDLAND-URBAN INTERFACE*

*<https://www.planning.org/publications/report/9174069/>*

## **PLANNING FOR WILDFIRES**

<https://www.planning.org/publications/report/9026859/>

*CASE STUDY: PARTNERSHIPS PROMOTE HEALTHY FORESTS AND CLEAN WATER – DENVER, COLORADO*

*Source: <https://toolkit.climate.gov/case-studies/partnerships-promote-healthy-forests-and-clean-water>*

Heavy fuel loads and severe drought in the west can cause wildfires to burn very hot, destroying vegetation and topsoil's ability to hold water. Heavy precipitation events – another impact of the warming climate – exacerbate severely burned areas: with little vegetation to hold fire debris, topsoil, and other material in place, they are vulnerable to erosion. The Buffalo Creek Fire in 1996 and the Hayman Fire in 2002 burned almost 150,000 acres in one of Denver's most critical watersheds, the South Platte. Denver area water utilities recognized that maintaining healthy forests upstream of their reservoirs would build their resilience against sediment runoff and fire debris flowing into Strontia Springs Reservoir, polluting the water and reducing the reservoir capacity for months. However, restoration and dredging of the reservoir proved extremely costly and somewhat ineffective, prompting the utilities to invest in fire prevention and management techniques. Partnership funding from various stakeholders across the Denver area, several local water utilities, and the U.S. Forest Service helped build resilience. These partnerships have provided funding for detailed assessments of watershed vulnerability. This allowed managers to identify priority locations and appropriate strategies for improving forest health upslope of reservoirs and other critical water infrastructure. Proactive forest management techniques have also been applied. For example, portions of the surrounding forests of the Strontia Springs Reservoir had been thinned, mitigating fire severity and saving the reservoir from significant erosion impacts.

*CASE STUDY: WATCHING FOR WIND: AN EFFORT TO GET THE UPPER HAND ON WILDFIRE - SAN DIEGO, CA*

*Source: <https://toolkit.climate.gov/case-studies/watching-wind-effort-get-upper-hand-wildfire>*

Wildfires have caused considerable damage in and around San Diego. Along with high temperatures, dry conditions, and the availability of fuel, wind is a key ingredient in igniting and spreading fire. Strong winds can cause utility wires to come in contact with one another or bring trees in contact with wires, creating the potential to start a fire. Once begun, wind can help spread it quickly.

San Diego Gas & Electric (SDG&E) made several investments and developed partnerships to manage fire risks better. They deployed a "mesonet," which are sensors that provide real-time information about weather conditions, including winds. Working with the University of California at Los Angeles and the Forest Service, they assisted with developing a forecasting system for fire weather – the Santa Ana Wildfire Threat Index. The index provides forecasts of potential fire risk six days into the future, allowing emergency responders and resource managers to proactively move firefighters and their equipment to high-risk areas in anticipation of fires and alert residents in these areas of potential danger.

# PUBLIC OUTREACH

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# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## OVERVIEW

1. Creation of an ***Economic Recovery and Resiliency Plan***
2. The plan will ***explore events and disasters that cause disruption*** in the economy in the Mid-Region.
3. It will ***address how events, including the COVID-19 pandemic***, expose and exacerbate social and economic weaknesses.
4. This meeting is the ***first set of stakeholder meetings to learn how communities economies are doing***; how they were affected by the pandemic; and what some of the economic weaknesses, opportunities, and constraints are.



## HOUSEKEEPING



Mute yourself unless  
you are speaking

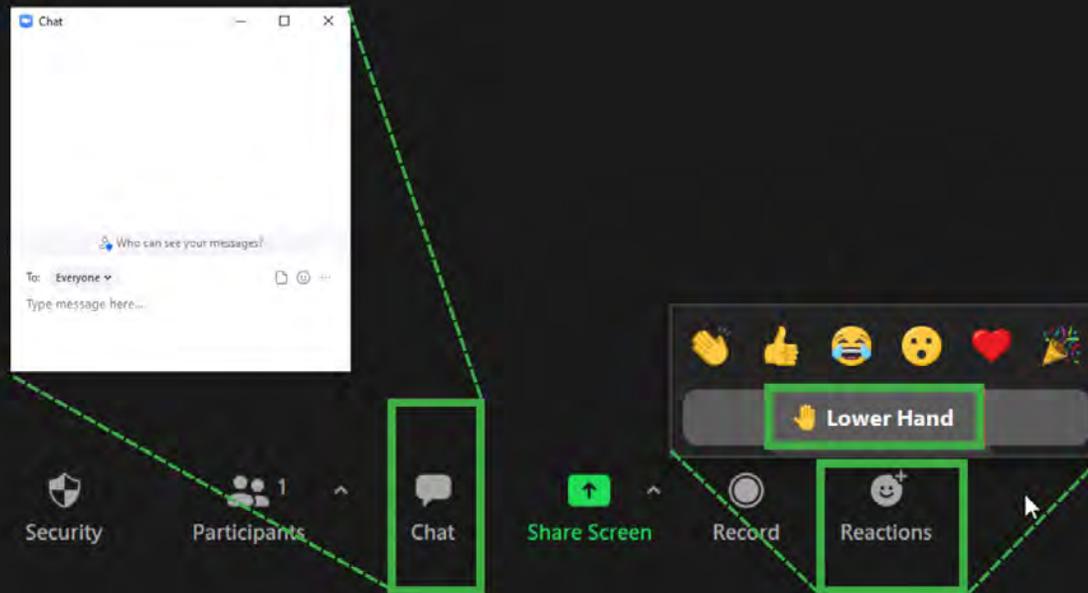


Ask questions by  
raising your hand or  
via the chat



We will not have an  
official break, but feel  
free to step away as  
necessary

# HOUSEKEEPING



## AGENDA

1. **Introductions** (5min)
2. **Presentation** (10-15min)
  - a. *Project scope/goals*
  - b. *Project team*
  - c. *Community cluster areas*
  - d. *Project schedule/stakeholder role*
  - e. *Goal of this meeting*
3. **Discussion/live polling** (70min)
4. **Next steps** (5min)

## PROJECT SCOPE

1. Creation of an Economic Recovery and Resiliency Plan
2. The plan will be an addendum to the Mid-Region of New Mexico **Comprehensive Economic Development Strategy (CEDS)**.
3. The project is **funded through the Economic Development Administration (EDA)** as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.
4. The **goal is to create economic and social resiliencies** and empower local communities to withstand future threats.
5. The plan **will identify actionable goals, strategies,** and a general list of **potential project priorities** for greater resilience.



## PROJECT SCOPE

1. The **CEDS is a five-year** plan for economic growth.
2. It looks at **urban and rural** communities separately.
3. It identifies key focus areas to move the region towards a more resilient economy.
4. It **identifies actionable economic development strategies**.
5. Strategies and projects identified in the CEDS **can be used to apply for grant monies**.
6. The EDA uses the CEDS to measure the application's fit and competitiveness, and whether it advances the goals set by the community.

Urban	Agriculture & Value-Added Foods	Rural	Agriculture & Value-Added Foods
<i>What are the goals?</i>	<ul style="list-style-type: none"> <li>Expand local business</li> <li>Develop food hubs to supply institutional buyers, such as government, hospitals, and schools</li> <li>Improve supply to market chain</li> <li>Provide business support value added production</li> <li>Invest in distribution networks</li> <li>Support national marketing for value-added products, local</li> <li>Support institutional procurement</li> <li>Follow recommendations in the 2019 Mississippi Food and Agriculture Action Plan, and Remick County's Urban Ag Plan</li> </ul>	<i>What are the goals?</i>	<ul style="list-style-type: none"> <li>Build statewide support and strategy</li> <li>Incentives for food manufacturers/producers in a local area</li> <li>AVOs for capital</li> <li>Letter credit and distribution network</li> <li>Incentives for value-added agriculture (see listing below)</li> <li>Build new marketing of RM regional agriculture products</li> <li>Support Remick County's Grow the Greater Program</li> <li>Urban Land Use <a href="http://www.rctm.com">www.rctm.com</a></li> <li>Support companies eligible for local job tax credits</li> </ul>
<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>Higher wages</li> <li>More jobs</li> <li>Increase marketed food products</li> <li>Increase marketing revenues</li> <li>Increased investment in sector</li> <li>Increased infrastructure</li> <li>Increased use of existing infrastructure</li> <li>Able to have primary income from farming</li> <li>Shift in export types of RM agriculture</li> </ul>	<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>MSCO - Cooperative Extension Service</li> <li>USDA / NMSA by State</li> <li>REED - value-added agricultural business (see listing below)</li> <li>Number of business startups created</li> <li>Number of business starts</li> <li>Grow the Greater, product</li> </ul>
<i>What are the key metrics?</i>	<ul style="list-style-type: none"> <li>Higher wages</li> <li>More jobs</li> <li>Increase marketed food products</li> <li>Increase marketing revenues</li> <li>Increased investment in sector</li> <li>Increased infrastructure</li> <li>Increased use of existing infrastructure</li> <li>Able to have primary income from farming</li> <li>Shift in export types of RM agriculture</li> </ul>	<i>What are the key metrics?</i>	<ul style="list-style-type: none"> <li>MSCO</li> <li>NMSA - Cooperative Extension Service</li> <li>USDA Rural Development</li> <li>Farm Bureau for lending capital</li> <li>Local Governments</li> </ul>
<i>Who are the partners?</i>	<ul style="list-style-type: none"> <li>Mississippi State University Cooperative Extension</li> <li>Mississippi Department of Agriculture (MDA)</li> <li>USDA Rural Development</li> <li>City of Mississippi</li> <li>Remick County</li> <li>Legislature / State investment</li> <li>Non-profits</li> <li>Commercial kitchen, The Many Good, Three Stakes, others</li> </ul>	<i>Who are the partners?</i>	<ul style="list-style-type: none"> <li>MSCO</li> <li>NMSA - Cooperative Extension Service</li> <li>USDA Rural Development</li> <li>Farm Bureau for lending capital</li> <li>Local Governments</li> </ul>
<i>How do we build resilience in this focus area?</i>	<ul style="list-style-type: none"> <li>Supply chain co-op/ing food aggregators, food distribution</li> <li>Sales channel opportunities</li> </ul>	<i>How do we build resilience in this focus area?</i>	<ul style="list-style-type: none"> <li>Good government policies and regulations, for example water policy</li> <li>Plan to increase capacity (water, market, etc.)</li> <li>Training on how to make a living in the agriculture sector</li> </ul>

EXCERPT FROM CEDS

Mississippi NMSA Council of Governments

## PROJECT SCOPE

1. Strategies identified in the **CEDS** are based on economic factors (only).
2. The **Economic Recovery and Resiliency Plan** will address how events, including the COVID-19 pandemic, **expose and exacerbate social and economic weaknesses**.
3. It will relate to some of the weaknesses that are called out in the CEDS.
4. It will also look at natural and man-made threats and hazards.
5. This plan will **identify goals, actionable strategies**, and a general **list of potential project priorities**.

### CEDS IDENTIFIED WEAKNESSES

- *Reliance on federal government*
- *Access to / lack of medical services (rural)*
- *Crime (urban)*
- *Drug problems/acceptance*
- *Few buildings for businesses/certified sites*
- *Poor access to nutritious foods/food deserts*
- *Lack of broadband*
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- *Small local venture capital pool*

## PROJECT TEAM



**ROBERT LOFTIS, PLA,**  
ASLA, LEED AP,  
Design Principal

- *Manages overall contract*
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**SEAN O'SHEA**  
Economic  
Development Subject  
Matter Expert

- *Responsible for economic related elements for the Economic Recovery and Resiliency Plan*
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**RS 21 DATA DRIVEN  
RESILIENCY  
STRATEGIES**

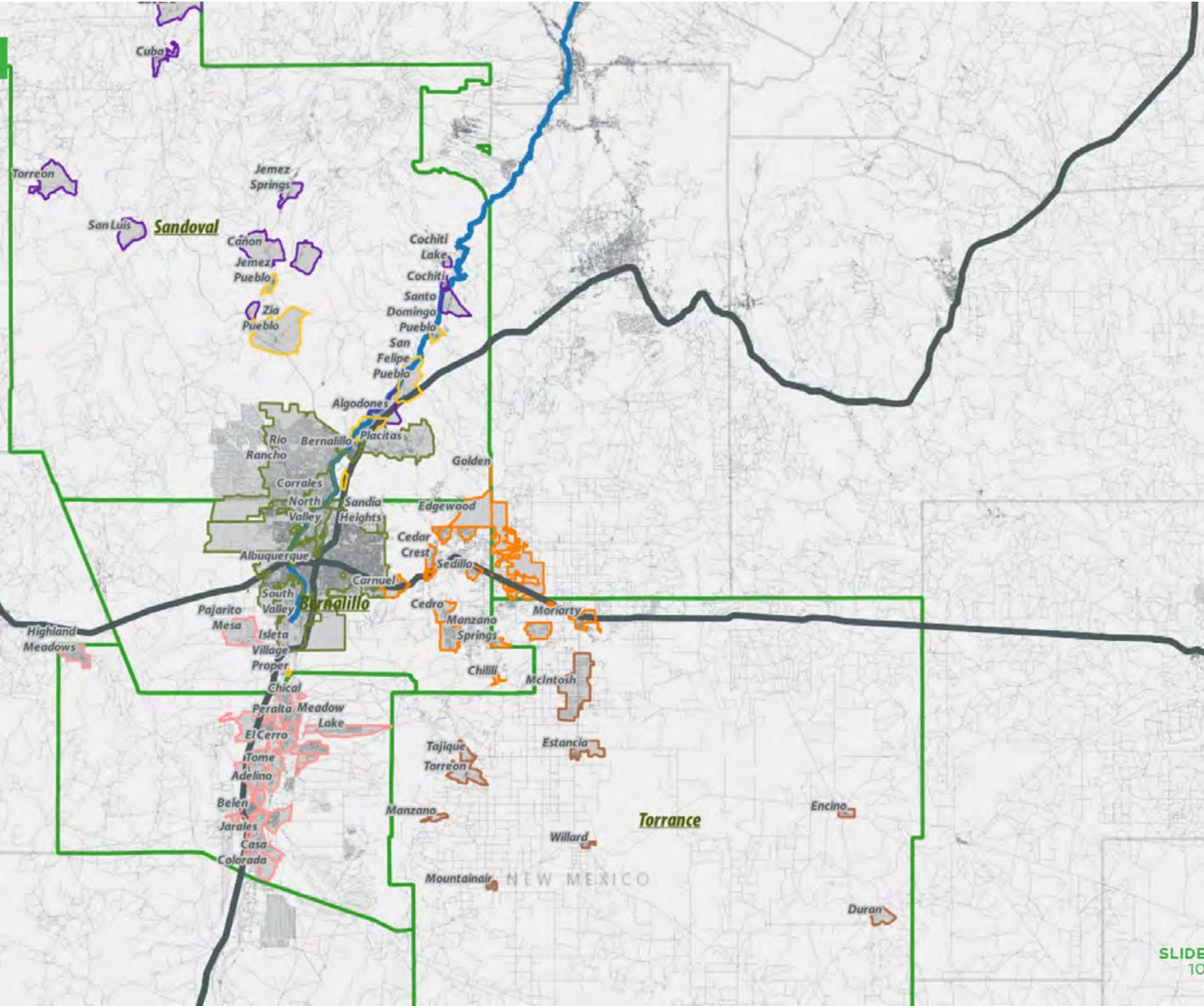
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# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

- ▭ Pueblo Cluster
- ▭ Sandoval Cluster
- ▭ Central ABQ Metro Cluster
- ▭ Eastern Interstate 40 Cluster
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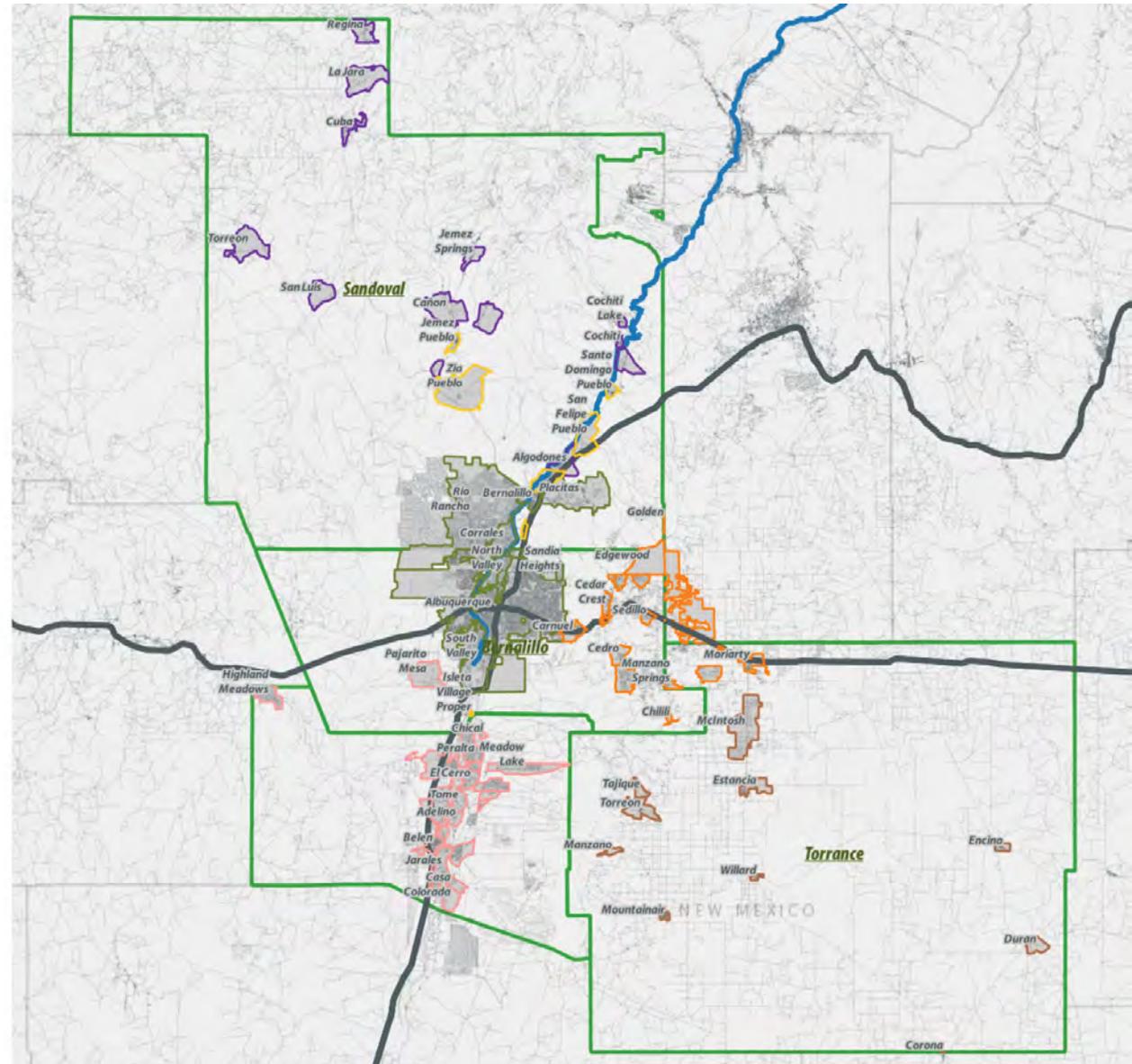


## PROJECT SCHEDULE/STAKEHOLDERS ROLE



## GOAL OF THIS MEETING

1. This meeting is the *first set of stakeholder meetings*
2. *Learn how communities economies are doing;*
3. How they were affected by the pandemic;
4. And what some of the economic weaknesses, opportunities, and constraints are.



## DISCUSSION

### Join by Web



- 1 Open an internet **browser**
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- 3 Insert ***your name***
- 4 Respond to activities

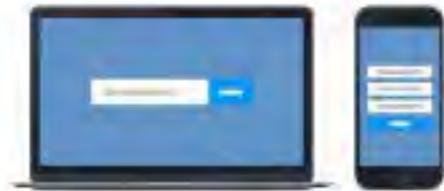
### Join by Text



- 1 Text to the number **22333**
- 2 Text ***mrwmla254***
- 3 Respond to activities by textting A, B, C etc. or writing a response

# What was the hardest hit industry in your community?

## Join by Web



- 1 Go to **PollEv.com**
- 2 Enter **MRWMLA254**
- 3 Respond to activity

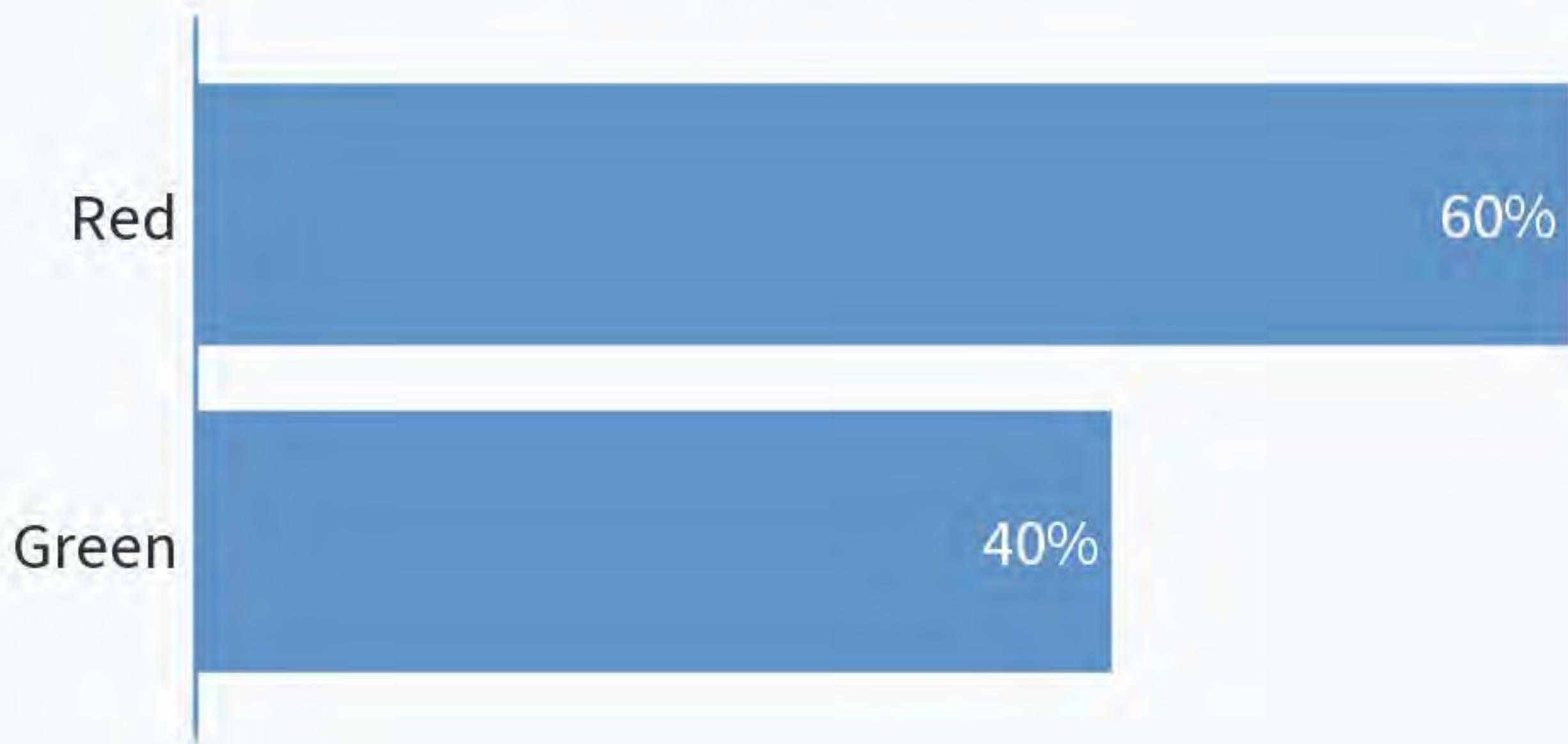
## Join by Text



- 1 Text **MRWMLA254** to **+1 (747) 444-3548**
- 2 Text in your message

**i** Instructions not active. **Log in** to activate

## Red Or Green?



## What is your favorite local business?

“ Los Cuates ”

“ Dave's Burgers ”

“ Dave's Burgers ”

“ El papaduro ”

“ D... ”

## **What is your focus area/role in your community?**

“ Natural Resources/Work closely with planning and business entities ”

“ Native Business Success ”

“ Infrastructure Planner ”

“ Educational and Entrepreneurial Support (as

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ Micro businesses in tribal communities - food vendors, wood haulers, etc. ”

“ Opportunities to diversify from casino/gas station model ”

“ The Creative Economy - Arts, Performers, Etc. ”

# **What industries does your community rely on most for jobs?**

“ Gaming, tourism, hospitality ”

“ Hospitality and arts ”

“ Hospitality ”

# What does your community struggle with the most? (Select the top 3)



## Is your community doing long-range planning?

Yes

No

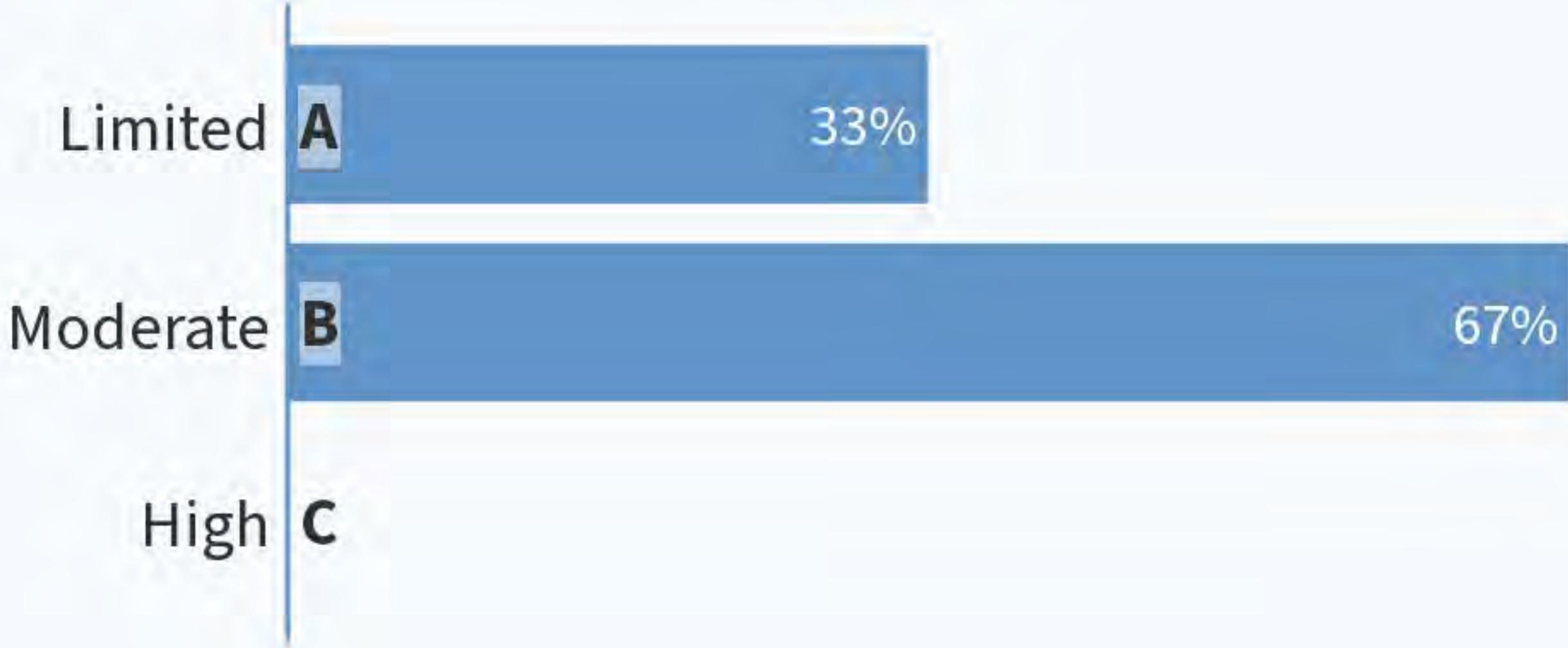
**What are the top 3 resilience solutions that you would like to implement for your region?**

“ Access to better/accurate data ”

“ Emergency Planning, Food and Water Security,  
Housing, Family Readiness ”

“ Broadband, broadband, broadband ”

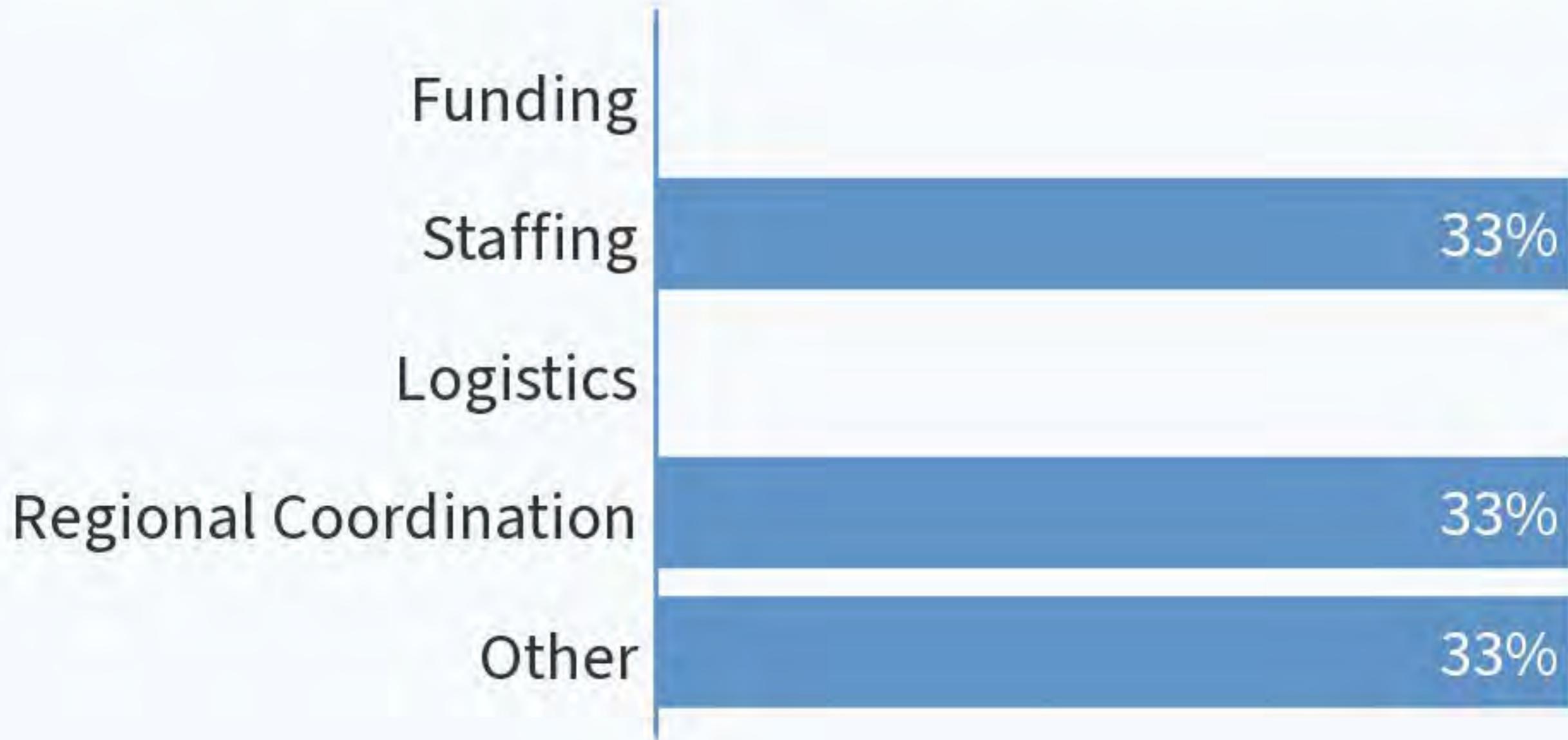
# How would you rate your capacity to handle implementation?



# What, in your opinion, is the biggest threat to the region?

Fire
Drought/Access to Water
Severe Weather Events
Access to Recourses
Invasive Species
Demographic Changes
Health
Crime/Public Safety
Economic Instability
Other

# What do you need to implement resilience solutions?



## Which of the following best defines resilience from your perspective?

Ability to quickly respond

Ability to recover

Operational continuity

Reducing vulnerability

Other

## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to *additional stakeholders*
2. March - *Strategy + Discovery Workshop* with all community clusters areas.
3. April - *Public Meeting*
4. *Follow-up Survey*
5. May - *Community Kiosks*
6. June - *Joint meeting*
7. **CALL FOR ACTION:** *Additional stakeholders*



**PROJECT UNDERSTANDING**

**THANK YOU + SEE YOU SOON**



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## OVERVIEW

1. Creation of an ***Economic Recovery and Resiliency Plan***
2. The plan will ***explore events and disasters that cause disruption*** in the economy in the Mid-Region.
3. It will ***address how events, including the COVID-19 pandemic***, expose and exacerbate social and economic weaknesses.
4. This meeting is the ***first set of stakeholder meetings to learn how communities economies are doing***; how they were affected by the pandemic; and what some of the economic weaknesses, opportunities, and constraints are.



## HOUSEKEEPING



Mute yourself unless  
you are speaking

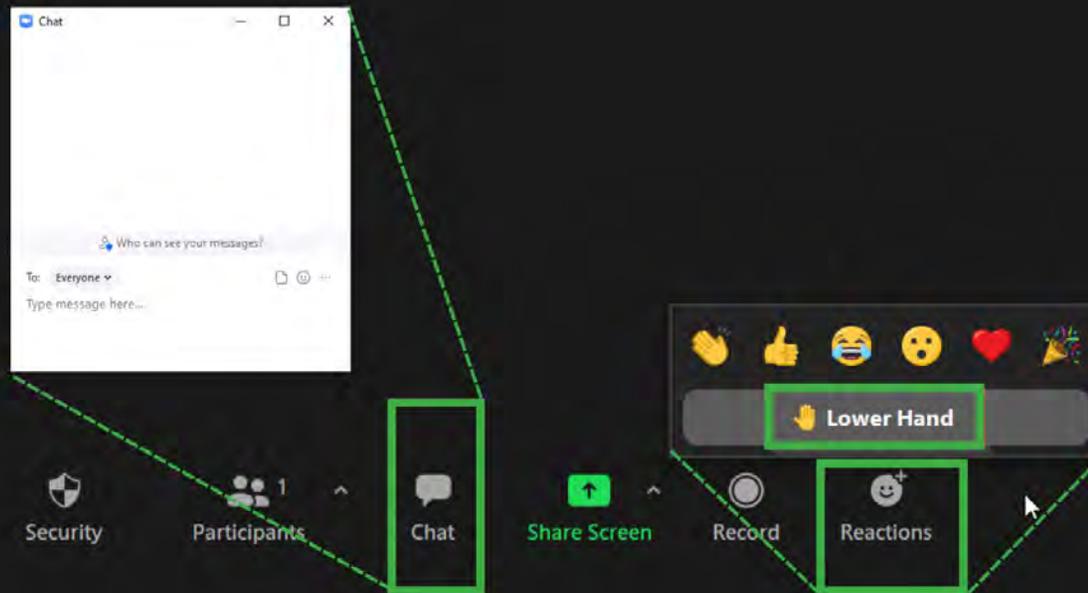


Ask questions by  
raising your hand or  
via the chat



We will not have an  
official break, but feel  
free to step away as  
necessary

## HOUSEKEEPING



## AGENDA

1. **Introductions** (5min)
2. **Presentation** (10-15min)
  - a. *Project scope/goals*
  - b. *Project team*
  - c. *Community cluster areas*
  - d. *Project schedule/stakeholder role*
  - e. *Goal of this meeting*
3. **Discussion/live polling** (70min)
4. **Next steps** (5min)

## PROJECT SCOPE

1. Creation of an Economic Recovery and Resiliency Plan
2. The plan will be an addendum to the Mid-Region of New Mexico **Comprehensive Economic Development Strategy (CEDS)**.
3. The project is **funded through the Economic Development Administration (EDA)** as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.
4. The **goal is to create economic and social resiliencies** and empower local communities to withstand future threats.
5. The plan **will identify actionable goals, strategies,** and a general list of **potential project priorities** for greater resilience.



## PROJECT SCOPE

1. The **CEDS is a five-year** plan for economic growth.
2. It looks at **urban and rural** communities separately.
3. It identifies key focus areas to move the region towards a more resilient economy.
4. It **identifies actionable economic development strategies**.
5. Strategies and projects identified in the CEDS **can be used to apply for grant monies**.
6. The EDA uses the CEDS to measure the application's fit and competitiveness, and whether it advances the goals set by the community.

Urban	Agriculture & Value-Added Foods	Rural	Agriculture & Value-Added Foods
<i>What are the goals?</i>	<ul style="list-style-type: none"> <li>Expand local business</li> <li>Develop food hubs to supply institutional buyers, such as government, hospitals, and schools</li> <li>Improve supply to market chain</li> <li>Provide business support value added production</li> <li>Invest in distribution networks</li> <li>Support national marketing for value-added products, local</li> <li>Support institutional procurement</li> <li>Follow recommendations in the 2019 Albuquerque Food and Agriculture Action Plan and Bernalillo County's Urban Ag Plan</li> </ul>	<i>What are the goals?</i>	<ul style="list-style-type: none"> <li>Build statewide support and strategy</li> <li>Incentives for food manufacturers/producers in a local area</li> <li>Access to capital</li> <li>Better market and distribution networks</li> <li>Incentives for value-added agriculture (see below)</li> <li>Build business marketing of NM regional agriculture products</li> <li>Support Bernalillo County's Grow the Greater Program</li> <li>Urban Land Use <a href="http://www.urbanlanduse.com">www.urbanlanduse.com</a></li> <li>Support companies eligible for local job tax credits</li> </ul>
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<i>How do we build resilience in this focus area?</i>	<ul style="list-style-type: none"> <li>Supply chain co-op/ing food aggregators, food distribution</li> <li>Sales channel opportunities</li> </ul>	<i>How do we build resilience in this focus area?</i>	

EXCERPT FROM CEDES

Mid-Hudson N.M. Council of Governments

## PROJECT SCOPE

1. Strategies identified in the **CEDS** are based on economic factors (only).
2. The **Economic Recovery and Resiliency Plan** will address how events, including the COVID-19 pandemic, **expose and exacerbate social and economic weaknesses**.
3. It will relate to some of the weaknesses that are called out in the CEDS.
4. It will also look at natural and man-made threats and hazards.
5. This plan will **identify goals, actionable strategies**, and a general **list of potential project priorities**.

### CEDS IDENTIFIED WEAKNESSES

- *Reliance on federal government*
- *Access to / lack of medical services (rural)*
- *Crime (urban)*
- *Drug problems/acceptance*
- *Few buildings for businesses/certified sites*
- *Poor access to nutritious foods/food deserts*
- *Lack of broadband*
- *Under-performing schools*
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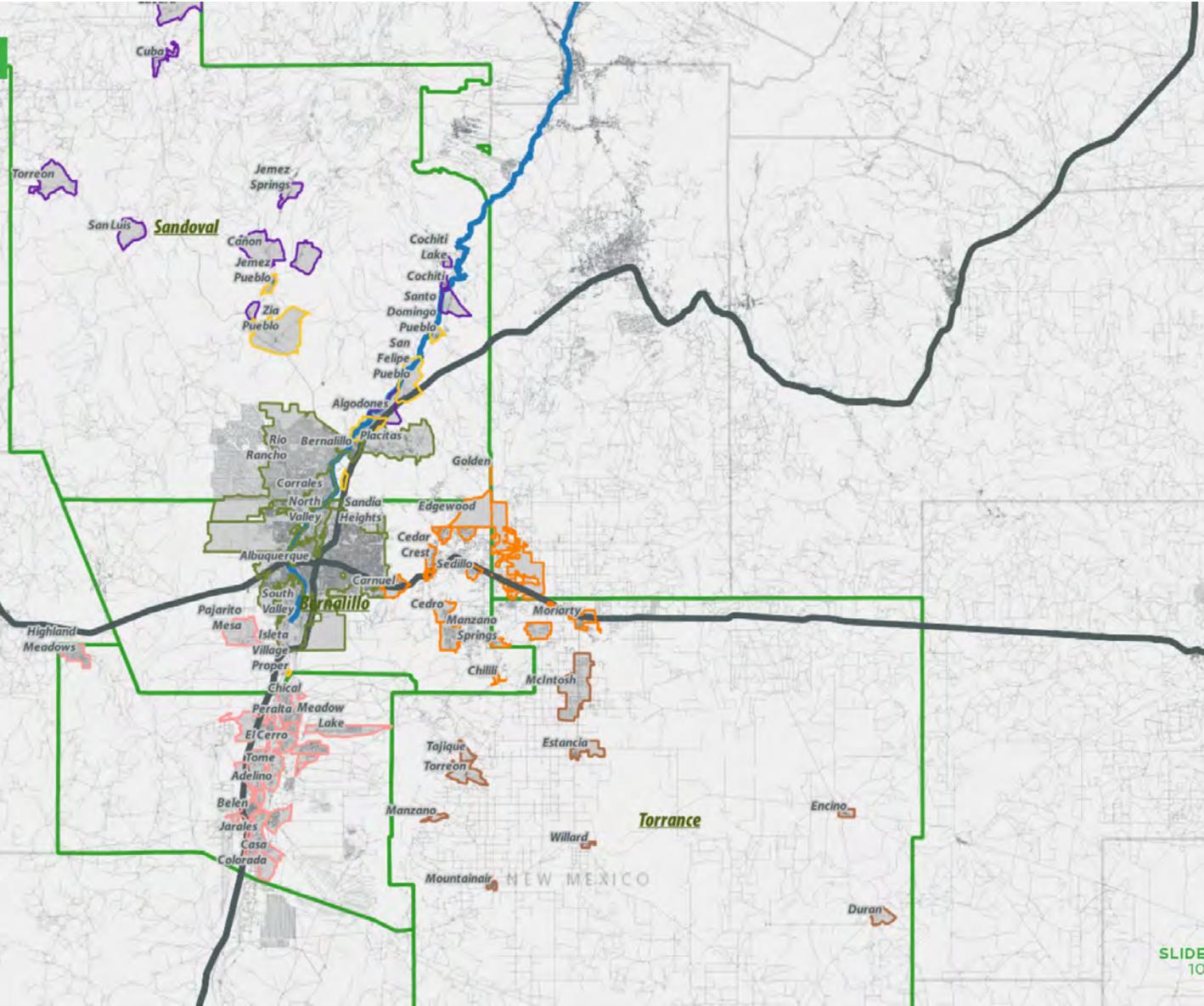
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# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

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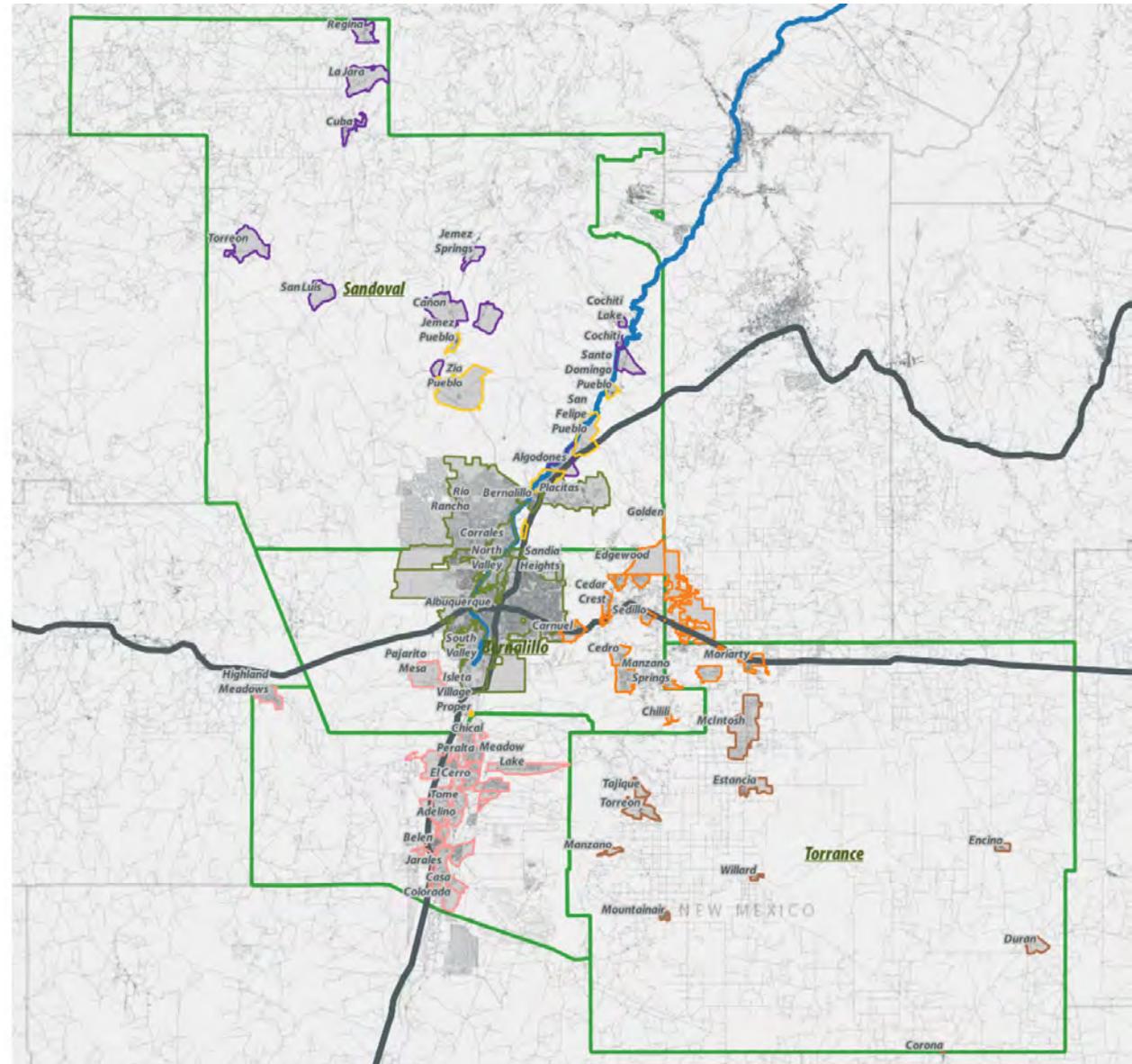


## PROJECT SCHEDULE/STAKEHOLDERS ROLE



## GOAL OF THIS MEETING

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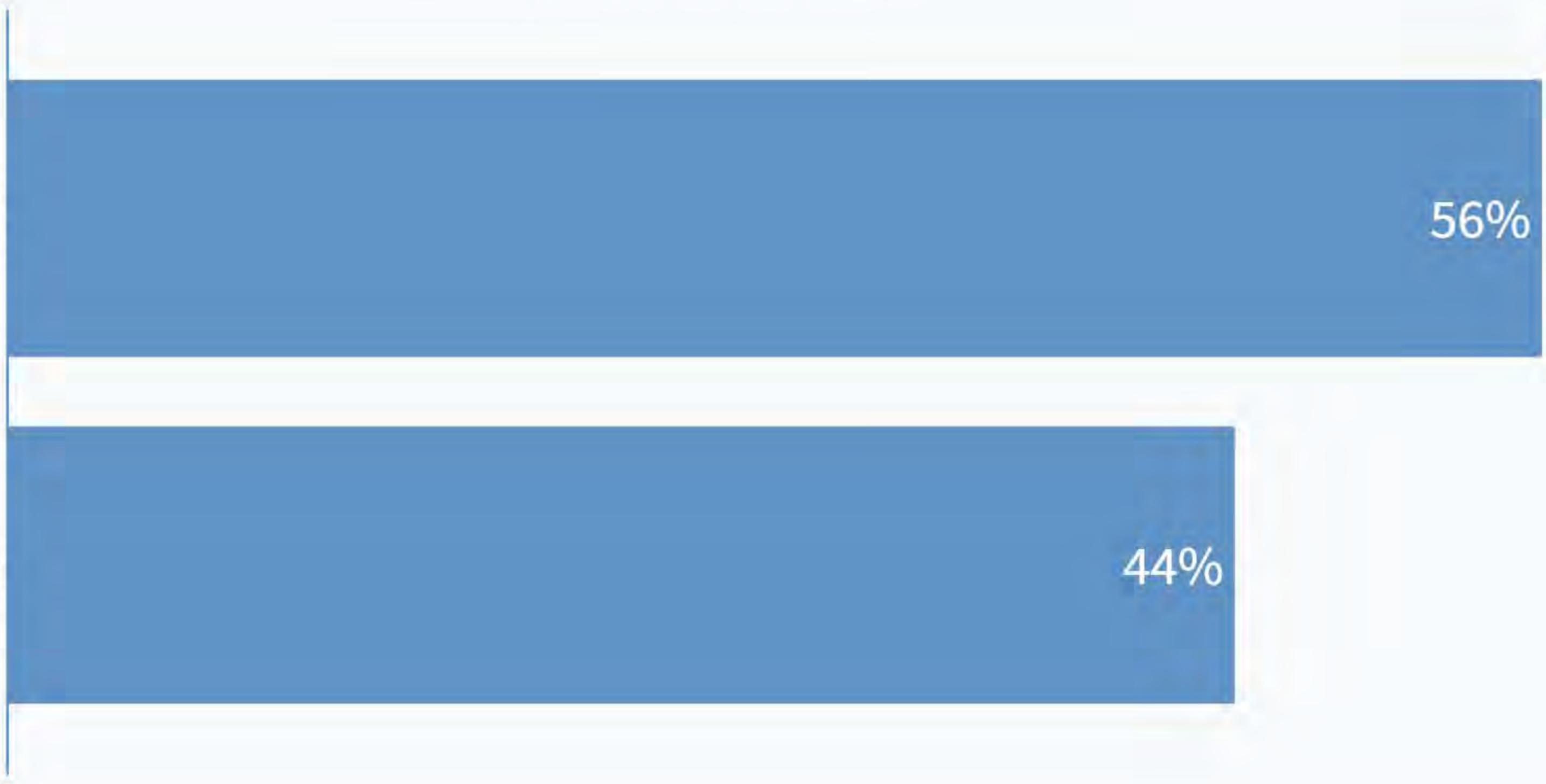
## Red Or Green?

Red

56%

Green

44%



## **What is your favorite local business?**

“ Los Poblanos inn/Campo ”

“ Turtle mountain ”

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ future development of camino del pueblo with context sensitive designed structures/uses ”

“ Large industry expansions happening on the west side of the river ”

“ Growth of Intel ”

“ Job growth at Intel ”

“ The eventual completion of paseo del volcan ”

## **What are some keystone businesses in your community?**

“ El Bruno's ”

“ Horizan Ag ”

“ CWW Feed ”

“ Deluxe Design ”

“ The Range Cafe & ponderosa winery ”

“ The Range Cafe ”

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ Continental Divide Trail ”

“ Direct frontage along I25; State Highway 550 and 528 ”

“ Fiestas de San Lorenzo (Aug. 9-11) ”

“ Sandoval County Fair ”

“ Gateway to the Jemez ”

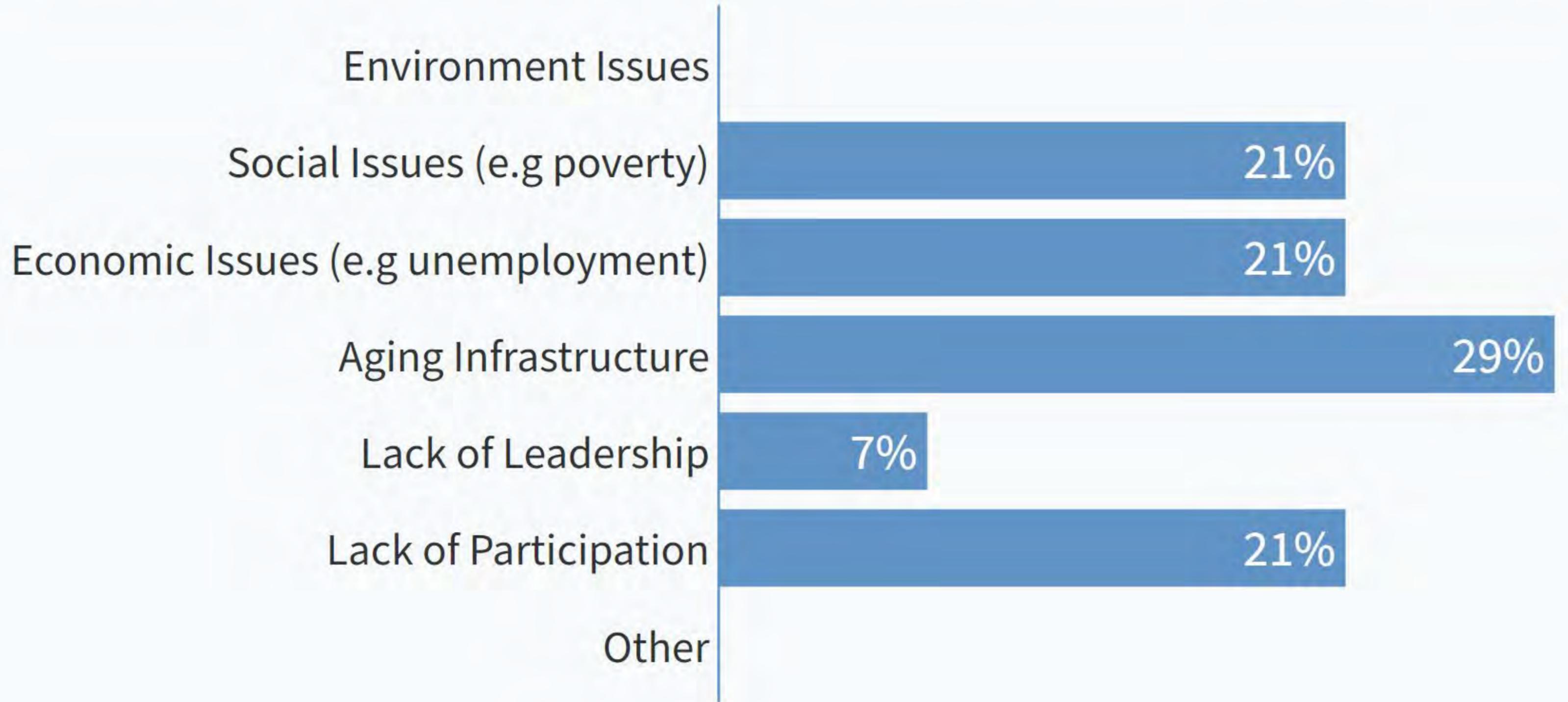
**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ Cannabis ”

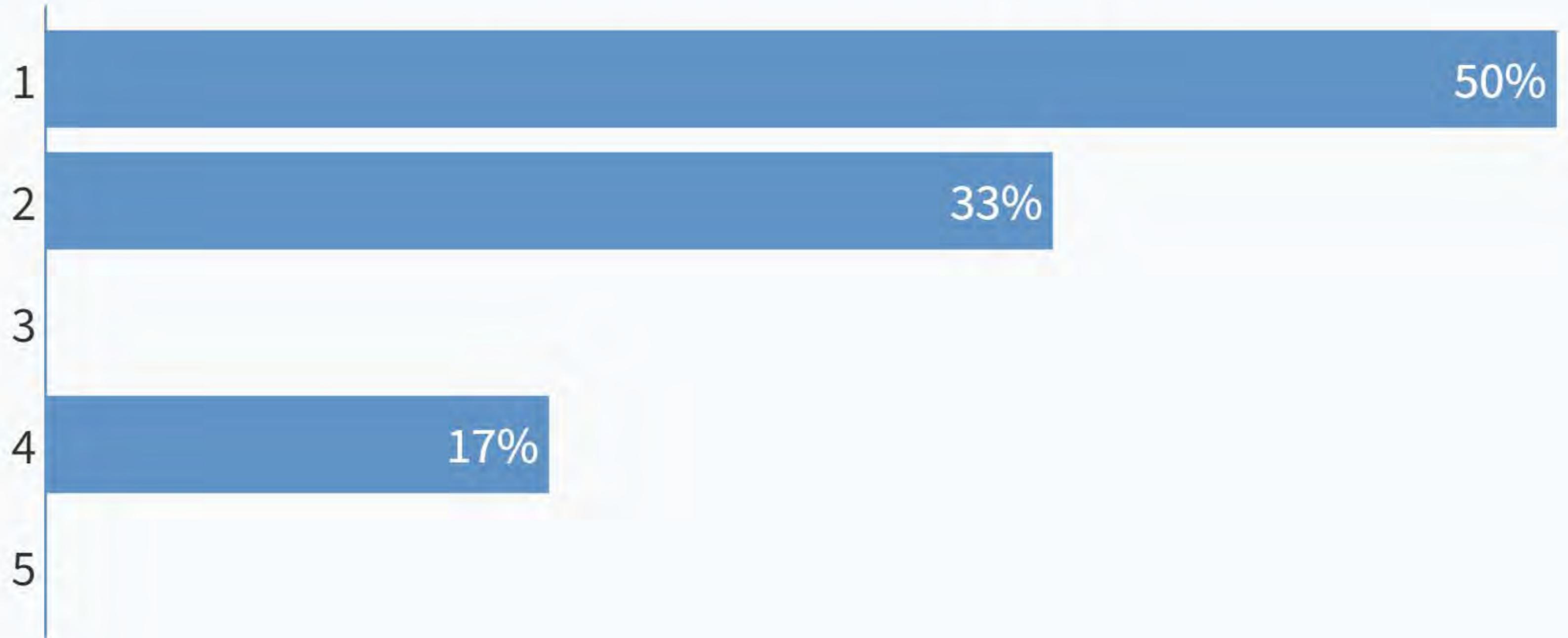
“ outdoor recreation, tourism ”

“ Metal fabrication, value-add agriculture ”

# What does your community struggle with the most? (Select the top 3)



# How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)

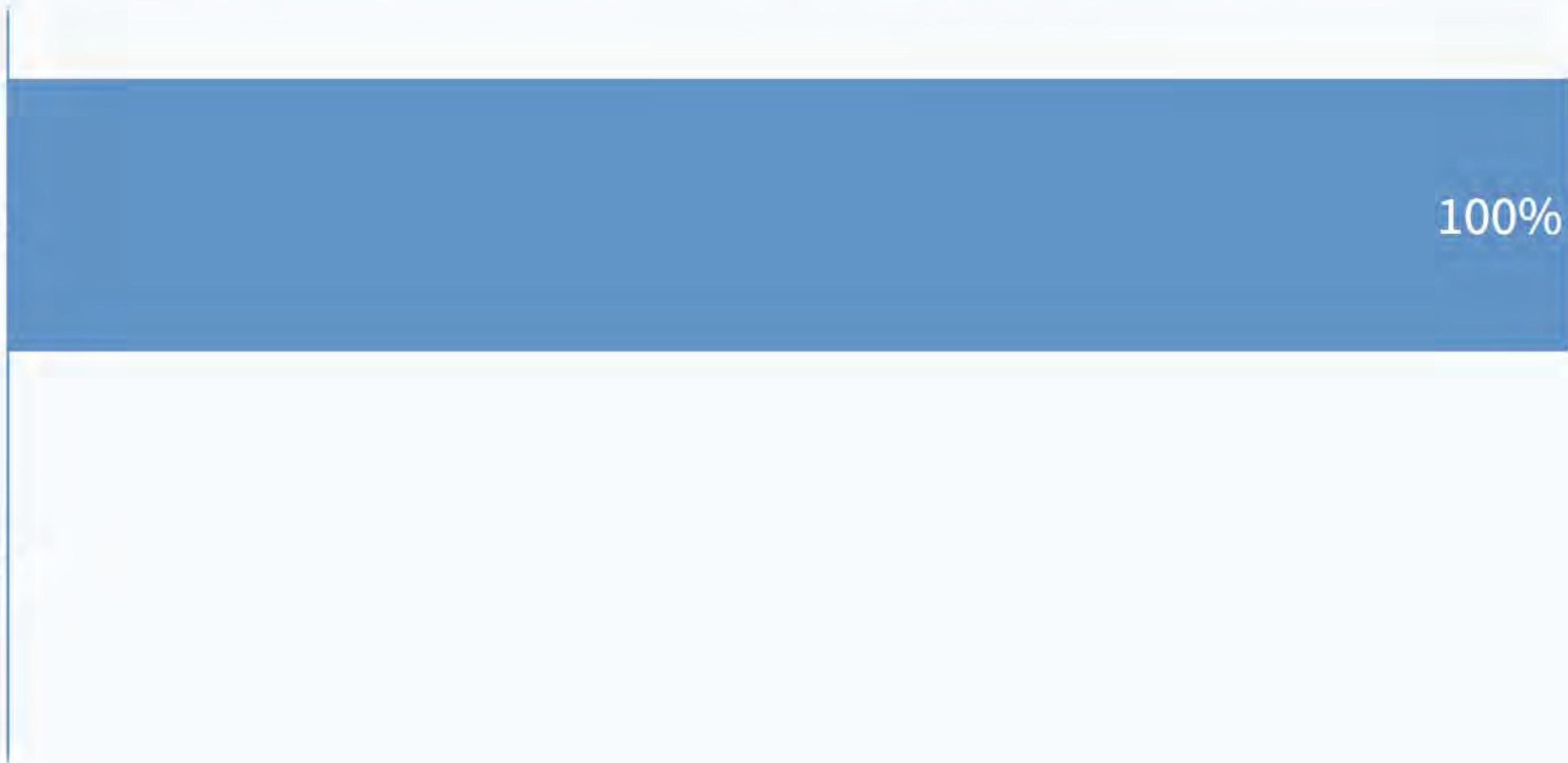


# Is your community doing long-range planning?

Yes

100%

No



# Which of the following best defines resilience from your perspective?

Ability to quickly respond

Ability to recover

Operational continuity

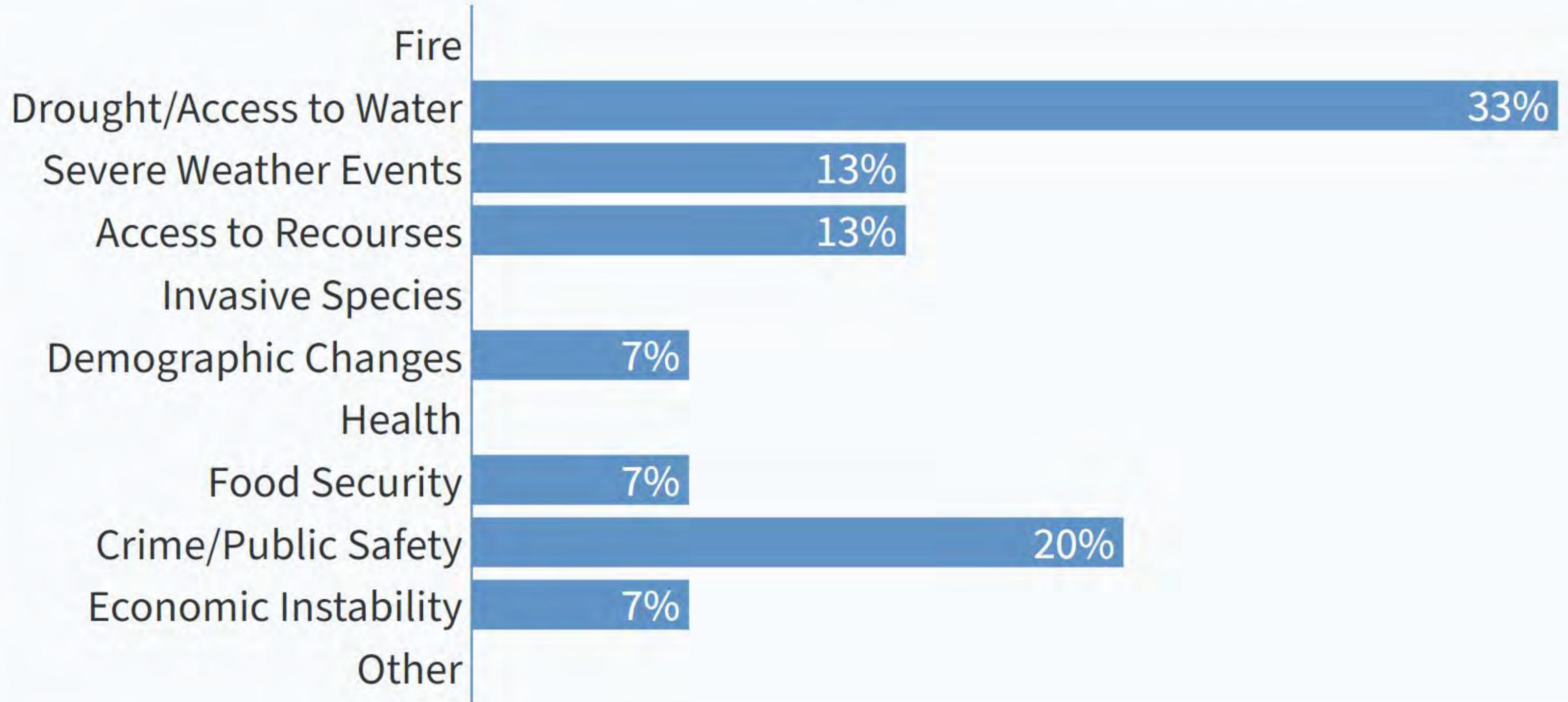
Reducing vulnerability

All of the above

Other

100%

# What, in your opinion, is the biggest threat to the region?



## **What industries are most vulnerable to future threats in your community?**

“ Mom & Pop Restaurants ”

“ Agrarian ”

“ Hospitality, Tourism, Travel dependent industries ”

“ retail ”

“ small business ”

**What are the top 3 resilience solutions that you would like to implement for your community?**

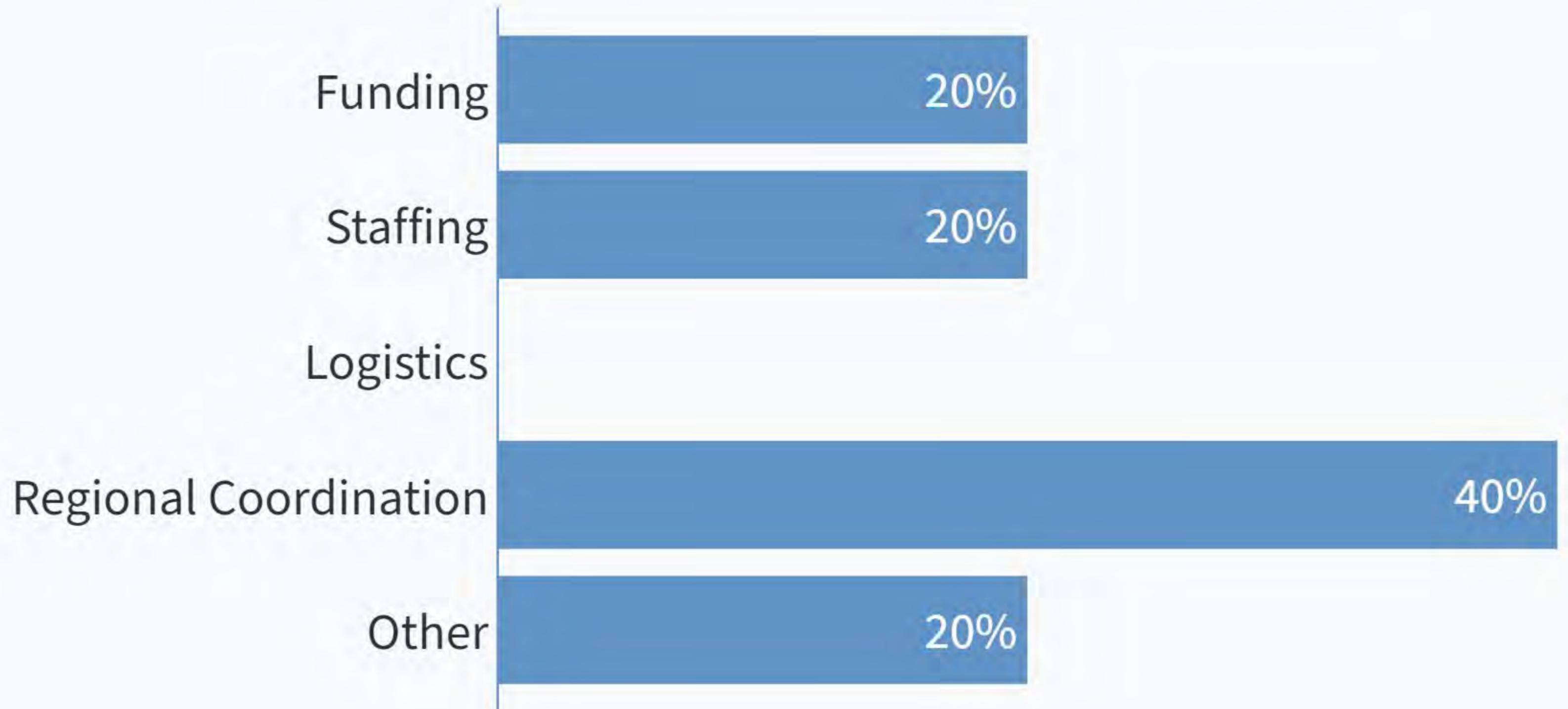
“ Provide business and outreach and resources in multiple languages ”

“ 1. Improve drinking water quality 2. Set up a comprehensive cannabis ordinance 3. Annexation of land for the Community Center ”

“ Lessen the amount of regulatory barriers ”

“ ... ”

# What do you need to implement resilience solutions?



## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to *additional stakeholders*
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**PROJECT UNDERSTANDING**

**THANK YOU + SEE YOU SOON**



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## OVERVIEW

1. Creation of an ***Economic Recovery and Resiliency Plan***
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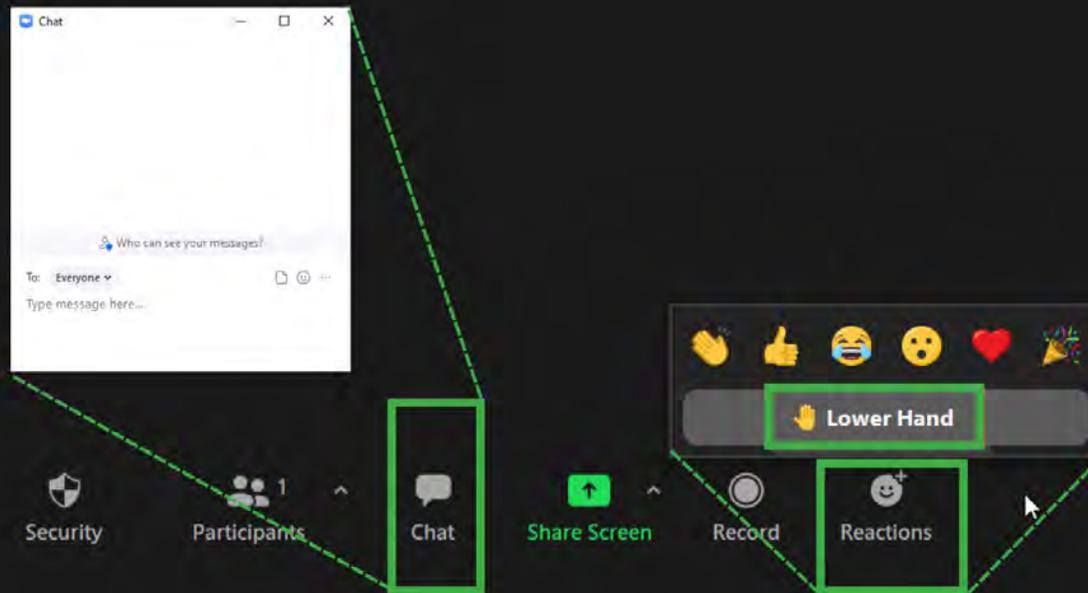


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# HOUSEKEEPING



## AGENDA

1. **Introductions** (5min)
2. **Presentation** (10-15min)
  - a. *Project scope/goals*
  - b. *Project team*
  - c. *Community cluster areas*
  - d. *Project schedule/stakeholder role*
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## PROJECT SCOPE

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<i>What are the key metrics?</i>	<ul style="list-style-type: none"> <li>Higher wages</li> <li>More jobs</li> <li>Increase marketed food products</li> <li>Increase marketing revenues</li> <li>Increased investment in sector</li> <li>Increased infrastructure</li> <li>Increased use of existing infrastructure</li> <li>Able to have primary income from farming</li> <li>Shift in export types of RM agriculture</li> </ul>	<i>What are the key metrics?</i>	<ul style="list-style-type: none"> <li>MSCO</li> <li>MSCO - Cooperative Extension Service</li> <li>USDA Rural Development</li> <li>Local Banks for lending capital</li> <li>Local Governments</li> </ul>
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EXCERPT FROM CEDS

Mississippi NIM Council of Governments

## PROJECT SCOPE

1. Strategies identified in the **CEDS** are based on economic factors (only).
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- *Reliance on federal government*
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- *Transportation network needs improvement*
- *Small local venture capital pool*

## PROJECT TEAM



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ASLA, LEED AP,  
Design Principal

- *Manages overall contract*
- *Develops Implementation Strategies*



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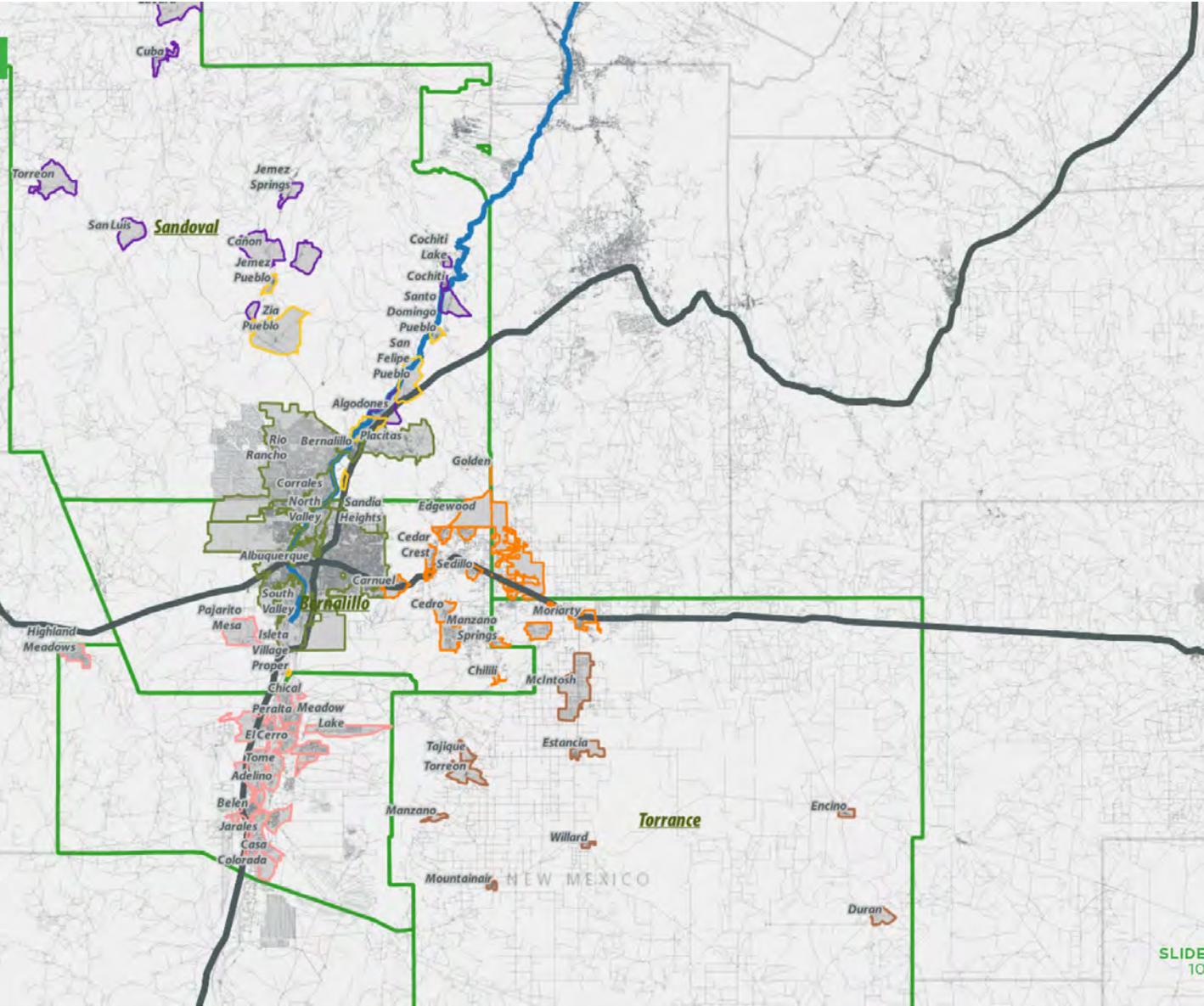
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# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

- ▭ Pueblo Cluster
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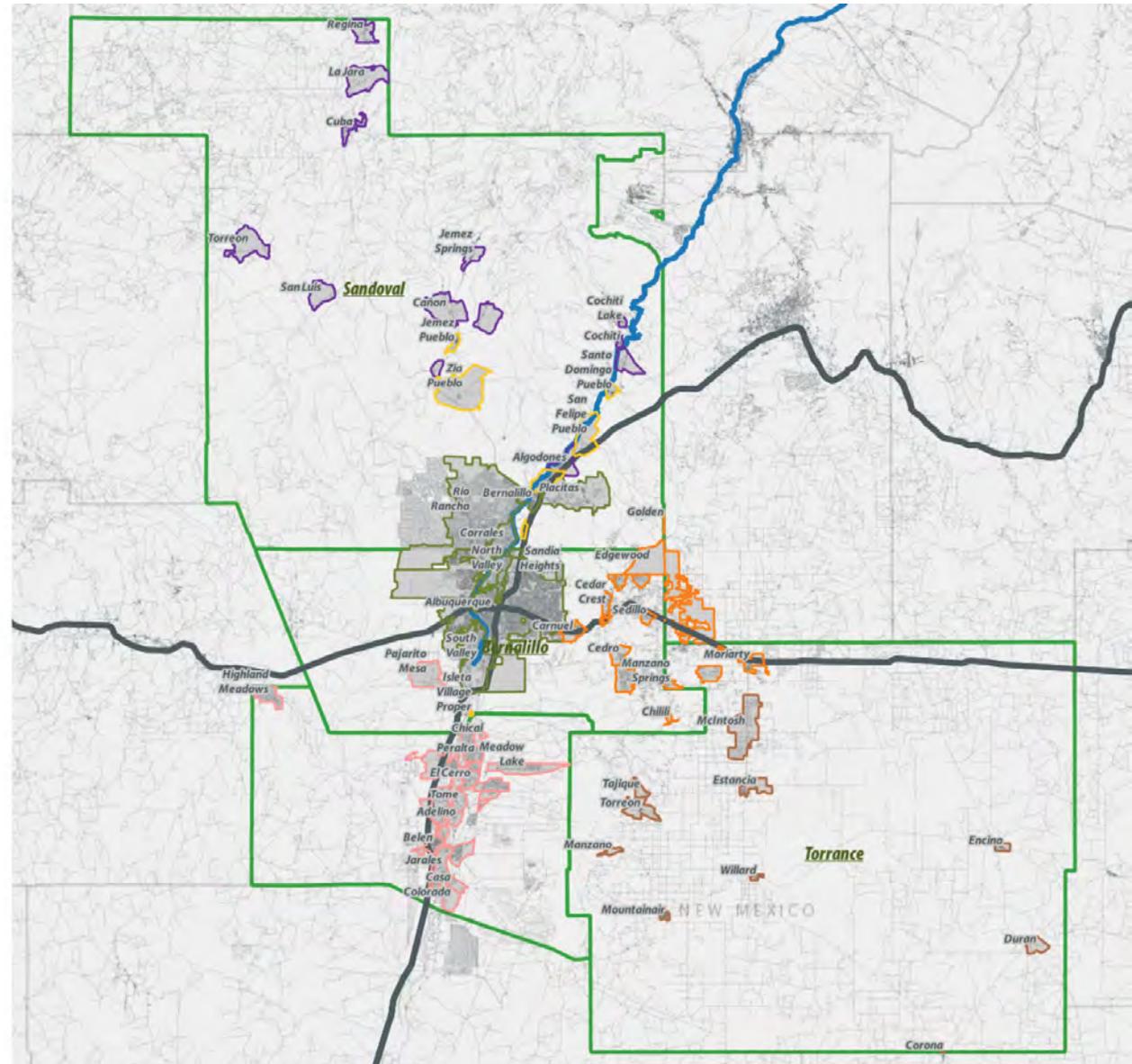


## PROJECT SCHEDULE/STAKEHOLDERS ROLE



## GOAL OF THIS MEETING

1. This meeting is the *first set of stakeholder meetings*
2. *Learn how communities economies are doing;*
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4. And what some of the economic weaknesses, opportunities, and constraints are.



## DISCUSSION

### Join by Web



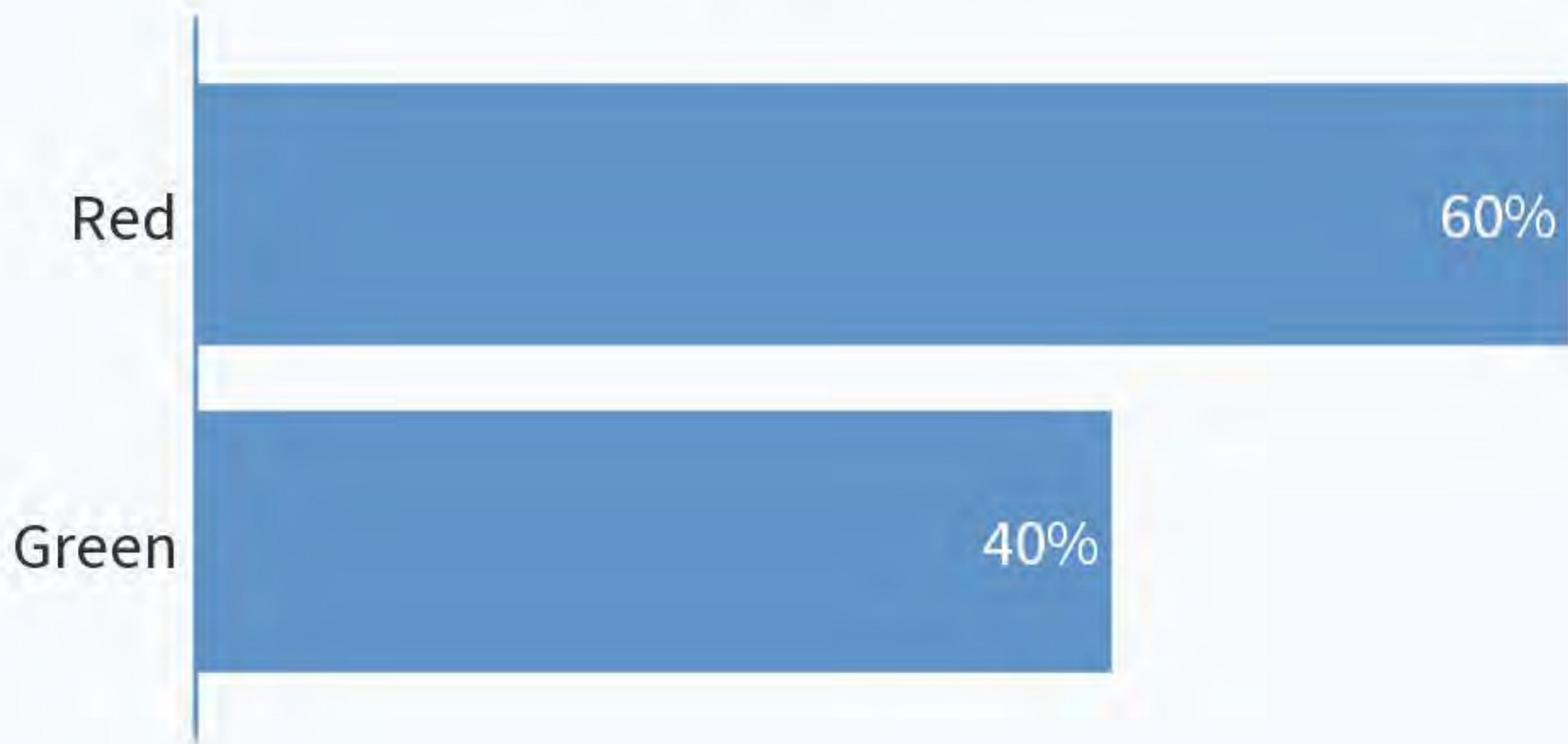
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### Join by Text



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A, B, C etc. or writing a response

## Red Or Green?



## **What is your favorite local business?**

“ Pizza Barn ”

“ Chili Hills ”

“ Roots Farm Cafe ”

“ Roots Farm Cafe ”

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ Infrastructure improvements to attract business

”

“ New businesses coming to Edgewood (tap room, Harbor Freight) ”

“ Development of the Main Street district in

## **What are some keystone businesses in your community?**

“ Walmart, Smiths, O'Reilly's, AutoZone,  
numerous medical facilities ”

“ EPCOR, Church Street Market, Chili Hills, Rich  
Ford, Sandia Labs Federal Credit Union ”

“ Wells Fargo Bank, Western Mercantile, Charlie's  
Fleet Service, Homes by Joe Boyden, Tractor

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ Venus Park (Soccer Field) Edgewood, trails, Route 66 Run Rally & Rock, NM Wind Festival, Brews on Bachelor, Woofstock, East Egg Hunt ”

“ Sandia Peak and greater Cibola National Forest ”

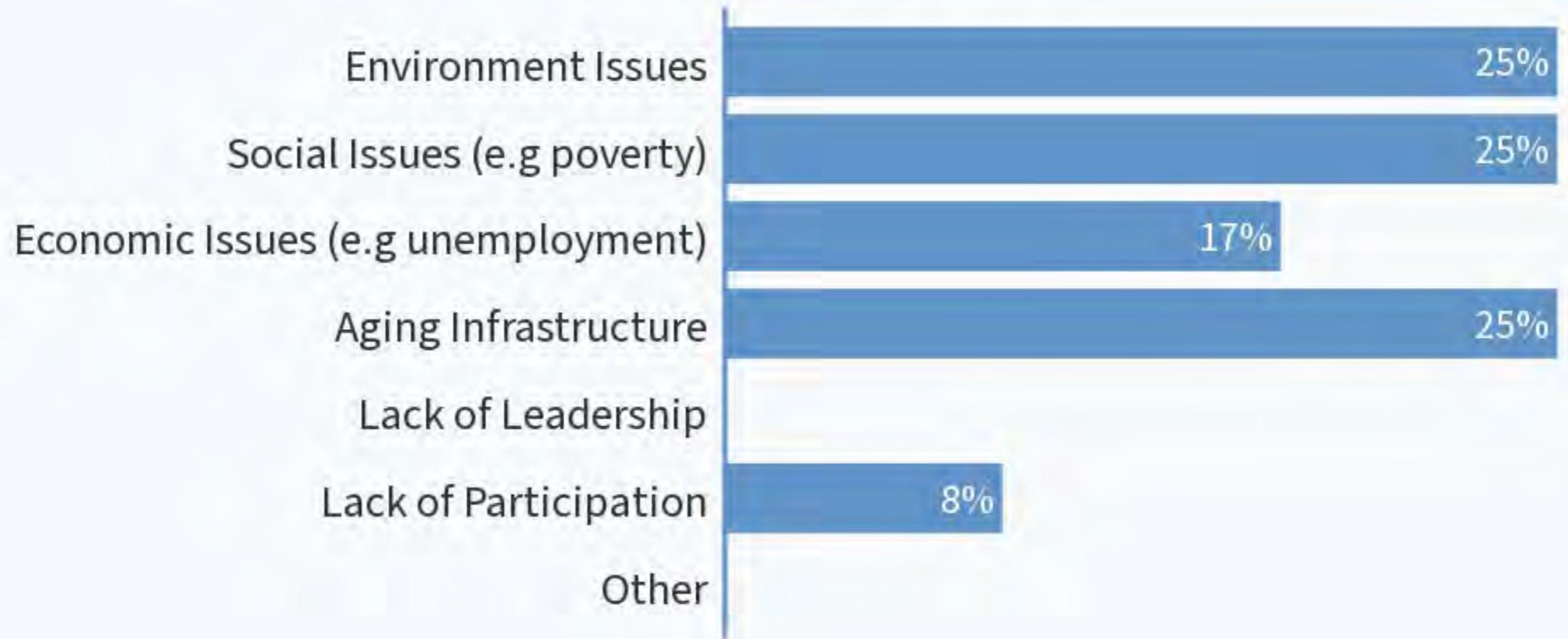
**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ Ness Farms ins the only pinto bean farm left ”

“ Local agriculutre ”

“ there are some small farms for whole foods,  
meats ”

# What does your community struggle with the most? (Select the top 3)



# How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)



# Is your community doing long-range planning?



## Which of the following best defines resilience from your perspective?

Ability to quickly respond

Ability to recover

Operational continuity

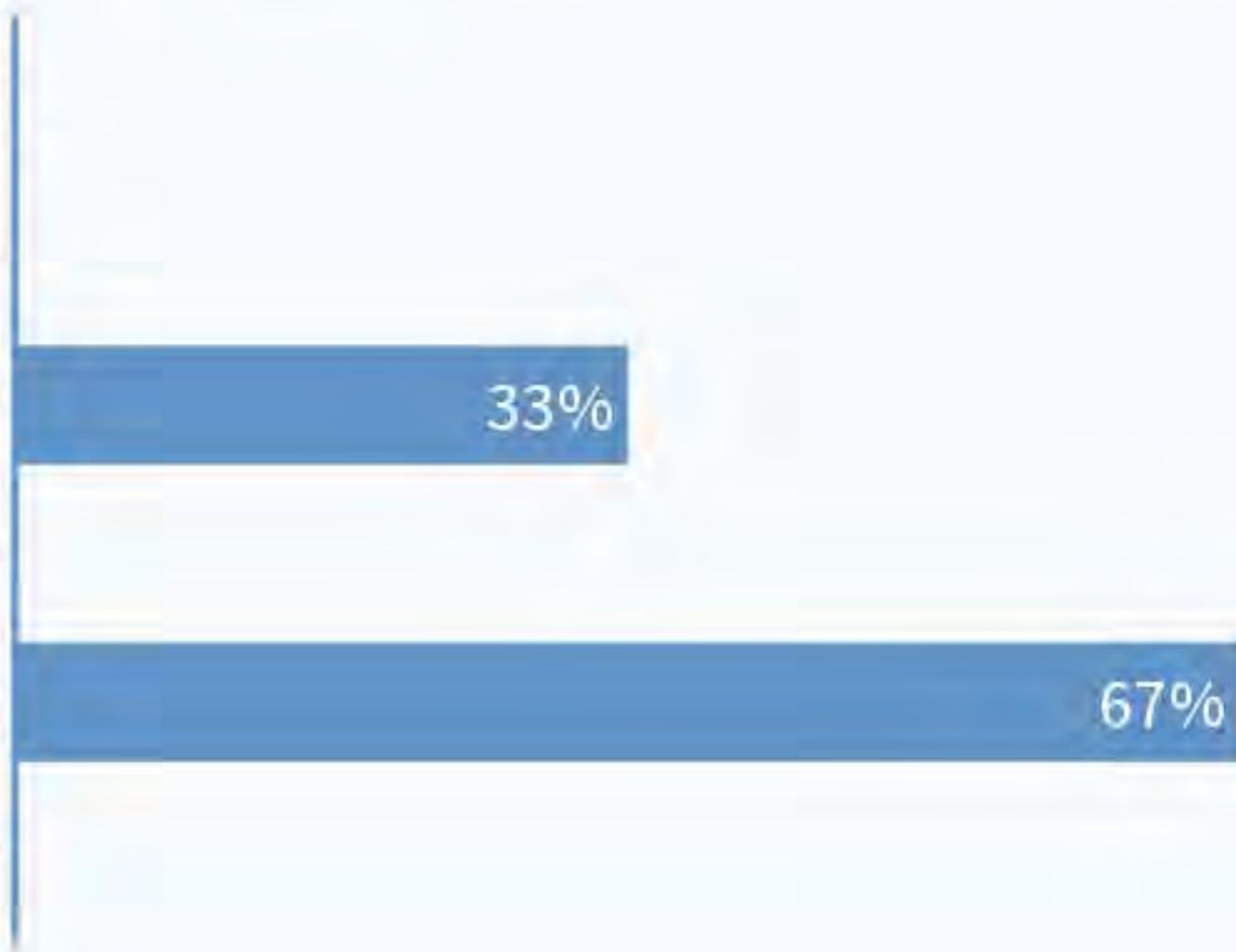
Reducing vulnerability

All of the above

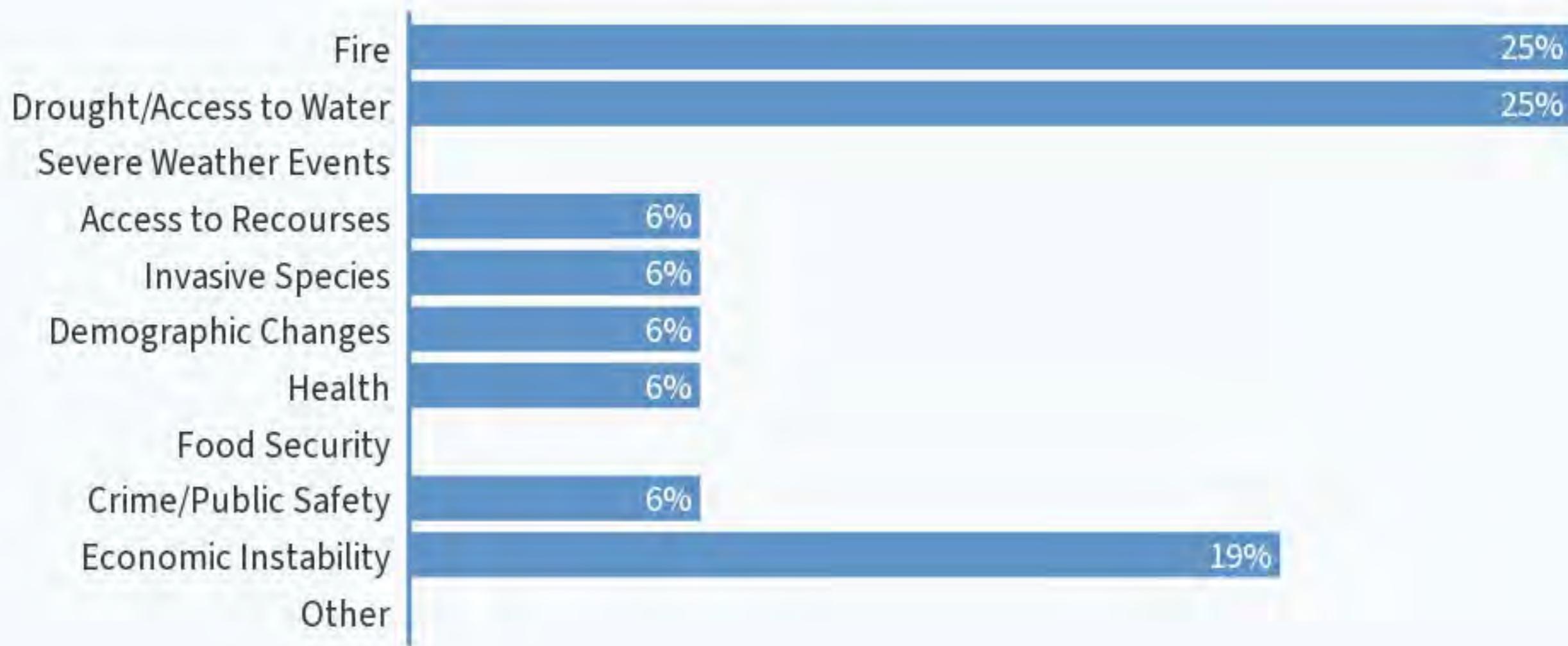
Other

33%

67%



# What, in your opinion, is the biggest threat to the region?



**What industries are most vulnerable to future threats in your community?**

“ small businesses are greatly impacted by COGs skyrocketing ”

“ Small business ”

**What are the top 3 resilience solutions that you would like to implement for your community?**

“ Acquisition of additional water resources, community wildfire prevention resources, infrastructure improvements ”

“ Broadband, infrastructure, social services ”

“ Water conservation, intentional planning

# What do you need to implement resilience solutions?

Funding

**A**

100%

Staffing

**B**

Logistics

**C**

Regional Coordination

**D**

Other

**E**

## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to *additional stakeholders*
2. March - *Strategy + Discovery Workshop* with all community clusters areas.
3. April - *Public Meeting*
4. *Follow-up Survey*
5. May - *Community Kiosks*
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7. **CALL FOR ACTION:** *Additional stakeholders*



**PROJECT UNDERSTANDING**

**THANK YOU + SEE YOU SOON**



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## OVERVIEW

1. Creation of an ***Economic Recovery and Resiliency Plan***
2. The plan will ***explore events and disasters that cause disruption*** in the economy in the Mid-Region.
3. It will ***address how events, including the COVID-19 pandemic***, expose and exacerbate social and economic weaknesses.
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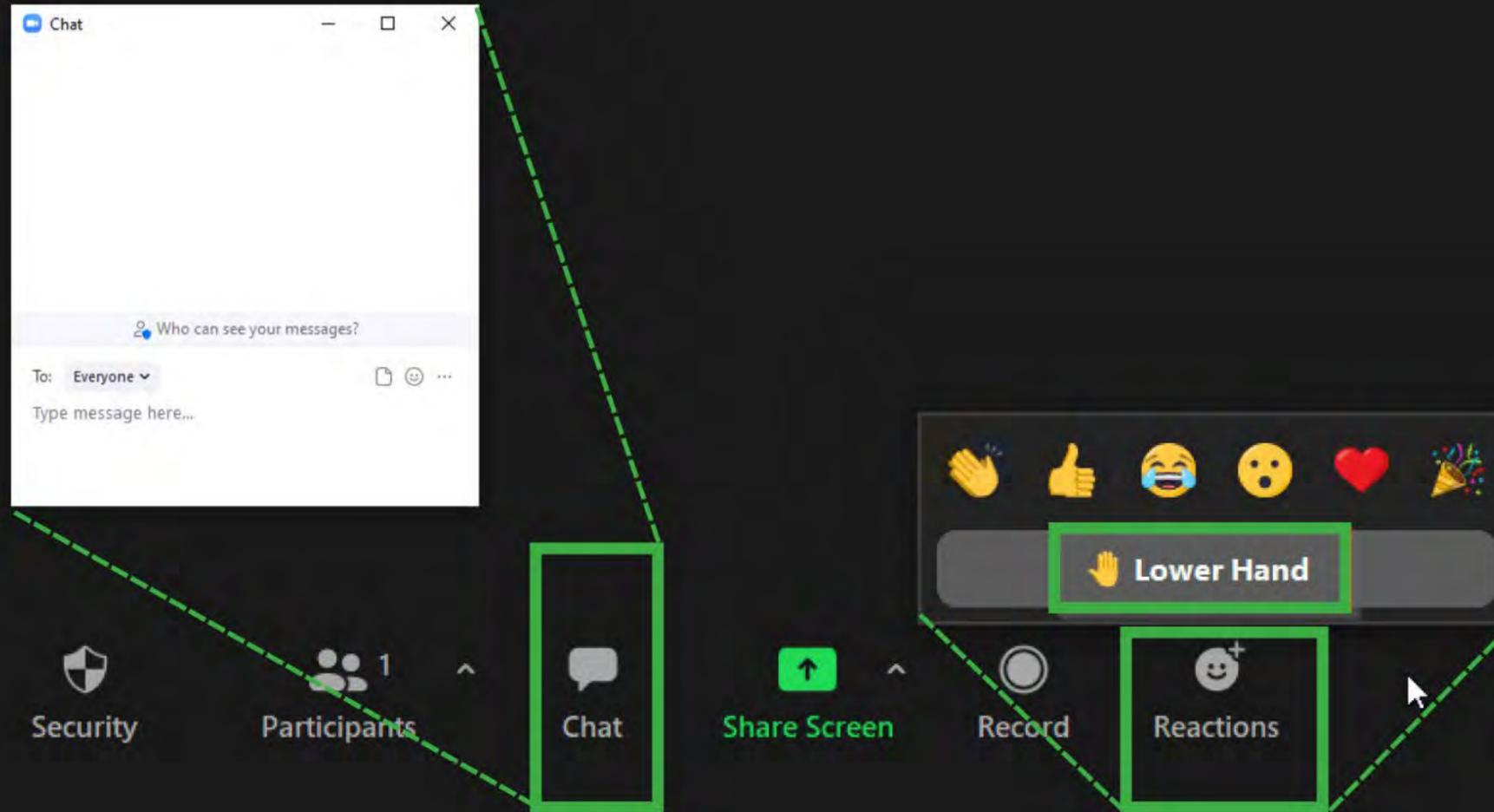


**Ask questions by  
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via the chat**



**We will not have an  
official break, but feel  
free to step away as  
necessary**

# HOUSEKEEPING



1. **Introductions** *(5min)*
2. **Presentation** *(10-15min)*
  - a. *Project scope/goals*
  - b. *Project team*
  - c. *Community cluster areas*
  - d. *Project schedule/stakeholder role*
  - e. *Goal of this meeting*
3. **Discussion/live polling** *(70min)*
4. **Next steps** *(5min)*

## PROJECT SCOPE

1. Creation of an Economic Recovery and Resiliency Plan
2. The plan will be an addendum to the Mid-Region of New Mexico **Comprehensive Economic Development Strategy** (CEDS).
3. The project is **funded through the Economic Development Administration** (EDA) as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.
4. The **goal is to create economic and social resiliencies** and empower local communities to withstand future threats.
5. The plan **will identify actionable goals, strategies,** and a general list of **potential project priorities** for greater resilience.



# PROJECT SCOPE

1. The **CEDS is a five-year** plan for economic growth.
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Urban	Agriculture & Value-Added Foods	Rural	Agriculture & Value-Added Foods
<i>Strategies for doing this?</i>	<ul style="list-style-type: none"> <li>Expand liquor licenses</li> <li>Develop food hubs to supply institutional buyers, such as government, hospitals, and schools</li> <li>Improve supply (to market) chain</li> <li>Remove barriers &amp; support value added production</li> <li>Invest in distribution networks</li> <li>Support national marketing for value-added products, beer, etc.</li> <li>Support institutional procurement</li> <li>Follow recommendations in the 2019 Albuquerque Food and Agriculture Action Plan, and Bernalillo County's Urban Ag Plan</li> </ul>	<i>Strategies for doing this?</i>	<ul style="list-style-type: none"> <li>Need statewide support and strategy</li> <li>Incentives for food manufacturer/producers in a rural area</li> <li>Access to capital</li> <li>Better roads and distribution networks</li> <li>Incentives to value-added agriculture (including hemp)</li> <li>Positive marketing of NM regional agriculture products</li> <li>Support Bernalillo County's Grow the Grower Program</li> <li>Utilize LandLink (<a href="http://www.landlinknm.org">www.landlinknm.org</a>)</li> <li>Support companies eligible for rural job tax credits</li> </ul>
<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>Higher ag wages</li> <li>More jobs</li> <li>Increase in exported food products</li> <li>Increase in gross ag revenues</li> <li>Increased investment in sector</li> <li>Increased infrastructure</li> <li>Increased use of existing infrastructure</li> <li>Able to have primary income from farming</li> <li>Shift in export/ type of NM agriculture</li> </ul>	<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>NMDCU - Cooperative Extension Service</li> <li>USDA / NMDCU Ag Stats</li> <li>BBER - value added agricultural economic impact survey</li> <li>Number of economic base jobs created</li> <li>Number of business starts</li> <li>Gross domestic product</li> </ul>
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<i>Who are the catalysts?</i>	<ul style="list-style-type: none"> <li>New Mexico State University Cooperative Extension</li> <li>New Mexico Department of Agriculture (NMDCU)</li> <li>USDA Rural Development</li> <li>City of Albuquerque</li> <li>Bernalillo County</li> <li>Legislature / State investments</li> <li>Non-profits</li> <li>Commercial kitchens, The Mixing Bowl, Three Sisters Kitchen, and others</li> </ul>	<i>Who are the catalysts?</i>	<ul style="list-style-type: none"> <li>NMDCU</li> <li>NMDCU - Cooperative Extension Service</li> <li>USDA Rural Development</li> <li>Farm Bureau for lending capital</li> <li>Local Governments</li> </ul>
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ASLA, LEED AP,  
Design Principal

- *Manages overall contract*
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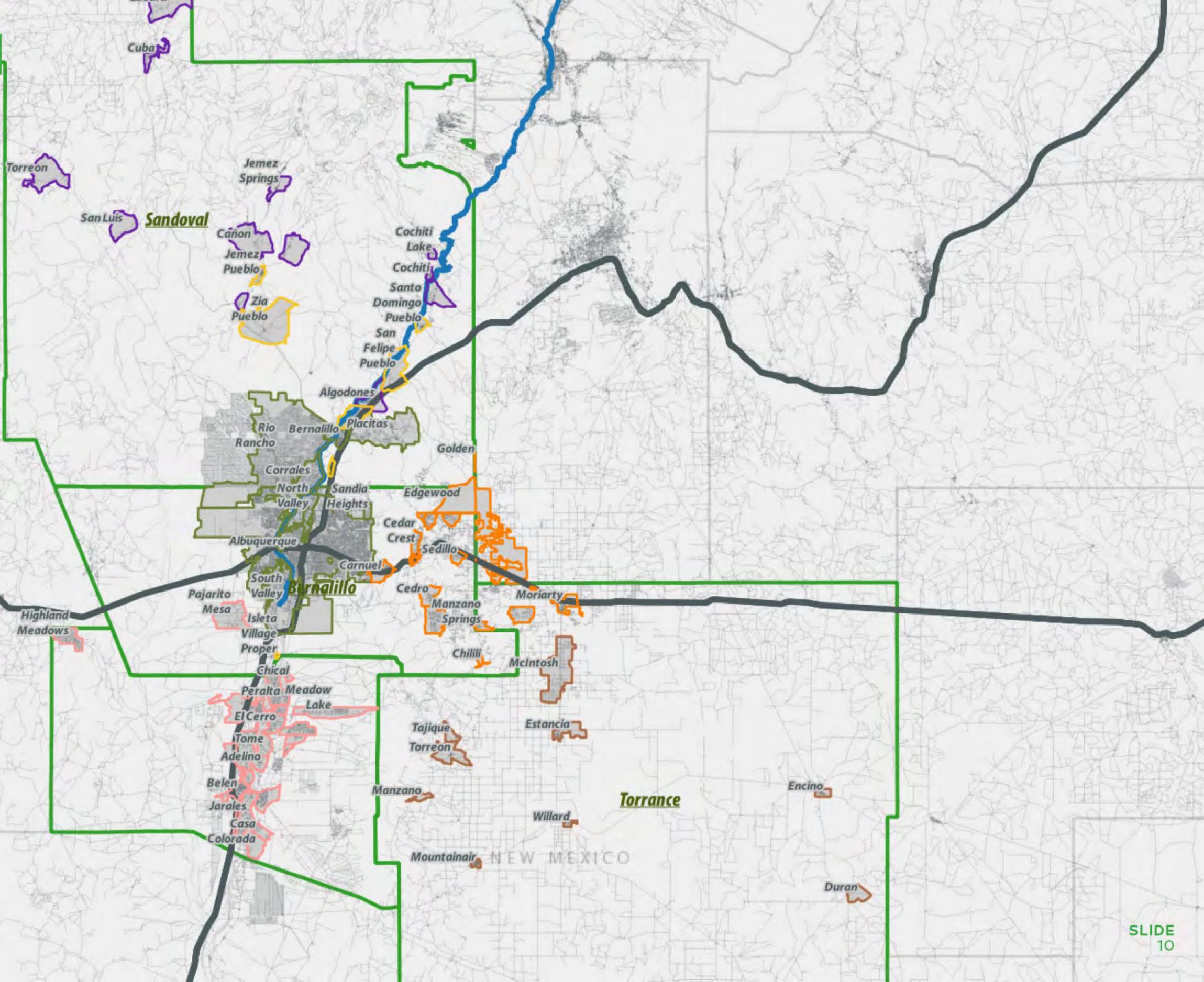
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# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

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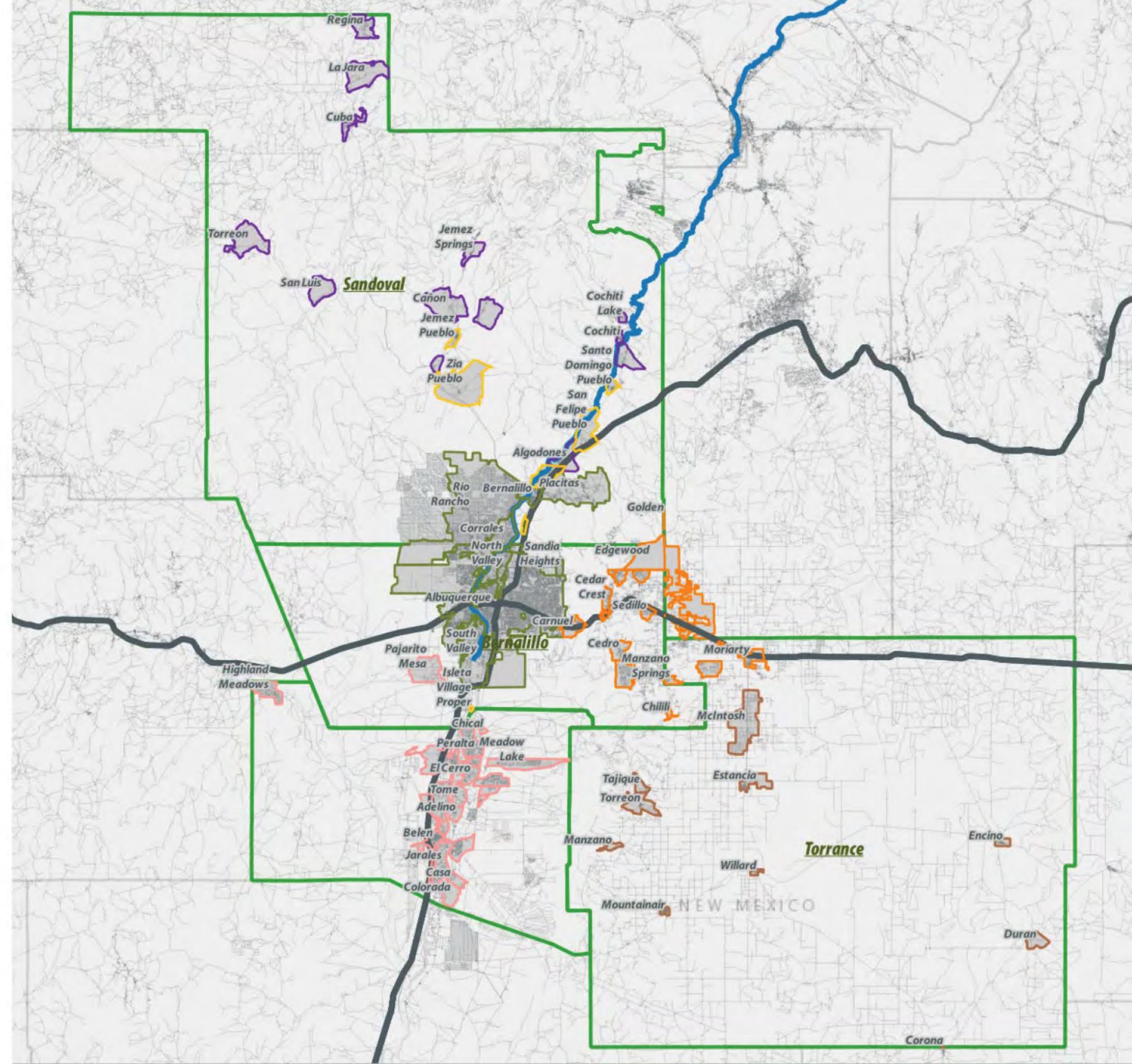


# PROJECT SCHEDULE/STAKEHOLDERS ROLE

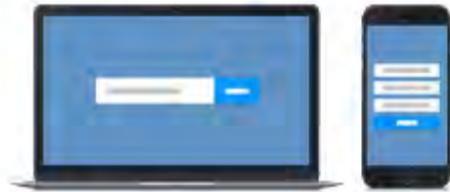


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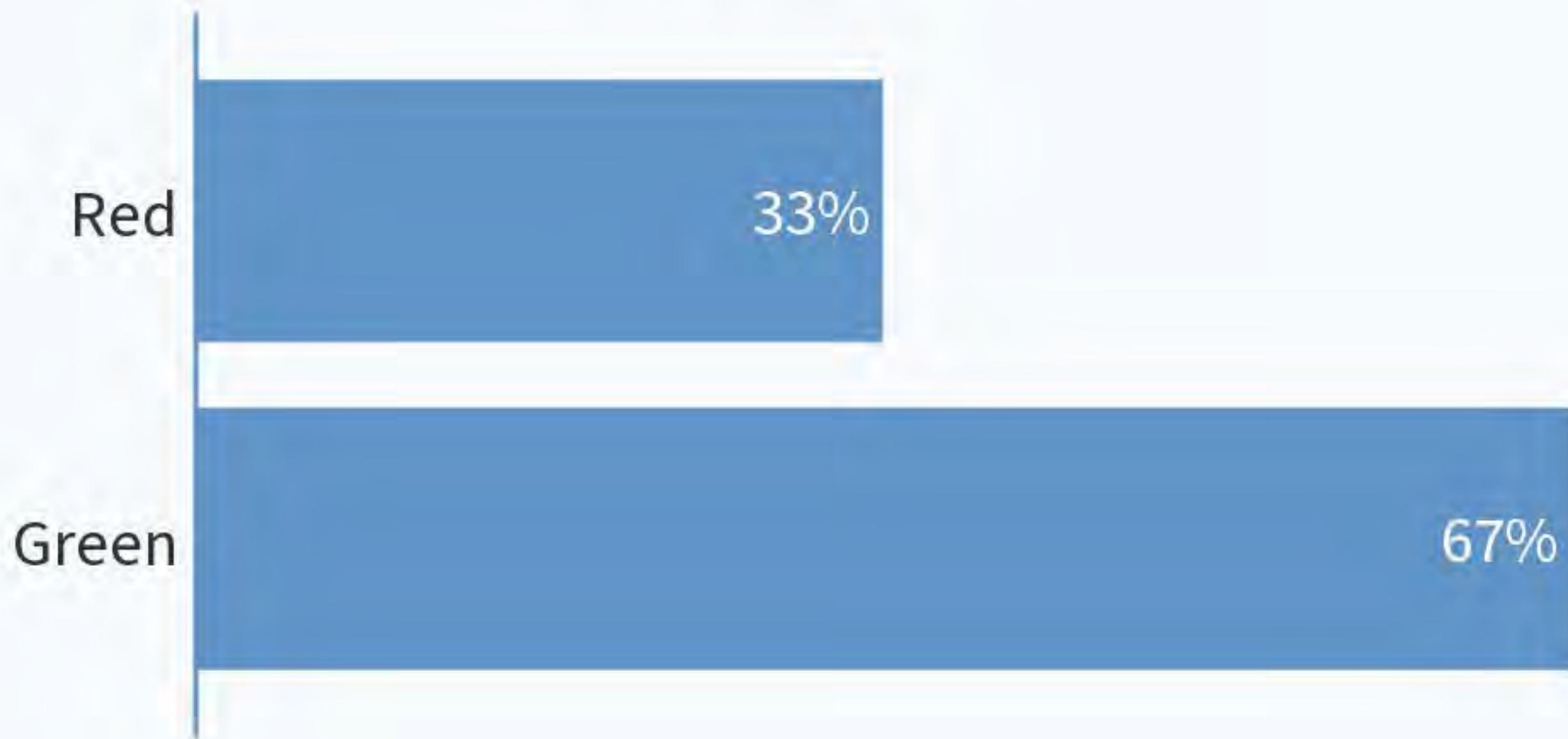
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## Red Or Green?



**What is your favorite local business?**

“ Double C Diner ”

# Are you optimistic about the future of your community?



**What economic opportunities are you most excited about?**

“renewable energy”

**What are some keystone businesses in your community?**

“ tagawa green house ”

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ gliders ”

“ soaring and iders ”

“ salt mission trail corridor ”

“ Salinas Pueblo Missions National Monument ”

**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ warehouse ”

“ processing ”

“ manufacturing ”

# What does your community struggle with the most? (Select the top 3)

Environment Issues

Social Issues (e.g poverty)

Economic Issues (e.g unemployment)

Aging Infrastructure

Lack of Leadership

Lack of Participation

Other

**How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)**

1

2

3

4

5

# Is your community doing long-range planning?

Yes

No



# Which of the following best defines resilience from your perspective?

Ability to quickly respond

Ability to recover

Operational continuity

Reducing vulnerability

All of the above

Other

100%

A horizontal bar chart with a blue bar extending from the 'All of the above' category to the right edge of the chart area. The percentage '100%' is written in white text at the end of the bar.

# What, in your opinion, is the biggest threat to the region?



# What industries are most vulnerable to future threats in your community?

 No responses received yet. They will appear here...

# What are the top 3 resilience solutions that you would like to implement for your community?

 No responses received yet. They will appear here...

# What do you need to implement resilience solutions?

Funding **A**

Staffing **B**

Logistics **C**

Regional Coordination **D**

Other **E**

## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to **additional stakeholders**
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**THANK YOU + SEE YOU SOON**

# SCHEDULE

Tasks		Nov.	December	January	February	March	April	May	22-Jun
1	Kick-off								
	MRWM, ESP Associates, and MRCOG to confirm key milestones								
2	<b>Economic Conditions Analysis</b>								
	a Economic conditions, trends, threats and opportunities								
	b Industry + Community Survey								
	c Existing planning and regulatory documents								
	d Community clusters will be developed								
	e Demographic profile/cluster								
	f Evaluation of natural + human made hazards								
	g Development of Goals and Strategies								
	1 Review of local + state hazard mitigation plans								
	2 Hazus will be used to conduct vulnerability assessments								
	h SWOT analysis (housing, infrastructure, economic development, health, environment)								
	i GAP analysis, creation of an economic resource map								
3	<b>National Best Practices</b>								
4	<b>Strategy Discovery Workshop</b>								
5	<b>Public Engagement</b>								
	a Stakeholder Kick-Off								
	b Meeting, existing conditions								
	c Public meeting								
	d Follow-up survey								
	e Pop-up kiosk in communities								
6	<b>Goals and Implementation Strategies</b>								
	a Recommend goals and strategies for each community cluster								
	b Strategic tool to identify priorities								
	c Implementation matrix								
7	<b>Final Document</b>								
	a Final Draft								
	b Final Deliverables								
	c Final Presentation at joint meeting								

Internal Work

Public/Internal

Survey



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



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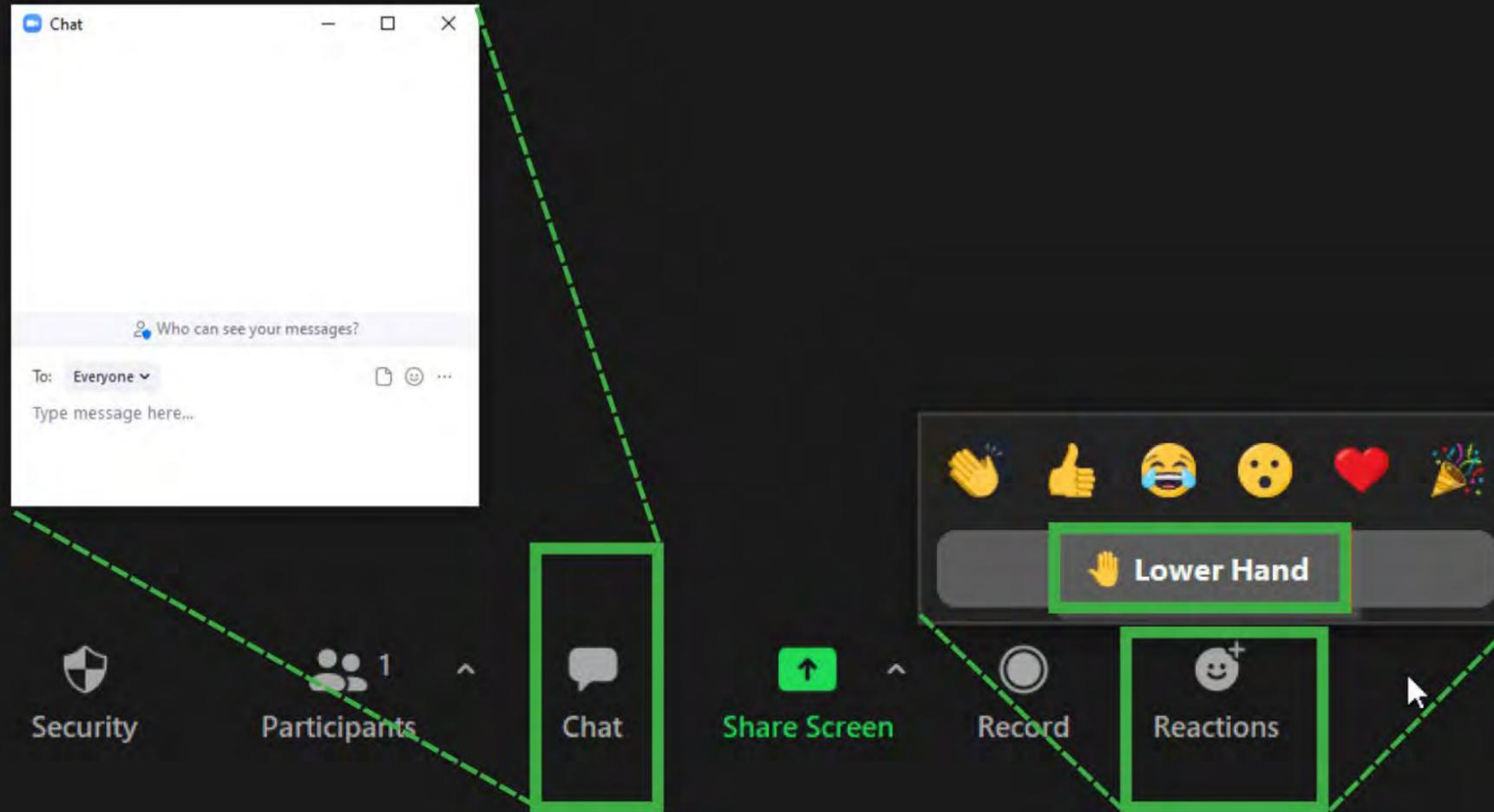


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Design Principal

- *Manages overall contract*
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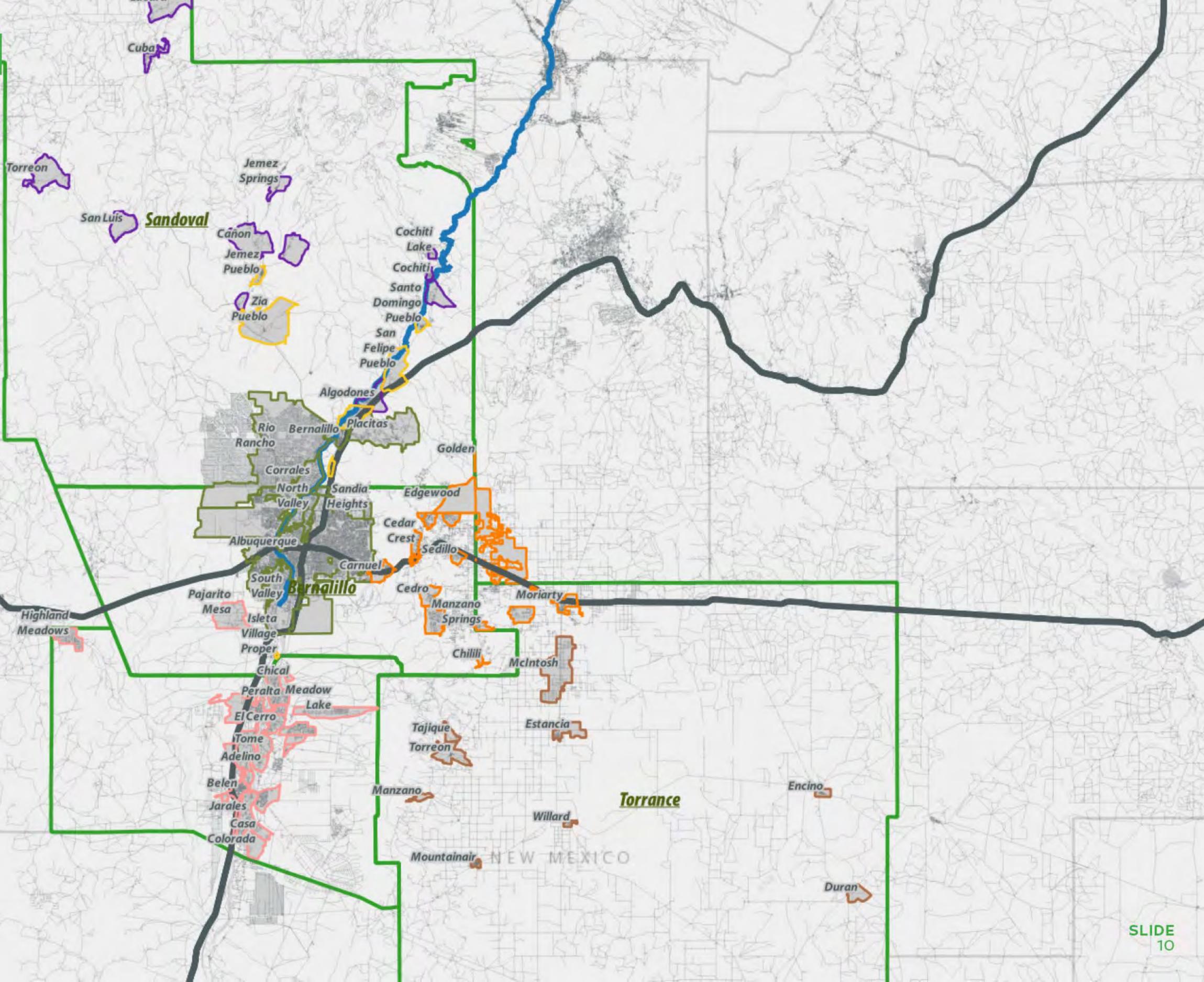
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# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

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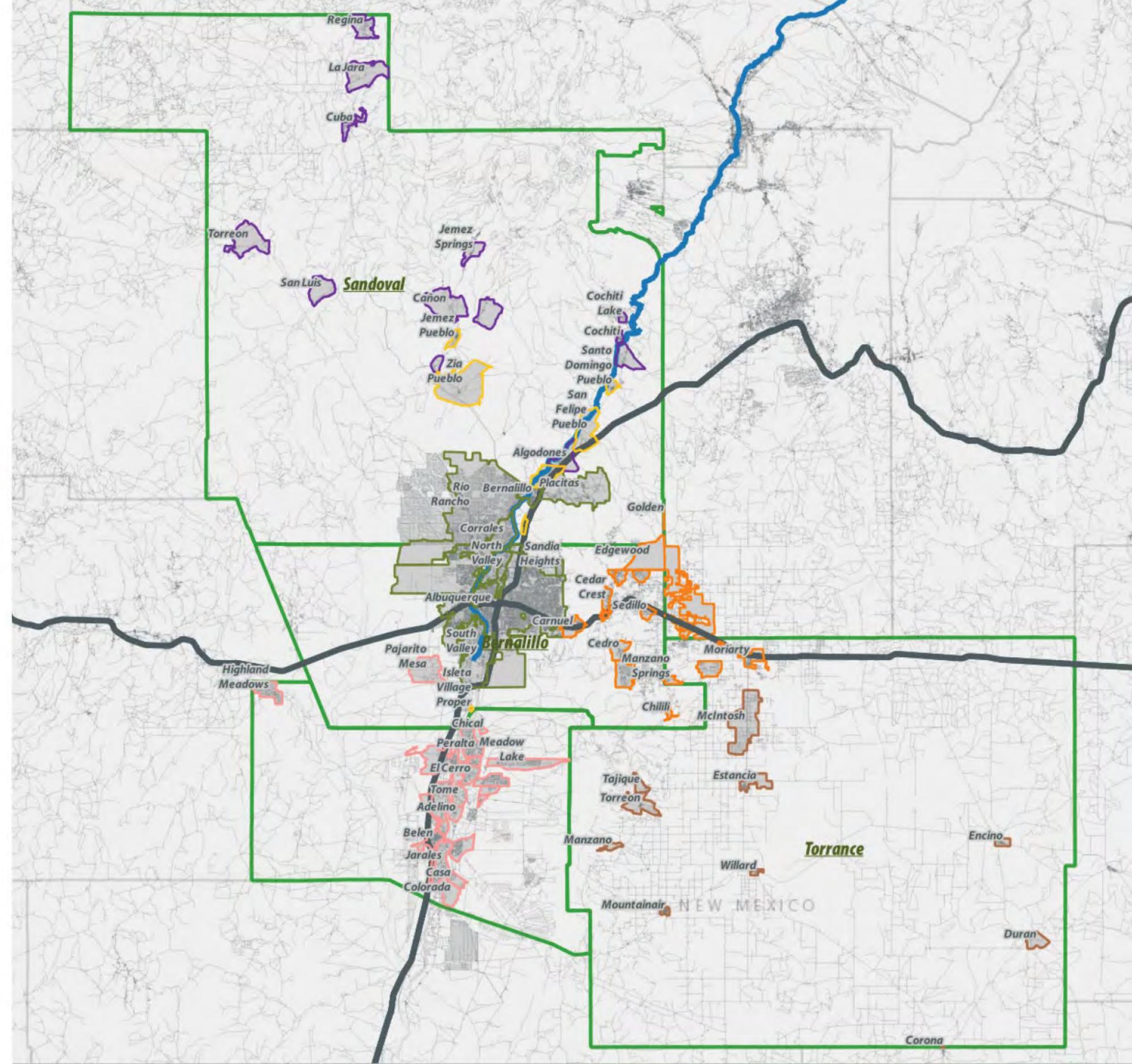


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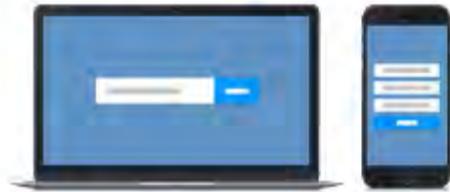


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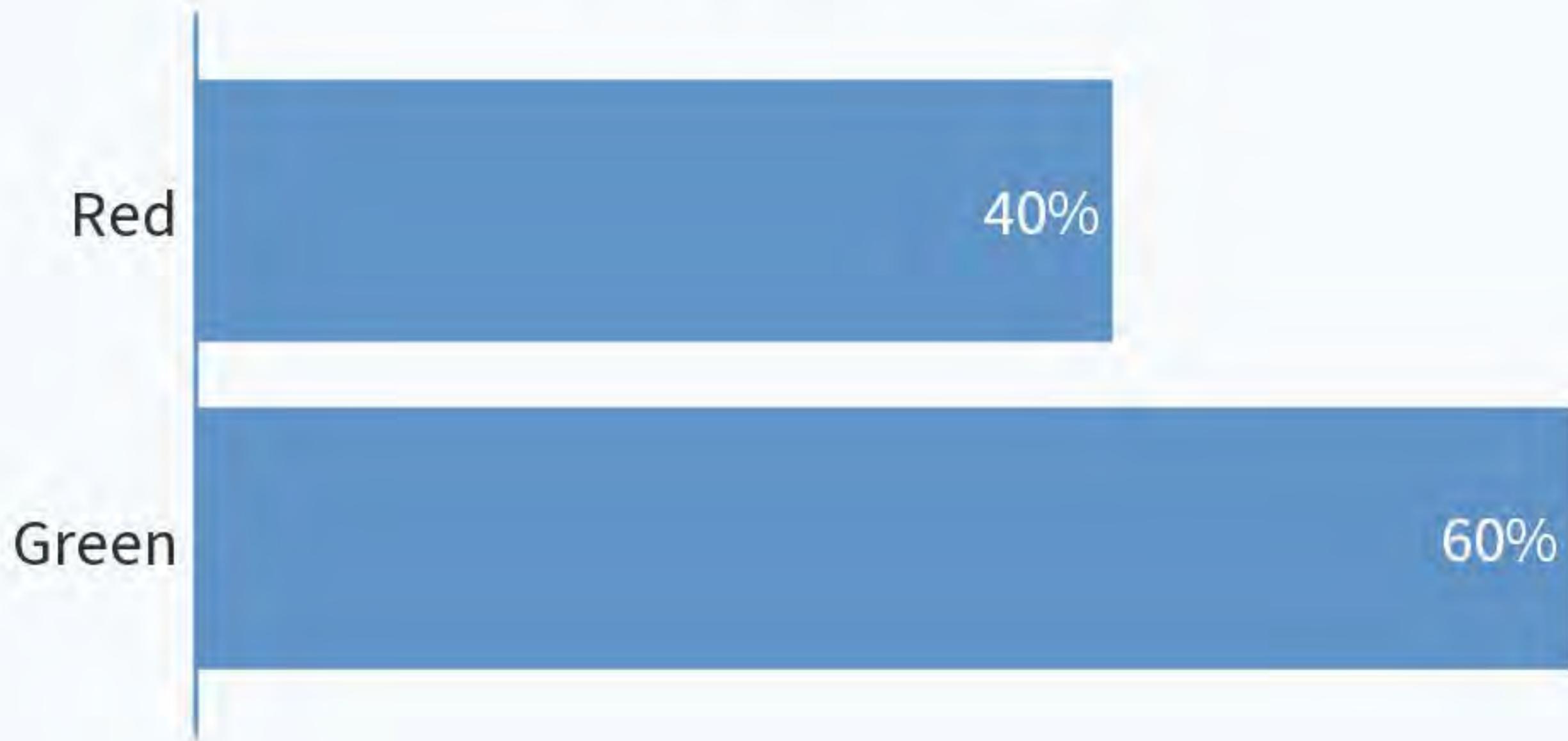
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## Red Or Green?



## What is your favorite local business?

“ West side of ABQ too ”

“ Brewlab 101 ”

“ Hannah & Nates ”

“ Stay True Barbershop ”

“ U... .. ”

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ Re-indigenizing our spaces and economy ”

“ Shopping local and supporting small businesses ”

“ Mixed use and higher density projects ”

## **What are some keystone businesses in your community?**

“ Food trucks, ice cream trucks, etc ”

“ The ABQ Artwalk has become a regular outdoor festival that draws people from citywide ”

“ Fat Pipe ”

“ ABQ has multiple startups that are important ”

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ Rio Grande rift topography provides massive Views to be captured in development ”

“ Architectural styles unique to area ”

“ Authentic people who care more about quality of life than "getting ahead" ”

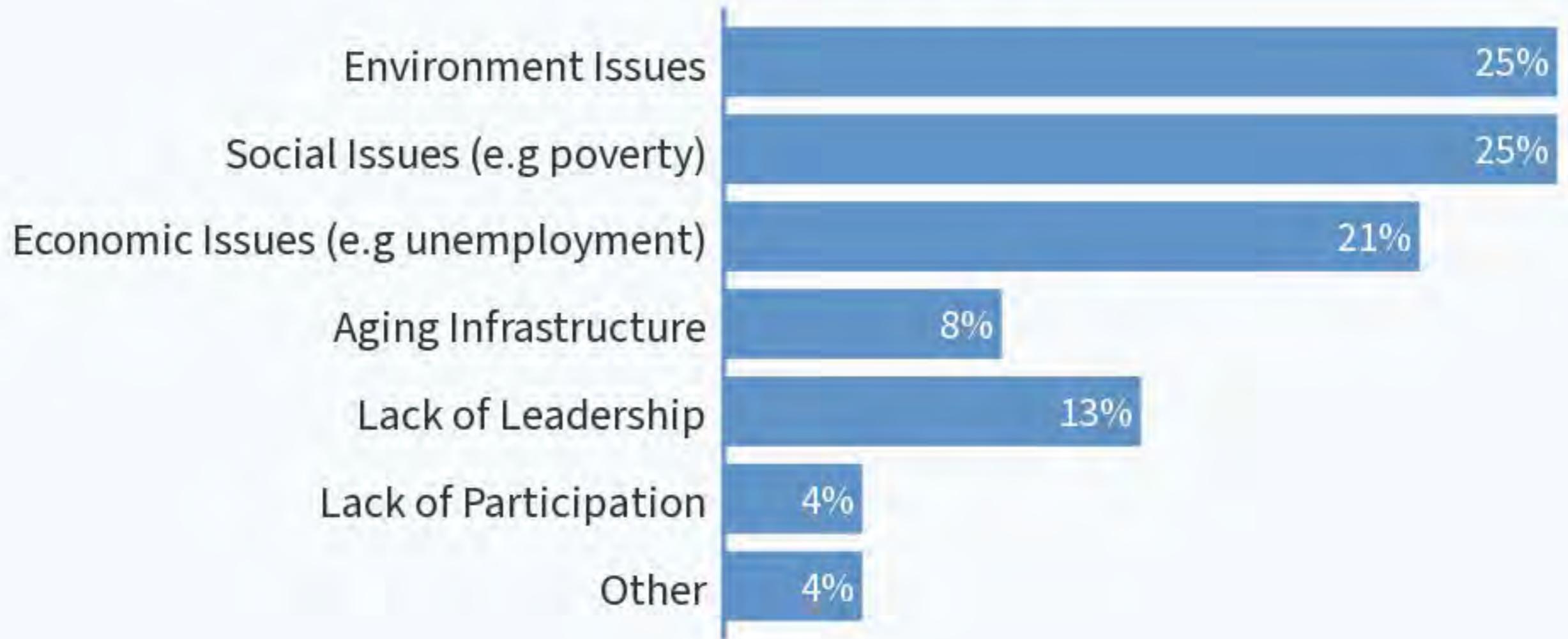
**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ Tricore is huge here and did a GREAT job to keep up with COVID testing needs... ”

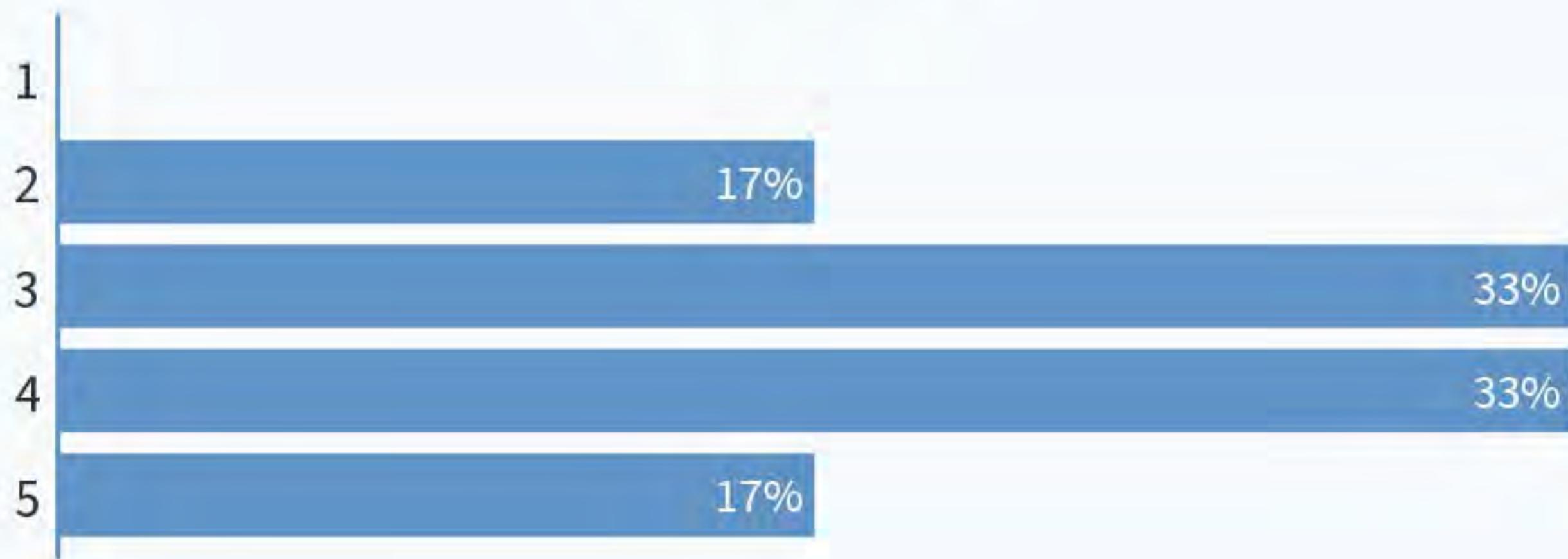
“ Medical (more) ”

“ Defense related ”

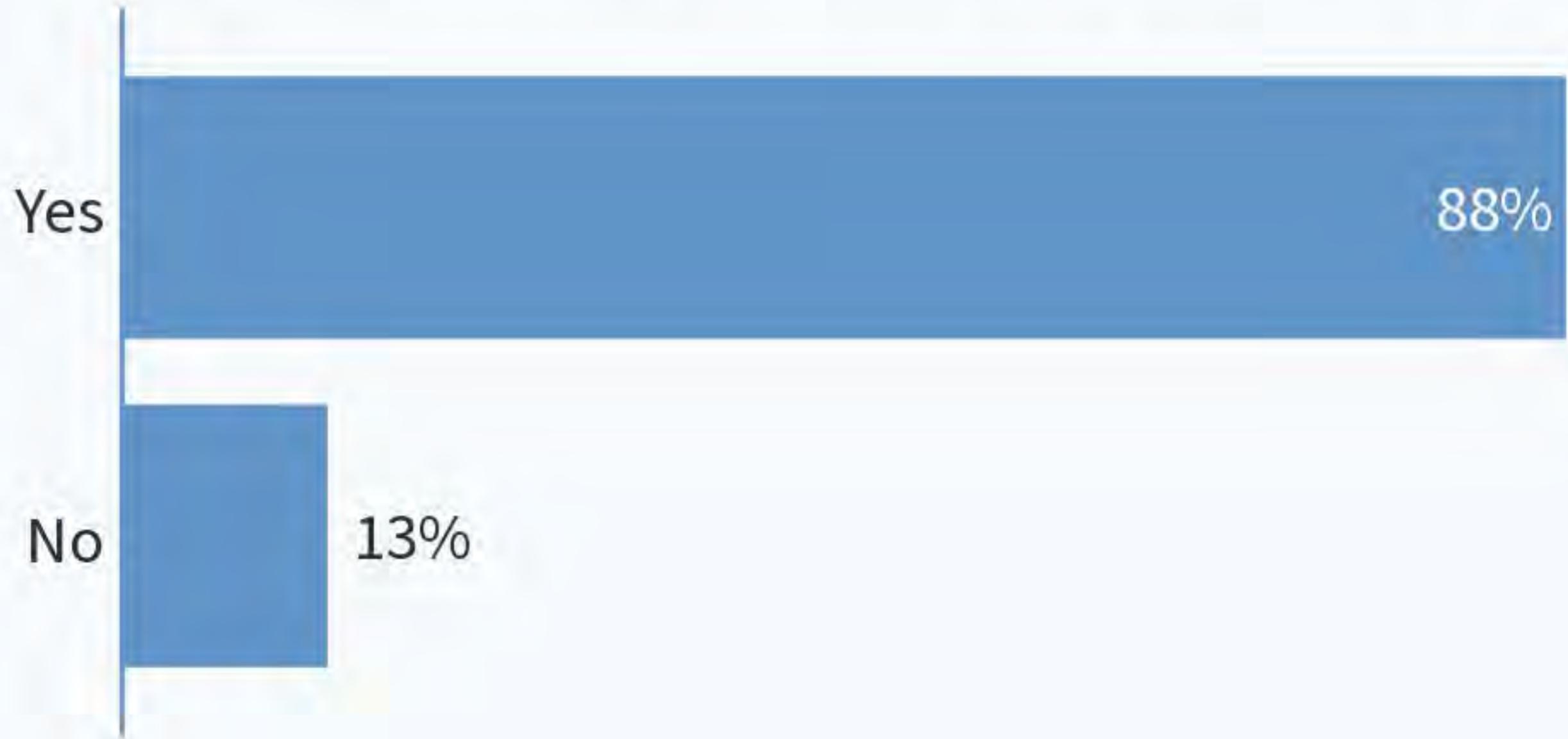
# What does your community struggle with the most? (Select the top 3)



# How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)



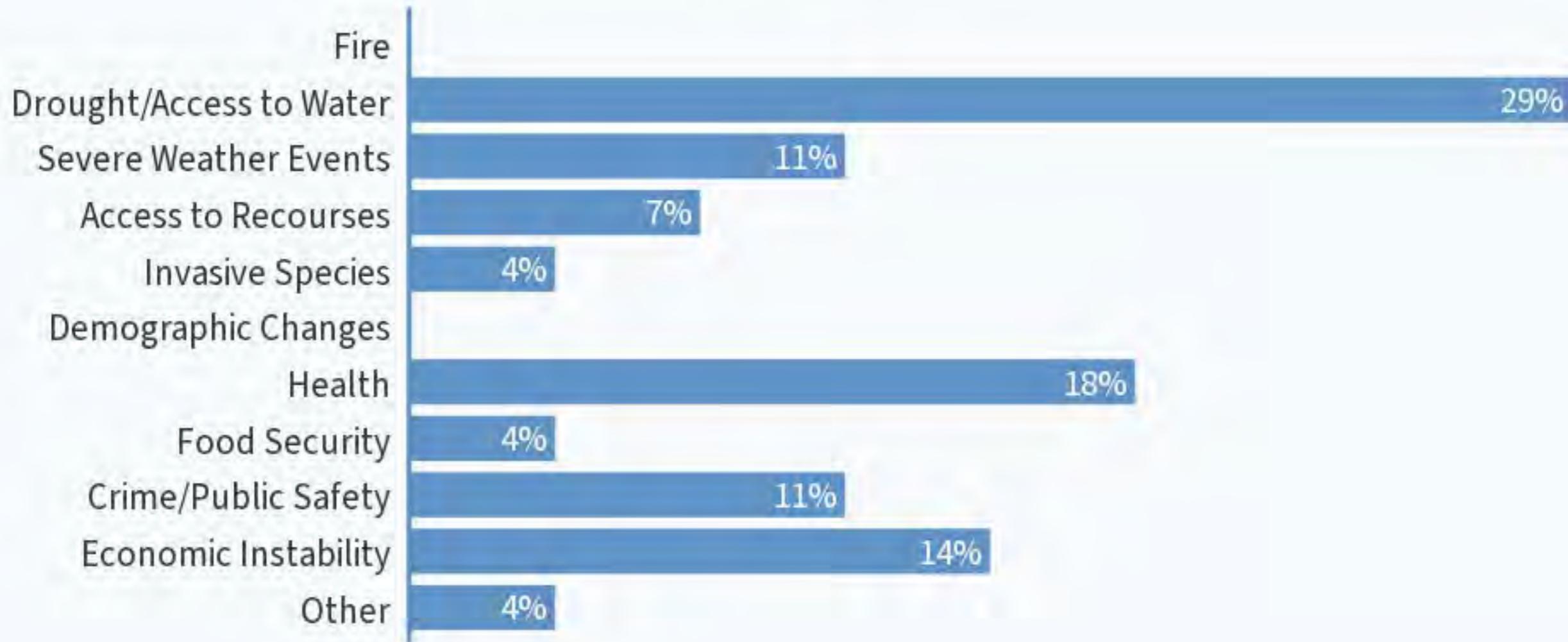
# Is your community doing long-range planning?



## Which of the following best defines resilience from your perspective?



# What, in your opinion, is the biggest threat to the region?



## **What industries are most vulnerable to future threats in your community?**

“ Agriculture / cannabis would be limited if water availability decreases ”

“ tourism will suffer if our air quality and natural beauty is degraded ”

“ Cannabis ”

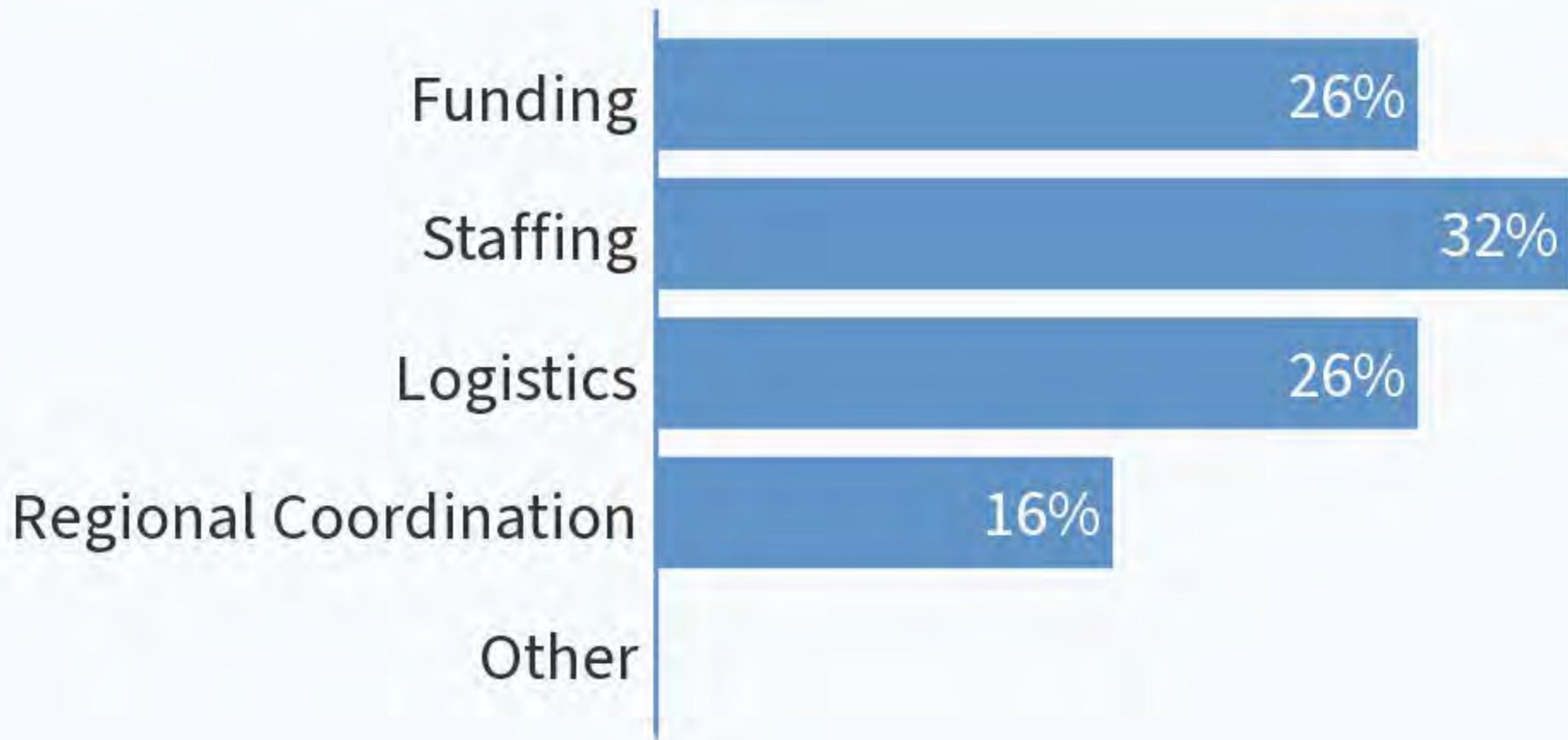
**What are the top 3 resilience solutions that you would like to implement for your community?**

“ encouraging TOD and mixed use development to reduce overall energy use and increase active transportation options ”

“ 15 minute neighborhoods ”

“ Cooling interventions, continual improvement

# What do you need to implement resilience solutions?



## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to **additional stakeholders**
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**THANK YOU + SEE YOU SOON**



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## OVERVIEW

1. Creation of an ***Economic Recovery and Resiliency Plan***
2. The plan will ***explore events and disasters that cause disruption*** in the economy in the Mid-Region.
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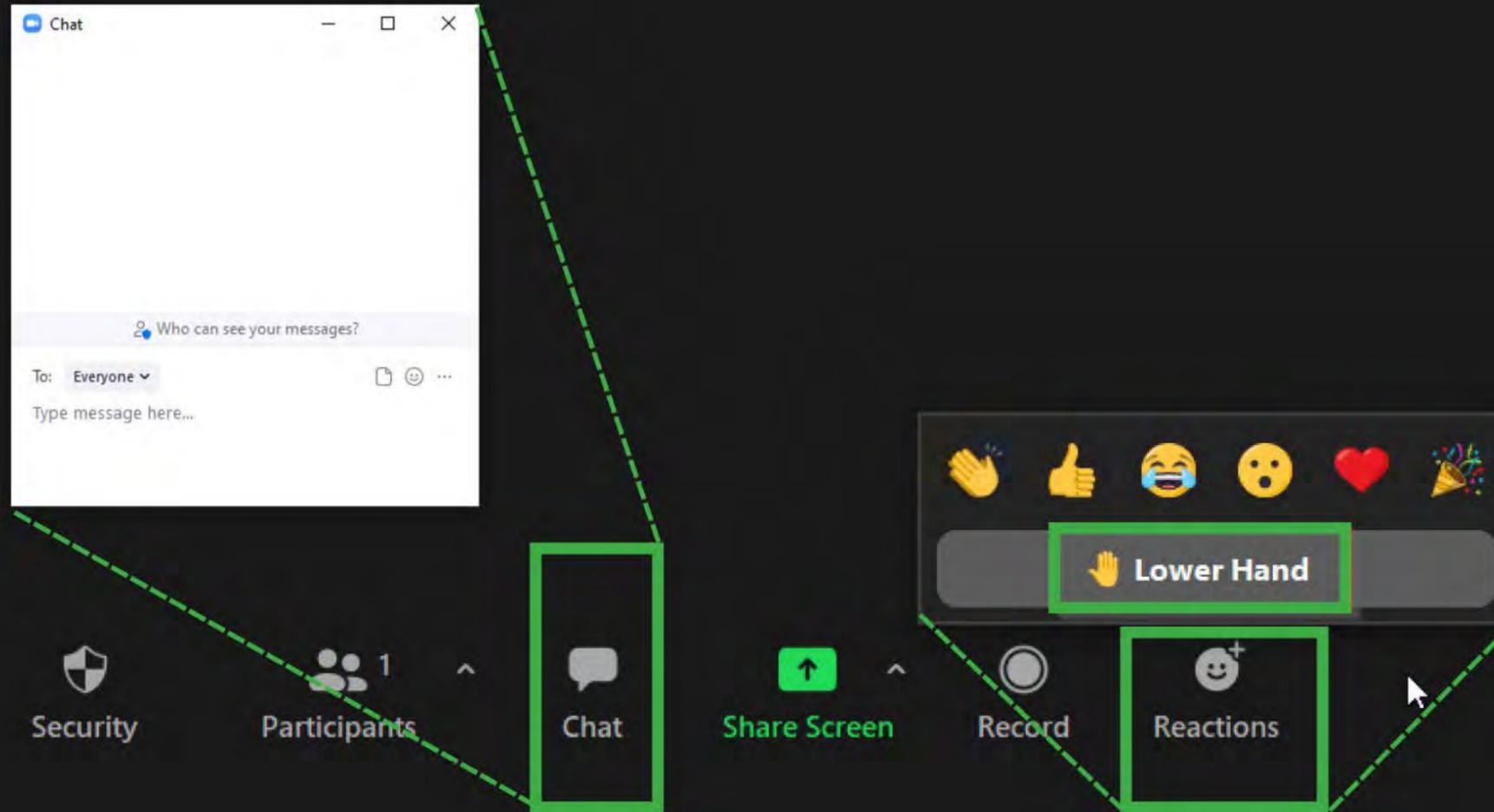


**Ask questions by  
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# HOUSEKEEPING



1. **Introductions** *(5min)*
2. **Presentation** *(10-15min)*
  - a. *Project scope/goals*
  - b. *Project team*
  - c. *Community cluster areas*
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## PROJECT SCOPE

1. Creation of an Economic Recovery and Resiliency Plan
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1. The **CEDS is a five-year** plan for economic growth.
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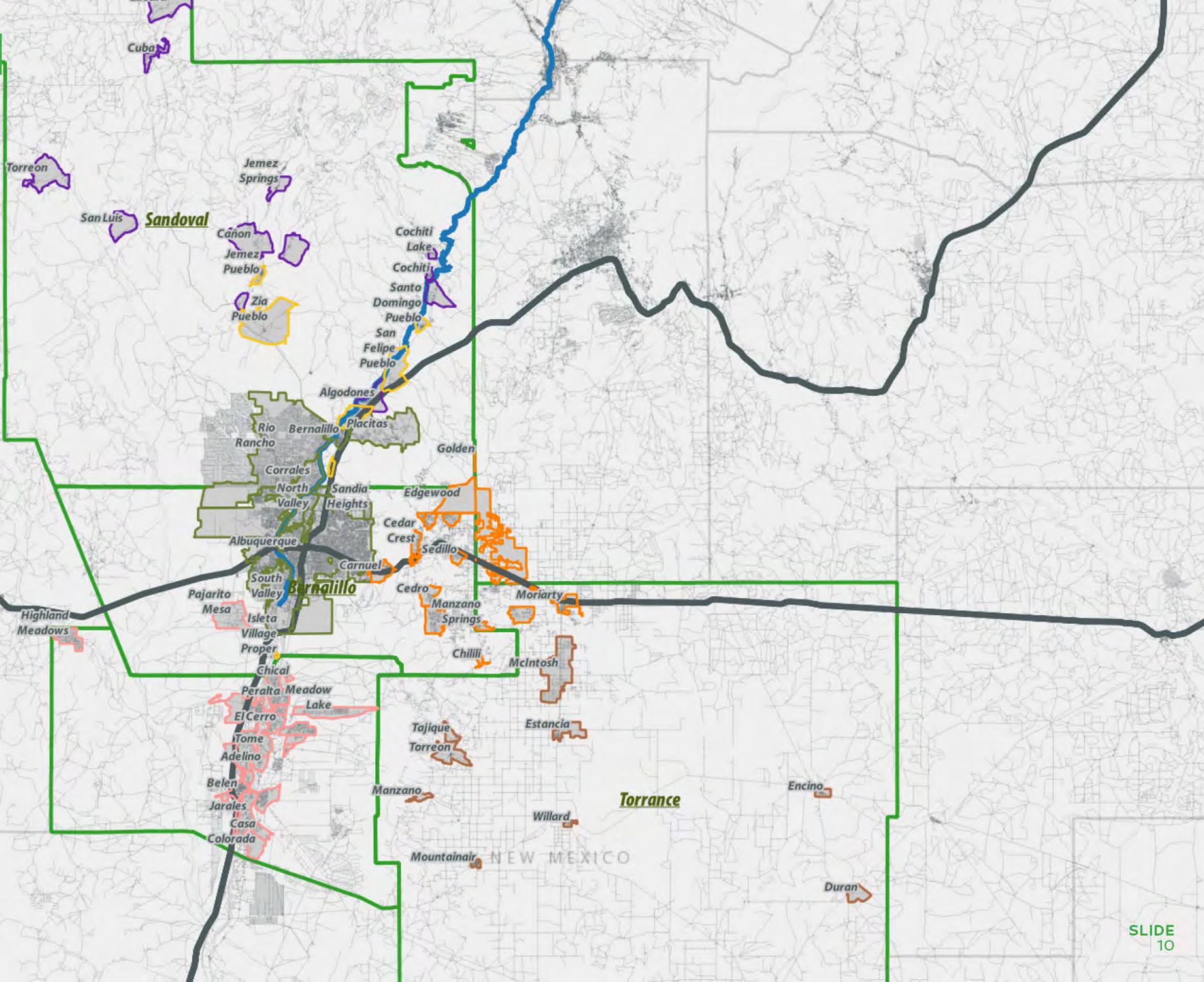
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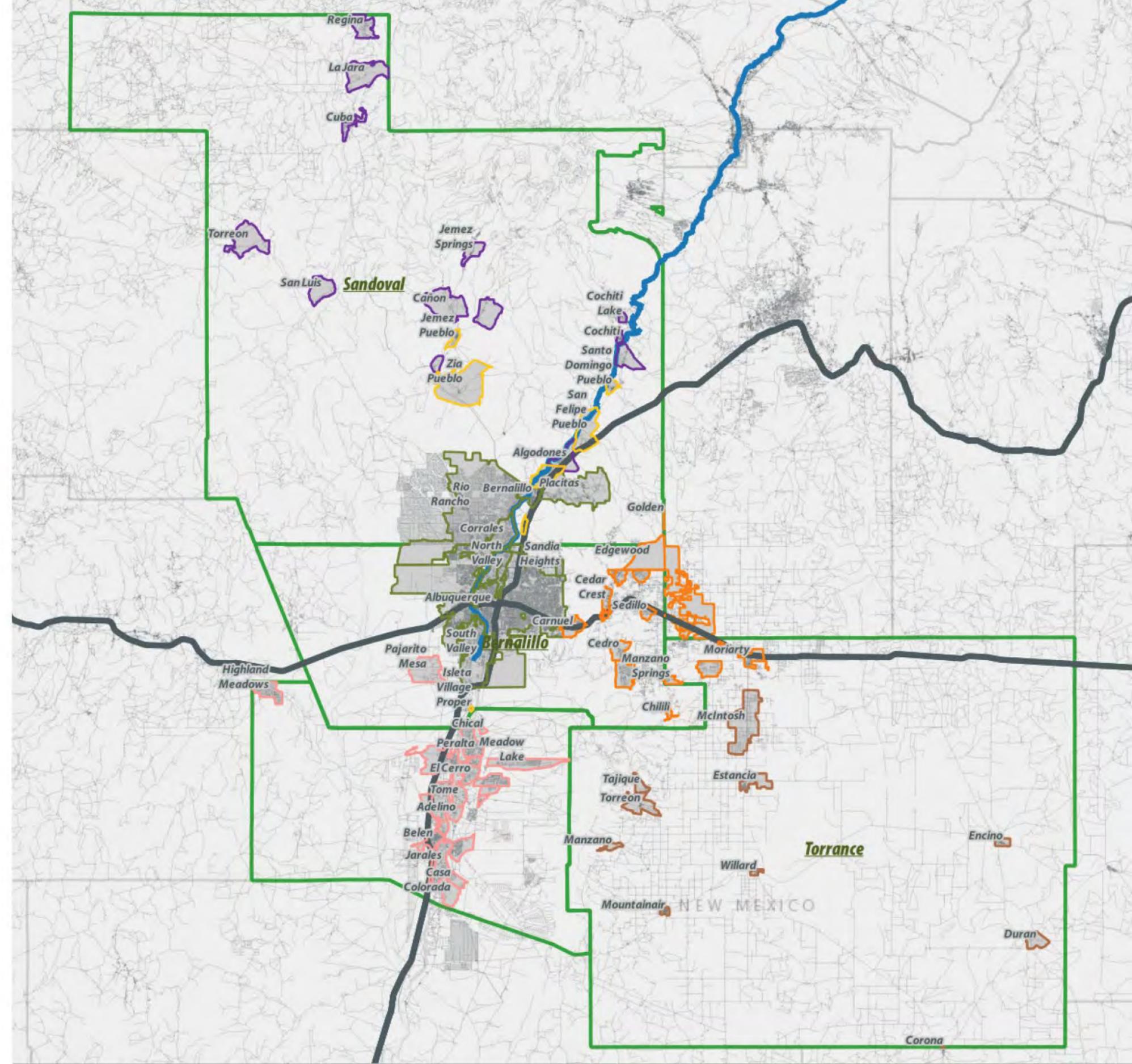


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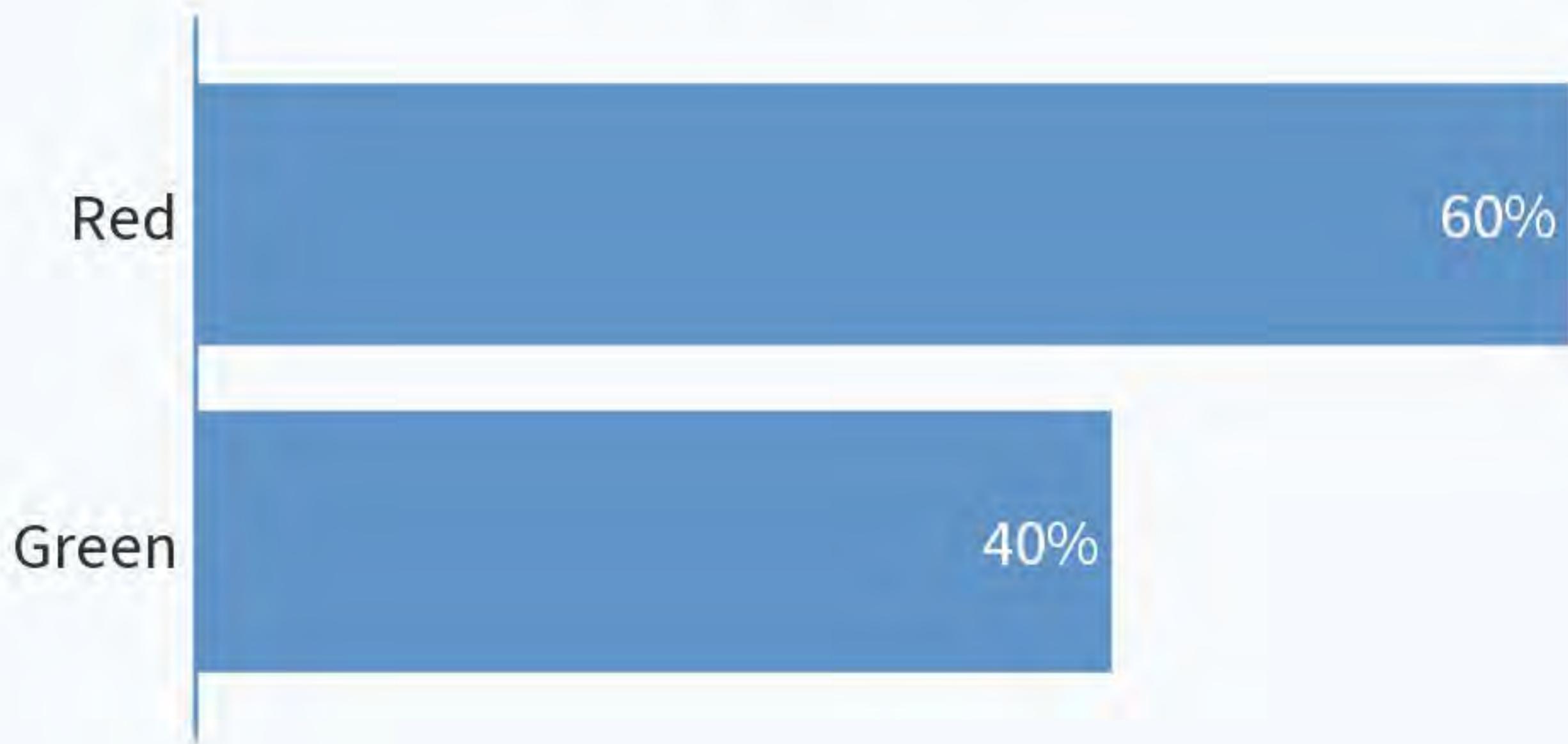
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## Red Or Green?



## **What is your favorite local business?**

“ Sopa's ”

“ The Branch ”

“ Jaramillo Wines ”

“ Pete's Cafe (Belen) ”

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ Major housing growth. New retail ”

“ new economic-base jobs, roof tops, collaboration in education and workforce pipelines, working through out Valencia County and the middle Rio Grande valley ”

## **What are some keystone businesses in your community?**

“ Teofilo's, Walmart Distribution Center, Meta (facebook) data centers, Wall Colmonoy, Raks, etc. ”

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ UNM workforce training center that opened 1/18/2022 ”

“ 3 industrial parks, agricultural based community, new interchange construction, work/life balance, rural landscape right next to metro, 15 min away from airport, great logistical

**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ Aviation industries at airport, clean energy manufacturing at 1,000 acre industrial site at north interchange, ”

“ Aviation relate - air cargo, training schools ”

# What does your community struggle with the most? (Select the top 3)



# How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)



# Is your community doing long-range planning?



## Which of the following best defines resilience from your perspective?

Ability to quickly respond

Ability to recover

Operational continuity

Reducing vulnerability

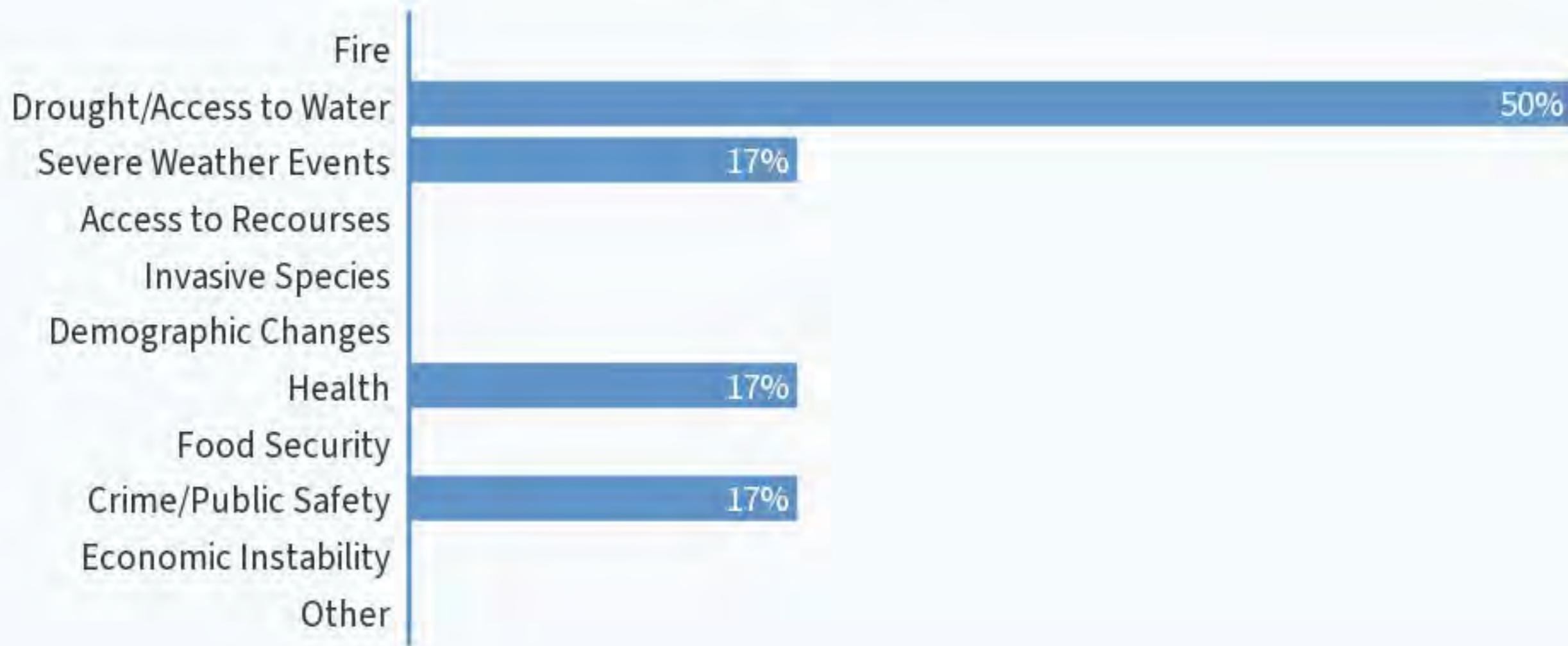
All of the above

Other

67%

33%

# What, in your opinion, is the biggest threat to the region?



**What industries are most vulnerable to future threats in  
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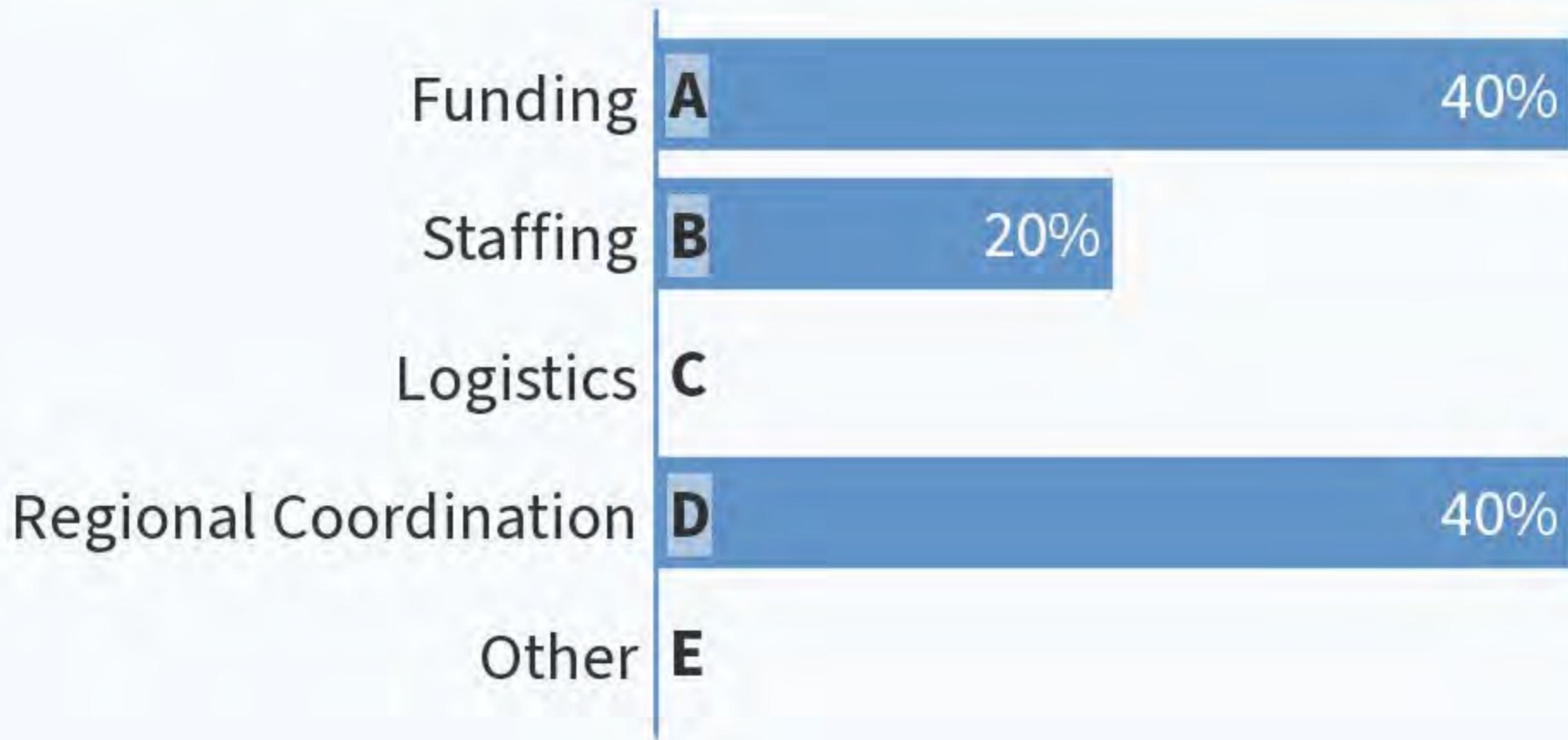
“ large water users (manufacturing) ”

**What are the top 3 resilience solutions that you would like to implement for your community?**

“ Flooding solution ”

“ Infrastructure expansions/replacements.  
Community participation in economic  
development, ”

# What do you need to implement resilience solutions?



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# ECONOMIC RECOVERY AND RESILIENCY PLAN

STAKEHOLDER MEETINGS, FEBRUARY 2022



## **What is your favorite local business?**

“ Chilli Hills Restaurant in Edgewood ”

“ the deli store that we used to have...sadly ”

“ Walkin' Circles Thrift Store/Edgewood ”

“ B-Street Market ”

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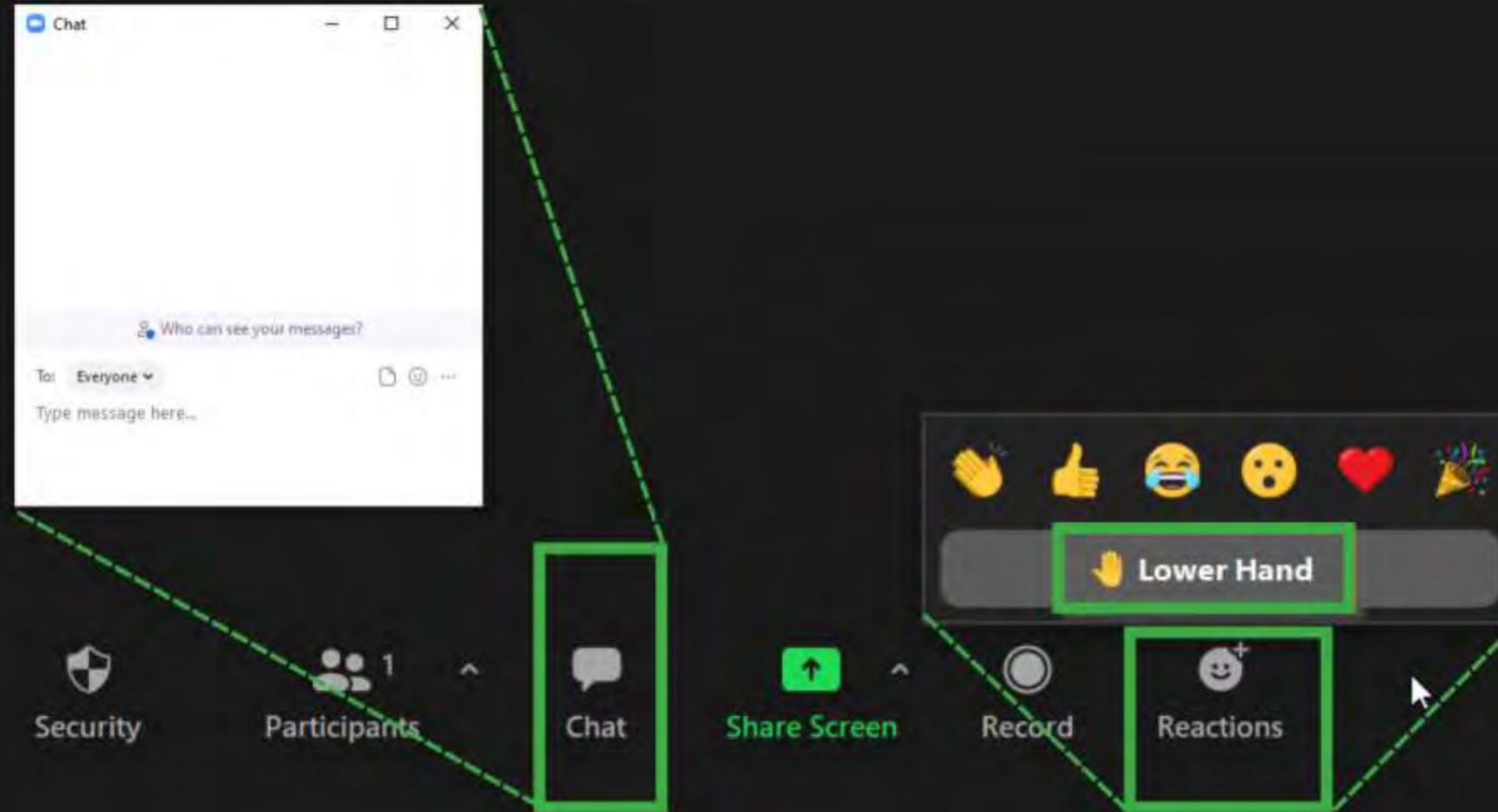


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6. The EDA uses the CEDS to measure the application's fit and competitiveness, and whether it advances the goals set by the community.

Urban	Agriculture & Value-Added Foods	Rural	Agriculture & Value-Added Foods
<i>Why are we doing this?</i>	<ul style="list-style-type: none"> <li>- Expand liquor licenses</li> <li>- Develop food hubs to supply institutional buyers, such as government, hospitals, and schools</li> <li>- Improve supply to market chain</li> <li>- Remove barriers to support value added production</li> <li>- Invest in distribution networks</li> <li>- Support national marketing for value-added products; beer, etc.</li> <li>- Support institutional procurement</li> <li>- Follow recommendations in the 2019 Albuquerque Food and Agriculture Action Plan and Bernalillo County's Urban Ag Plan</li> </ul>	<i>Why are we doing this?</i>	<ul style="list-style-type: none"> <li>- Need state-wide support and strategy</li> <li>- Incentives for food manufacturers/producers in rural areas</li> <li>- Access to capital</li> <li>- Better roads and distribution networks</li> <li>- Incentives to value-added agriculture (including hemp)</li> <li>- Promotion/marketing of NM regional agricultural products</li> <li>- Support Bernalillo County's Grow the Grower Program</li> <li>- Urban Land Link <a href="http://www.urbanslandlink.org">www.urbanslandlink.org</a></li> <li>- Support companies eligible for rural job tax credits</li> </ul>
<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>- Higher ag wages</li> <li>- More jobs</li> <li>- Increase in exported food products</li> <li>- Increase in gross ag revenues</li> <li>- Increased investment in sector</li> <li>- Increased infrastructure</li> <li>- Increased use of existing infrastructure</li> <li>- Able to have primary income from farming</li> <li>- Shift in export type of NM agriculture</li> </ul>	<i>How would we know if we were successful?</i>	<ul style="list-style-type: none"> <li>- WMDU - Cooperative Extension Service</li> <li>- USDA / NMDA Ag Stats</li> <li>- CEDS value added agricultural economic impact survey</li> <li>- Number of economic jobs created</li> <li>- Number of business starts</li> <li>- Gross domestic product</li> </ul>
<i>Who are the catalysts?</i>	<ul style="list-style-type: none"> <li>- New Mexico State University Cooperative Extension</li> <li>- New Mexico Department of Agriculture (NMDA)</li> <li>- USDA Rural Development</li> <li>- City of Albuquerque</li> <li>- Bernalillo County</li> <li>- Legislature / State investments</li> <li>- Non-profits</li> <li>- Commercial kitchens, The Moving Bowl, Three Sisters, farmers, and others</li> </ul>	<i>Who are the catalysts?</i>	<ul style="list-style-type: none"> <li>- WMDU</li> <li>- WMDU - Cooperative Extension Service</li> <li>- USDA Rural Development</li> <li>- Farm Bureau for lending capital</li> <li>- Local Governments</li> </ul>
<i>Who should be accountable for this?</i>	<ul style="list-style-type: none"> <li>- New Mexico State University Cooperative Extension</li> <li>- New Mexico Department of Agriculture (NMDA)</li> <li>- USDA Rural Development</li> <li>- City of Albuquerque</li> <li>- Bernalillo County</li> <li>- Legislature / State investments</li> <li>- Non-profits</li> <li>- Commercial kitchens, The Moving Bowl, Three Sisters, farmers, and others</li> </ul>	<i>Who should be accountable for this?</i>	<ul style="list-style-type: none"> <li>- WMDU</li> <li>- WMDU - Cooperative Extension Service</li> <li>- USDA Rural Development</li> <li>- Farm Bureau for lending capital</li> <li>- Local Governments</li> </ul>
<i>How do we build resilience in this focus area?</i>	<ul style="list-style-type: none"> <li>- Supply chains, co-packing, food aggregators, food distribution</li> <li>- Sales channel opportunities</li> </ul>	<i>How do we build resilience in this focus area?</i>	<ul style="list-style-type: none"> <li>- Good government policies and regulations (for example water policy)</li> <li>- Plan not to exceed capacity (water, market etc.)</li> <li>- Training on how to make a living in the agricultural sector</li> </ul>

EXCERPT FROM CEDS

Mid-Region NM Council of Governments

1. Strategies identified in the **CEDS** are based on economic factors (only).
2. The **Economic Recovery and Resiliency Plan** will address how events, including the COVID-19 pandemic, **expose and exacerbate social and economic weaknesses**.
3. It will relate to some of the weaknesses that are called out in the CEDS.
4. It will also look at natural and man-made threats and hazards.
5. This plan will **identify goals, actionable strategies**, and a general **list of potential project priorities**.

### CEDS IDENTIFIED WEAKNESSES

- *Reliance on federal government*
- *Access to / lack of medical services (rural)*
- *Crime (urban)*
- *Drug problems/acceptance*
- *Few buildings for businesses/certified sites*
- *Poor access to nutritious foods/food deserts*
- *Lack of broadband*
- *Under-performing schools*
- *Mindsets - resistance to change, slow to adopt new ideas, risk averse*
- *Gross receipts tax structure*
- *Small private sector*
- *Poor transportation infrastructure*
- *Region lacks an identity/poor image*
- *Shortage of capital for businesses (rural)*
- *Lack of middle management to executive level workforce*
- *Transportation network needs improvement*
- *Small local venture capital pool*

# PROJECT TEAM



**MRWM**  
**ROBERT LOFTIS, PLA,**  
 ASLA, LEED AP,  
 Design Principal

- *Manages overall contract*
- *Develops Implementation Strategies*



**MRWM**  
**KATRINA ARNDT,**  
 AICP, Planning /  
 Project Manager

- *Manages day-to-day project/client*
- *Prepares work effort and progress reports*
- *Responsible for planning related elements for the Economic Recovery and Resiliency Plan*
- *Responsible for outreach*
- *Develops*



**ESP**  
**BEL MARQUEZ, PE,**  
 PMP, CFM  
 Disaster Resilience  
 Program Manager

- *Responsible for hazard and resiliency related elements for the Economic Recovery and Resiliency Plan*
- *Identifies natural and human made risks*
- *Develops Implementation Strategies*



**ESP**  
**NATHAN SLAUGHTER,**  
 AICP, CFM  
 Hazard Mitigation and  
 Resilience Planning

- *Responsible for hazard and resiliency related elements for the Economic Recovery and Resiliency Plan*
- *Identifies natural and human made risks*
- *Develops Implementation Strategies*



**HatchForm**  
**SEAN O'SHEA**  
 Economic  
 Development Subject  
 Matter Expert

- *Responsible for economic related elements for the Economic Recovery and Resiliency Plan*
- *Identifies economic risks*
- *Develops Implementation Strategies*



**RS21**  
**RS 21 DATA DRIVEN  
 RESILIENCY  
 STRATEGIES**

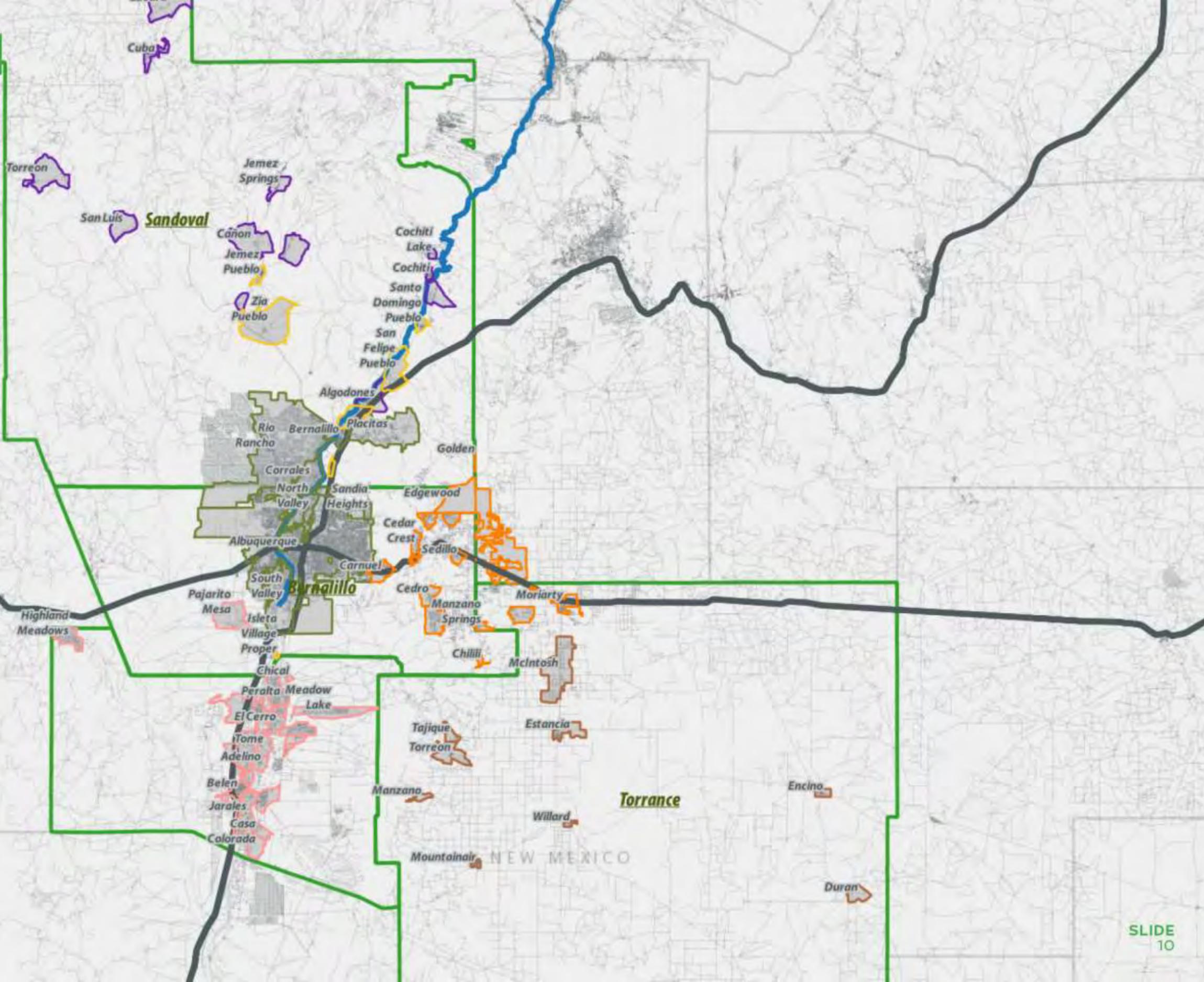
- *Leads the Strategy and Discovery workshop*
- *Develops Implementation Strategies*

# COMMUNITY CLUSTER AREAS

## LEGEND

### Community Clusters

-  Pueblo Cluster
-  Sandoval Cluster
-  Central ABQ Metro Cluster
-  Eastern Interstate 40 Cluster
-  Torrance Cluster
-  Valencia Cluster

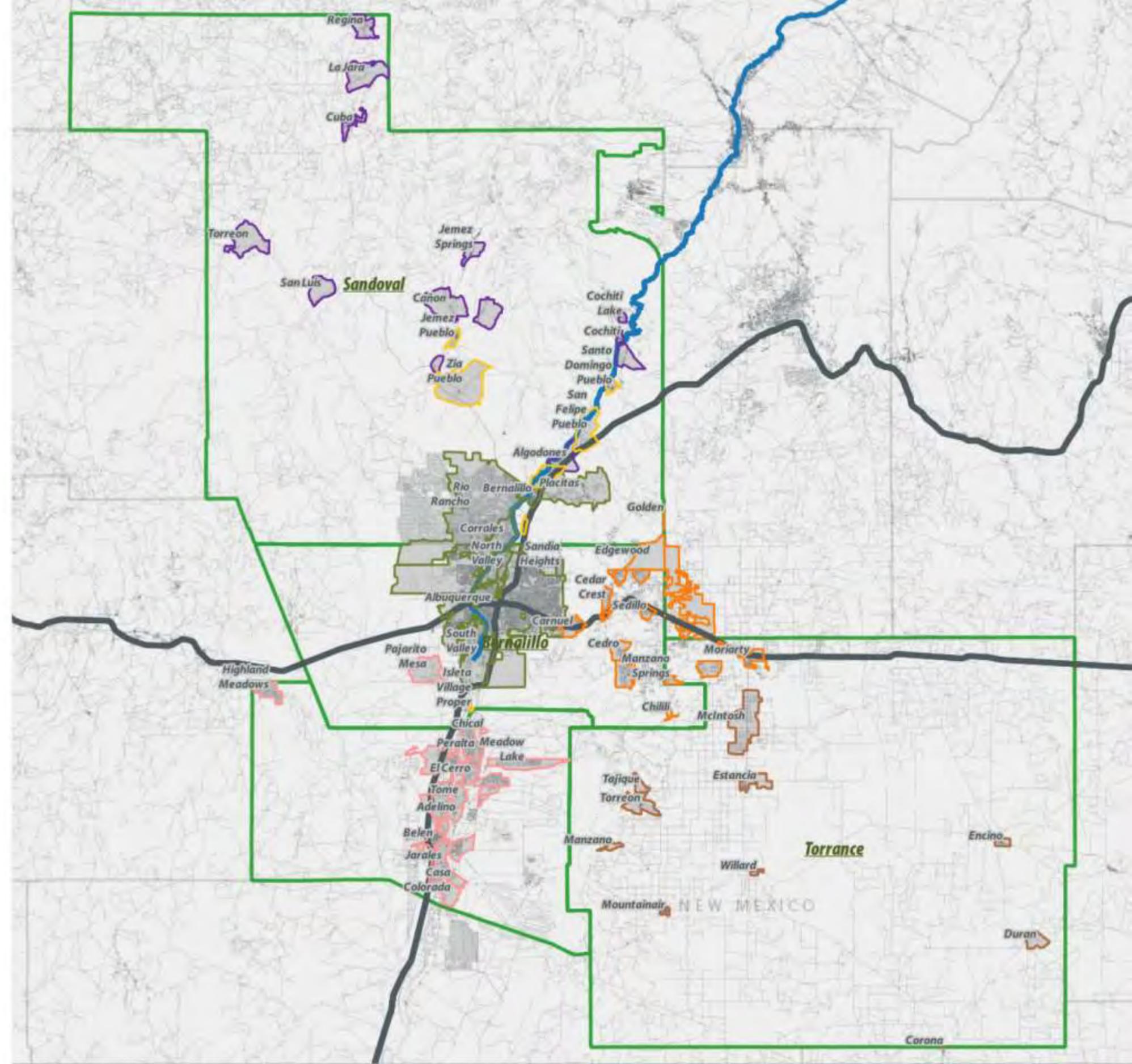


# PROJECT SCHEDULE/STAKEHOLDERS ROLE



## GOAL OF THIS MEETING

1. This meeting is the **first set of stakeholder meetings**
2. **Learn how communities economies are doing;**
3. How they were affected by the pandemic;
4. And what some of the economic weaknesses, opportunities, and constraints are.



## Join by Web



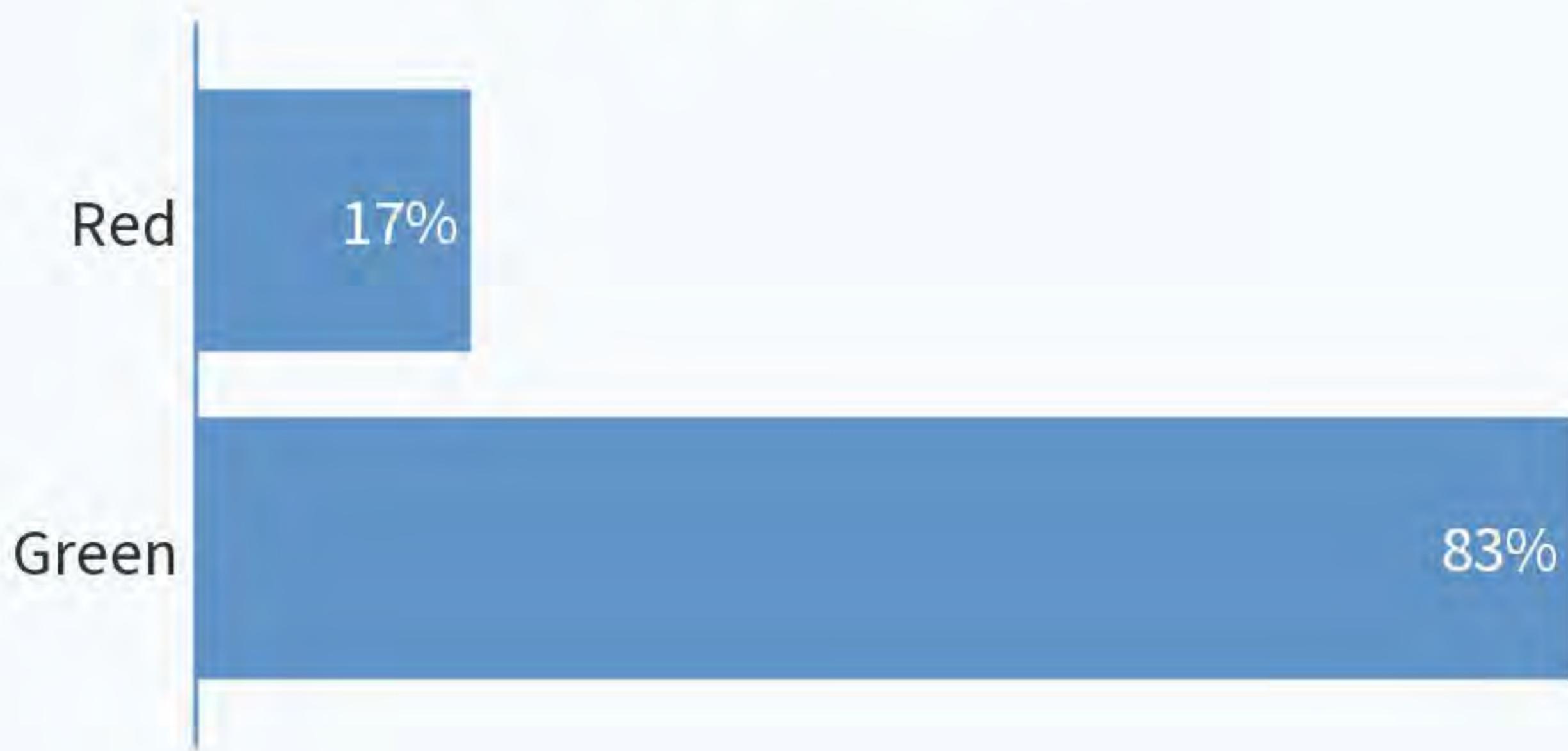
- 1 Open an internet **browser**
- 2 Go to ***Pollev.com/mrwmla254***
- 3 Insert ***your name***
- 4 Respond to activities

## Join by Text



- 1 Text to the number **22333**
- 2 Text ***mrwmla254***
- 3 Respond to activities by textting A, B, C etc. or writing a response

## Red Or Green?



## **What is your favorite local business?**

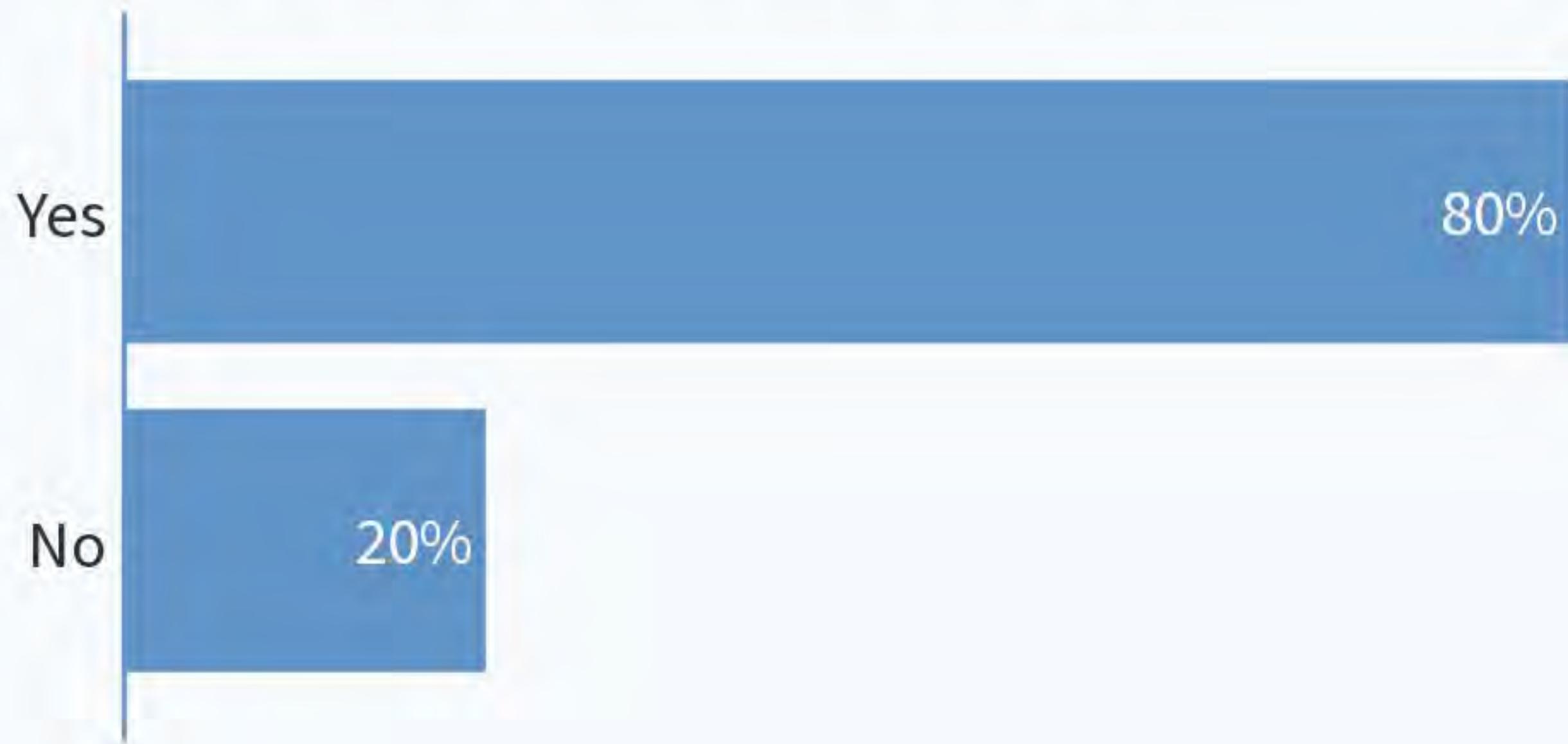
“ Chilli Hills Restaurant in Edgewood ”

“ the deli store that we used to have...sadly ”

“ Walkin' Circles Thrift Store/Edgewood ”

“ B-Street Market ”

# Are you optimistic about the future of your community?



## **What economic opportunities are you most excited about?**

“ New Retail, Harbor Freight for one in Edgewood ”

“ Residents who work in other communities but want to live in Mountainair. ie. Facebook in Los Lunas. Attract creative class. ”

**What are some keystone businesses in your community?**

“ Walmart ”

“ Smiths/Edgewood, if only for their  
previous/current (?) program to support local  
schools ”

“ CNMEC ”

**Can you name a few specific assets (ex: a particular park, attraction, leader, etc.)**

“ Founders Ranch ”

“ Venus Park Edgewood ”

“ Our Public swimming pool, the only public pool in the County - ”

**What emerging industries do you think are the most likely to grow and have a positive effect on your community in the next 5 to 10 years?**

“ Water treatment/purification? Potable water is a challenge for many in the East Mountains and Estancia Valley ”

“ Healthcare services, Cannabis Retail, Recreation growth & Traditional Retail growth ”

# What does your community struggle with the most? (Select the top 3)



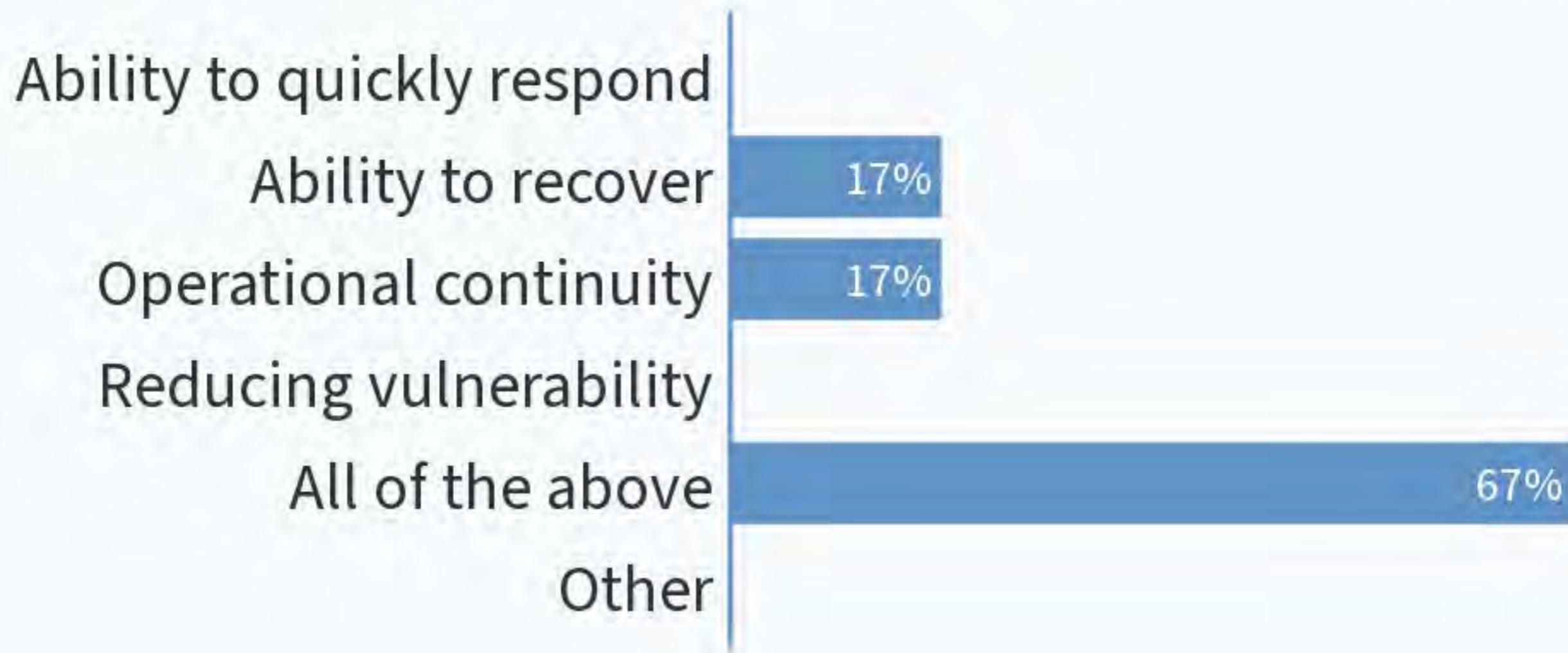
# How was your community prepared to deal with the effects of COVID? (1 being not prepared - 5 being prepared)



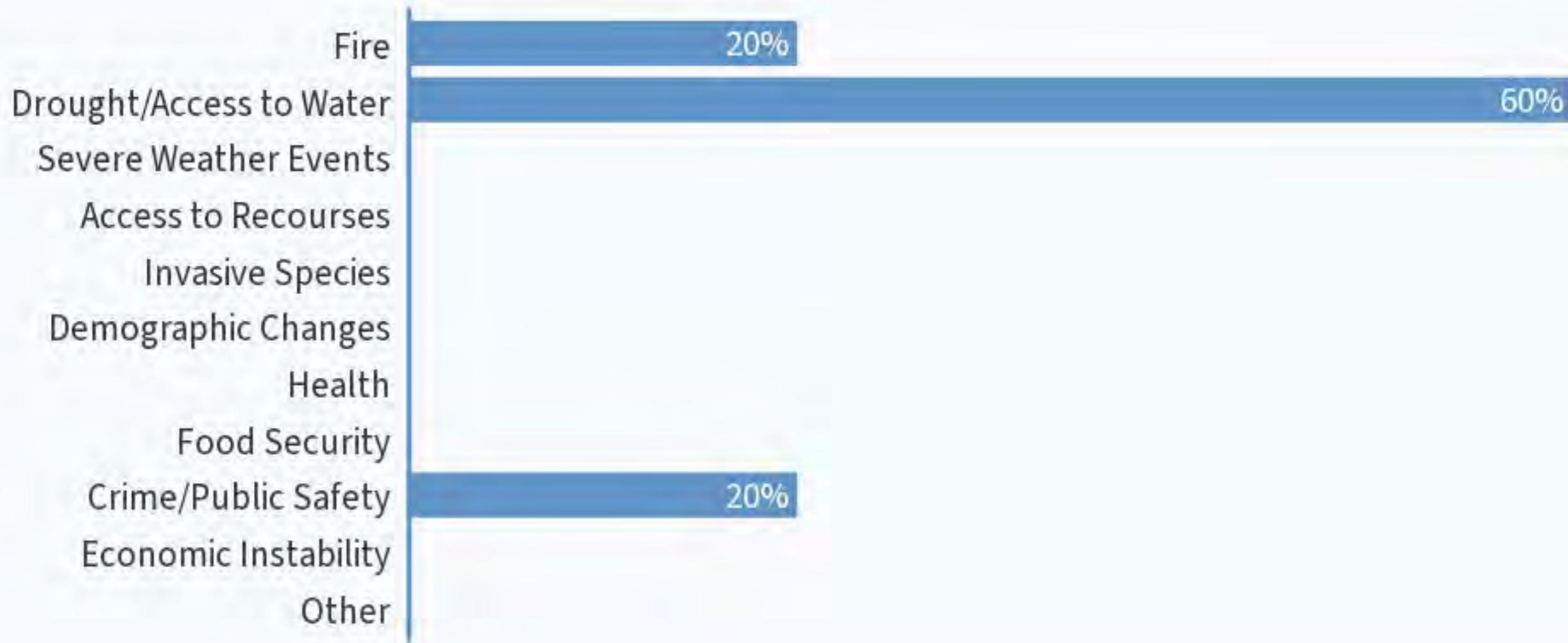
# Is your community doing long-range planning?



## Which of the following best defines resilience from your perspective?



# What, in your opinion, is the biggest threat to the region?



## **What industries are most vulnerable to future threats in your community?**

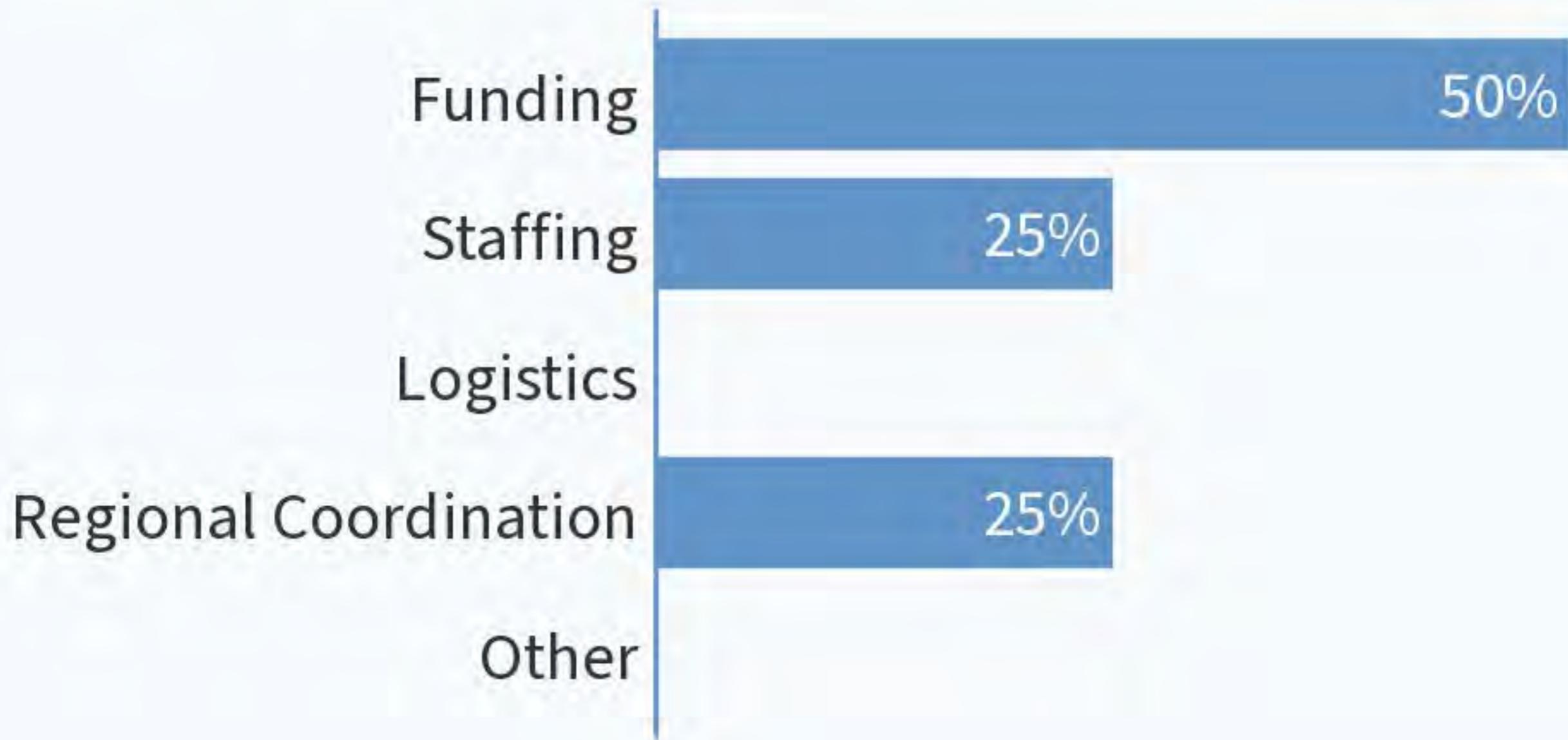
“ Retail/food.....because of current inflation and wages not keeping up with the cost of living. ”

“ Political threat ”

**What are the top 3 resilience solutions that you would like to implement for your community?**

“ more community involvement ”

# What do you need to implement resilience solutions?



## NEXT STEPS

1. **CALL FOR ACTION:** Meeting discussion survey to **additional stakeholders**
2. March - **Strategy + Discovery Workshop** with all community clusters areas.
3. April - **Public Meeting**
4. **Follow-up Survey**
5. May - **Community Kiosks**
6. June - **Joint meeting**
7. **CALL FOR ACTION:** **Additional stakeholders**



**THANK YOU + SEE YOU SOON**



# ECONOMIC RECOVERY AND RESILIENCY PLAN

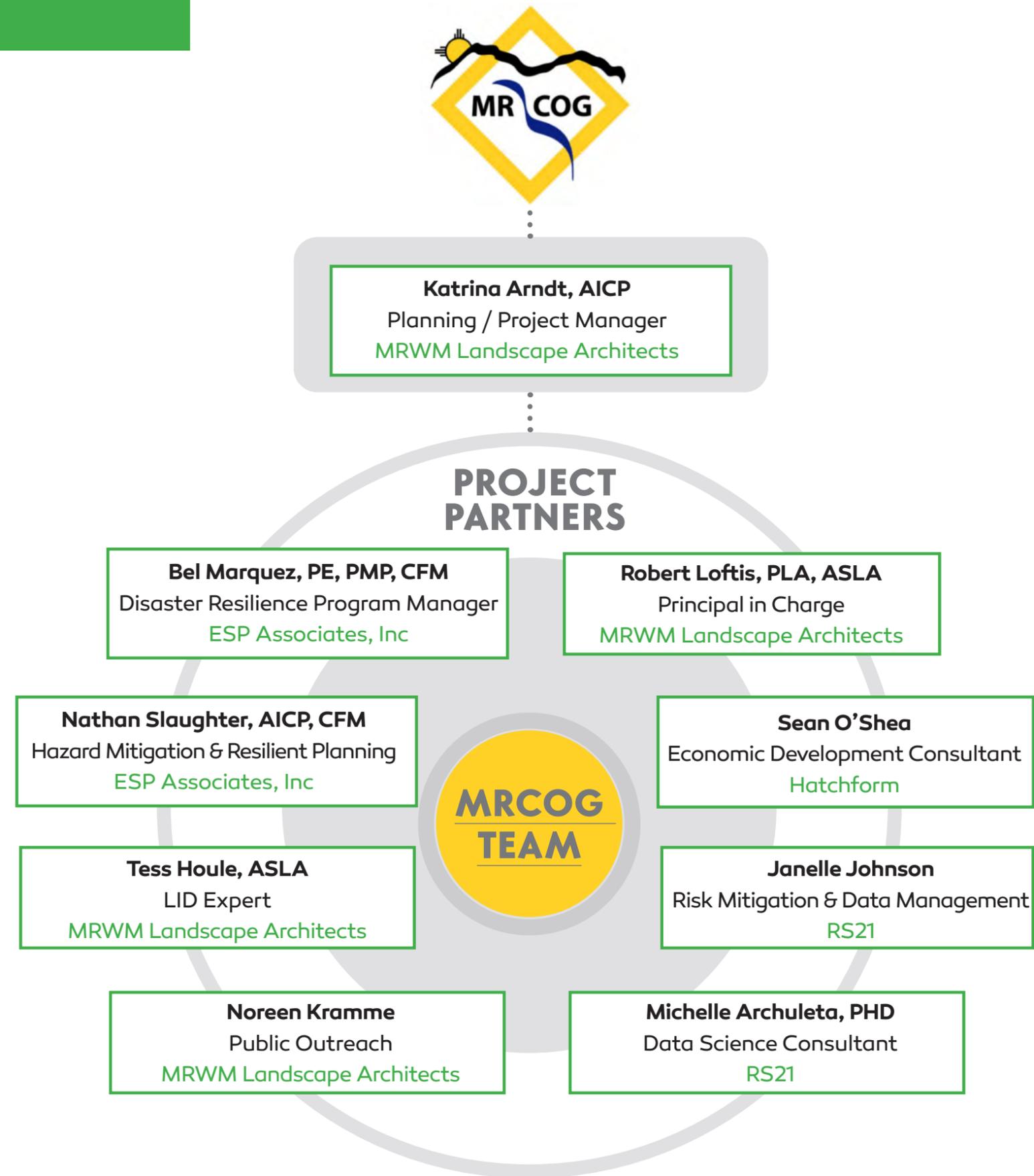
11/19/2021 - KICK-OFF MEETING



# AGENDA

1. Introduction
2. Team
  - a. *Roles*
3. Schedule
  - b. *Dates*
4. Preliminary Stakeholder List
5. Community Cluster Areas
6. Existing Data/Existing Regulatory Documents
7. Open Discussion

# KEY MEMBERS



# ROLES



**ROBERT LOFTIS, PLA,**  
ASLA, LEED AP,  
Design Principal

- Manages overall contract
- Develops Implementation Strategies



**KATRINA ARNDT,**  
AICP, Planning /  
Project Manager

- Manages day-to-day project/client
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Disaster Resilience  
Program Manager

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**SEAN O'SHEA**  
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Matter Expert

- Leads the Strategy and Discovery workshop
- Develops Implementation Strategies

# TASKS

Task	Sub-Task	MRWM	ESP	Hatch	RS21
<b>Task 1: Kick-Off</b>		X	X	X	
<b>Task 2: Existing Condition Analysis</b>					
	Economic conditions, trends, <u>threats</u> and opportunities			X	
	Industry + Community Survey			X	
	Existing planning and regulatory documents	X	X		
	Community clusters will be developed	X	X	X	
	Demographic profile/cluster	X			
	Evaluation of natural + human made hazards		X		
	Development of Goals and Strategies	X	X	X	
	SWOT analysis (housing, infrastructure, economic development, health, environment)	X	X	X	
	GAP analysis, creation of an economic resource map		X	X	
<b>Task 3: National Best Practices</b>		X	X	X	
<b>Task 4: Strategy Discovery Workshop</b>		X			X
<b>Task 5: Public Engagement</b>					
	Meeting, existing conditions (not to exceed 6 meetings)	X		X	
	Public meeting (not to exceed 6 meetings)	X		X	
	Follow-up survey	X			
	Pop-up kiosk in communities (not to exceed 6 meetings)	X		X	
<b>Task 6: Goals + Implementation Strategies</b>					
	Recommend goals and strategies for each community cluster	X	X	X	X
	Strategic tool to identify priorities	X	X	X	X
	Implementation matrix	X	X	X	X
<b>Task 7: Final Document</b>		X	X	X	

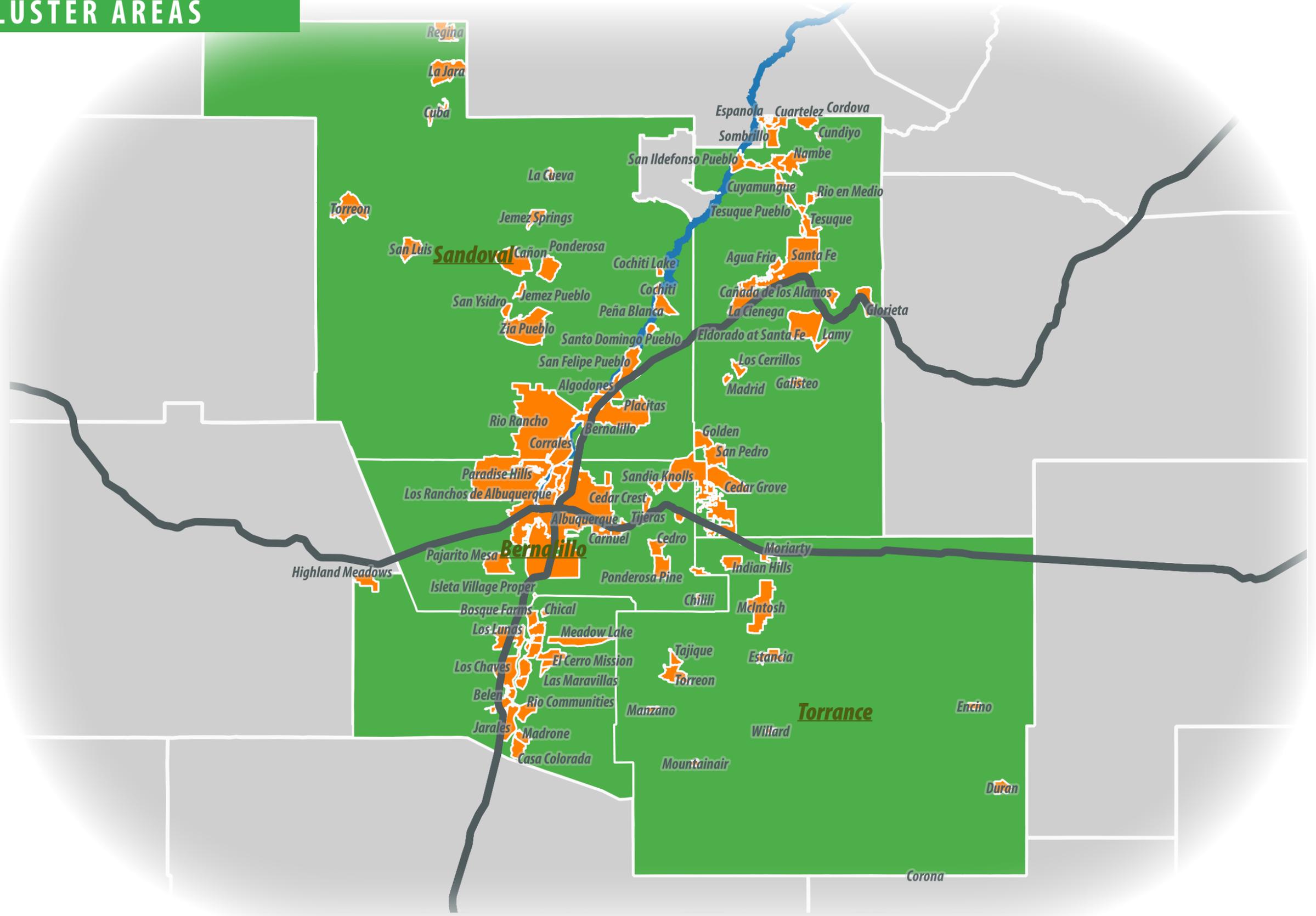
# SCHEDULE

				Nov.	December	January	February	March	April	May	22-Jun
<b>1</b>	<b>Kick-off</b>										
		MRWM, ESP Associates, and MRCOG to confirm key milestones									
<b>2</b>	<b>Economic Conditions Analysis</b>										
	a	Economic conditions, trends, threats and opportunities									
	b	Industry + Community Survey									
	c	Existing planning and regulatory documents									
	d	Community clusters will be developed									
	e	Demographic profile/cluster									
	f	Evaluation of natural + human made hazards									
	g	Development of Goals and Strategies									
	1	Review of local + state hazard mitigation plans									
	2	Hazus will be used to conduct vulnerability assessments									
	h	SWOT analysis (housing, infrastructure, economic development, health, environment)									
	i	GAP analysis, creation of an economic resource map									
<b>3</b>	<b>National Best Practices</b>										
<b>4</b>	<b>Strategy Discovery Workshop</b>										
<b>5</b>	<b>Public Engagement</b>										
	a	Meeting, existing conditions (not to exceed 6 meetings)									
	b	Public meeting (not to exceed 6 meetings)									
	c	Follow-up survey									
	d	Pop-up kiosk in communities (not to exceed 6 meetings)									
<b>6</b>	<b>Goals and Implementation Strategies</b>										
	a	Recommend goals and strategies for each community cluster									
	b	Strategic tool to identify priorities									
	c	Implementation matrix									
<b>7</b>	<b>Final Document</b>										
	a	Final Draft									
	b	Final Deliverables									
	c	Final Presentation at joint meeting									

# PRELIMINARY STAKEHOLDER LIST



# COMMUNITY CLUSTER AREAS



**EXISTING DATA/EXISTING REGULATORY DOCUMENTS**

CENSUS DESIGNATED PLACES

Adelino  
 Agua Fria  
**Albuquerque**  
 Algodones  
 Belen  
 Bernalillo  
 Bosque Farms  
 Cañada de los Alamos  
 Cañon  
 Carnuel  
 Casa Colorada  
 Cedar Crest  
 Cedar Grove  
 Cedro  
 Chical  
 Chilili  
 Chimayo  
 Chupadero

Cochiti  
 Cochiti Lake  
 Cordova  
 Corona  
 Corrales  
 Cuartelez  
 Cuba  
 Cundiyo  
 Cuyamungue  
 Cuyamungue Grant  
 Duran  
 Edgewood  
 Edith Endave  
 El Cerro  
 El Cerro Mission  
 El Rancho  
 El Valle de Arroyo Seco  
 Eldorado at Santa Fe  
 Encino  
 Espanola  
 Estancia

Galisteo  
 Glorieta  
 Golden  
 Highland Meadows  
 Indian Hills  
 Isleta Village Proper  
 Jacona  
 Jaconita  
 Jarales  
 Jemez Pueblo  
 Jemez Springs  
 La Cienega  
 La Cueva  
 La Jara  
 La Puebla  
 Lamy  
 Las Maravillas  
 Los Cerrillos  
 Los Chaves  
**Los Lunas**  
 Los Ranchos de Albu-

querque  
 Madrid  
 Madrone  
 Manzano  
 Manzano Springs  
 McIntosh  
 Meadow Lake  
 Monterey Park  
 Moriarty  
 Mountainair  
 Nambe  
 North Valley  
 Pajarito Mesa  
 Paradise Hills  
 Peak Place  
 Peña Blanca  
 Peralta  
 Placitas  
 Pojoaque  
 Ponderosa  
 Ponderosa Pine

Pueblitos  
 Pueblo of Sandia Village  
 Regina  
 Rio Communities  
 Rio en Medio  
**Rio Rancho**  
 San Antonito  
 San Felipe Pueblo  
 San Ildefonso Pueblo  
 San Luis  
 San Pedro  
 San Ysidro  
 Sandia Heights  
 Sandia Knolls  
 Sandia Park  
 Santa Ana Pueblo  
 Santa Cruz  
**Santa Fe**  
 Santo Domingo Pueblo  
 Sausal

Sedillo  
 Sombrillo  
 South Valley  
 Tajiue  
 Tesuque  
 Tesuque Pueblo  
 Tijeras  
 Tome  
 Torreon  
 Torreon  
 Valencia  
 White Rock  
 Willard  
 Zia Pueblo

# OPEN DISCUSSION



# ECONOMIC RECOVERY AND RESILIENCY PLAN

12/17/2021 - PROJECT SCOPE



## PROJECT SCOPE

1. Creation of an Economic Recovery and Resiliency Plan for the MRCOG region
2. The plan will be an addendum to the Mid-Region of New Mexico Comprehensive Economic Development Strategy (CEDS).
3. The project is funded through the Economic Development Administration (EDA) as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.



- 1. The goal is to create economic and social resiliencies and empower local communities to withstand future threats.**
  - > *We will measure the community preparedness with an traffic light system.*
  - > *The **Green** status is associated with plans, infrastructure elements, and utilities, access to resources etc. The Green status differs for urban, rural, and tribal communities*
  - > *We will identify strategic priorities and desired outcomes aimed at increasing their resiliency level.*
  - > *There will be concrete metrics to determine the transition from one resiliency level to another*
- 2. The final plan will identify goals, strategies, and a general list of potential project priorities for greater resiliency in the economy and stronger communities.**





# PROJECT TEAM



**ROBERT LOFTIS, PLA,**  
ASLA, LEED AP,  
Design Principal

- Manages overall contract
- Develops Implementation Strategies



**KATRINA ARNDT,**  
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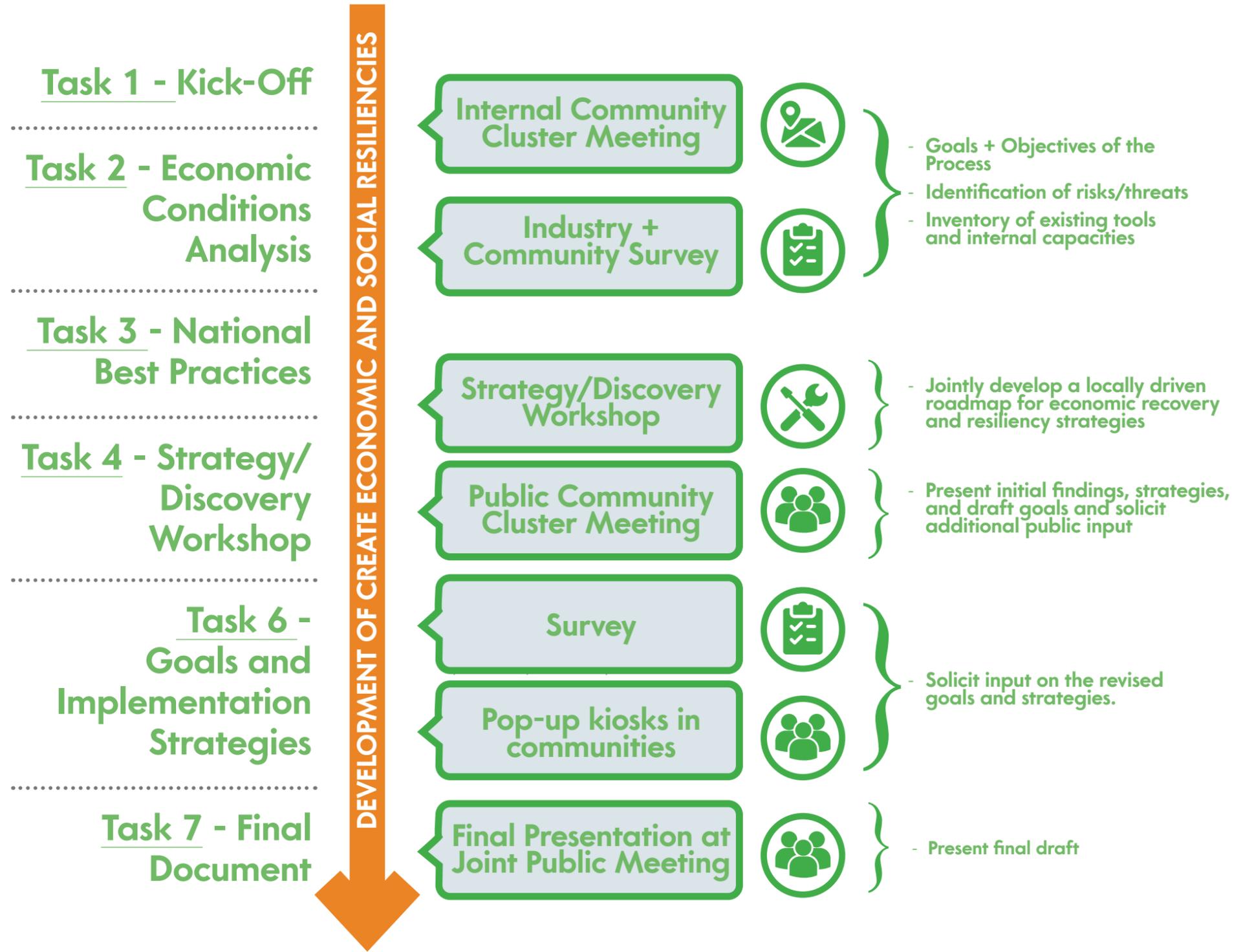
- Responsible for economic related elements for the Economic Recovery and Resiliency Plan
- Identifies economic risks
- Develops Implementation Strategies



**RS 21 DATA DRIVEN  
RESILIENCY  
STRATEGIES**

- Leads the Strategy and Discovery workshop
- Develops Implementation Strategies

# PROJECT TASKS



# KEY STAKEHOLDER INVOLVEMENT OPPORTUNITIES

## 1. Task 2: Existing Conditions Analysis:

- a. Meetings with each Community Cluster area
- b. Community + Industry Leaders
- c. **Goal:** Identify perceived threats, existing tools and internal capacity

## 2. Task 4: Strategy Discovery Workshop

- d. Meetings with all Community Cluster areas together
- e. Lead by RS21
- f. **Goal:** develop a roadmap for economic recovery and long-term resiliency through utilizing data to create strategies that are accessible, intuitive, flexible, and effective.



# SCHEDULE

Tasks		Nov.	December	January	February	March	April	May	22-Jun
<b>1</b>	<b>Kick-off</b>								
	MRWM, ESP Associates, and MRCOG to confirm key milestones								
<b>2</b>	<b>Economic Conditions Analysis</b>								
	a Economic conditions, trends, threats and opportunities								
	b Industry + Community Survey								
	c Existing planning and regulatory documents								
	d Community clusters will be developed								
	e Demographic profile/cluster								
	f Evaluation of natural + human made hazards								
	g Development of Goals and Strategies								
	1 Review of local + state hazard mitigation plans								
	2 Hazus will be used to conduct vulnerability assessments								
	h SWOT analysis (housing, infrastructure, economic development, health, environment)								
	i GAP analysis, creation of an economic resource map								
<b>3</b>	<b>National Best Practices</b>								
<b>4</b>	<b>Strategy Discovery Workshop</b>								
<b>5</b>	<b>Public Engagement</b>								
	a Stakeholder Kick-Off								
	b Meeting, existing conditions								
	c Public meeting								
	d Follow-up survey								
	e Pop-up kiosk in communities								
<b>6</b>	<b>Goals and Implementation Strategies</b>								
	a Recommend goals and strategies for each community cluster								
	b Strategic tool to identify priorities								
	c Implementation matrix								
<b>7</b>	<b>Final Document</b>								
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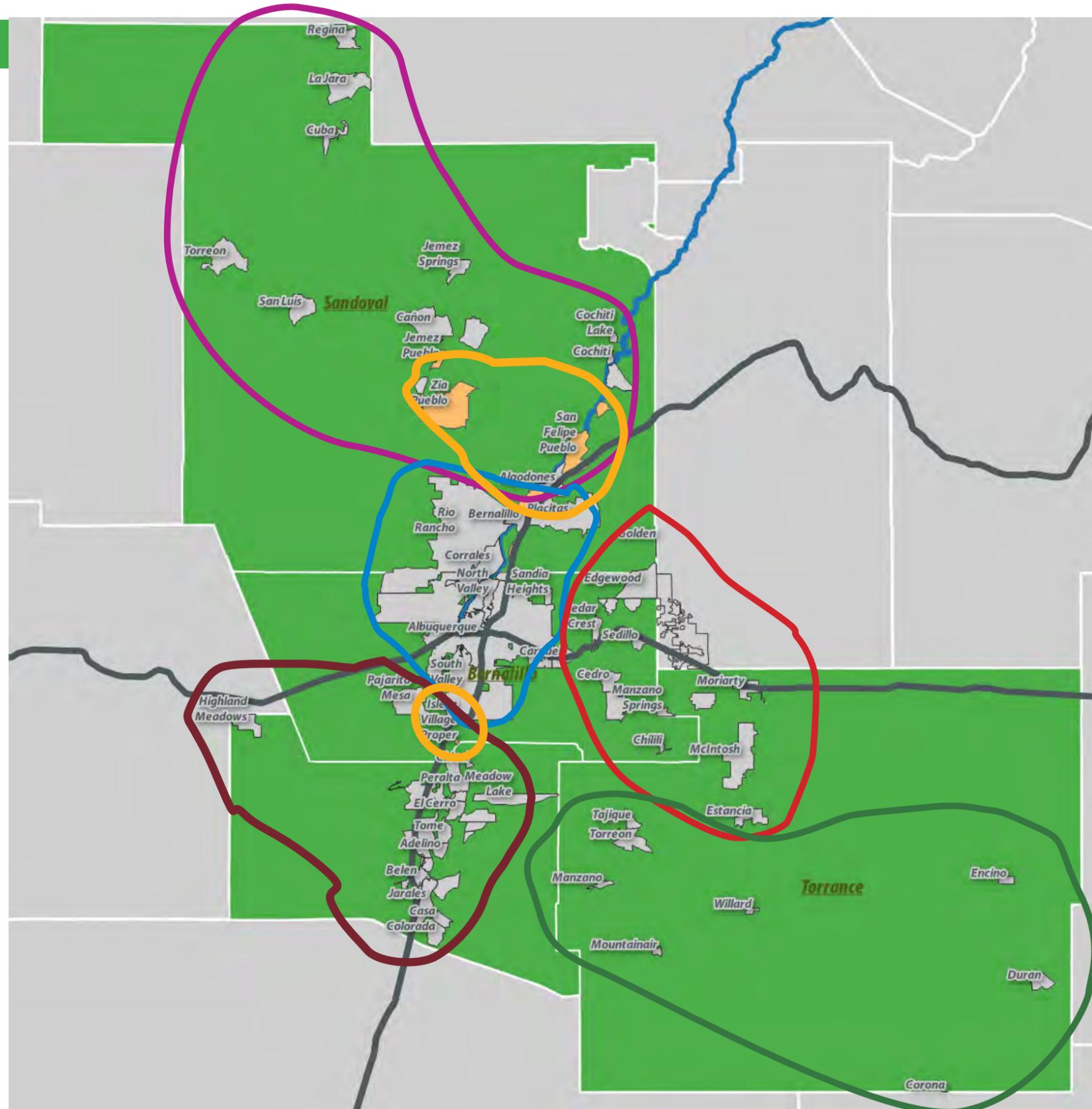
Internal Work Phases

Public / Internal Meetings

Survey

**THANK YOU + SEE YOU SOON**

# PROJECT UNDERSTANDING



## **Los Lunas Farmers' Market**

4/3/2022 4-7pm

Across from Heritage Park, Los Lunas

### **Notes on Public Outreach**

We spoke to roughly 30 people at the market, including 12 market vendors. Ages ranged from young adults to retirement age persons, all English speakers and the majority identifying as Los Lunas or Bosque Farms residents.

Several recurring themes and highlights from our discussions:

- **Water:** Many expressed concerns about drought conditions and water supply issues, especially with new industries coming into the region and the recent legalization of recreational cannabis.
  - Returning water to the local aquifer (water reclamation, water reuse)
  - Prioritizing water for growing food
  - Understanding how water gets accounted and sharing that information
- **Crime and safety:** While quieter than Albuquerque (as many noted), there was a perception of increased crime and concerns about public safety. Break ins and increased police activity were noted.
- **Regional Coordination:** Several folks noted that new projects in the region – such as roadway improvements, new developments – do not seek enough local input before making changes and do not follow up with the community.
- **George Torres, Farmers' Market Coordinator,** shared the history of the market and his ideas regarding several challenges in the area:
  - The Market has been operating since 2009, originally at River Park, temporarily at the Fire Station, and now at this spot for the past 6 years. On it's busiest day they'll have between 30-35 vendors and the market has come to be a regular community fixture. A number of food affordability programs – like SNAP, FreshRX, and Double Up Food Bucks (DUFB) – have been very successful for both vendors and folks seeking fresh vegetables. George spoke highly of the DUFB program in which folks that use EBT can pay \$50 from their EBT account (for example) and receive \$100 worth of market tokens. "For folks trying to make ends meet and get quality food, this is a tremendous program."
  - When asked what he would do with unlimited funds, George said he would get landscape and site upgrades for the market location (windscreen plantings, dust control, trees for shade). As we were there, high winds blew sand from on site directly into the market area and any car traffic in the parking lot created significant dust storms. The parcel is owned by NMDOT, but according to George, it's unclear who manages it and NMDOT has not been open to dust control measures. He said the exposure to Main St makes it a prime location, even though the site conditions aren't ideal.
  - George also expressed concern about water and the incoming industries taking a large share for their facility operations, such as cooling their buildings.
- **Housing:** concerns regarding new housing developments and a lack of housing efficiency standards (ie. A lot of homes being built in the region require tremendous amounts of energy for heating and cooling because they are poorly built)

- Zoning: “We’re not protecting our farmland. High value areas in the valley, near the river, are being prioritized for suburban developments and this is an agricultural area.”
  - A desire for more mixed-use development so that Los Lunas is more walkable; “so that it feels like an actual community”
- “There’s a lack of things to do for our youth, which leads to trouble. Everyone just hangs out at the local Sonic after school.”
- Healthcare: “We don’t have any doctors anymore. All you can find are nurse practitioners and you have to go to Albuquerque if you want to see a doctor.”
- Addressing the homeless/addict population. It’s more than just housing.

**Written Feedback on Outreach Boards:**

***“I want my community to...”***

- Country feeling
- Strawberries
- Be safe; brighter tomorrow; brighter future
- Be a place I am proud to raise my children in
- Not grow so quickly

## **ABQ Downtown Growers' Market**

5/7/2022 8-12pm

Robinson Park, ABQ

### **Notes on Public Outreach**

We spoke to roughly 106 people over the course of four (4) hours. Ages ranged from mostly young adults to retirement age persons, plus a handful of children (7-12) that wanted to vote and share ideas as well. Most were English speakers with the exception of the tortilla vendors across from our table; the son was born in Albuquerque and his mother was from Chihuahua, Mexico.

Several recurring themes and highlights from our discussions:

- Poverty, crime and homelessness were popular topics of concern in this cluster. Many shared the opinion that homelessness was a symptom of several other threats & challenges (such as mental health support, poverty, housing), however, that it needed particular attention and resources. More than it was currently receiving.
- Affordable housing and concern regarding available housing stock was both a commonly voted threat/challenge and one that folks elaborated on, eg. "how much Albuquerque is changing"; "how expensive things are getting"; "this needs to be more than just section 8 housing or low-income housing, there need to be more options"
- Wildfire (33 votes) was a particularly pressing topic, as a number of folks reported having family members currently being forced to evacuate their homes in Norther NM, where President Biden declared a national emergency the week before; several expressed concern regarding general Forest Health and long-term resiliency with climate change

### **Written Feedback on Outreach Boards:**

#### ***"I want my community to..."***

- Be loving and supporting
- Get outside more (State or NPS passes and kids/family programs)
- Police reform
- Eat healthier food

#### ***"If I had unlimited funds I would..."***

- Attempt to stop prejudice, homelessness
- Attempt to mitigate homelessness with more easily accessible mental illness resources
- \$100 per person food credit (Universal Basic Income); \$300 per family
- Increase social services for the unhoused
- Transition the city to 100% renewable energy
- Radically multiply the number of employees in social services
- Low-cost housing (for very low-income)
- Education and healthcare for homeless
- Increase police force and their training/efficiency
- Target population who resort to criminal activity for income with prevention/intervention
- Pay off my student loans

- Make sure that all neighborhoods had abundant shade trees or structures; and new developments or repairs were always constructed with the most modern or efficient (sustainable) materials with attention to local and global climate challenges

***Alternative Threats/Challenges offered:***

- Lack of education
- Alternative medicine
- Gentrification
- Equal education
- Wage gap disparity - cost of living/wages
- Government overhead
- Growing hope
- Homelessness
- Reforming prison system
- Superfund sites

## **Cedar Crest Farmers' Market**

5/11/2022 3-6pm

Next to Triangle Grocery, Cedar Crest, NM

### **Notes on Public Outreach**

We spoke to roughly (42) people over the course of three (3) hours. About half of the folks we talked with were vendors selling at the market – from farmers to food trucks to craft goods. Most were local to Cedar Crest, several had traveled from Rio Rancho, Albuquerque, or Edgewood to sell at the market.

Several recurring themes and highlights from our discussions:

- Drought and water issues were priority number one at the market. Several folks expressed concern that the current levels of use were going to lead to a crisis in the not-too-distant future.
- Many expressed worries regarding affordable housing and the types of developments that were happening in both Cedar Crest and Edgewood. These included large lot suburban developments that were out of reach financially for most folks and that were being built quickly and without community input.
- Community engagement and lack of access to resources came up as an issue for the whole cluster. One vendor noted: "This is the first time I've ever been asked about anything like this or about the community. This is great."
- Several noted that broadband and lack of reliable internet made the virtual pivot during Covid a rough or nearly impossible transition

### **Written Feedback on Outreach Boards:**

#### ***"I want my community to..."***

- Groundwater levels are going down at 2.5ft per year. We're 20 years from water crisis. Office of the State Engineer estimates 80% of wells run dry in next 40 years.

## **Mountainair Public Meeting**

5/12/2022 5-6:30pm

Mountainair, NM – Dr. Saul Community Center

### **Notes on Public Outreach**

Three (3) Torrance cluster residents attending the meeting: Dennis Fulfer, Town Clerk of Mountainair; Samantha O’Dell, Torrance County Emergency Manager; and James Solomon, Torrance County Safety Officer. A brief presentation was given to explain the background and goals of the project, attendees were asked to vote on priority threats and challenges for the region, and there was ample time for informal discussion as a group.

Several recurring themes and highlights from our discussions:

- As a more rural community, most agreed that there was a need for more training and coordination to help with access to resources and regional coordination. One resource identified that was helpful in the past and could be an asset that gets better utilized is the **New Mexico Municipal League’s MOLI Program – Municipal Officials Leadership Institute**. The idea was raised that this could be used to do a lot more in terms of regional coordination and resource sharing/training.
- US-60 as an alternative Route 66 historic tourism route. Identified as a still-authentic representation of the original east-west travel route; the old west
- In terms of regional coordination, there’s an opportunity to work with Valencia County as well. “Valencia growth would benefit Mountainair and vice versa.” Rather than just looking at the cluster or Torrance County, Los Lunas and Belen aren’t very far west. There’s an opportunity to share resources like investments in regional medical services. “Belen, Los Lunas – reach out to us.”

### **Written Feedback on Outreach Boards:**

*“If I had unlimited funds I would...”*

- Improve access to healthcare

## **San Ysidro Public Meeting**

5/17/2022 6-7:30pm - San Ysidro, NM – Village Complex

### **Notes on Public Outreach**

We spoke to five (5) residents, including three public officials, at the San Ysidro public meeting.

Several recurring themes and highlights from our discussions:

- Water & internet – “we need to make those happen”
- Having to compete with larger municipalities – like Rio Rancho and Albuquerque – for resources such as federal and state grants. The Marshal expressed frustration that there should be a per capita or rural-specific clause to some grants so that communities like San Ysidro could go after them.
- Regional coordination. There was agreement that it would be great if more of the communities in this cluster could work together toward infrastructure improvements – like sewer and water treatment – and that funding entities often targeted those proposals. However, there was expressed concern that it’s difficult to make that happen.
- Better collaboration/coordination between state/fed/DOT (for example with broadband, they are all doing their own *rural internet* but aren’t working with each other)
- Simplifying grant applications and requirements
- Issues regarding access to clean water. John Urban said the mineral content is too high in the water and they currently have to treat it at *point of service*. However, soon they’ll reach the max that they are allowed to do that (100 households) and will have to treat it before point of service. A need for arsenic removal facility.

### **Written Feedback on Outreach Boards:**

#### ***“I want my community to...”***

- Be loving and supporting
- Get outside more (State or NPS passes and kids/family programs)
- Police reform
- Eat healthier food

#### ***“If I had unlimited funds I would...”***

- Build a regional sewer system (San Ysidro, Jemez Pueblo, Zia Pueblo, Cañon)
- Public access to computers/internet (since there is no library here)
- Build an arsenic removal facility for the water
- Create a solar field to sell energy and make revenue for the village
- More access to healthcare
- Drinking water

### ***Other ideas/concerns offered:***

- Broadband passes through but there’s a bad connection
- Graywater systems

## **Rio Rancho's Biggest Yard Sale**

5/21/2022 7am-12pm – Cabezon Park, Rio Rancho, NM

### **Notes on Public Outreach**

Over the course of four hours, we spoke with and collected votes from approximately (112) visitors. Most were Rio Rancho residents attending the yard sale as customers.

### **Several recurring themes and highlights from our discussions:**

- The threats and challenges that received most votes, in order:
  - Crime & safety (68)
  - Drought (57)
  - Wildfire (42)
  - Affordable housing (41)
  - Access to health services (19)
- A number of visitors expressed the opinion that unemployment was not an issue; there are jobs available, but people are not filling them
- Many people were concerned about drought and wildfire, but also noted that it was likely because of heavy news coverage and visibly poor air quality making it an obvious and immediate concern
- Crime and safety were a big topic of discussion, not any specific examples, but for many this was the first threat they chose
- A few visitors expressed frustration regarding the cost of caring for elderly relatives which included the availability of affordable housing and access to healthcare services
- Multiple visitors noted that public transportation is almost non-existent in Rio Rancho and if you don't have a car, ridesharing services may be the only other choice. However, this is often not a financially feasible option for everyday transportation

### ***Other ideas/concerns offered:***

- Affordable internet
- Better lighting
- Wildlife
- Drug abuse, homelessness
- Homelessness
- Affordable gas
- Affordable senior care/programs
- Broadband passes through but there's a bad connection
- Graywater systems

## **Pueblos Cluster – Virtual Public Meeting**

5/26/2022 6-7:30pm – Zoom Call

### **Notes on Public Outreach**

#### **Attendees:**

- Katrina Arndt (MRWM)
- Mario Nuño-Whelan (MRWM)
- Bianca Borg (MRCOG)
  
- Ken Lucero – Tribal Administrator for Zia Pueblo  
Ken.lucero@ziapueblo.org

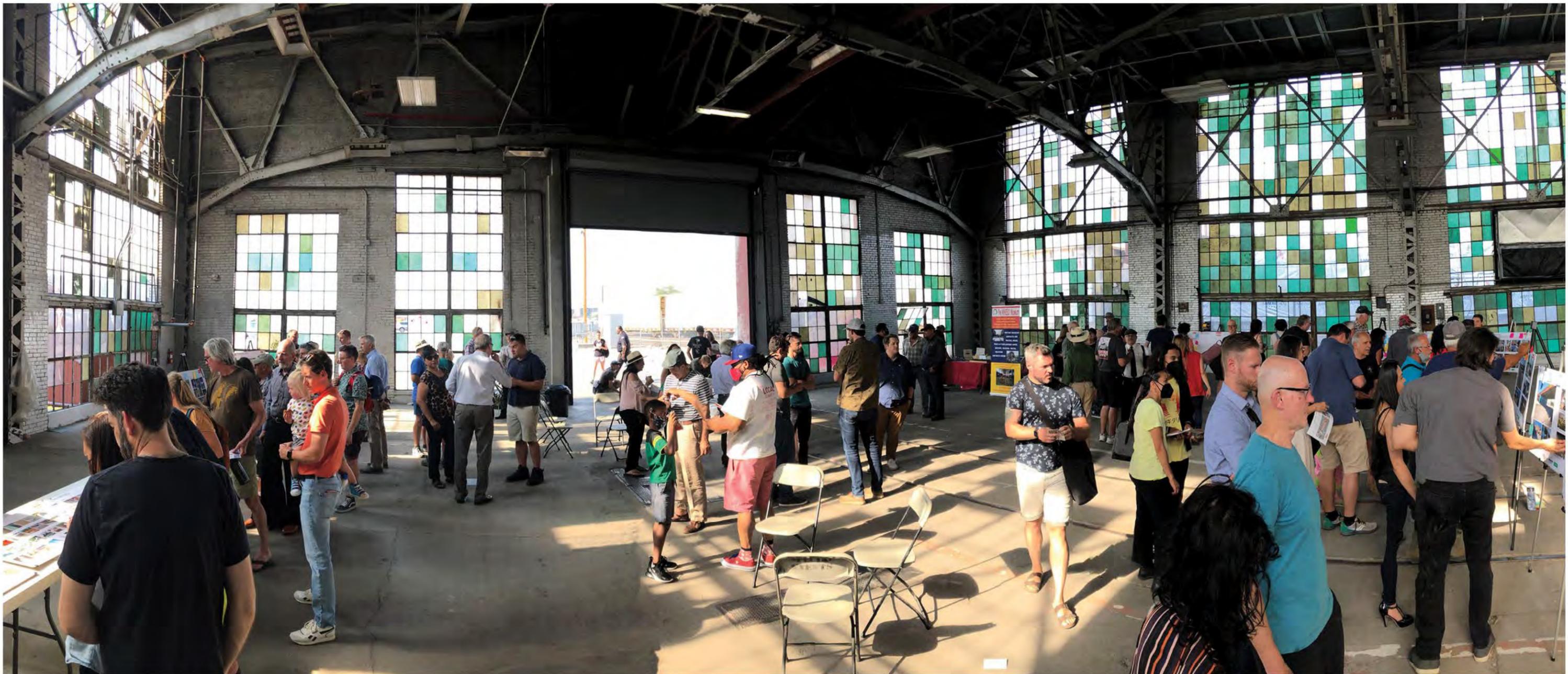
Ken got a one-on-one presentation. We went through the a PPT presentation discussing the project, background, and outreach/research work up to now; initial findings in terms of threats/challenges;

#### **PRIORITIES for Ken**

- Drought/Water
- Invasive Species along the Rio Jemez for Zia Pueblo
- Poverty
- Unemployment
- Lack of Econ Diversification
- Lack of Workforce, specifically *trained* workforce
  - We have members that want to work but they need additional training
- Lack of Operational Capacity
  - We are just now starting to stand up an economic development arm in Zia Pueblo; applied for the ARPA Indigenous Grant; partly why Ken is on the call!
- Affordable Housing
  - Especially during the pandemic this became evident
  - We have homes with 10 or more people living in them; it was difficult to relocate folks during the pandemic
  - We ended up buying hotel rooms in Rio Rancho for those non-quarantined
- Broadband
  - We're only 20 miles from Rio Rancho but we don't have reliable broadband

#### **OTHER NOTES**

- Ken asked if we could do this while people are VOTING next week; MRWM will share materials for Ken to share around
- Ken – last though. Wanting to learn more about MRCOG and how the Pueblo fits into it. Ken will be leading up developing an economic development plan for Zia Pueblo and would like to learn more, bring more of the resources back to Zia.



# ECONOMIC RECOVERY AND RESILIENCY PLAN

STRATEGY + DISCOVERY WORKSHOP, MARCH 2022



1. Creation of an **Economic Recovery and Resiliency Plan**
2. The plan will **explore events and disasters that cause disruption** in the economy in the Mid-Region.
3. It will **address how events, including the COVID-19 pandemic**, expose and exacerbate social and economic weaknesses.



## PROJECT GOALS + ANTICIPATED OUTCOMES

1. The plan will be an addendum to the Mid-Region of New Mexico **Comprehensive Economic Development Strategy** (CEDS).
2. The project is **funded through the Economic Development Administration** (EDA) as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.
3. The **goal is to create economic and social resiliencies** and empower local communities to withstand future threats.
4. The plan **will identify actionable goals, strategies**, and a general list of **potential project priorities** for greater resilience.



## MEETING GOALS

1. This workshop builds on feedback received during stakeholder meetings, the economic conditions analysis, and natural/man-made hazard assessment.
2. During the workshop we will prioritize a list of resiliency threats and challenges;
3. And develop strategies to mitigate challenges and empower the local community.
4. The outcome of this workshop will inform and guide the recommendations of the Economic Recovery and Resiliency Plan.

### STAKEHOLDER MEETINGS



### STRATEGY + DISCOVERY WORKSHOP

1. Prioritize a list of resiliency threats and challenges
2. Develop strategies to mitigate challenges and empower the local community

Inform the Economic Recovery and Resiliency Plan

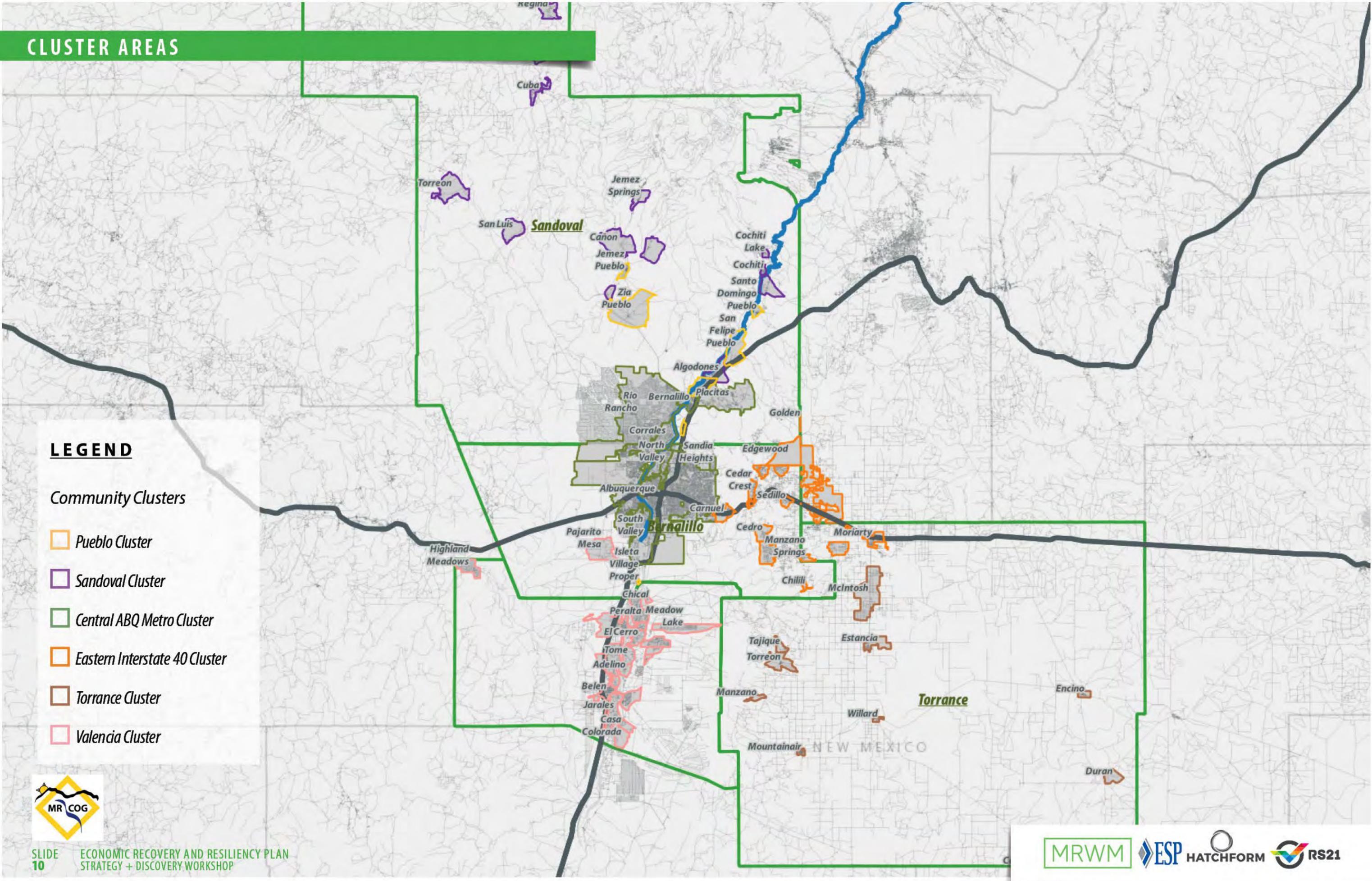


# CLUSTER AREAS

## LEGEND

### Community Clusters

-  Pueblo Cluster
-  Sandoval Cluster
-  Central ABQ Metro Cluster
-  Eastern Interstate 40 Cluster
-  Torrance Cluster
-  Valencia Cluster





Mute yourself unless  
you are speaking

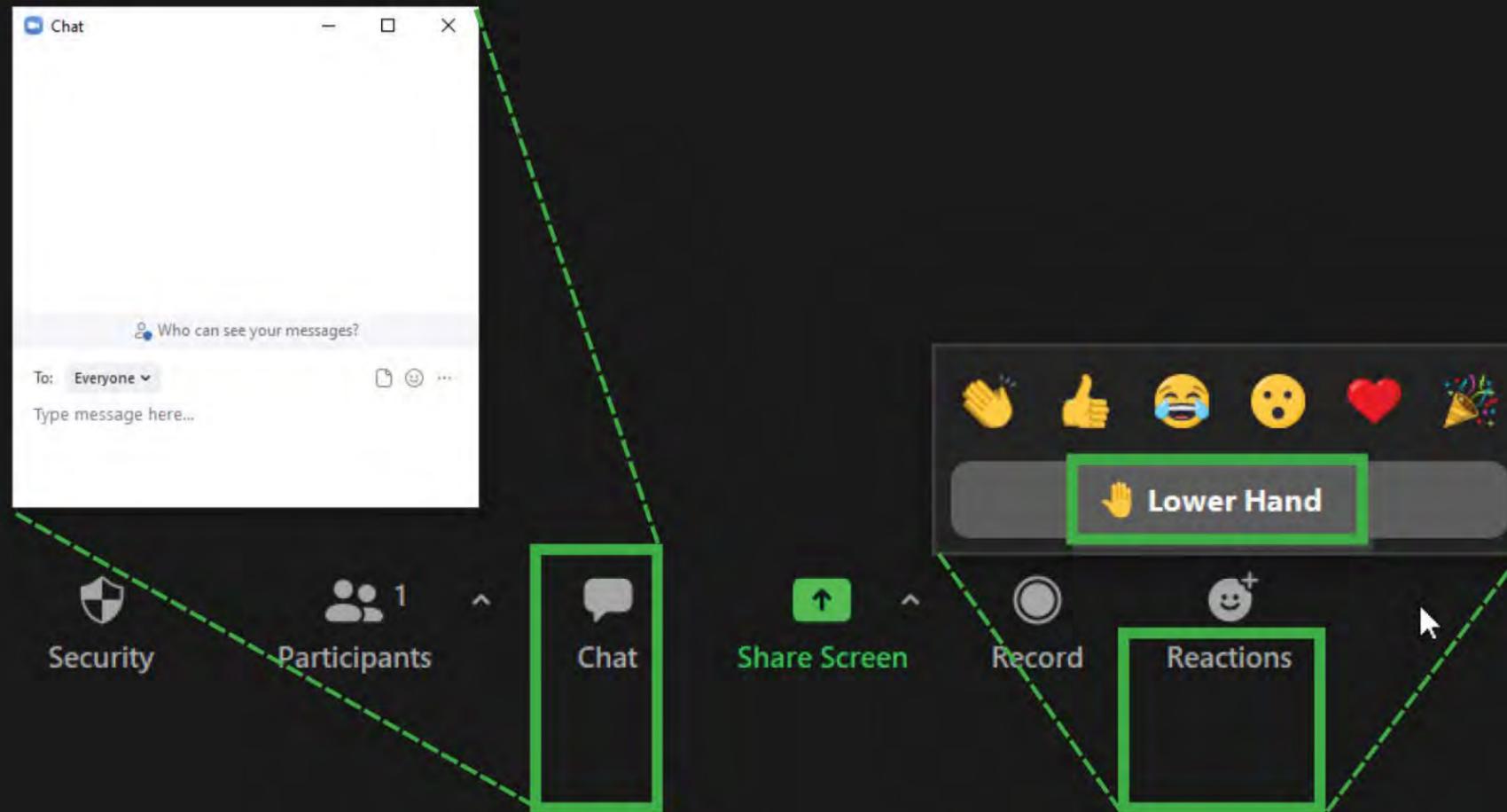


Ask questions by  
raising your hand or  
via the chat



We will have a 10  
minute break at  
around 10:20





1. Project Introduction (10 min)
2. Resilience Challenges - Initial Findings + Best Management Practices / National Best Practices (45 min)
  - a. Outreach
  - b. Economy
  - c. Natural/Man-Made Hazards
  - d. Biggest Threats
3. Using Data for Economic Recovery + Resiliency (25 min)



4. Break (10min)

5. RS21 Overview of Breakout Group Process (10 min)



6. Rank threats/challenges (Poll Everywhere) (5 min)



7. Breakout Groups (50 min)

8. Report Back (20min)

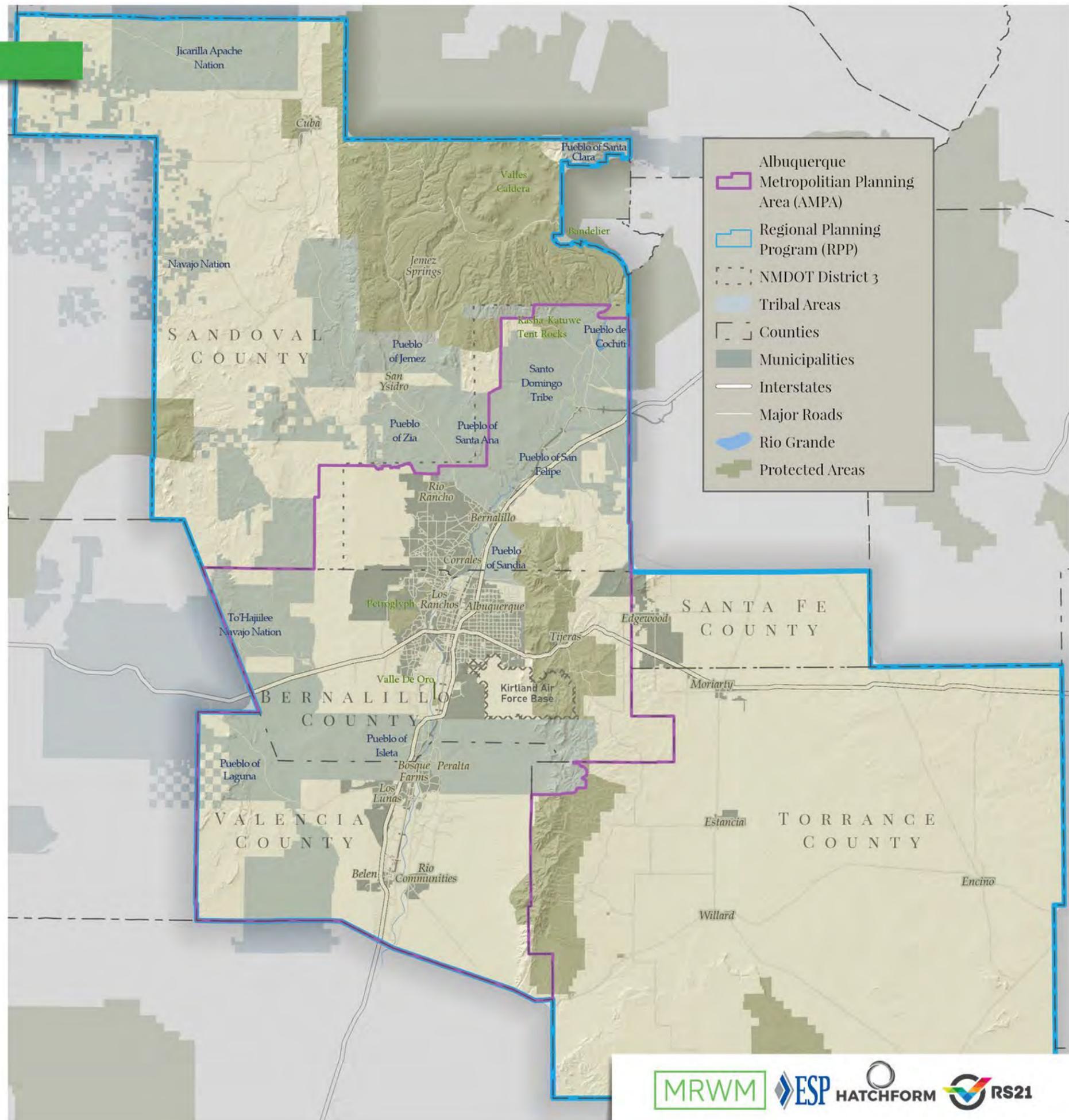
9. Next Steps (5min)



1. The Mid-Region Council of Governments:

- e. Provides technical assistance to our member agencies through transportation planning, land use planning, and Economic Development,
- f. Helps our region plan responsibly for the future, and
- g. Provides a forum for groups and individual communities to meet and address regional issues.

2. By working together as a region, we're able to identify and implement short and long term policy decisions that are critical to a healthy community and prosperous New Mexico.



# TEAM INTRODUCTION



**KATRINA ARNDT, AICP,**  
Associated Planner  
Project Manager

- Manages day-to-day project/client
- Prepares work effort and progress reports
- Responsible for planning related elements for the Economic Recovery and Resiliency Plan
- Responsible for outreach
- Develops Implementation Strategies



**NATHAN SLAUGHTER, AICP, CFM**  
Department Manager – Hazard Mitigation  
Hazard Mitigation and Resilience



**HANNAH DELUDE**  
Hazard Mitigation Planner  
Hazard Mitigation and Resilience Planning

- Responsible for hazard and resiliency related elements for the Economic Recovery and Resiliency Plan
- Identifying of natural and human made risks
- Development of Implementation Strategies



**SEAN O'SHEA**  
Economic Development

- Responsible for economic related elements for the Economic Recovery and Resiliency Plan
- Identifies economic risks
- Develops Implementation Strategies



**ANNEMARIE HENTON**  
Director of State + Local Services  
Driven Resiliency Strategies



**STEFANY GORADIA**  
VP of Analytics, RS21 Health Lab  
Data Driven Resiliency Strategies

- Leading the Strategy and Discovery workshop
- Development of Implementation Strategies





## Initial Findings - Outreach

## PUEBLOS CLUSTER

### CHALLENGES + IDENTIFIED THREATS\*

- Drought + access to water
- Broadband + digital infrastructure
- Access to local businesses
- Diversification
- COVID impacts - loss of culture
- Housing
- Poverty & unemployment
- Aging infrastructure (Mateo Overpass)
- Staffing

### OPPORTUNITIES\*

- Hemp Summit for Indigenous Entrepreneurs
- Grant Capacity Building Webinar
- Green energy, community energy coops
- Infrastructure for farmers to get goods to the market
- Virtual platform for Arts and Culture

## EAST I-40 CLUSTER

### CHALLENGES + IDENTIFIED THREATS\*

- Access to water
- Wildfires
- Lack of high speed Internet - virtual meetings challenging Funding
- Lack of public participation
- Crime and public safety
- Lack of Housing
- Economic instability (lack of workforce)
- Access to services
- Removing Edgewood from flood-zone

### OPPORTUNITIES\*

- Re-engaging people
- Regional coordination to implement resilience solutions
- Mainstreet in Tijeras
- Infrastructure upgrades (new sewer, offramp)
- New water sources
- Renewable energy
- Health and assisted living facilities
- Broadband and remote work

## SANDOVAL CLUSTER

### CHALLENGES + IDENTIFIED THREATS\*

- Access to water
- Increase in crime (urban and spreading to rural)
- Access to resources (Rural)
- Aging/lack of public infrastructure
- Demographic changes
- Small businesses

### OPPORTUNITIES\*

- Workforce training / computer training
- Digital presence for small businesses
- Remove regulatory barriers
- Cannabis
- Business outreach and resources in multiple languages



\*Lists are not comprehensive, but a selected summary of the discussions during the stakeholder meetings

## TORRANCE CLUSTER

### CHALLENGES & IDENTIFIED THREATS

- Access to water
- Wildfire - lack of volunteer firefighters
- Torrance County is a food desert
- Crime and public safety
- Cannabis using water resources and bringing crime
- Push-back against growth
- Political polarization/division

### OPPORTUNITIES

- Becoming bedroom communities, offering attractive communities for families, focusing on lifestyle
- Wind energy and associated opportunities
- Emerging industries – warehouse, manufacturing, and processing (meat)
- Growing demand for housing
- Producing more Gross Receipts Tax
- LEDA Funding
- Grant writing support

## ABO METRO CLUSTER

### CHALLENGES & IDENTIFIED THREATS\*

- Access to water
- Lack of leadership, lack of participation
- Lack of workforce
- Heat island effects, equitable distribution of resources, amenities
- Push-back to growth/change (higher density development vs. sprawl)
- Health and homelessness
- Vacant storefronts downtown
- Investment in transit

### OPPORTUNITIES\*

- Zero fair transit pilot
- Cannabis ready ordinance
- Defense
- Health services
- Re-purposing and re-using spaces
- Reducing the heat island effect
- 15-minute neighborhood
- Deal with land use and transit on a regional restructure basis
- Restructuring impact fees

## VALENCIA CLUSTER

### CHALLENGES & IDENTIFIED THREATS

- Perception of crime and visual deterioration
- Aging/insufficient infrastructure
- Lack of develop-able land and industrial/commercial space
- Lack of healthcare professionals/facilities/services
- Aging population
- Drought and access to water
- Staffing/access to workforce

### OPPORTUNITIES

- Growing new base economic jobs
- UNM Workforce Training Center
- Major housing growth
- Regional airport expansion, military training, testing, assessment, and experimentation
- Clean energy manufacturing
- Better community participation
- Regional approach
- Learn from each other



\* Lists are not comprehensive, but a selected summary of the discussions during the stakeholder meetings



## Initial Findings - Economy

## Key Industries (Across Region)

### Core

- Government
- Healthcare
- Gaming/Hospitality
- Transportation/Logistics
- Renewable Energy
- Agriculture
- Tourism

### Emerging

- Data Centers
- Bio/Life Sciences
- Space/Aerospace
- Manufacturing
- Film/Media
- Outdoor Recreation
- Cybersecurity
- Film
- Agriculture (Hemp/Cannabis)



### Local Competitiveness/Concerns

#### Core

- Government – typically vulnerable to downturns (2008) and can't expand wealth or opportunity
- Healthcare
- Gaming/Hospitality – vulnerable to changes in consumer preferences/behaviors
- Transportation/Logistics – vulnerable to supply chain disruptions. Global implications
- Renewable Energy – vulnerable to business climate, price sensitivity, and access to markets
- Agriculture - water

#### Emerging

- Data Centers
- Bio/Life Sciences
- Space/Aerospace
- Manufacturing - water
- Film/Media – largely dependent on tax credit. High political vulnerability
- Tourism/Outdoor Recreation
- Cybersecurity
- Agriculture (Hemp/Cannabis) - water



# Global Competitiveness/Concerns

## Core

- Government
- Healthcare
- Gaming/Hospitality – vulnerable to changes in consumer preferences/behaviors
- Transportation/Logistics – vulnerable to supply chain disruptions. Global implications
- Renewable Energy – vulnerable to business climate, price sensitivity, and access to markets
- Agriculture

## Emerging

- Data Centers – competitive – lean towards areas with network capabilities
- Bio/Life Sciences – highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
- Space/Aerospace - highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
- Manufacturing – global supply chain, labor, and incentives
- Film/Media – competitive market. Vulnerable to other areas of the world enacting similar incentives
- Tourism/Outdoor Recreation
- Cybersecurity - highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
- Agriculture (Hemp/Cannabis)



## Ecosystem Review

### ABQ Metro

- WESST
- SBDC
- SCORE
- MainStreet (Knob Hill, Barelmas, Downtown, Corrales, South Valley)
- NM Angels
- CNM Ingenuity
- UNM Rainforest
- Bioscience Center
- Fat Pipe
- Q Station
- NMSBA
- TRGR
- PTAC

- South Valley Economic Development
- Three Sisters Kitchen
- La Esquinita
- SFI/Homewise
- Startup Factory
- Fuse makerspace
- ABQ Economic Development
- AREA
- International district economic development
- ABQ Chamber of Commerce
- Hispano Chamber of Commerce
- African American Chamber of Commerce
- American Indian Chamber of Commerce
- Keshet
- NM Bio
- NMMEP
- NM Bioscience Authority
- New Space New Mexico
- Creative Startups
- CNM
- UNM
- LEDA
- JTIP

- NM FAST
- NM Regional Reps
- Rio Grande Community Development Corporation
- NM Tech Council
- Quelab
- Activate NM
- Technology Retirees Economic Catalysts (TREC)
- Hyperspace Challenge
- NM Out Business Alliance
- Parker Center for Family Business

### RISK CAPITAL

- ABQid Fund
- Arrowhead Innovation Fund
- Cottonwood Technology Fund
- Ingenuity Venture Fund
- New Mexico Angels
- NMA Ventures
- Sun Mountain Capital
- Tramway Venture Partners



## Ecosystem Review

### Outside ABQ Metro

- Outside ABQ Metro
- Sandoval Economic Alliance
- ARPA & CARES direct grants
- Rotary
- Belen Chamber
- Rio Rancho Chamber of Commerce
- Zia Pueblo MainStreet
- Jemez Enterprises
- EVEDA
- Bernalillo Economic Development
- Belen MainStreet
- Los Lunas Economic Development
- Sandoval Economic Development
- Greater East Mountain Chamber of Commerce



## Strategic Priorities based on Ecosystem and Conditions

- Opportunities or drivers to capitalize upon
- Challenges to mitigate
- Gaps in resources
- Potential partnerships
- Areas of over subscription



## Examples from Other Resilience Plans

Establishing a Business Recovery Center (<https://restoreyoureconomy.org/main/establishing-a-business-recovery-center/>)

- Very popular during pandemic
- Established in more disaster prone areas
- Separate from FEMA assistance

### Examples

- Washington County, OR - [https://www.co.washington.or.us/Support\\_Services/Finance/GrantManagement/CARES/business-recovery-centers.cfm](https://www.co.washington.or.us/Support_Services/Finance/GrantManagement/CARES/business-recovery-centers.cfm)
- Clackamas County, OR - <https://www.clackamas.us/business/business-recovery-centers>
- Placer County, CA - <https://www.placer.ca.gov/7524/Business-Assistance>

### Diversification

- Dovetails with existing CEDS
- Diversified economies naturally less impact by shocks/disasters
- Same broad industries often targeted – outdoor rec, bioscience, manufacturing
- Entrepreneurship also often mentioned

### Examples

- Interesting – “Van-life work hubs” in the pacific northwest; land investment campaign to profit from climate refuges in the Buffalo, NY area; Value added fish processing in Great Lakes region of Wisconsin



## Examples from Other Resilience Plans

A Roadmap For Economic Resilience – Bay Area Council Economic Institute

- Create a platform for public-private collaboration on regional economic strategy

<http://www.bayareaeconomy.org/files/pdf/BACEI-RES-Report.pdf>

Mountainland Region (Utah) COVID-19 Economic Recovery and Resilience Plan

- Establish a business roundtable by size and sector that provides a pulse on current business needs. Connect these needs to resources as they come available. Leverage the roundtable participants to identify the best method for announcing new recovery initiatives.

<https://mountainland.org/static/files/MEDD%20COVID-19%20Economic%20Recovery%20%26%20Resilience%20Plan.pdf>

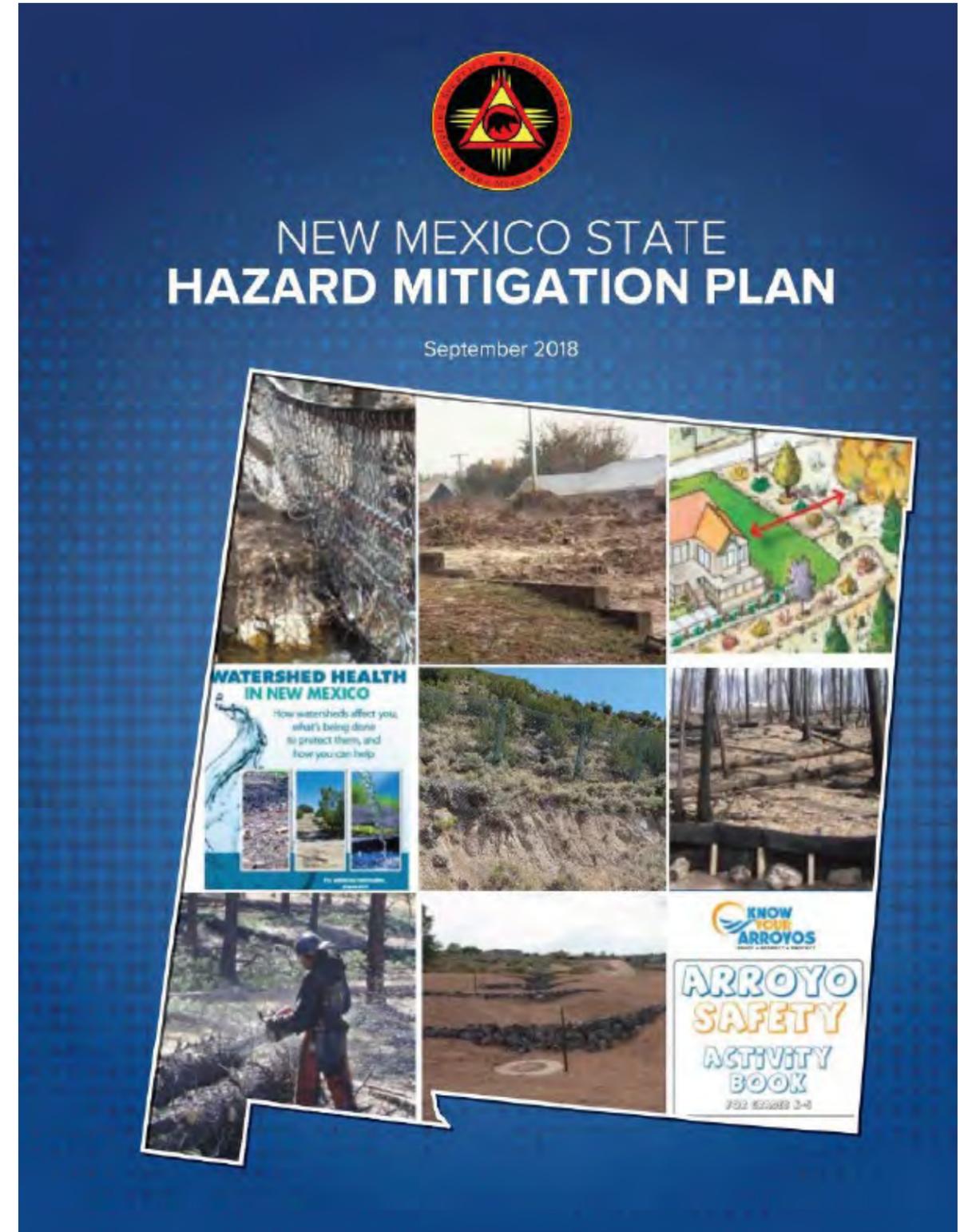




## Initial Findings - Hazards

## Preliminary Risk Assessment Findings

- *Referenced previous Local HMPs and New Mexico State HMP*
  - *Albuquerque/Bernalillo County HMP*
  - *Sandoval County HMP*
  - *Torrance County HMP*
  - *Valencia County HMP*



## Preliminary Risk Assessment Findings

- *Hazards Identified for Resilience Plan Hazard Profiles*

- *Dam Failure*
- *Earthquake*
- *Extreme Heat*
- *Flood/Flash Flood*
- *Infectious Disease*
- *Landslide*
- *Land Subsidence*
- *Severe Winter Weather*
- *Thunderstorms*
- *Tornadoes*
- *Wildfire*



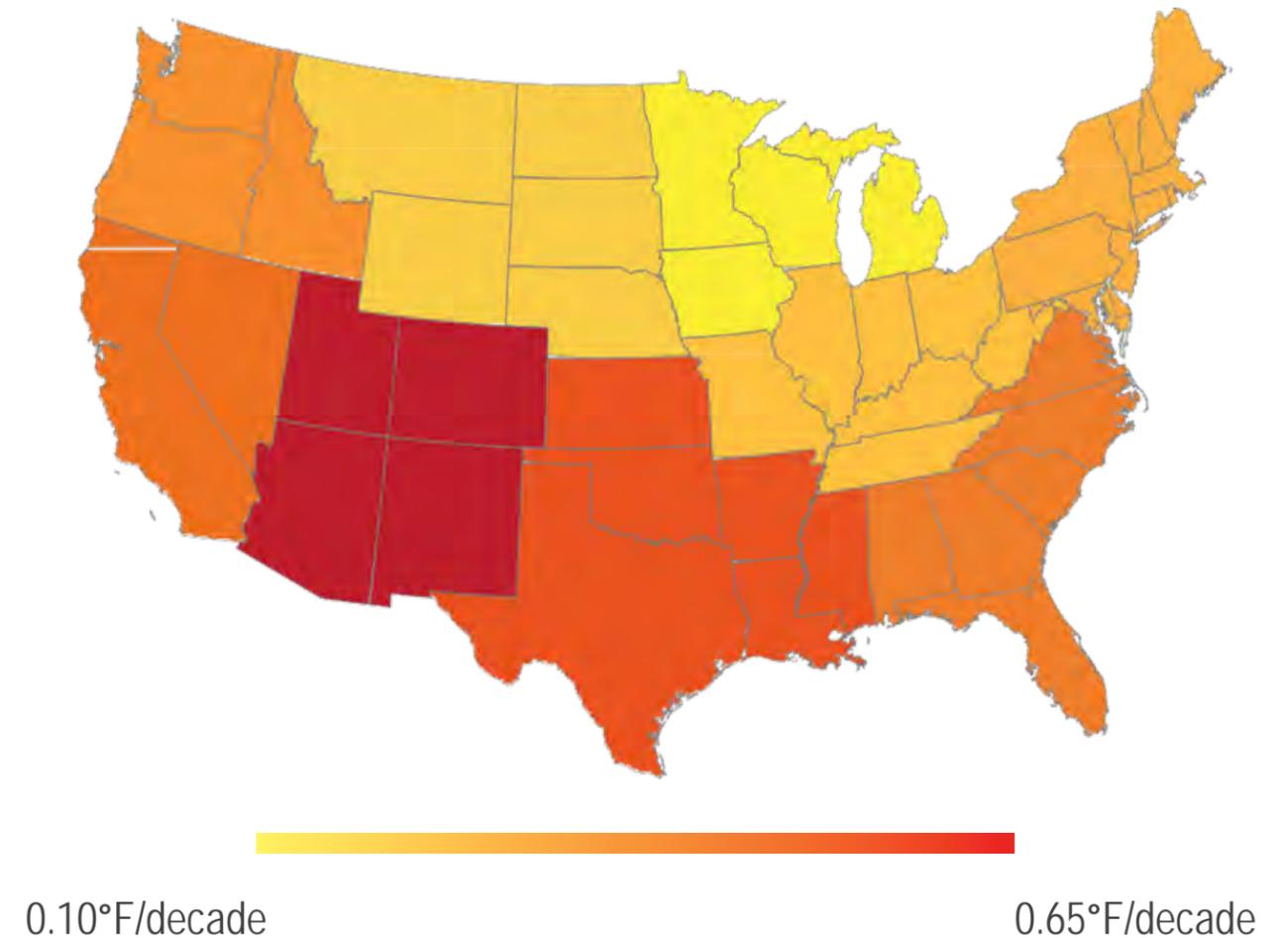
- *36 Previous Disaster Declarations Since 1973*

- *19 Wildfire, 12 Severe Storm and Flooding, 1 Drought, 1 Severe Winter Storm, and 1 Infectious Disease (Ongoing COVID-19 Pandemic)*

## Preliminary Risk Assessment Findings

- *Climate Change*
  - *More Days with extreme heat events*
  - *Longer drought periods*
  - *Snowmelt and streamflow's projected to decline – decreasing surface water reliability*
- *Possible Economic Impacts*
  - *Agricultural sector*
  - *Water Supply Issues*
- *Biggest Threat to Region*
  - *Water issues from drought and cascading impacts*

**Regional Summer Warming Rates Since 1970**

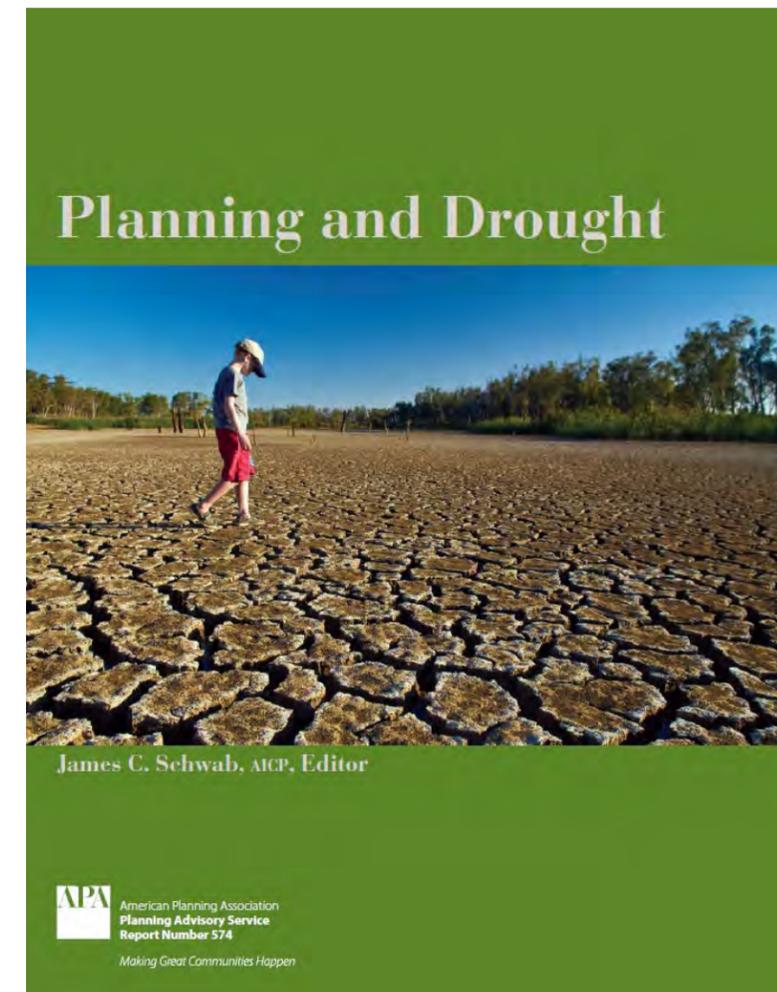
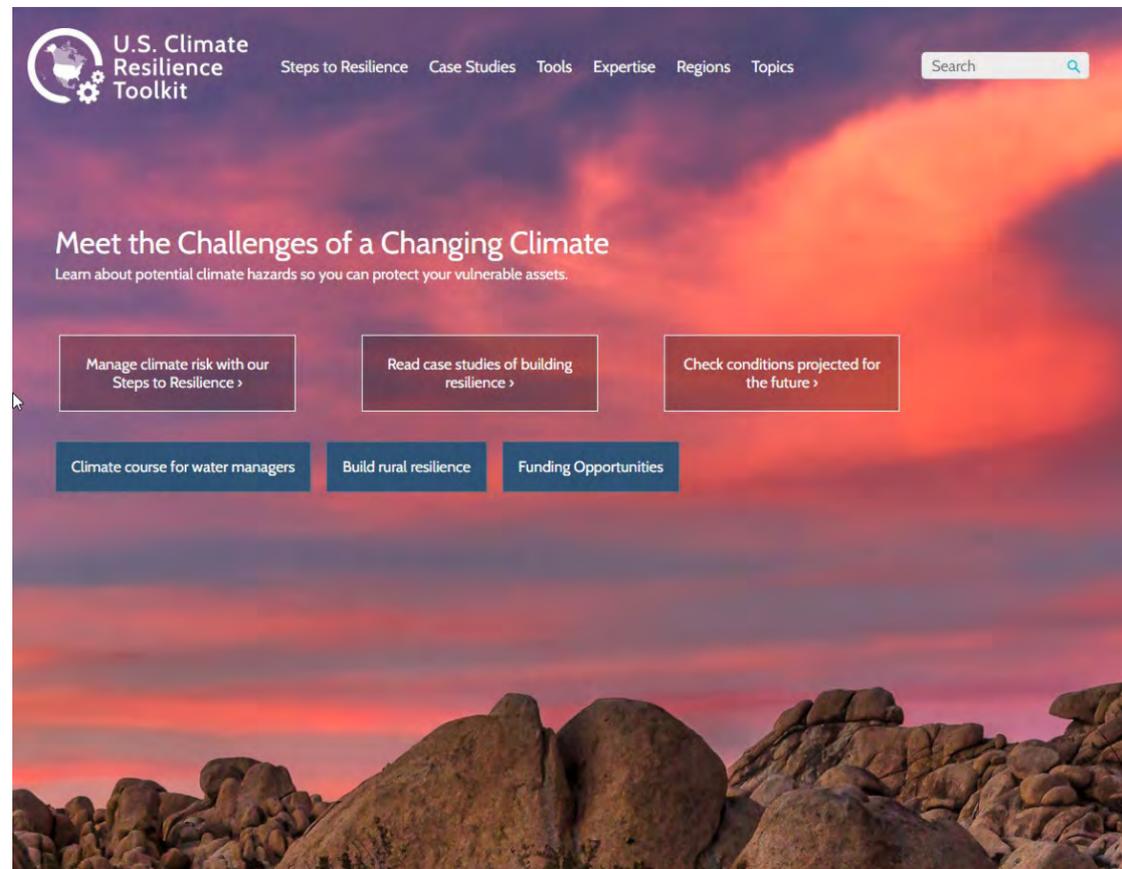


Source: <http://assets.climatecentral.org/pdfs/UrbanHeatIsland.pdf>



# Preliminary Risk Assessment Findings

- *National Best Practices*
  - *Momentum for Resiliency at National Level*
  - *Local and Regional Partners*
    - *Time to plan for resilience and seek funding for projects*
    - *Focus on Action and Project Identification*





USING DATA FOR  
ECONOMIC RECOVERY + RESILIENCY

# AGENDA

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01

**About RS21**

02

**What is Big Data?**

03

**A Winning Strategy**

04

**RS21 Tools/Data at Work**

05

**Dreaming Big**



# OUR PARTNERS

Contract  
Vehicles



GSA



Homeland  
Security

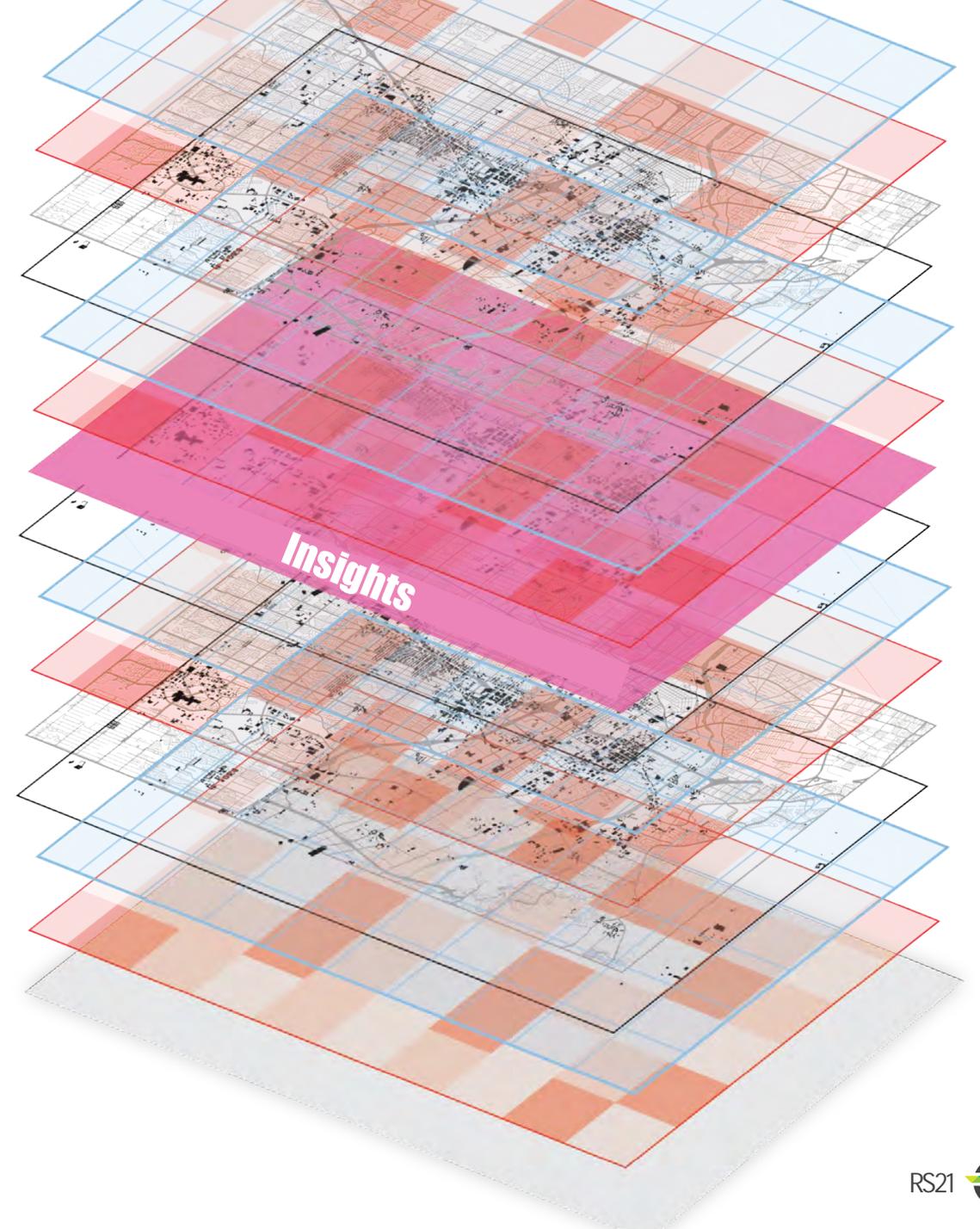


FEMA



# WE MAKE PRODUCTS TO ADDRESS HUMANITY'S MOST COMPLEX CHALLENGES

Our expertise with unique data means we can approach problems in new ways that have never existed before. We use data such as: community risk indicators, atmospheric, societal determinants of health/safety/wellbeing, structured, unstructured, geospatial, open source, proprietary, public, point-based, crowd-sourced, web-scraped, digital devices and IOT, telemetry or real-time (such as devices and sensors), and so much more.

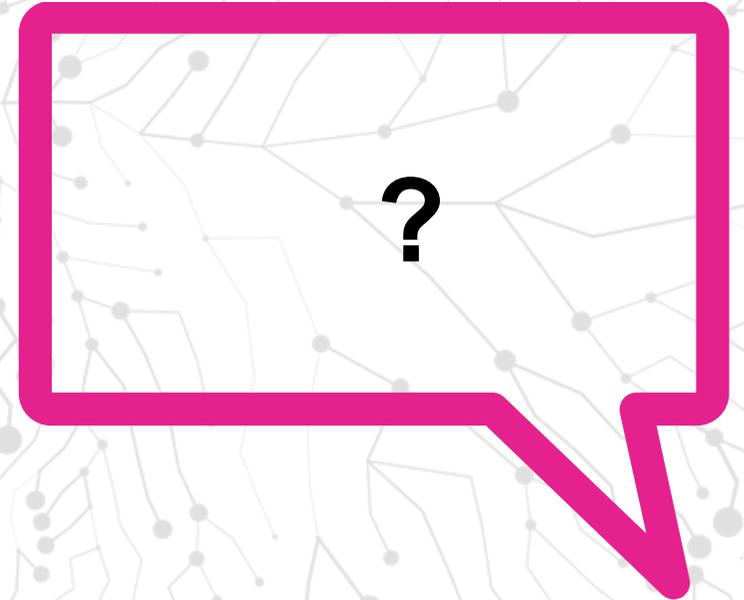
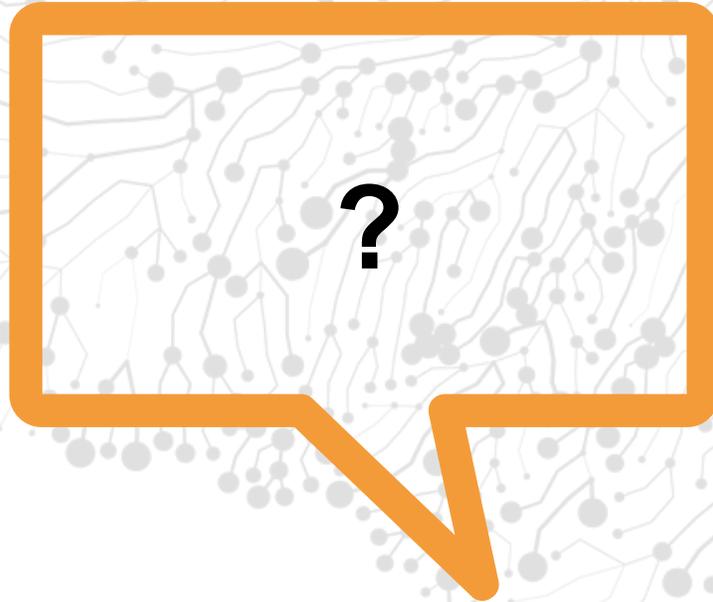


# BIG DATA

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# WHAT DOES "BIG DATA" MEAN TO YOU?



# EXAMPLES OF **BIG DATA** AT WORK

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Mapping + Route Planning



Virtual Assistants like Siri



Wearables + Fitness like Peloton



Recommender Systems like Netflix



Live Demand for Ridesharing

# HOW TO FIND + COLLECT DATA



Public



Private



Google



Surveys



Research

# A WINNING STRATEGY

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# START BY ASKING **QUESTIONS**

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**WHY?**

**HOW?**

**WHERE?**

# THINK ABOUT HOW DATA COULD HELP



Workforce development/job training programs?



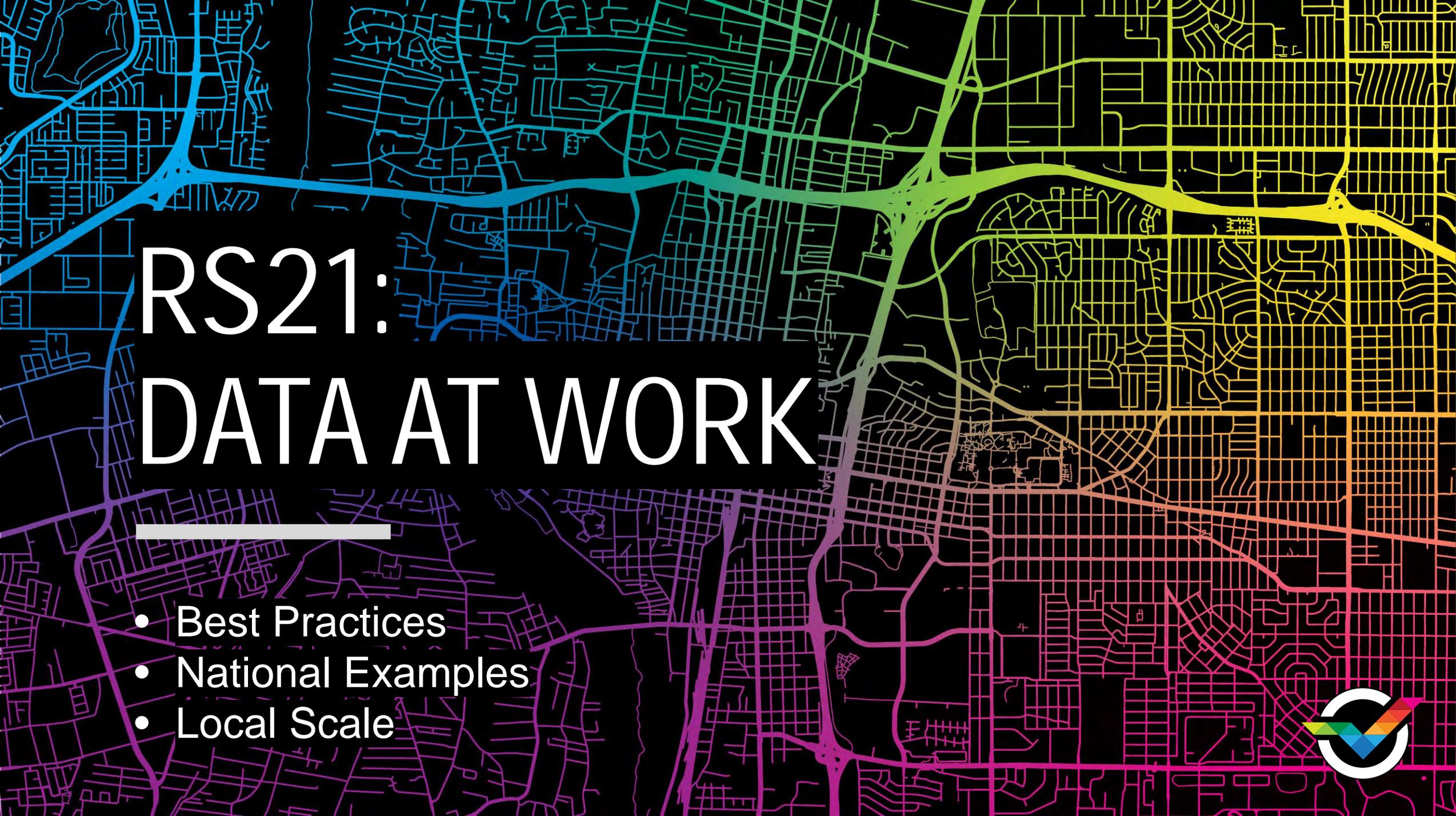
Disaster preparedness and stress-test modeling?



Equitable access to community programs and benefits?



Potential growth in certain industries, like cannabis?



# RS21: DATA AT WORK

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- Best Practices
- National Examples
- Local Scale



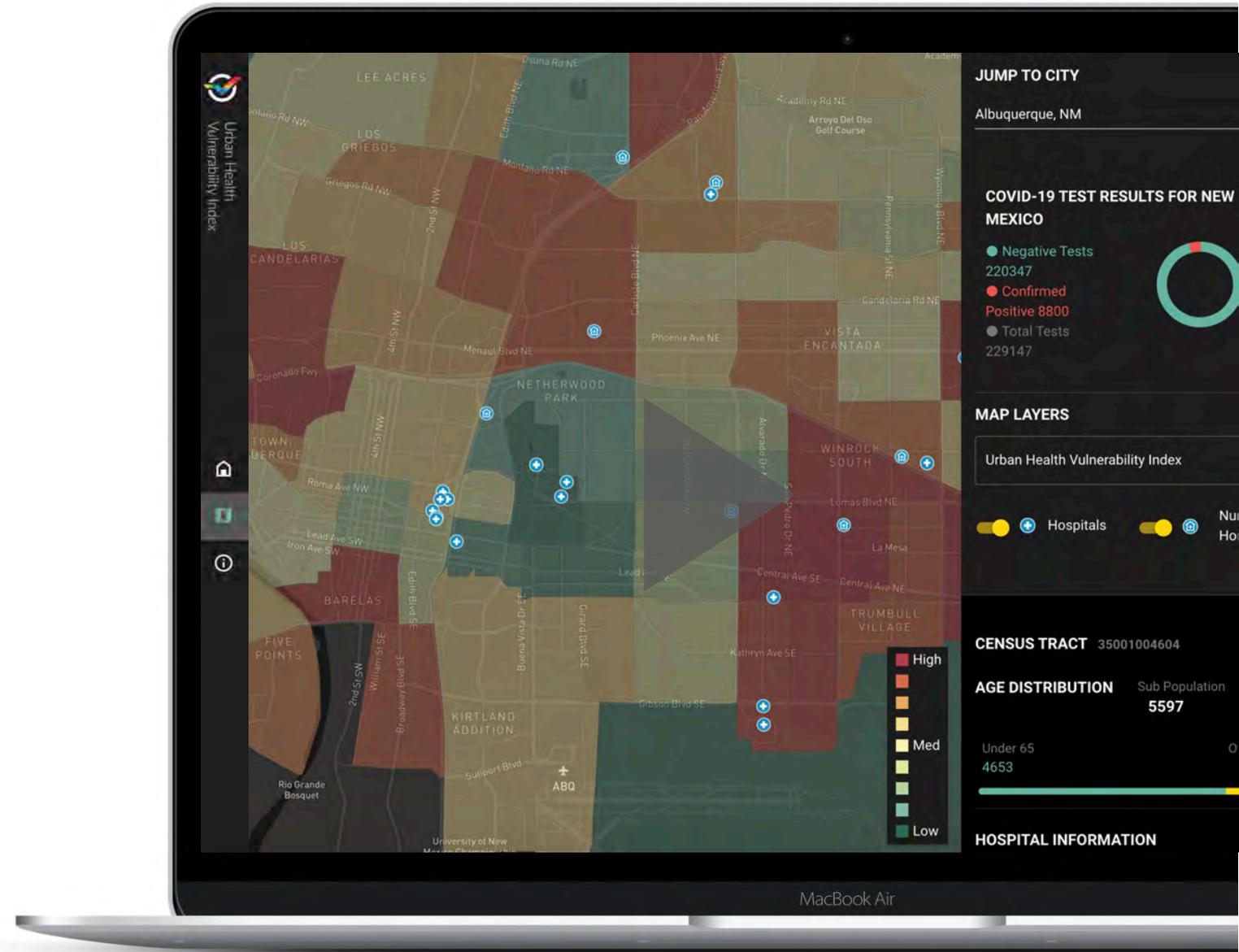
# RS21:

# URBAN HEALTH VULNERABILITY INDEX

Visit <https://covid.rs21.io>

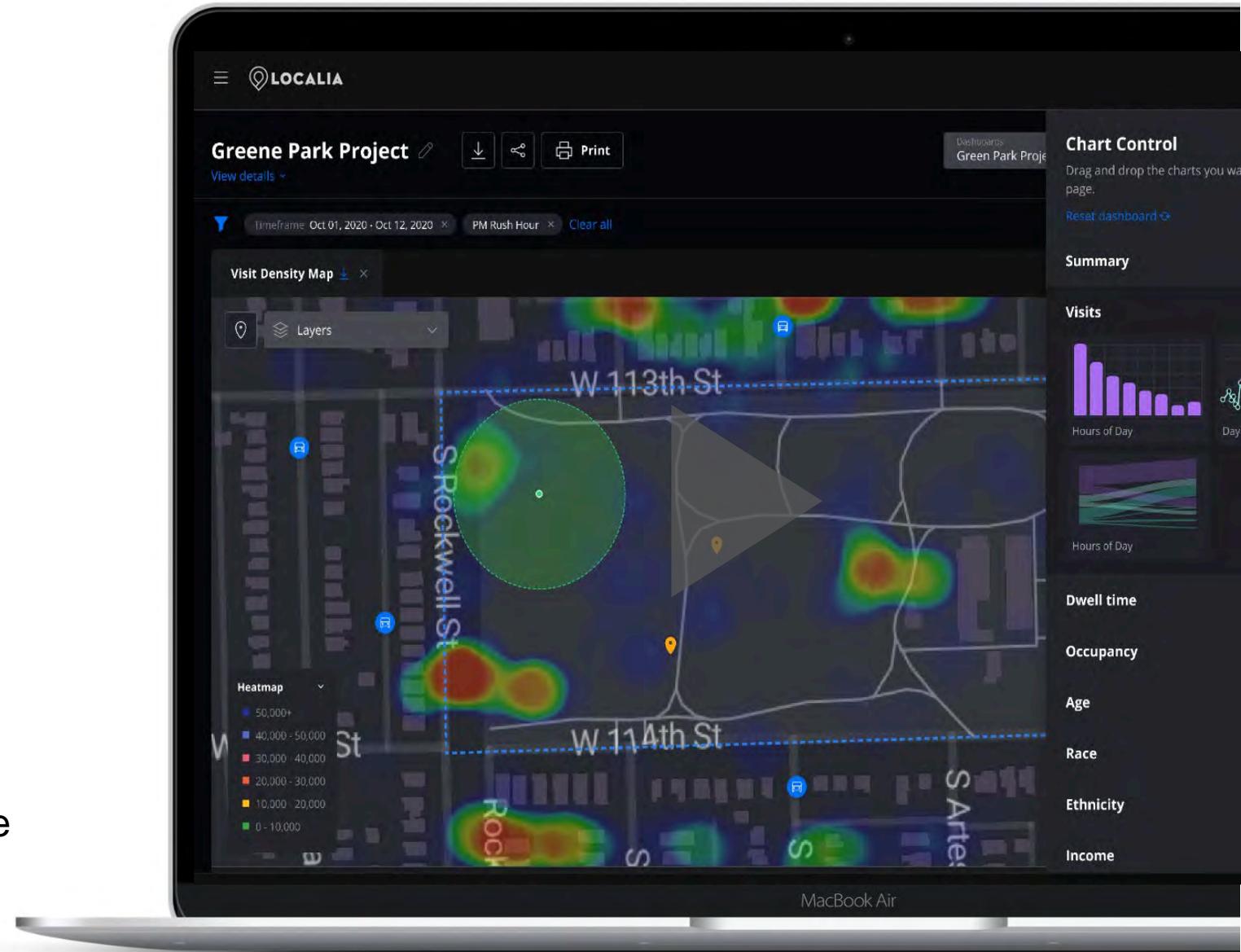
Scraping Real-Time  
Data to Identify Neighborhoods at  
Highest Risk of COVID Using a  
Composite Vulnerability Risk  
Scoring Mechanism

*Launched just in 5 days in March 2020*



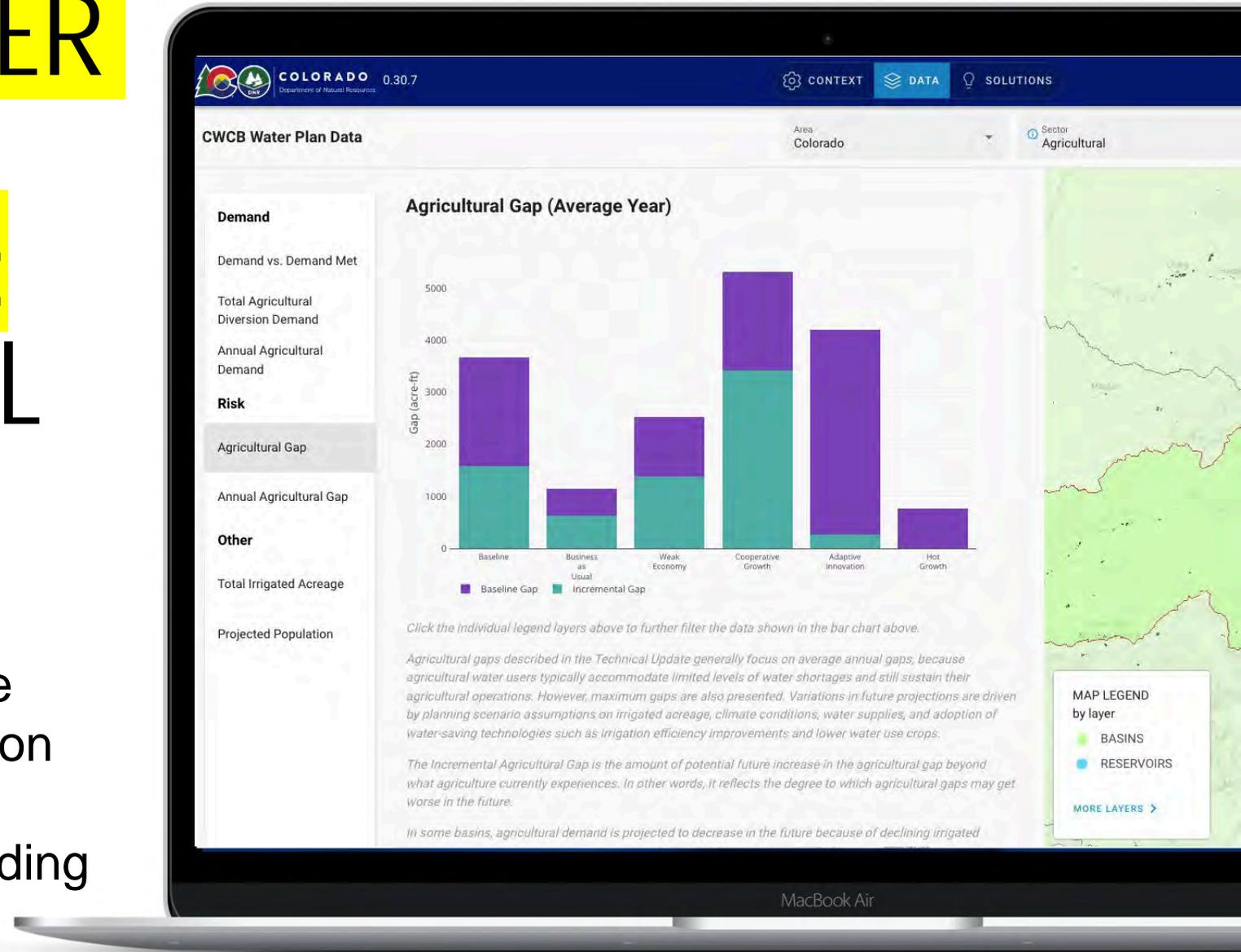
# FEMA: COVID TASK FORCE SUPPORT

- Predicting vaccine hesitancy, which FEMA used to prioritize locations for vaccination clinics
- Gravity model showing how healthcare access changed in the pandemic
- Predictive model of healthcare facility strain to better help agencies/public understanding of services & access



# COLORADO WATER CONSERVATION BOARD (CWCB): EDUCATION TOOL

- Shows statewide water needs through 2050
- Describes the impact of resource planning and mitigation projects on water availability and usage
- Promotes an in-depth understanding of the complexities involved in regional water challenges.



Development in progress. Not for public consumption.

# DHS NRMCM

# EVALUATING RISK TO GAS + OIL DISRUPTION

ERGO is a data-driven assessment of the systematic dependencies and impacts to the oil and natural gas supply chain and critical infrastructure before, during, and after a disruption event.



# USAID: SOCIAL RESILIENCE DATA IN MEXICO

El Rayo is an analysis of youth violence in municipalities across Mexico.



RS21:

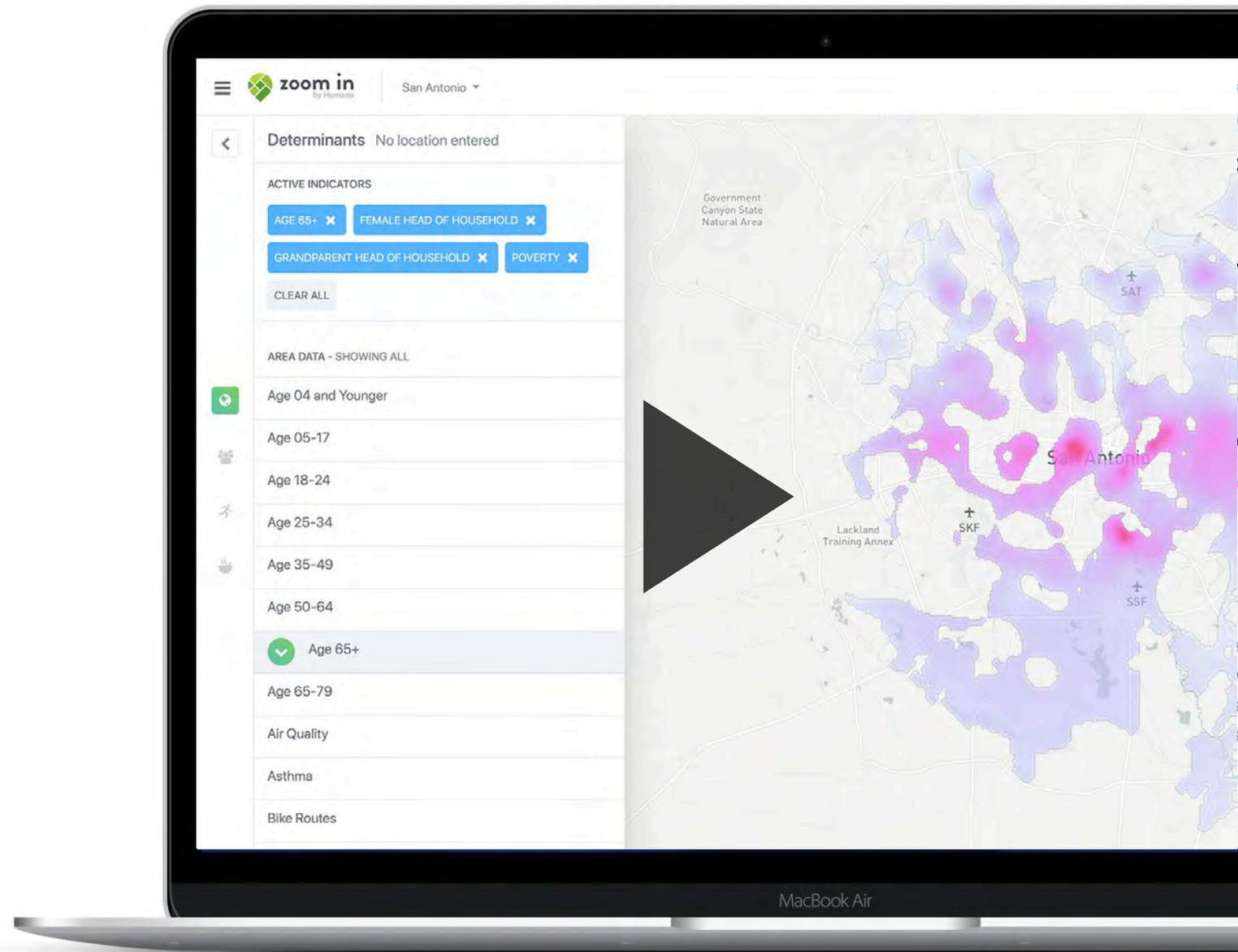
# NATURAL DISASTER COMMAND CENTER

Conceptualizes how the next generation of data science + AI tools can empower cities and first responders to save lives, protect critical infrastructure, safeguard resources, and defend communities.



# HUMANA: ZOOM-IN™

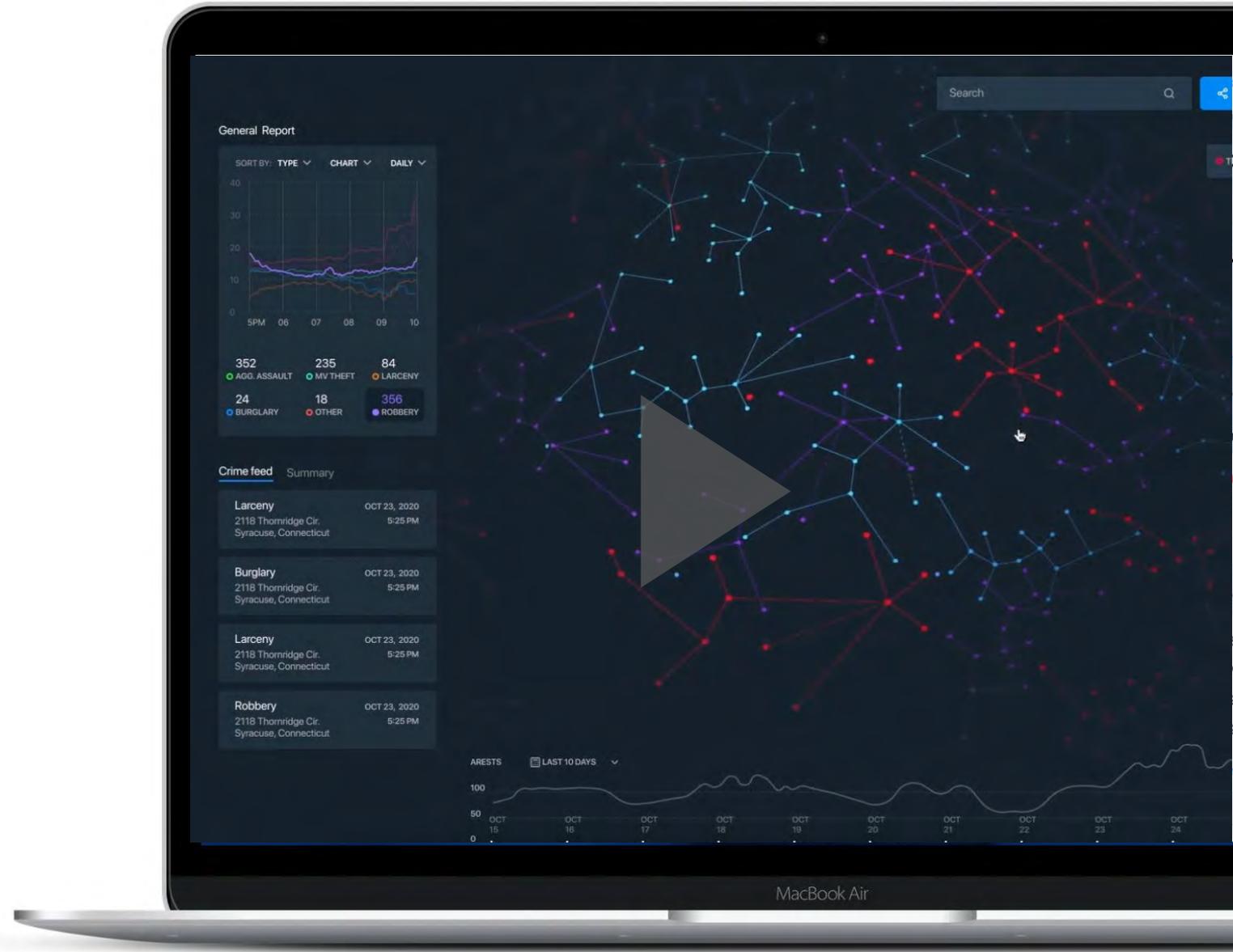
Identifying Communities Most Impacted by Certain Social & Community Determinants of Health and Wellbeing, using machine learning to extrapolate and predict down to the Neighborhood Level



# RS21:

# CRIMINAL DATA PLATFORM

A fully integrated system designed for stewards of public safety and criminal justice. Users can drill down and identify networks responsible for driving the majority of serious and violent crime.



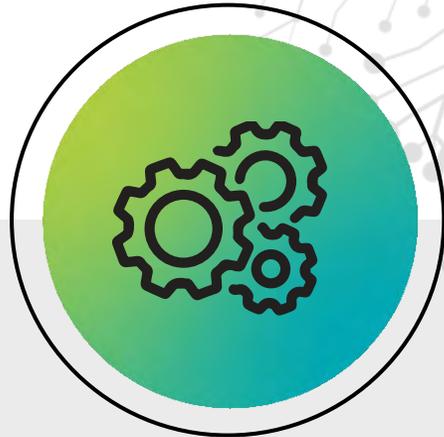
# DREAMING BIG

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# NOW WHAT?

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Prioritize +  
Define



Identify  
Funding



Consider  
Partnerships

---

# THANK YOU.

Annemarie Henton  
annemarie@rs21.io

Stefany Goradia  
stefany@rs21.io



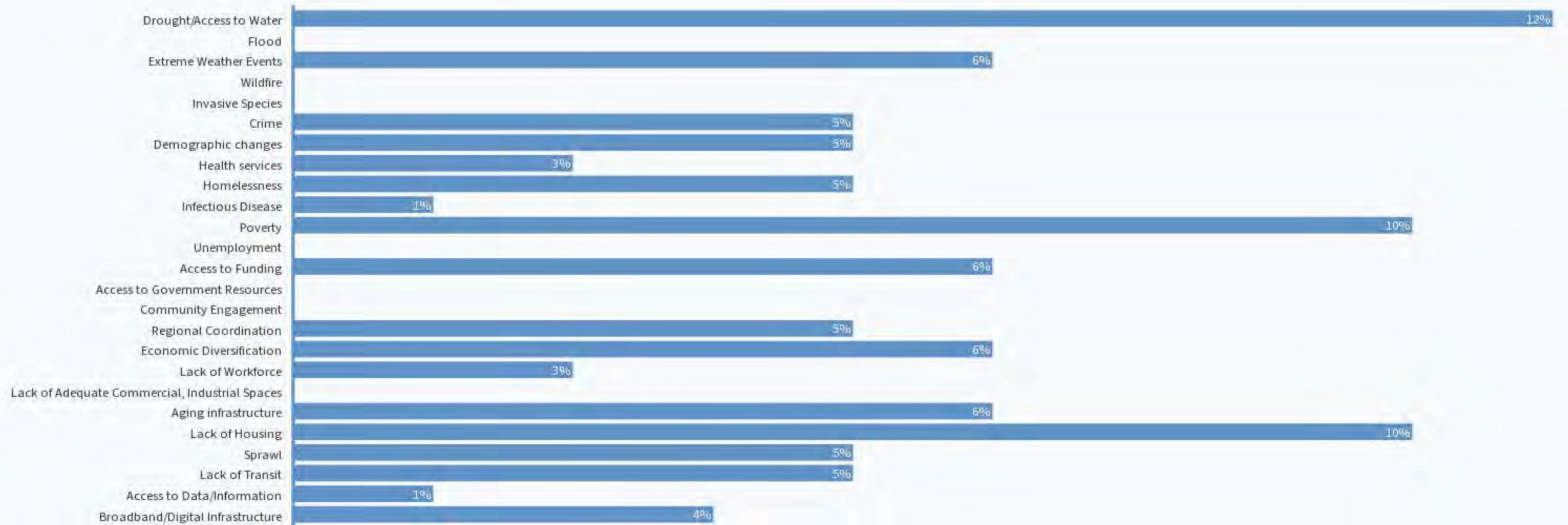


## Rank Resilience Threats/Challenges

🌐 When poll is active, respond at [pollev.com/mrwmla254](https://pollev.com/mrwmla254)

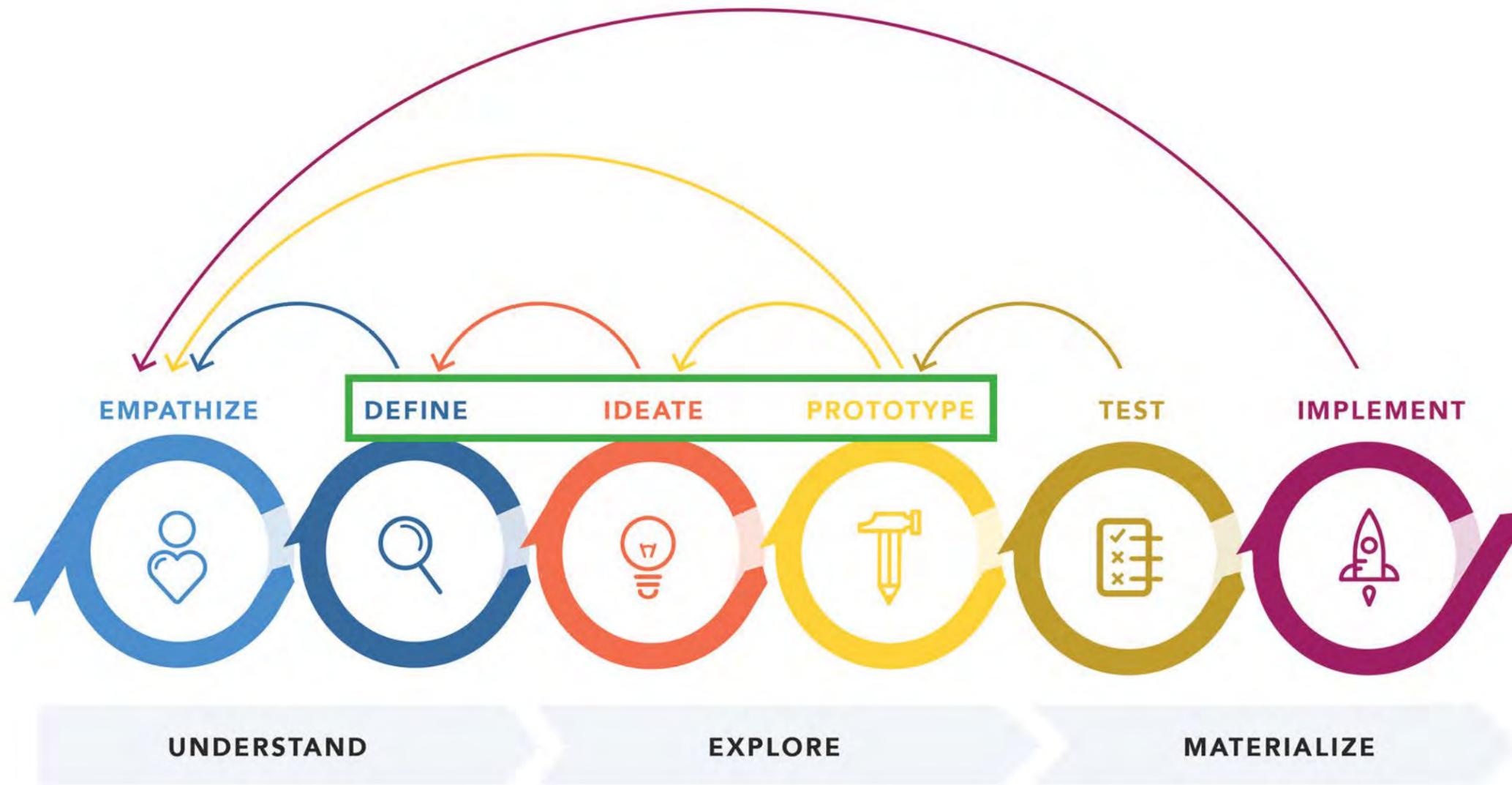
📧 Text **MRWMLA254** to **22333** once to join

# Rank Resiliency Threats / Challenges (Choose 9)





## Breakout Groups (50min)





## Breakout Groups (50min)

## NEXT STEPS

1. April - **Public Meeting**
2. **Follow-up Survey**
3. May - **Community Kiosks**
4. June - **Joint meeting**
5. Call to Action - **Additional stakeholders**

### Task 1 - Kick-Off

### Task 2 - Economic Conditions Analysis

### Task 3 - National Best Practices

### Task 4 - Strategy/Discovery Workshop

### Task 6 - Goals and Implementation Strategies

### Task 7 - Final Document

DEVELOPMENT OF CREATE ECONOMIC AND SOCIAL RESILIENCIES

Internal Community Cluster Meeting

Industry + Community Survey

Strategy/Discovery Workshop

Public Community Cluster Meeting

Survey

Pop-up Kiosks in Communities

Final Presentation at Joint Public Meeting

**THANK YOU + SEE YOU SOON**



# Strategy and Discovery Workshop

## Meeting Summary



Economic Recovery and Resiliency Plan

Thursday, March 31, 9-12PM

### MEETING OVERVIEW

Hybrid meeting with in-person and virtual options:

- **In person: MRCOG Office Conference Room - 809 Copper Ave NW, Albuquerque, NM 87102**
  - Participants: 10
- **Virtual: Zoom**
  - Participants: 38

### MEETING SUMMARY

#### 1. Project Introduction

- Overview of project and outreach thus far, introduction of team members, roles, and the mission of MRCOG, goals for the meeting
- Explanation of hybrid meeting format with break out groups occurring in person and virtually

#### 2. Resilience Challenges - Initial Findings

- **Outreach** – Katrina (MRWM) presented a summary presentation of the findings from cluster stakeholder meetings and surveys thus far; opportunities and challenges identified by cluster are identified in the graphic below:

RESILIENCE CHALLENGE - INITIAL FINDINGS OUTREACH		
<p><b>PUEBLOS CLUSTER</b> CHALLENGES + IDENTIFIED THREATS*</p> <ul style="list-style-type: none"> <li>- Drought + access to water</li> <li>- Broadband + digital infrastructure</li> <li>- Access to local businesses</li> <li>- Diversification</li> <li>- COVID impacts - loss of culture</li> <li>- Housing</li> <li>- Poverty &amp; unemployment</li> <li>- Aging infrastructure (Mateo Overpass)</li> <li>- Staffing</li> </ul> <p><b>OPPORTUNITIES*</b></p> <ul style="list-style-type: none"> <li>- Hemp Summit for Indigenous Entrepreneurs</li> <li>- Grant Capacity Building Webinar</li> <li>- Green energy, community energy coops</li> <li>- Infrastructure for farmers to get goods to the market</li> <li>- Virtual platform for Arts and Culture</li> </ul>	<p><b>EAST I-40 CLUSTER</b> CHALLENGES + IDENTIFIED THREATS*</p> <ul style="list-style-type: none"> <li>- Access to water</li> <li>- Wildfires</li> <li>- Lack of high speed Internet - virtual meetings challenging funding</li> <li>- Lack of public participation</li> <li>- Crime and public safety</li> <li>- Lack of Housing</li> <li>- Economic instability (lack of workforce)</li> <li>- Access to services</li> <li>- Removing Edgewood from flood-zone</li> </ul> <p><b>OPPORTUNITIES*</b></p> <ul style="list-style-type: none"> <li>- Re-engaging people</li> <li>- Regional coordination to implement resilience solutions</li> <li>- Mainstreet in Tijeras</li> <li>- Infrastructure upgrades (new sewer, offramp)</li> <li>- New water sources</li> <li>- Renewable energy</li> <li>- Health and assisted living facilities</li> <li>- Broadband and remote work</li> </ul>	<p><b>SANDOVAL CLUSTER</b> CHALLENGES + IDENTIFIED THREATS*</p> <ul style="list-style-type: none"> <li>- Access to water</li> <li>- Increase in crime (urban and spreading to rural)</li> <li>- Access to resources (Rural)</li> <li>- Aging/lack of public infrastructure</li> <li>- Demographic changes</li> <li>- Small businesses</li> </ul> <p><b>OPPORTUNITIES*</b></p> <ul style="list-style-type: none"> <li>- Workforce training / computer training</li> <li>- Digital presence for small businesses</li> <li>- Remove regulatory barriers</li> <li>- Cannabis</li> <li>- Business outreach and resources in multiple languages</li> </ul>

## RESILIENCE CHALLENGE - INITIAL FINDINGS OUTREACH

### TORRANCE CLUSTER CHALLENGES & IDENTIFIED THREATS

- Access to water
- Wildfire - lack of volunteer firefighters
- Torrance County is a food desert
- Crime and public safety
- Cannabis using water resources and bringing crime
- Push-back against growth
- Political polarization/division

### OPPORTUNITIES

- Becoming bedroom communities, offering attractive communities for families, focusing on lifestyle
- Wind energy and associated opportunities
- Emerging industries – warehouse, manufacturing, and processing (meat)
- Growing demand for housing
- Producing more Gross Receipts Tax
- LEDA Funding
- Grant writing support



\*Lists are not comprehensive, but a selected summary of the discussions during the stakeholder meetings

### ABO METRO CLUSTER CHALLENGES & IDENTIFIED THREATS\*

- Access to water
- Lack of leadership, lack of participation
- Lack of workforce
- Heat island effects, equitable distribution of resources, amenities
- Push-back to growth/change (higher density development vs. sprawl)
- Health and homelessness
- Vacant storefronts downtown
- Investment in transit

### OPPORTUNITIES\*

- Zero fair transit pilot
- Cannabis ready ordinance
- Defense
- Health services
- Re-purposing and re-using spaces
- Reducing the heat island effect
- 15-minute neighborhood
- Deal with land use and transit on a regional restructure basis
- Restructuring impact fees

### VALENCIA CLUSTER CHALLENGES & IDENTIFIED THREATS

- Perception of crime and visual deterioration
- Aging/insufficient infrastructure
- Lack of develop-able land and industrial/commercial space
- Lack of healthcare professionals/facilities/services
- Aging population
- Drought and access to water
- Staffing/access to workforce

### OPPORTUNITIES

- Growing new base economic jobs
- UNM Workforce Training Center
- Major housing growth
- Regional airport expansion, military training, testing, assessment, and experimentation
- Clean energy manufacturing
- Better community participation
- Regional approach
- Learn from each other

- **Economy** – Sean (HatchForm) presented initial findings on resilience challenges in economic development

## ECONOMIC DEVELOPMENT

### LOCAL COMPETITIVENESS/CONCERNS

#### Core Industries

- Government – typically vulnerable to downturns (2008) and can't expand wealth or opportunity
- Healthcare
- Gaming/Hospitality – vulnerable to changes in consumer preferences/behaviors
- Transportation/Logistics
- Renewable Energy
- Agriculture - water

#### Emerging Industries

- Data Centers
- Bio/Life Sciences
- Space/Aerospace
- Manufacturing - water
- Film/Media – largely dependent on tax credit. High political vulnerability
- Tourism/Outdoor Recreation
- Cybersecurity
- Agriculture (Hemp/Cannabis) - water

## ECONOMIC DEVELOPMENT

### GLOBAL COMPETITIVENESS/CONCERNS

#### Core Industries

- Government
- Healthcare
- Gaming/Hospitality – vulnerable to changes in consumer preferences/behaviors
- Transportation/Logistics – vulnerable to supply chain disruptions. Global implications
- Renewable Energy – vulnerable to business climate, price sensitivity, and access to markets
- Agriculture

#### Emerging Industries

- Data Centers – competitive – lean towards areas with network capabilities
  - Bio/Life Sciences – highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
  - Space/Aerospace – highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
  - Manufacturing – global supply chain, labor, and incentives
  - Film/Media – competitive market. Vulnerable to other areas of the world enacting similar incentives
  - Tourism/Outdoor Recreation
  - Cybersecurity – highly competitive. Vulnerable to areas of higher workforce concentration and levels of risk capital
  - Agriculture (Hemp/Cannabis)
- Natural/Man-Made Hazards – Nathan (ESP) presented preliminary risk assessment findings regarding natural and man-made hazards

## MRCOG Natural / Man-Made Hazards

### Preliminary Risk Assessment Findings

#### • Hazards Identified for Resilience Plan Hazard Profiles

- Dam Failure
- Earthquake
- Extreme Heat
- Flood/Flash Flood
- Infectious Disease
- Landslide
- Land Subsidence
- Severe Winter Weather
- Thunderstorms
- Tornadoes
- Wildfire



#### • 36 Previous Disaster Declarations Since 1973

- 19 Wildfire, 12 Severe Storm and Flooding, 1 Drought, 1 Severe Winter Storm, and 1 Infectious Disease (Ongoing COVID-19 Pandemic)



ECONOMIC RECOVERY AND RESILIENCY PLAN  
STRATEGY – DISCUSSION WORKSHOP

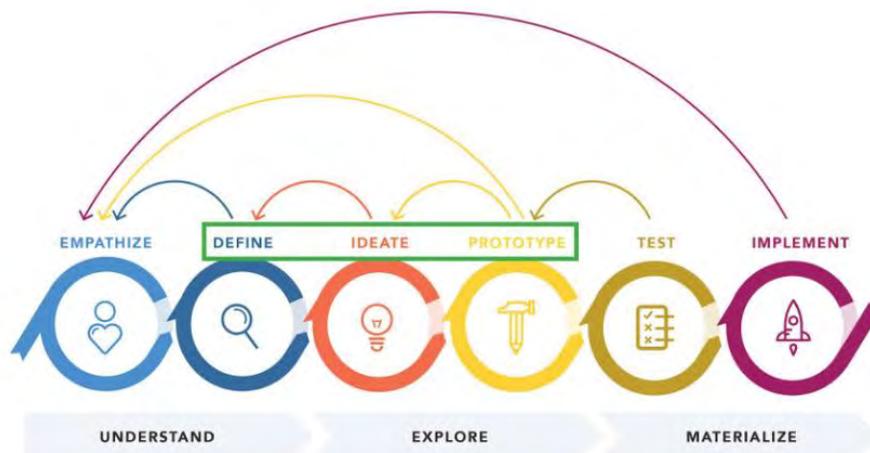


### 3. Examples of RS21 work/strategies

- Stefany and Annemarie (RS21) presented examples of RS21 projects that use big data – healthcare, natural gas, others.

### 4. RS21 Overview of Breakout Group Process

- Stefany (RS21) presented *Design Thinking Process* for creative problem solving. Breakout groups to use design thinking to tackle the threats/challenges list developed from initial findings
- Design thinking:
  - i. Gather information
  - ii. Define the problem
  - iii. Generate ideas
  - iv. Prototype to make ideas tangible
  - v. Test and get feedback



### 5. Rank threats/challenges – In-person and virtual poll to prioritize list of threats

- Based on the stakeholder outreach findings and the preliminary research presented, a list of 25 threats/challenges was identified. Using an instant polling app, participants selected nine (9) threats/challenges to brainstorm on three (3) issues during the breakout group discussions. Results were displayed in real-time.
- 9 THREATS/CHALLENGES were selected and assigned to one (1) of three (3) breakout groups. In order of popularity, the 9 threats/challenges were:
  - 1) Drought/Access to Water
  - 2) Lack of Housing
  - 3) Poverty
  - 4) Funding
  - 5) Crime
  - 6) Homelessness
  - 7) Aging Infrastructure
  - 8) Sprawl
  - 9) Extreme Weather/Changing Climate

## **BREAKOUT GROUPS**

During the breakout groups, each group went through the Design Thinking Process, earlier identified. Each group had three boards. At first, each threat/challenge was further defined by answering the following questions:

- *Why is this threat a problem? What are some of the negative impacts it might have on the community?*
- *What are the most affected areas of the community?*
- *How does this threat/challenge affect different types of communities (urban/rural, affluent/poor)?*
- *What would success look like to fix the problem (e.g., % decrease in the unemployment rate, X number of people coming through job training programs, etc.)*

Following the 'Definition' stage, the group selected three (3) of the defining elements to ideate around. The sticky notes were moved to the "Ideation" board to develop ideas. Then meeting participants developed ideas on how to address the particular threats and challenges. This ideation stage was meant to go quickly so that ideas were generated without overthinking. The last stage was the 'Prototyping AKA Strategizing' stage. During this stage, three (3) ideas were selected from the ideation board, and strategies were developed to implement the idea.

## **IN-PERSON TEAM**

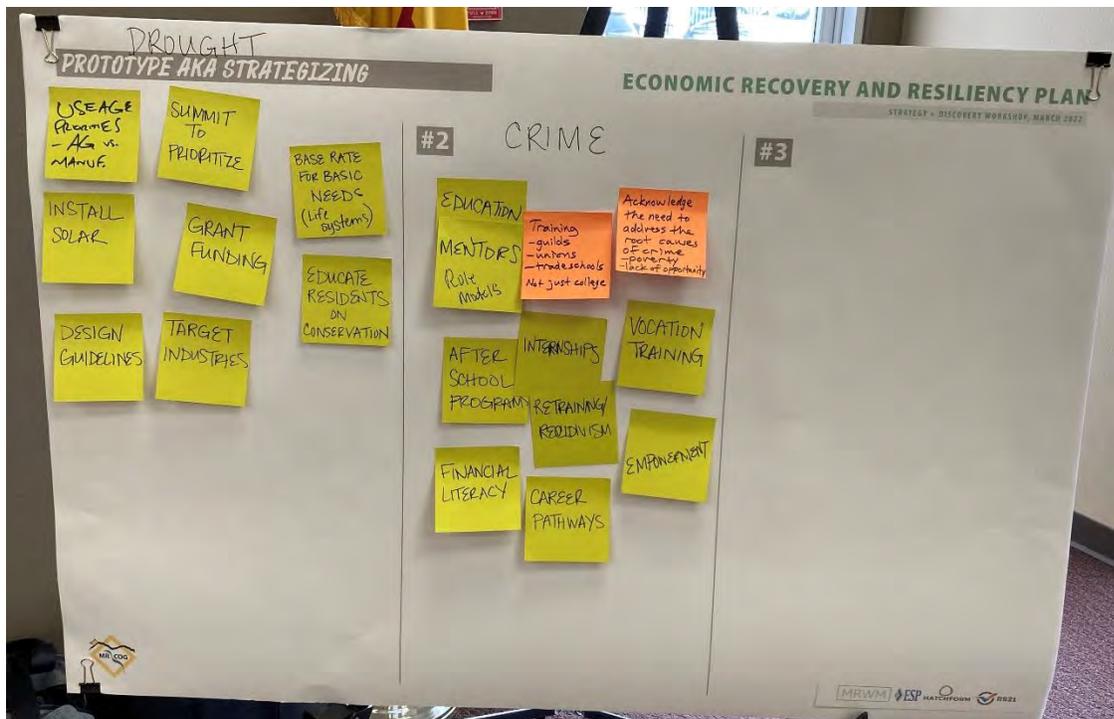
Facilitator: Annemarie Henton (RS21)

Notetaker: Mario Nuño-Whelan (MRWM)

Threats/Challenges tasked to problem-solve: **WATER, CRIME, FUNDING**







## **WATER**

### **DEFINING THE THREAT/CHALLENGE**

Generally, the ideas offered by the group in terms of defining the threat/challenge of water and drought fell into two broad categories: physical/environmental; and social/legal/governmental

#### **Physical & Environmental:**

- A diminishing water table
- Climate change and less rainfall, snowmelt, available water
- Pollution of water bodies like the Rio Grande
- Ecosystem loss due to channelization, aridification of wetlands

#### **Social & Governmental:**

- Compact agreements: a need for clarity on how they exist currently, what future plans may require, and what they mean for water rights within the MRCOG region
- Equitable access to water both present and future (Pueblos, rural areas, urban areas, ag use)
- Conservation issues: population growth and per capita domestic use, the cost of water, water rationing
- Perception of drought in the region and its effect on attracting industries and general economic development

## IDEATION

### **Conservation Through Technology and Design:**

- Modeling to understand water needs over time
- Improved distribution, infrastructure
- Rainwater and stormwater harvesting
- Technology to track use and respond to issues
- Water controls in the home
- Desalination
- Gray and black water recycling systems
- Less water-intensive fracking
- Genetic engineering for cannabis
- Indoor farming

### **Regulation**

- Landscape guidelines and regulations for lower water use
- Prioritization and scored distribution of water based on need
- Revised building codes
- Policy solutions that address water recycling and greywater use

### **Education**

- Education of businesses and residents
- Education about water supply, use, and conservation

## STRATEGIES

- Well drilling programs on tribal lands
- A water summit in order to establish priorities (agriculture vs manufacturing vs residential vs commercial)
- Design guidelines/policy
- Establish a basic rate for basic needs
- Education – materials, outreach
- Target industries
- Indoor farming

### **→ KEY TAKEAWAYS:**

One of the difficulties that surfaced during this exercise was defining what the threat actually is in terms of water and drought in the MRCOG region. Is it water availability for agricultural, commercial and residential use? Is it water availability for ecosystem function? Is it climate change and what that means for our water supply? Is it our inadequate water infrastructure for increased conservation? Is it ensuring equitable access to water into the future? Is it preparing for the sudden demand from cannabis growth? And if it's all of the above, how do we break this down into component parts in order to tackle the problem?

Actionable ideas and strategies identified by the group fell into two broad categories:

Measures to increase water conservation (through regulation, pricing, implementing technology and water harvesting/reuse, education, and design guidelines)

Developing clear regional priorities for water management. Regional coordination could take the form of a water summit where stakeholders and policy makers analyze and establish usage priorities among agricultural, industrial, commercial, residential, recreational, and habitat or ecosystem water use.

## **CRIME**

### *DEFINING THE THREAT/CHALLENGE*

- Origins/Causes of those committing crime
  - Poverty
  - Lack of opportunity
  - Boredom
  - Recidivism
  - Lack of education/training
  - Morals
  - Fear
  - Broken families
  - Substance abuse
  - Racism
  - Systems – judicial, law enforcement
  - Disinvestment in communities
- Problems that stem from having a perception of crime
  - Perception of being an unsafe region
  - Vacancy, blighted properties
- Larger scale issues with crime
  - Domestic terrorism
  - Threats to critical infrastructure (water, electricity, food production)

### **→ KEY TAKEAWAYS:**

The group ran out of time before getting to the ideas and strategies portion of tackling the threat of crime. However, much of the discussion in defining the threat centered around addressing the root causes of crime in the MRCOG region. From substance abuse and broken families to systemic poverty and racism, the group focused on the holistic causes of crime rather than law enforcement and the number of cops on the street.

It was mentioned that knowing what kinds of crimes were most common and which were contributing most to a negative perception of the region would be good data/information to work with. And bringing in the voice of criminals would help shed light on the causes and possible solutions. For example, if a lot of cases come from persons with substance abuse issues, then the resilience goals should be targeted toward that sector specifically.

## Virtual Team 1:

Facilitator: Nathan (ESP)

Miro Board: Linley Green (MRWM)

Miro Board Link: [https://miro.com/app/board/uXjVOB5JR9c=?invite\\_link\\_id=980076660095](https://miro.com/app/board/uXjVOB5JR9c=?invite_link_id=980076660095)

Threats/Challenges tasked to problem-solve: **HOMELESSNESS, AGING INFRASTRUCTURE, SPRAWL**

### DEFINE THREATS/CHALLENGES

### ECONOMIC RECOVERY AND RESILIENCY PLAN

STRATEGY + DISCOVERY WORKSHOP, MARCH 2022

#### #1 HOMELESSNESS

Increase in unsheltered population in Abco. Spaces and resources are limited - resources can't come fast enough. Goal: decrease homeless population by helping them directly, provide them with resources, comfortable spaces during extreme heat and other weather events. Lack of available affordable housing is also an issue.

East Mountains: lack of rental properties and weather. Not enough affordable residences for people who are employed. Presence of unsheltered folks is less visible but not necessarily non-existent. Housing shortage has increased in East Mountains during pandemic.

Visibility of homelessness in downtown Albuquerque has caused businesses to leave, businesses are hesitant to move downtown. Lack of restroom facilities for the unsheltered, increase in trash, etc. on the street.

Is there currently a plan in place to address homelessness?  
- Gateway shelter in old hospital on Gibson (100 beds vs. thousands of people on the street every night). Transitional housing is largely empty because of restrictions on residents.  
- Housing for 50 individuals with lower restrictions downtown.

Broader ecosystem of support: engage faith based community and workforce development.  
- More direct line with services.  
- Proposed official campaigns with restrooms, security, cooking facilities, etc.

"Prior to moving to CBM 7 weeks ago, I was the director of the CABEQ Planning Department. There are several people that are looking at all angles of homelessness, affordable housing, behavioral health, substance abuse, and code enforcement, to address all these. I can provide specific names if needed."

#### #2 AGING INFRASTRUCTURE

Transportation facilities:  
- Tendency to build new facilities rather than repair and replace existing facilities.  
- Existing infrastructure is neglected.  
- Challenge is prioritizing where funding goes.

Infrastructure that supports neighborhoods - higher quality infrastructure needs to be available to lower income neighborhoods so that they can also be more efficient.  
Where do we place new infrastructure: adding to existing urban areas, connecting to other communities (sprawl issue is relevant here as well).

Broadband access is an infrastructure issue related to equity and job opportunities for lower income communities.

East Mountains: broadband access is also an issue. Small communities can't have funding to maintain roadways, sewer systems, etc. Being unable to maintain these basic systems makes it difficult to attract growth, more advanced infrastructure. Higher costs associated with new infrastructure in rural areas.  
Expensive to extend pipe, broadband through rocky soil. Smaller communities have similar issues that need to be addressed, need to function as larger communities.

#### #3 SPRAWL

Why is sprawl a threat? What challenges does it pose to your community?

East Mountains: Everyone wants a large lot with lots of space, which inherently creates sprawl and makes it more difficult to provide and extend services. Lack of housing can be partially attributed to larger lots. Changing zoning regulations to allow for greater density, multi-family housing would help with this issue.

Downtown ABQ: density is attractive in urban spaces. People feel more comfortable going out, more venues and businesses are attractive.

### IDEATE

### ECONOMIC RECOVERY AND RESILIENCY PLAN

STRATEGY + DISCOVERY WORKSHOP, MARCH 2022

#### #1 HOMELESSNESS

Economic empowerment tools, hard skill development

Federal housing vouchers, lease with first month's rent, no deposit, housing vouchers, section 8. Limited inventory of housing that accepts those vouchers. Change law to require landlords to accept these vouchers.

#### #2 AGING INFRASTRUCTURE

Tangible assets that can drive growth. Invest into job centers throughout region. Link to industry growth and job opportunities.

Prioritize where we put our resources in addressing aging infrastructure, reform capital outlay system in state to be more local. The funding amount is often not enough to actually address the situation - needs to be enough to fund an entire project.

#### #3 SPRAWL

Multi-intensity best. Being intentional with outcomes, be more intentional with developing density/densification. Housing affordable, convenient, business retention and government incentives to making downtown more attractive with businesses, etc.

Sprawl is driven by multiple factors: aging neighborhoods, affordability, different lifestyle preferences. Can't be addressed until you look at those issues.  
East Mountains: no incentives for in-fill; lack of focus on commercial housing options, which will be needed as the population ages.  
Young families can't afford to live out there until they have gained equity living somewhere more affordable like Albuquerque. Some people prefer smaller lots - less to maintain.

## PROTOTYPING AKA STRATEGIZING

## ECONOMIC RECOVERY AND RESILIENCY PLAN

STRATEGY + DISCOVERY WORKSHOP, MARCH 2022

#1

Target audience: The unsheltered/homeless.

Need for mental health care to temporarily house the homeless. Tools for those who are seeking employment: (financial and digital literacy, interviewing skills, etc.)

Services for those struggling with addiction and mental health issues.

Not all homeless lack jobs; need to provide services for those fleeing domestic violence, address broader social issues that lead to displacement.

Many homeless are also at-risk of COVID-19. Need for social support, especially in food pantries and shelters. Need for digital literacy and support systems.

Partners: City of Albuquerque, various departments.

#2

#3

### HOMELESSNESS

#### DEFINING THE THREAT/CHALLENGE

- Increase in unsheltered population in Albuquerque
- Spaces and resources are limited - resources can't come fast enough.
- Goal: decrease homeless population by helping them directly, provide them with resources, comfortable spaces during extreme heat and other weather events.
- Lack of available affordable housing is also an issue.
- Visibility of homelessness in downtown Albuquerque has caused businesses to leave, businesses are hesitant to move downtown.
- Lack of restroom facilities for the unsheltered, increase in trash, etc. on the street.
- East Mountains: lack of rental properties and weather. Not enough affordable residences for people who are employed. Presence of unsheltered folks is less visible but not necessarily non-existent. Housing shortage has increased in East Mountains during pandemic.
- Is there currently a plan in place to address homelessness?
- All angles of homelessness: affordable housing, behavioral health, substance abuse, and code enforcement

#### IDEATE

- Economic empowerment tools: hard skill development
- Federal housing vouchers. Issue with local landlords refusing to accept housing vouchers, section 8. Limited inventory of housing that accepts these vouchers. Change law to require landlords to accept these vouchers.
- Broader ecosystem of support:
  - Engage faith-based community and workforce development.
  - More direct line with services.

- Proposed official campgrounds with restrooms, security, cooking facilities, etc.

## STRATEGIES

- Target audience: The unhoused/homeless
- Services for those struggling with addiction and mental health issues
- Multi-generational issues: generations who grew up with struggling parents/guardians don't have the support and resources to break the cycle. Especially prevalent in New Mexico.
- Students rely on food programs at schools
- Multi-generational approach to support systems
- Need for more real estate to temporarily house the homeless
- Tools for those who are seeking employment (financial and digital literacy, interviewing skills, etc.)
- Not all homeless lack jobs: need to provide services for those fleeing domestic violence, address broader social issues that lead to displacement.
- Partners: City of Albuquerque, various departments
- Existing resources:
  - Gateway shelter in old hospital on Gibson (100 beds vs. thousands of people on the street every night).
  - Transitional housing is largely empty because of restrictions on residents.
  - Housing for 50 individuals with fewer restrictions downtown.

## → KEY TAKEAWAYS:

In trying to define the challenge of homelessness in the region, it was clear that narrowing in on a specific goal for this issue is difficult. Is the priority addressing immediate needs or root causes? Is it the visibility of homelessness and its effect on economic development and the general perception of the region? Is it a lack of affordable housing? Lack of behavioral/mental health and/or substance abuse services? Or a lack of services directly targeted at transient and unhoused persons?

Many of the actionable strategies centered around developing a broader ecosystem of support for the homeless and transient. This includes addiction and mental health services, affordable housing options, and economic empowerment tools/services. It was made clear that more information/data/analysis was needed to understand *who* the homeless population is (to figure out what services are needed most) and what the most prevalent causes of homelessness are (to figure out what investments could be made to help address the problem holistically).

## **AGING INFRASTRUCTURE**

### *DEFINING THE THREAT/CHALLENGE*

- Transportation facilities:
  - Tendency to build new facilities rather than repair and replace existing facilities.
  - Existing infrastructure is neglected.
  - Challenge is prioritizing where funding goes.
- Infrastructure that supports neighborhoods - higher quality infrastructure needs to be available to lower income neighborhoods so that they can also be more efficient.
- Where do we place new infrastructure: adding to existing urban areas, connecting to other communities (sprawl issue is relevant here as well).
- Broadband access is an infrastructure issue: related to equity and job opportunities for lower income communities.
- East Mountains: broadband access is also an issue. Small communities don't have funding to maintain roadways, sewer systems, etc. Being unable to maintain these basic systems makes it difficult to attract growth, more advanced infrastructure. Higher costs associated with new infrastructure in rural areas. Expensive to extend pipe, broadband through rocky soil. Smaller communities have similar issues that need to be addressed, need to function as larger communities.

### *STRATEGIES*

- Tangible assets that can drive growth. Invest into job centers throughout region. Link to industry growth and job opportunities.
- Prioritize where we put our resources in addressing aging infrastructure. Reform capital outlay system in state to be need-based. The funding amount is often not enough to actually address the situation - needs to be enough to fund an entire project.

### **→ KEY TAKEAWAYS:**

The group ran out of time before getting to ideas and strategies. However, in defining the problem, it became clear that lower-income neighborhoods, as well as small and rural communities felt most threatened by aging infrastructure without the funds to cover increasingly higher costs of repair and construction since the pandemic.

## **SPRAWL**

### *DEFINING THE THREAT/CHALLENGE*

- East Mountains: Everyone wants a large lot with lots of space, which inherently creates sprawl and makes it more difficult to provide and extend services. Lack of housing can be partially attributed to larger lots. Changing zoning regulations to allow for greater density, multi-family housing would help with this issue.
- Downtown ABQ: density is attractive in urban spaces. People feel more comfortable going out, more venues and businesses are attractive.

## STRATEGIES

- Not inherently bad - being intentional with outcomes. Be more intentional with developing density downtown. Housing affordability conversation, business retention and growth perspective, attention to making downtown more attractive with businesses, etc.
- Sprawl is driven by multiple factors: aging neighborhoods, affordability, different lifestyle preferences. Can't be addressed until you look at those issues.
- East Mountains: no incentives for infill, lack of focus on communal housing options, which will be needed as the population ages.
- Young families can't afford to live out there until they have gained equity living somewhere more affordable like Albuquerque. Some people prefer smaller lots - less to maintain.

### → KEY TAKEAWAYS:

The group ran out of time before getting to think through the problem of sprawl in much depth. However, one theme that arose was the need for providing housing options that realistically responded to shifting demographics in the MRCOG region and the affect this might have on curbing sprawl. For example: a need for communal housing options for aging populations and a need for more affordable (not necessarily single-family) housing options for young professionals and newer families. Actionable goals might center around diversifying the housing stock throughout the MRCOG region and providing more appropriate options for our diverse and shifting demographics.

**Virtual Team 2:**

Facilitator: Sean (HatchForm)

Miro Board: Gabe Raab-Faber (MRWM)

Miro Board Link: [https://miro.com/app/board/uXjVOB5JR1A=?invite\\_link\\_id=82672401080](https://miro.com/app/board/uXjVOB5JR1A=?invite_link_id=82672401080)

Threats/Challenges tasked to problem-solve: **HOUSING, POVERTY, CHANGING CLIMATE**

**DEFINE THREATS/CHALLENGES**

**ECONOMIC RECOVERY AND RESILIENCY PLAN**  
STRATEGY + DISCOVERY WORKSHOP, MARCH 2022

#1 Housing	#2 Poverty	#3 Changing Climate
Lack of inventory	Stagnant wages	Drought/flooding
Affordability	Inflation	Fire
Rise of prices	Quality of education/opportunity	Air quality
Rural financing	Workforce education	Effect on employment
Infrastructure	Healthcare	Heat = Energy consumption
Production of multi-family housing	Community resources/Lack of/mismatched resources	Heat Island/Climate comfort/Livability
Housing options	Addiction	Negative impact on tourism (outdoor activity)
Lack of state/federal representation	Mental Health	Outdated water politics
Aging housing stock	Generational wealth	Wind!
Housing regulation limitations	Lack of development in rural areas	Healthcare capacity limitations- allergies, asthma etc.
Land availability	Lack of jobs	
Attitudes towards multi-family housing	Access to jobs	
Vacant housing	Quality of jobs	
Outside investment	Workforce development	
	Lack of state/federal representation	

MRWM | ESP | HATCHFORM | RB21

**IDEATE**

**ECONOMIC RECOVERY AND RESILIENCY PLAN**  
STRATEGY + DISCOVERY WORKSHOP, MARCH 2022

#1 Housing	#2 Poverty	#3 Changing Climate
Innovation in housing design for lower unit cost	Rebuilt healthcare system	Rebuilt healthcare system
Sustainable funding	Improved public transit	More site and building design guidelines that focus on climate
Tiny - medium houses	UBC	Capitalize on research opportunities
Zoning flexibility/perm issiveness of accessory dwelling units	Universal healthcare	Connect HS students to skills bootcamps and trade skills programs
Statewide authorization of incremental infill		Develop mentorships for certain demographic groups
Matching commercial and residential for mixed use development		Capitalize on solar and wind energy
Protection from outside investment		Plant more trees
Funding for mixed use		Become a center for indigenous ideas to work with natural climate in building/living
Intentional corridors of densification		
Diversify available funding for individual/small businesses to build		
Rural housing development funding		
More cross generation housing		

## PROTOTYPING AKA STRATEGIZING

## ECONOMIC RECOVERY AND RESILIENCY PLAN

STRATEGY + DISCOVERY WORKSHOP, MARCH 2022



### HOUSING

#### DEFINING THE THREAT/CHALLENGE

- Housing availability
  - Lack of inventory
  - Lack of housing options
  - Land availability
  - Vacant housing
  - Lack of production of multi-family housing
  - Aging housing stock
- Structural, societal
  - Housing regulation limitations
  - Outside investment
  - Rise of prices
  - Lack of infrastructure
  - Lack of state/federal representation
  - Need for rural financing
  - Attitudes toward multi-family housing

#### IDEATION

- Design, production
  - Innovation in housing for lower unit cost
  - Tiny-medium houses
  - More cross-generation housing

- Funding, regulations
  - Sustainable funding
  - Zoning flexibility/permmissiveness of ADUs
  - Statewide authorization of incremental infill
  - Matching commercial and residential for mixed use development
  - Funding for mixed use
  - Protection from outside investment
  - Intentional corridors of densification
  - Diversify available funding for individuals/small businesses to build
  - Rural housing development funding

## *STRATEGIES*

- Incentivize small business home building: state level incentive for affordable housing as a ration to other housing – cost offset
- A fast track for development for local developers
- Land trusts could preserve land for local developers
- Incentives for energy-efficient home development
- State/Federal incentives and tax breaks for affordable and multi-family housing

## **→ KEY TAKEAWAYS:**

In defining the threat/challenge of housing in the MRCOG region, the group discussion fell into two broad categories: 1) housing stock is not meeting the needs of the MRCOG population; and 2) housing policies and financing do not allow for enough flexibility and local development.

Actionable strategies include: encouragement of innovative, multi-family or missing-middle housing development; incentives and financing structures that prioritize local developers; and zoning/regulation changes or incentives that foster density and mixed-use development.

## **POVERTY**

### *DEFINING THE THREAT/CHALLENGE*

- Economic
  - Stagnant wages
  - Inflation
  - Generational wealth
  - Lack of development in rural areas
  - Lack of jobs, access to jobs
  - Quality of jobs
- Socioeconomic, Governmental, Systemic
  - Quality of education/opportunity
  - Workforce education, development
  - Healthcare
  - Lack of or mismatched community resources
  - Addiction
  - Mental health

- Lack of state/federal representation

### *IDEATION*

- Rebuilt healthcare system
- Improved public transit
- Universal Basic Income
- Universal healthcare
- Connect HS students to skills bootcamps and trade skills programs
- Develop mentorships for certain demographic groups

### *STRATEGIES*

- N/A not enough time

### **→ KEY TAKEAWAYS:**

The group ran out of time before getting to think through the very broad challenge of poverty in much depth. In trying to define the challenge, group discussion fell into two larger categories: 1) economic causes of poverty in the region (from lack of quality jobs to inflation) and 2) socioeconomic or systemic root causes of poverty, such as health/mental health/addiction issues or lack of workforce education opportunities.

## **CHANGING CLIMATE**

### *DEFINING THE THREAT/CHALLENGE*

- Drought/flooding
- Fire
- Air quality
- Effect on employment
- Energy consumption (from heat)
- Wind
- Outdated water politics
- Negative impact on tourism (outdoor activity)
- Healthcare capacity limitations – allergies, asthma, etc

### *IDEATION*

- Rebuilt healthcare system
- Plant more trees
- More site and building design guidelines that focus on climate
- Capitalize on research opportunities
- Become a center for indigenous ideas to work with natural climate building/living
- Capitalize on solar and wind energy

## STRATEGIES

- Incentives for energy efficient home development

### → KEY TAKEAWAYS:

The group ran out of time before getting to think through the challenge of a changing climate in much depth. One of the unique ideas proposed – and very much appropriate to the MRCOG region – was that of becoming a center for indigenous ideas for working with the natural climate (from buildings to full urban living systems). Another proposal – and recurring theme in stakeholder outreach around resiliency – is to capitalize on solar and wind energy throughout the MRCOG region.



# ECONOMIC RECOVERY & RESILIENCY PLAN

for Sandoval, Bernalillo, Valencia, Tarrant, & Southern Santa Fe Counties

PUBLIC MEETINGS, JUNE 2022



## AGENDA

1. MRCOG & Team Introductions
2. Project Goals + Anticipated Outcomes
3. Meeting Goals
4. Cluster Areas & Sandoval Cluster Profile
5. Initial Findings
6. Identifying Local Priorities
7. Next Steps

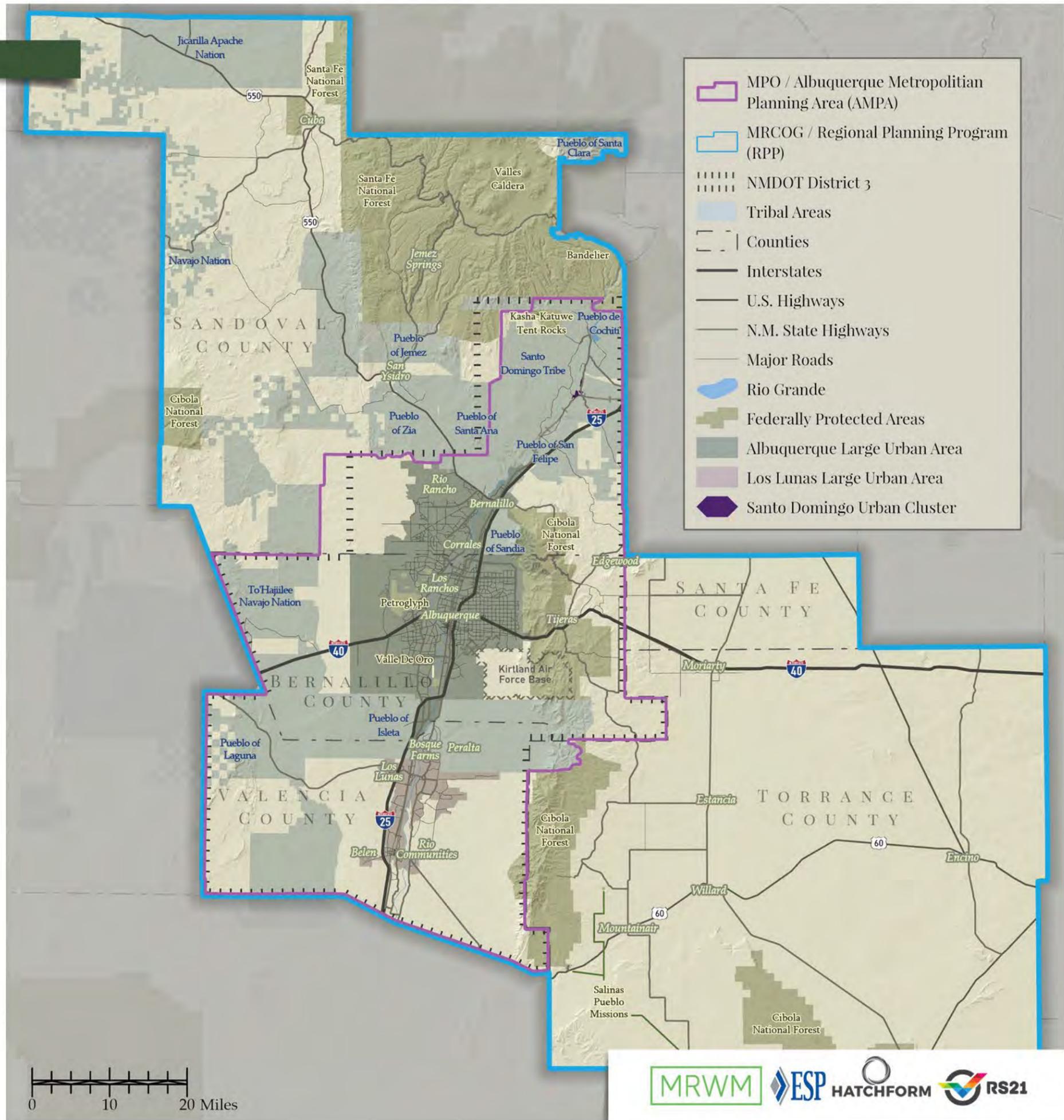




**1. The Mid-Region Council of Governments:**

- a. *Provides technical assistance to our member agencies through transportation planning, land use planning, and Economic Development,*
- b. *Helps our region plan responsibly for the future, and*
- c. *Provides a forum for groups and individual communities to meet and address regional issues.*

**2. By working together as a region, we're able to identify and implement short and long term policy decisions that are critical to a healthy community and prosperous New Mexico.**



# TEAM INTRODUCTION



**KATRINA ARNDT, AICP,**  
Associated Planner  
Project Manager



**Mario Nuno-Whelan**  
Landscape Designer  
Outreach

- Manages day-to-day project/client
- Prepares work effort and progress reports
- Responsible for planning related elements for the Economic Recovery and Resiliency Plan
- Responsible for outreach
- Develops Implementation Strategies



**NATHAN SLAUGHTER,**  
AICP, CFM  
Department Manager – Hazard  
Mitigation  
Hazard Mitigation and Resilience

- Responsible for hazard and resiliency related elements for the Economic Recovery and Resiliency Plan
- Identifying of natural and human made risks
- Development of Implementation Strategies



**SEAN O'SHEA**  
Economic Development

- Responsible for economic related elements for the Economic Recovery and Resiliency Plan
- Identifies economic risks
- Develops Implementation Strategies



**ANNEMARIE HENTON**  
Director of State + Local Services  
Driven Resiliency Strategies

- Leading the Strategy and Discovery workshop
- Development of Implementation Strategies



1. Creation of an ***Economic Recovery and Resiliency Plan***
2. The plan will ***explore events and disasters that cause disruption*** in the economy in the Mid-Region.
3. It will ***address how events, including the COVID-19 pandemic***, expose and exacerbate social and economic weaknesses.



## PROJECT GOALS + ANTICIPATED OUTCOMES

1. The plan will be an addendum to the Mid-Region of New Mexico **Comprehensive Economic Development Strategy** (CEDS).
2. The project is **funded through the Economic Development Administration** (EDA) as part of the CARES Act to provide planning and technical assistance in response to the COVID-19 Pandemic.
3. The **goal is to create economic and social resiliencies** and empower local communities to withstand future threats.
4. The plan **will identify actionable goals, strategies**, and a general list of **potential project priorities** for greater resilience.





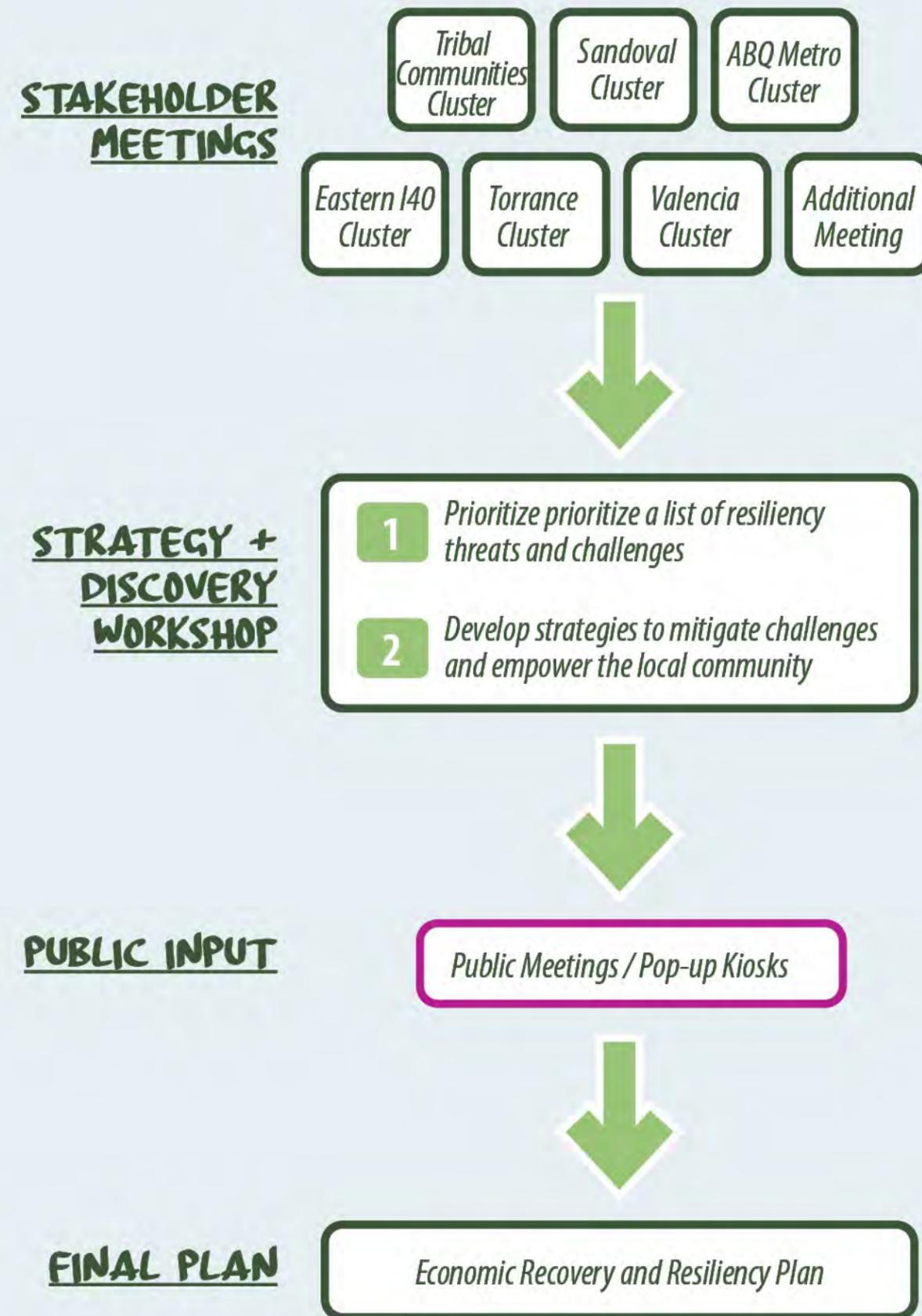
Year	Recipient	EDA Assistance	Project
2010	Santo Domingo Pueblo	\$1,000,000	Revitalizing the Domingo Trading Post
2011	Nat'l Dance Institute of New Mexico and Bernalillo County	\$1,500,000	Hiland Theatre Economic Revitalization
2011	NM Community Capital	\$750,000	Entrepreneurial Training to Tribal Communities
2012	Keshet	\$1,000,000	Keshet Ideas and Innovation Center
2013	UNM/STC	\$1,500,000	Innovate ABQ
2014	Santo Domingo Pueblo	\$500,000	Finalize the Domingo Trading Post
2014	ACCION	\$270,000	Presto Loan program
2016	First Choice Community Healthcare	\$1,000,000	Workforce Training Center at South Valley Health Commons
2017	Innovate ABQ	\$1,000,000	Public/private bioscience laboratory
2018	Partnership for Community Action	\$1,000,000	Manufacturing facility & Social Enterprise Center
2018	Village of Los Lunas	\$1,300,000	Water utility extension for rail-served industrial development
2018	University of New Mexico	\$564,250	5-Yr. University Center Grant to extend the Innovation Academy to the branch campuses
2018	WESST	\$250,000	Program extension funds for rural New Mexico
2018	New Mexico Angels	\$300,000	Access to Capital and Seed Fund Expansion
2019	Indian Pueblo Cultural Center	\$1,000,000	Indian Pueblo Opportunity Center
2019	Central New Mexico Community College	\$295,375	ABQid Seed Fund

EDA PROJECTS 2010-2019



## MEETING GOALS

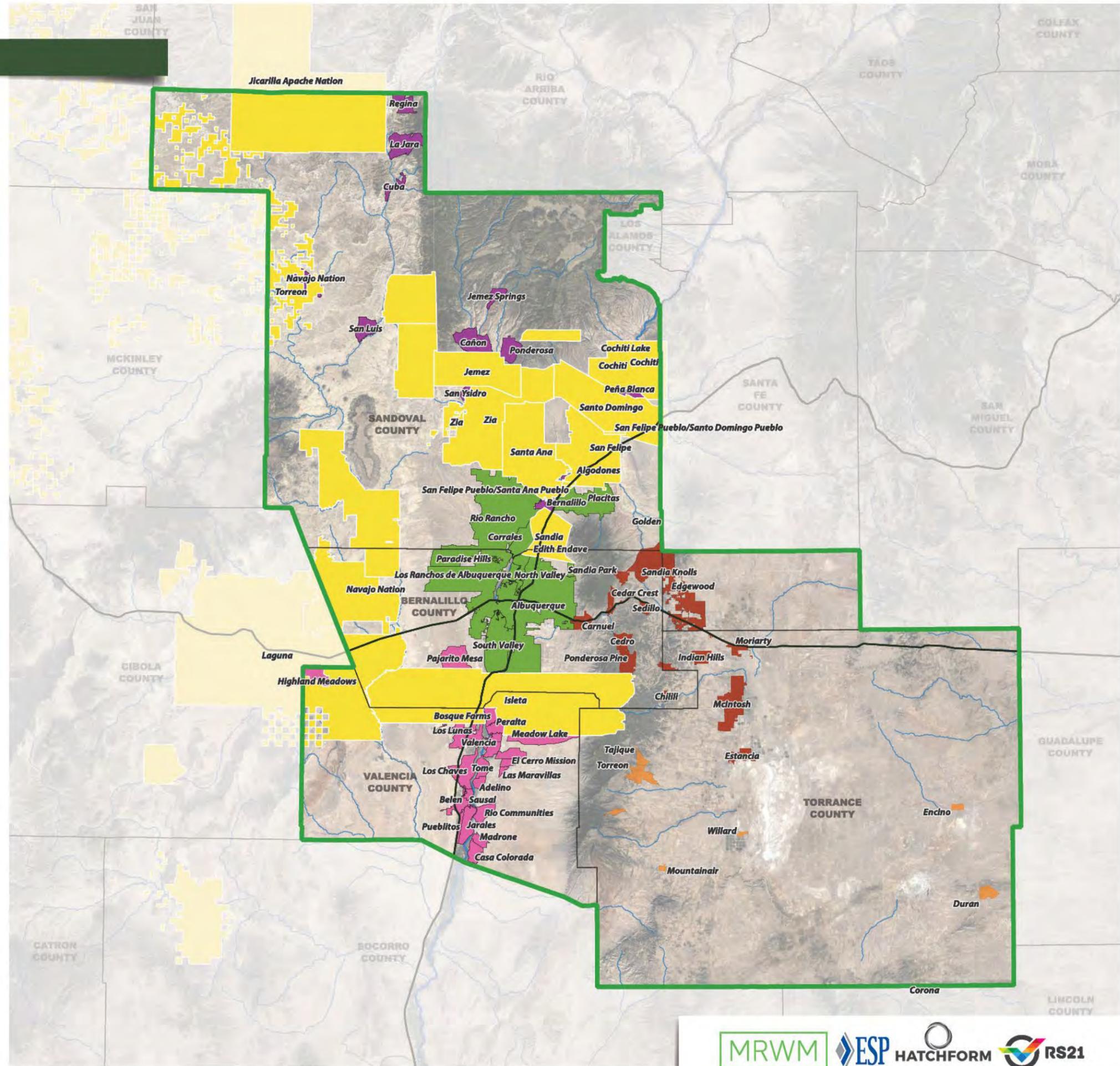
1. Inform about the project and process to date
2. Solicit input on threats/challenges
3. Prioritize threats/challenges



# CLUSTER AREAS

## LEGEND

- Tribal Communities Cluster
- Torrance Cluster
- East I-40 Cluster
- Valencia Cluster
- Sandoval Cluster
- ABQ Metro Cluster





# Initial Findings

# TRIBAL COMMUNITIES CLUSTER CHALLENGES + IDENTIFIED THREATS\*

- Drought + access to water
- Broadband + digital infrastructure
- Access to local businesses
- Diversification
- COVID impacts - loss of culture
- Housing
- Poverty & unemployment
- Aging infrastructure (Mateo Overpass)
- Staffing

## OPPORTUNITIES\*

- Hemp Summit for Indigenous Entrepreneurs
- Grant Capacity Building Webinar
- Green energy, community energy coops
- Infrastructure for farmers to get goods to the market
- Virtual platform for Arts and Culture



\* Lists are not comprehensive, but a selected summary of the discussions during the stakeholder meetings

FIGURE 1.  
POLLING RESULTS FROM STAKEHOLDER MEETINGS

	TRIBAL COMMUNITIES	SANDOVAL	VALENCIA	TORRANCE	I-40	ABQ METRO
Drought/Access to Water	✓	✓	✓	✓	✓	✓
Heat Island Effect						✓
Demographic Changes / Aging Population		✓	✓			
Transit						✓
Wildfire				✓	✓	
Access/Appropriate Health Services			✓			✓
Economic Instability					✓	
Crime/Public Safety		✓	✓	✓	✓	✓
Broadband	✓					
Diversification	✓					
Off-Jurisdictional Site	✓					
Invasive Species					✓	
Operational Capacity	✓		✓			✓
Access to Resources					✓	
Lack of Workforce				✓		
Lack of Leadership					✓	✓
Lack of Public Participation						✓
Sprawl					✓	✓
Access to Funding	✓	✓				
Aging Infrastructure	✓		✓	✓	✓	
Visual Deterioration			✓			
Lack of Available Building Space			✓			



## Initial Findings - Hazards

WILDFIRE

- According to the US Forest Service, homes in NM, on average, are at a greater risk of wildfire damage than 78% of other states
- The largest wildfires in the states history occurred this year: Hermits Peak/Calf Canyon Fire (2022) burning over 300,000 acres, and Black Fire (2022) burning over 298,000 acres
- More than 1.4 million people in NM, or 70 percent of the state's population, are living in areas of elevated risk of wildfire

Potential Strategies

- + Develop strategies to create buffer zones of wildland and urban areas in fire prone areas
- + Identify vulnerable populations (elderly, disadvantaged, non-English speaking, etc) to determine where the highest risk of wildfire and those populations overlaps using GIS data



Smoke from the McBride Fire is seen in video from Laura Reynolds in Alto, New Mexico.

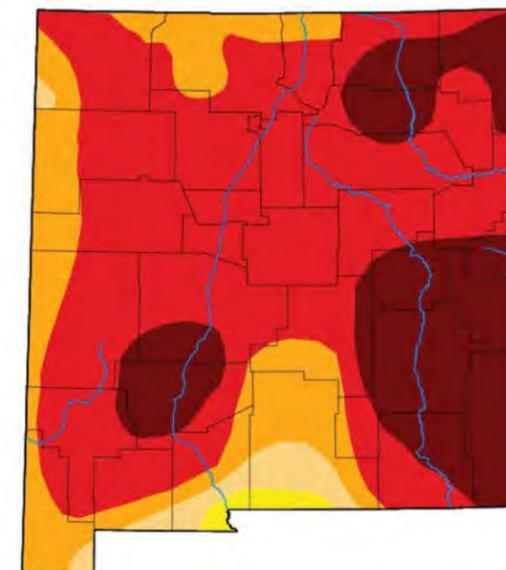
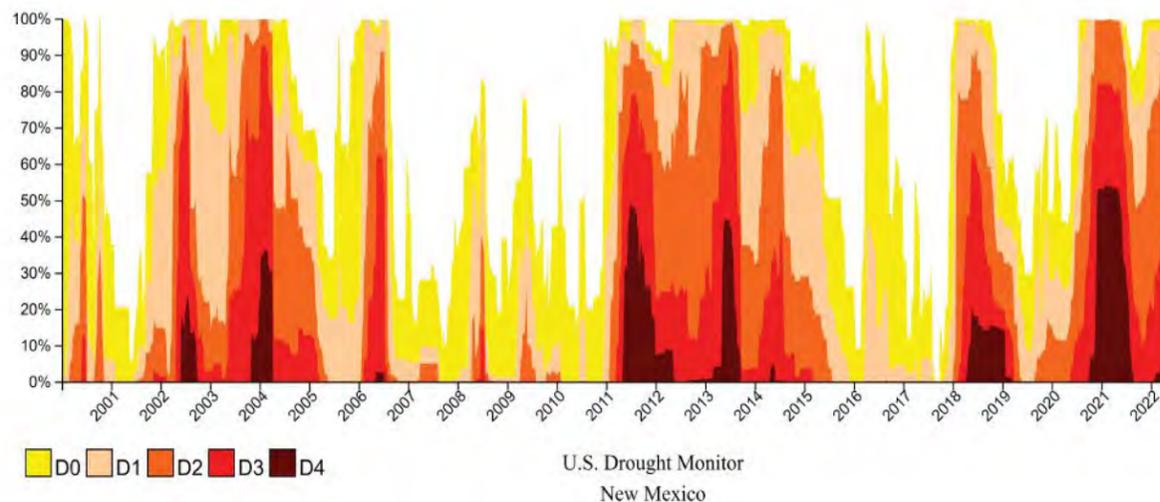


**DROUGHT / WATER**

- Longest duration of drought in New Mexico lasted 329 weeks (May 2001 – August 2007)
- Irrigated agriculture accounts for more than 78% of water usage
- According to the EPA, 87% of New Mexico’s public water supply comes from ground water and 1/3 of residential water use is devoted to landscape irrigation

**Potential Strategies**

- + Implement a low-flow program which offers rebates on WaterSense labeled showerheads, toilets, and flushing urinals for residents
- + Host workshops to provide information to residents and businesses on how to reduce their water usage
- + Establish a conservation ordinance and conservation pricing to reduce water consumption
- + Identify a list of appropriate plant species to be grown that need less water



Map released: Thurs. May 12, 2022

Data valid: May 10, 2022 at 8 a.m. EDT

**Intensity**

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

**Authors**

United States and Puerto Rico Author(s):  
David Simeral, Western Regional Climate Center  
Pacific Islands and Virgin Islands Author(s):  
Curtis Riganti, National Drought Mitigation Center

The Drought Monitor focuses on broad-scale conditions.

Local conditions summary for



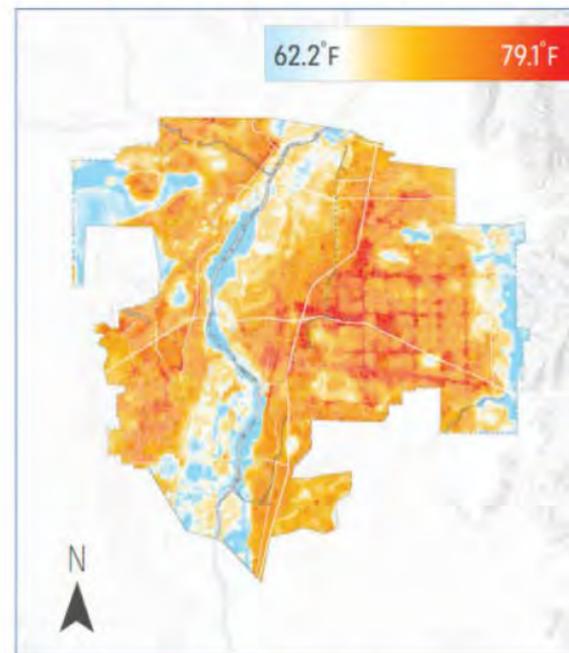
**EXTREME HEAT**

- New Mexico averages 20 days a year classified as dangerous or extremely dangerous
- Typical number of **heatwave days in New Mexico is projected to increase from slightly less than 15 to more than 50 days a year**
- Albuquerque, NM is one of the top ten (10) cities with the most intense summer urban heat islands (average daily urban-rural temperature difference) over the past ten years at 5.9°F

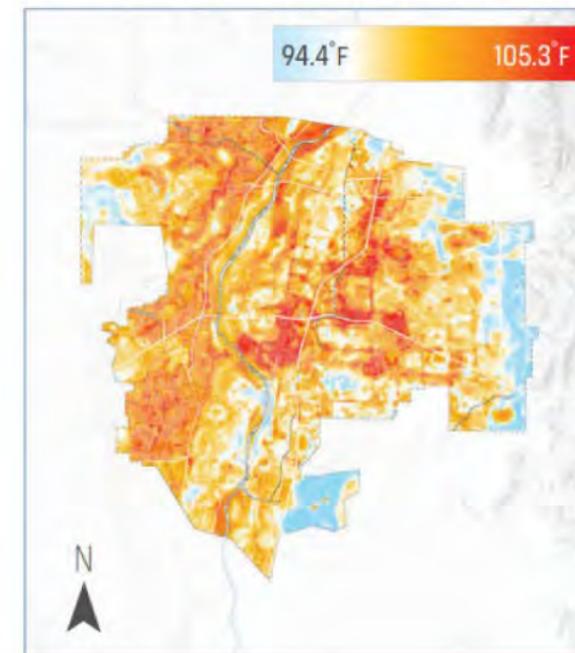
**Potential Strategies**

- + Employers to develop a plan to prevent heat-related illness (include hydration, acclimatization, and schedules that alternate work with rest)
- + Identify most at risk communities and create cooling centers serve communities that are most at risk from heat exhaustion using GIS data

Morning Area-Wide Temperature (6 - 7 am)



Afternoon Area-Wide Temperature (3 - 4 pm)



Sources: City of Albuquerque "Heat Watch Report" ([https://www.cabq.gov/sustainability/documents/heat-watch-albuquerque\\_report\\_111921.pdf](https://www.cabq.gov/sustainability/documents/heat-watch-albuquerque_report_111921.pdf))



## INVASIVE SPECIES

- *The direct threats of invasive species include preying on native species, outcompeting native species for food or other resources, causing or carrying disease, and preventing native species from reproducing or killing a native species' young*
- *Invasive species impose enormous costs to agriculture, forestry, fisheries, and other human enterprises, as well as to human health*

## Potential Strategies

- + *Create a database for cataloging invasive species*
- + *Establish a system to coordinate invasive species management efforts between state, federal, tribal, regional, and local agencies and private organizations*
- + *Develop a system for monitoring and documenting the presence and distribution of invasive species in the state*



Sources: Saltcedar (*tamarix ramosissima*)



Sources: Musk thistle (*carduus nutans L.*)



# Initial Findings - Economic



**UNEMPLOYMENT / LACK OF WORKFORCE**

- In March, the state of **New Mexico had a 5.3% unemployment rate, and the city of Albuquerque had a 5% unemployment rate** - both of which are higher than the national rate of 3.6%

**Potential Strategies**

- + *Provide training, incentives, and startup support to launch businesses that supports workforce participation: childcare, eldercare, disability support, etc.*
- + *Link transportation options to areas of high employment density, in rural areas, identify strategies to increase mobility*
- + *Work with high schools, trade unions, and employers to identify skills required for the workplace and develop programs to develop those skills*
- + *Expand remote/distributed work capabilities and identify areas where fully remote workers can integrate into the workflow*
- + *Develop a program to connect employees with appropriate workforce housing options*



## STABILIZATION &amp; EXPANSION

- *Small and medium-sized businesses were the most impacted by the pandemic and are experiencing some of the most severe effects of supply chain disruptions, inflation, and labor market corrections. Ensuring that these businesses are able to stabilize operations (have enough cash flow to maintain) and expand (have access to capital to grow and/or open new locations/lines of business) is extremely important to the overall health of the economy*

## Potential Strategies

- + *Maintain small Mainstreet businesses by continuing micro-grant programs for assistance repairing machinery, marketing, websites, etc.*
- + *Support business retention & expansion by developing a survey to periodically inform about industry trends, needs, and opportunities*
- + *Provide a central software and/or planning assistance for a database to give access to information about programs business retention & expansion*
- + *Provide grants and technical assistance to communities economic development organizations and other community organizations who want to launch economic gardening initiatives*



## DIVERSIFICATION

- *During the pandemic, areas that relied heavily on retail, gaming, and some aspects of tourism were particularly hard hit.*
- *In New Mexico there also is a heavy dependence on government, healthcare, and big box retail for employment.*

## Potential Strategies

- + *Build regional working groups to disseminate information and resource to provide insights on industry needs*
- + *Support new business sectors by providing resources and technical assistance*
- + *Support regional approach to entrepreneurship (regional accelerators, regional incubation programs, regional boot camps, and idea stage development & validation programs)*



# SELECT THE THREAT/CHALLENGE THAT SHOULD BE PRIORITIZED

## PRIORITIES

### NATURAL SYSTEMS

Drought / WATER (36)

Flood/Flash Floods

Wildfire (19)

Invasive Species (7)

Biodiversity (4)

Erosion (7)

Extreme Weather Events (7)

### SOCIAL & PUBLIC HEALTH

Crime/Safety (10)

Demographic Change (3)

Poverty (29)

Infectious Disease (1)

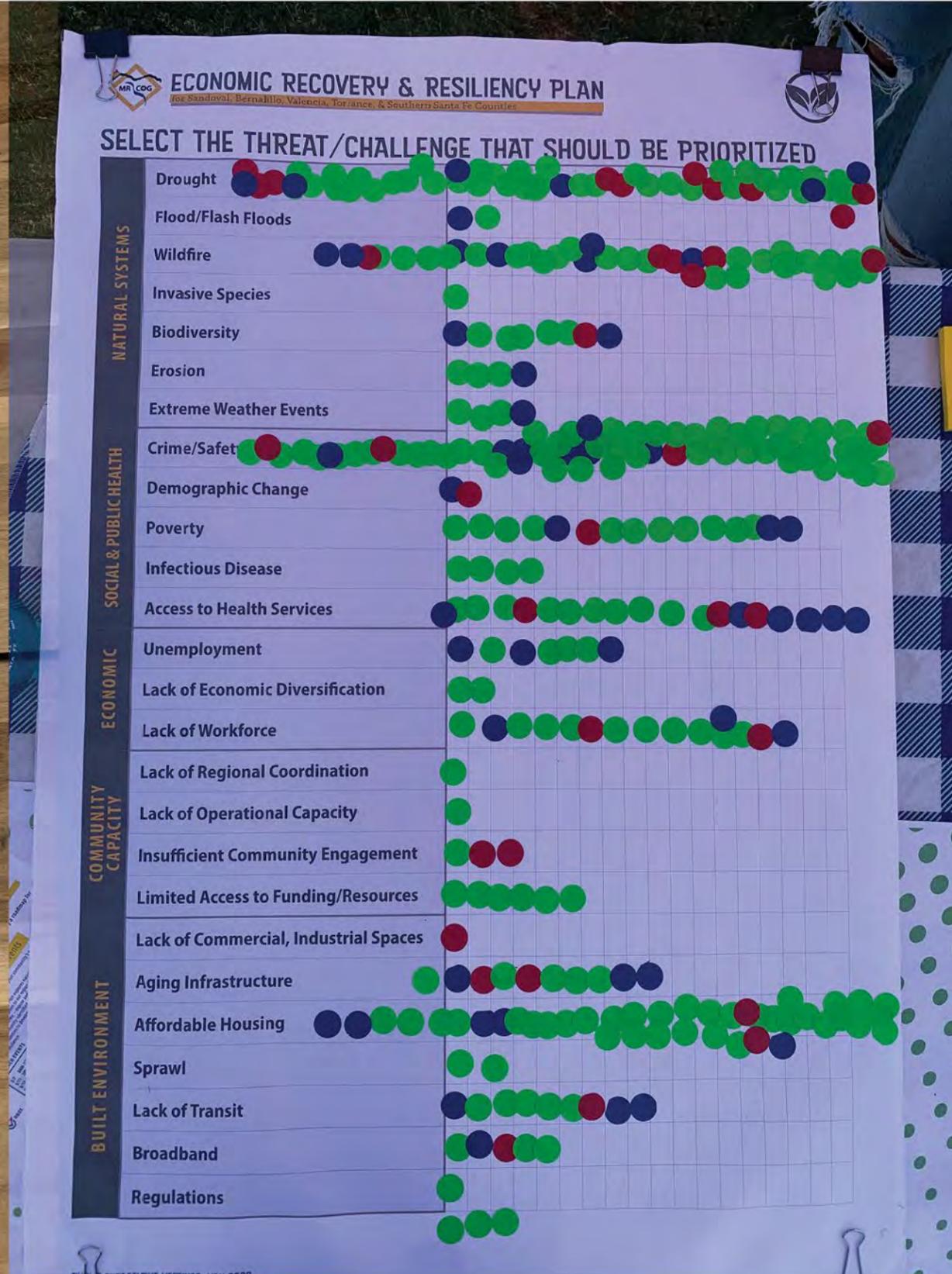
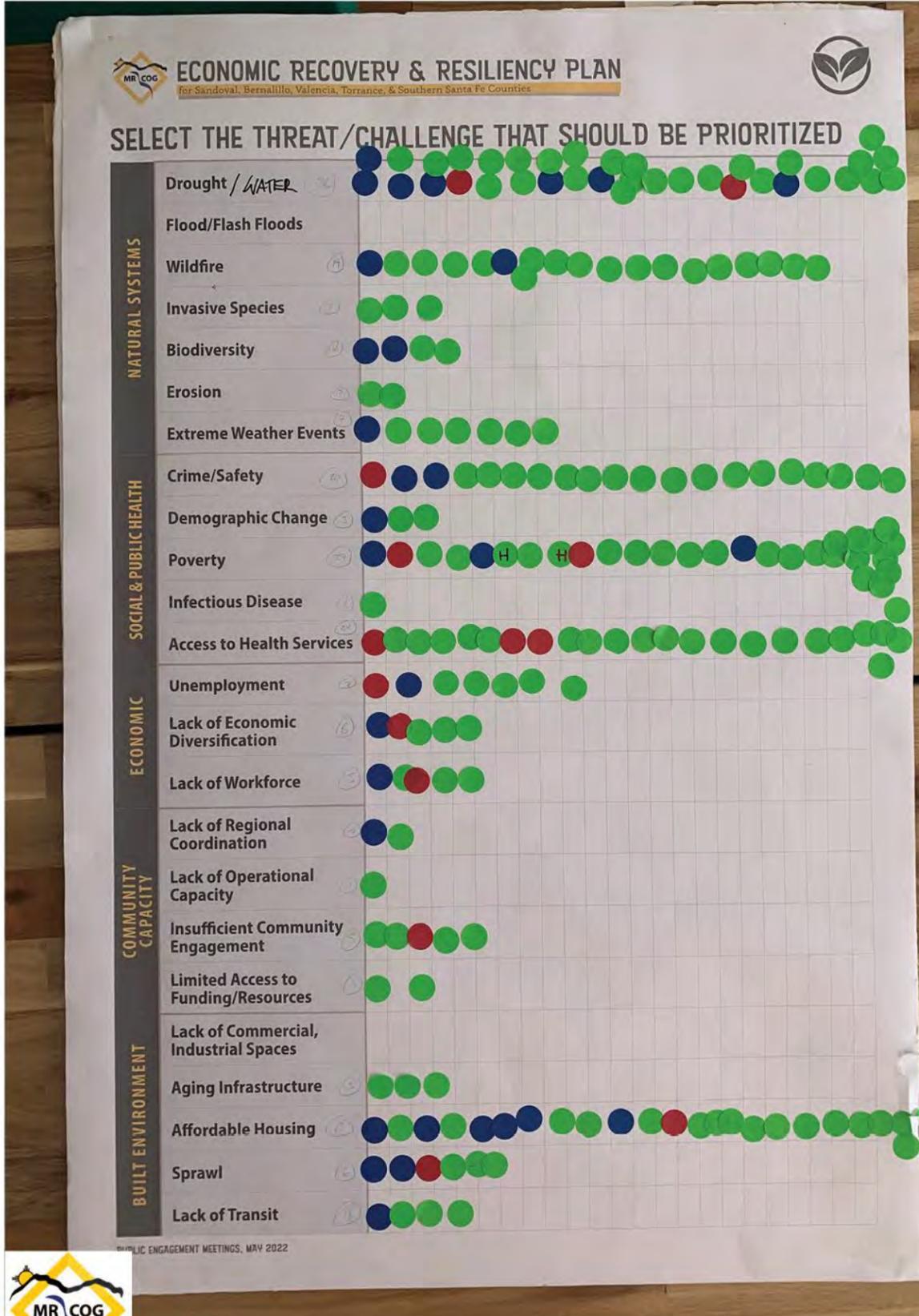
Access to Health Services (30)

Unemployment (9)



# What are your priorities?





Join by Web

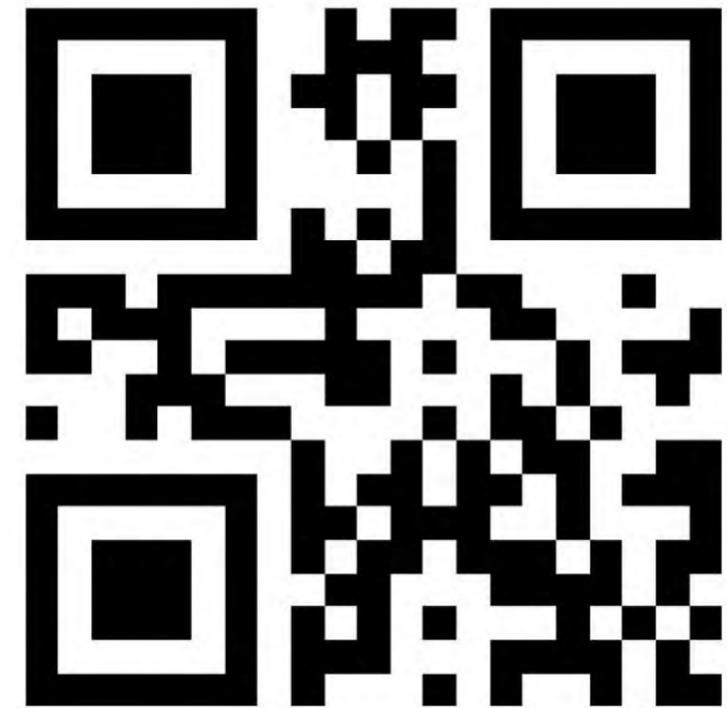


- 1 Open an internet **browser**
- 2 Go to ***Pollev.com/mrwmla254***
- 3 Insert ***your name***
- 4 Respond to activities

Join by Text



- 1 Text to the number **22333**
- 2 Text ***mrwmla254***
- 3 Respond to activities by text in A, B, C etc. or writing a response



When poll is active, respond at [pollev.com/mrwmla254](https://pollev.com/mrwmla254)

Text **MRWMLA254** to **22333** once to join

# Rank Resiliency Threats / Challenges

- Lack of Economic Diversification
- Lack of Workforce/Unemployment
- Lack of Regional Coordination
- Insufficient Community Engagement
- Limited Access to Funding/Resources
- Lack of Operational Capacity
- Crime/Safety
- Demographic Changes
- Poverty
- Infectious Disease
- Lack of Adequate Commercial, Industrial Spaces
- Lack of Affordable Housing
- Lack of Transit
- Sprawl
- Access to Health services
- Aging infrastructure
- Lack of Regulations
- Lack of Broadband/Digital Infrastructure
- Drought/Access to Water
- Flood/Flash Floods
- Wildfire
- Invasive Species/Biodiversity
- Extreme Weather Events
- Erosion

# THANK YOU + SEE YOU SOON

**Bianca Borg**

*Bborg@mrcog-nm.gov*

**Payton Showalter**

*Pshowalter@mrcog-nm.gov*

**Katrina Arndt**

*karndt@mrwmla.com*



*Fill out our  
survey*



# RESILIENCE SCORE CARD

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**ECONOMIC RECOVERY & RESILIENCY PLAN**  
FOR SANDOVAL, BERNALILLO, VALENCIA, TORRANCE, & SOUTHERN SANTA FE COUNTIES

# Resilience Scorecard



# ECONOMIC RECOVERY & RESILIENCY PLAN

for Sandoval, Bernalillo, Valencia, Tarrant, & Southern Santa Fe Counties

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# ASSESSING RESILIENCE

***The Disaster Resilience Scorecard is a tool for Mid-Region communities to evaluate themselves and monitor and review progress in the implementation of the resiliency strategies identified in this plan.***

Resilience as defined by the Economic Development Administration includes the following:

- the ability to recover quickly from a shock,
- the ability to withstand a shock,
- and the ability to avoid the shock altogether

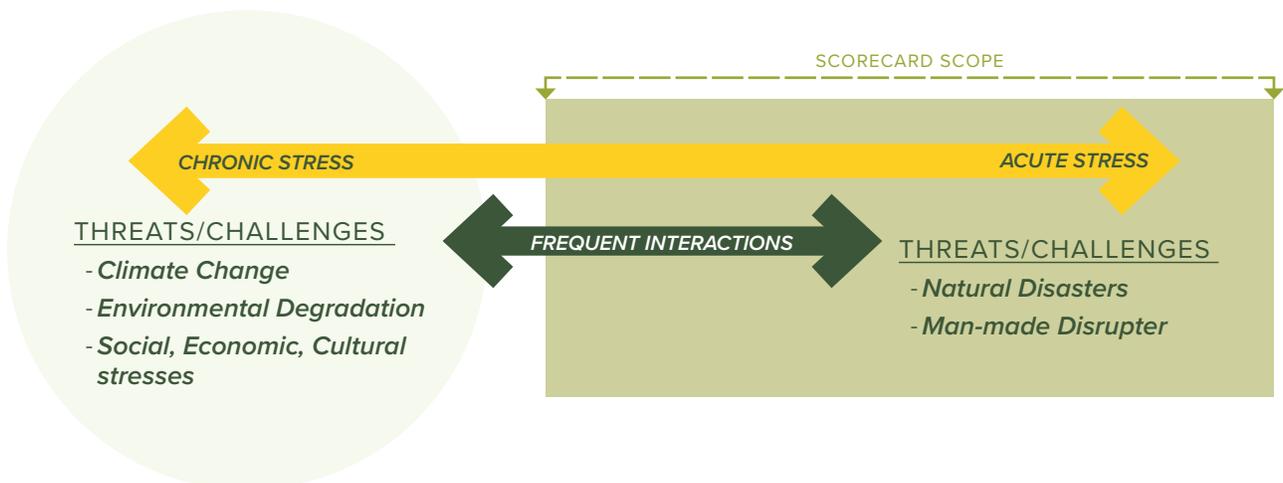
As part of the threats and challenges we identified in this plan, there are 1) **acute shocks**: natural and man-made disrupters such as floods, earthquakes, hurricanes, wildfires, and power outages; and 2) **chronic stresses**: disrupters occurring over longer time scales, such as groundwater depletion, droughts, deforestation, or socio-economic issues like homelessness, unemployment, and poverty.

This plan and scorecard aim to help communities understand the risks the Mid-Region faces and offer strategies to mitigate those risks. It aims to better prepare communities to respond so that immediate and longer-term loss of life or damage to livelihoods, property, infrastructure, economic activity and the environment is minimized.

However, it is imperative for communities to participate and collaborate with their neighbors and the appropriate agencies to have the greatest impact and most efficient process to address disaster risk reduction and resilience.

This Resilience Scorecard is based on the United Nations Office for Disaster Risk Reduction's (UNDRR) preliminary resilience scorecard assessment. It has been slightly adjusted to fit local needs, the rural and urban nature of the Mid-Region, and other unique requirements of the region.

**FIGURE 2. RESILIENCE SCORECARD CONTEXT**



The Resilience Scorecard is structured around “Ten Sections for Making Communities Resilient”:

1. Organize for disaster resilience
2. Identify, understand and use current and future risk scenarios
3. Strengthen financial capability for resilience
4. Pursue resilient development and design
5. Safeguard natural buffers to enhance the protective functions offered by natural capital
6. Strengthen institutional community for resilience
7. Understand and strengthen societal community for resilience
8. Increase infrastructure resilience
9. Ensure effective disaster response
10. Expedite recovery and build back better

## HOW TO USE THE SCORECARD

The scorecard includes questions associated with each of the “Ten Sections for Making Communities Resilient.” When completing the scorecard, the community should identify individuals from different departments, industries, and stakeholder groups.

As some of the questions will require discovery, they might take time to be completed.

All questions need to be answered promptly and scored accordingly. Think, what could be done better? These points, if recorded, may be further developed into actions or projects in your community resilience strategy / action plan. In completing the preliminary assessment, the conversation is often as important as the score.

The original UNDRR scorecard can be assessed through the following link: <https://mcr2030.undrr.org/disaster-resilience-scorecard-cities>

## RESILIENCE READINESS LEVEL

For each question, there are three (3) points a community can score. Once all questions are scored, the points are added up for a total score.

The aim is to get communities to work towards a **Green Resilience Readiness Level**, 95-141 points. There are a total of 141 points available.

A low score should not discourage a community, but encourage action. Most communities will score very low, but the goal should be to work towards a higher score over time.

FIGURE 1. RESILIENCE SCORECARD READINESS LEVEL

Score/Point	Community Resilience Readiness Level	Level
0-47	Red	
48-94	Yellow	
95-141	Green	

### RESILIENCE SCORECARD

#### **01 - ORGANIZE FOR RESILIENCE**

***Put in place task force or agencies responsible for overseeing the implementation of resiliency strategies and identify the necessary processes to understand and act on reducing disaster risks.***

Create an organizational structure to house and lead resiliency efforts. In small communities, this could be a collaboration with neighbors or a Mid-Region wide Resilience Task Force that oversees the inventory, assessment, implementation, and monitoring of resilience strategies.

1. *Engaging and building alliances with all relevant stakeholder groups including government at all levels (e.g. national, state, community, county, parish or other subdivision, neighboring communities or countries as applicable), civil society and community organizations and the private sector.*
2. *Engaging and learning from other community networks and initiatives (e.g. community to*

*community learning programs, climate change, resilience initiatives, etc.)*

3. *Establish necessary strategies, acts, laws, and codes or integrate resilience qualities into existing policies aimed at preventing the creation of risk and reduction of existing risk.*
4. *Creating policies to gather and manage data for sharing amongst all stakeholders and citizens.*
5. *Putting in place reporting mechanisms for all citizens that capture key information about resilience and promote transparency, accountability and improved data capture over time (e.g. consider use of tools like this Scorecard) and enable information sharing with other organizations and with the public.*

**FIGURE 3. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Plan making</b>	<p><b>Q1</b> Does the community have comprehensive plan (or other relevant plan)?</p> <p><b>Q2</b> Does the comprehensive plan (or other relevant plan) include resilience planning?</p> <p>Plan could include an infrastructure plan, environmental, sustainability, or stand-alone disaster risk reduction plan / policy / strategy.</p>	<p><b>0</b> No plans / compliance</p> <p><b>1</b> Plans includes some reference of resilience, covering some of the “Ten Sections for Making Communities Resilient”</p> <p><b>2</b> Stand-alone plan that includes resilience challenges and strategies and complies with the “Ten Sections for Making Communities Resilient”</p> <p><b>3</b> Fully integrated plan with comprehensive coverage of the “Ten Sections for Making Communities Resilient”</p>	<p>To comply with this section a relevant local strategy should include:</p> <ul style="list-style-type: none"> <li>- And implementation pathway to address disrupters including time-frames</li> <li>- Goals and measures aiming at preventing the creation of risk</li> <li>- Goals and measures aiming at the reduction of existing risk</li> <li>- Goals and measures aiming at the strengthening of economic, social, health and environmental resilience</li> </ul>
<b>Organization, coordination and participation</b>	<p><b>Q3</b> Has the community established a task force/ identified agencies to facilitate the implementation of resilience strategies, and engage in pre-event, event response and post disaster response?</p> <p><b>Q4</b> Do the task force/ agencies have recourses to do their job?</p>	<p><b>0</b> No task force established or agencies identified. No resources available</p> <p><b>1</b> Task force has been established or agencies identified but they lack resources and authority.</p> <p><b>2</b> Task force has been established or agencies identified and resources are available, but there is lack of leadership, coordination, and action.</p> <p><b>3</b> Task force has been established or agencies identified. They have proper resources and the authority to act.</p>	<p>Think about this for pre-event, event response and post disaster response. Are roles and responsibilities clearly identified</p> <p>Does member of the task force/agency have a clear and documented role and has it agreed to this role?</p> <p>Are funding allocations clearly established?</p>
<b>Integration</b>	<p><b>Q5</b> Is resilience properly integrated within key functions of the community? (e.g., planning, sustainability, community engagement, emergency management, code compliance, infrastructure management, communications, etc.)</p>	<p><b>0</b> Not applied.</p> <p><b>1</b> Applies occasionally.</p> <p><b>2</b> No formal process, but resilience benefits are generally understood to be “helpful” to a proposal, in most areas.</p> <p><b>3</b> Resilience is integrated into the decision-making process(es), and are applied to all policy and budget proposals in all relevant areas.</p>	<p>Is resilience considered routinely as part of “day-to-day” decision making and budgeting, as opposed to being a separate issue disconnected with day-to-day government activity?</p>

**ASSESSING RESILIENCE**

**02 - IDENTIFY, UNDERSTAND AND USE CURRENT AND FUTURE RISK SCENARIOS**

*Communities should identify and understand their risk scenarios, and use this knowledge to inform decision making.*

The community should understand what type of threats and challenges create the most vulnerability. A scenario should be developed that identifies the “most probable” and “most severe” (worst-case) scenarios, paying particular attention to the following:

- How hazards might change over time, given the impact of factors such as urbanization and climate change.
- How multiple hazards might combine, and how repeated small scale disaster events (if there is a relevant risk of these) might accumulate in their impact over time.
- Geographic areas exposed and territorial impact.
- Exposed vulnerable populations, housing, and community services.

- Exposed Economic assets and activities.
- Exposed critical infrastructure, the consequent risk of cascading failures from one asset system to another (for example where loss of power prevents water being pumped or weakens the hospital system).
- Timescales over which impacts occur and responses are required.
- Creation and publication of exposure maps detailing the above.

Scenarios should be:

- Used to aid current and future investment decisions.
- Based public outreach seeking input from a full range of stakeholders.
- Regularly updated.
- Widely communicated and used for decision-making purposes, and for updating of response and recovery plans.

Note that actions to address the disrupters in each scenario are covered in other sections of the Scorecard.

**FIGURE 4. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Hazard assessment</b>	<p><b>Q6</b> Does the community have knowledge of the key hazards that the community faces, and their likelihood of occurrence?</p>	<p><b>0</b> Hazards are not well understood.</p> <p><b>1</b> Data exists on most of the main hazards.</p> <p><b>2</b> Community understands main hazards, but there are no agreed plans for updating this information.</p> <p><b>3</b> Community understands main hazards. Hazards data is updated at agreed intervals.</p>	<ul style="list-style-type: none"> <li>- Note: Use of the UN Disaster Risk Reduction Quick Risk Estimator Tool (QRE) can be utilized to help satisfy this criteria.</li> <li>- For each hazard there needs to be identified, as a minimum, the “most probable” and “most severe” consequences?</li> </ul>

**FIGURE 4. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Shared understanding of infrastructure risk</b>	<p><b>Q7</b> Is there a shared understanding of risks between the community and various utility providers and other regional and national agencies that have a role in managing infrastructure such as power, water, roads and trains, of the points of stress on the system and community scale risks?</p>	<p><b>0</b> There is significant gaps in understanding risks, even at the level of individual systems (e.g., power, water, transport)</p> <p><b>1</b> Individual system risks are known but there is no task force to share these or to understand cascading impacts.</p> <p><b>2</b> There is some sharing of risk information between the community and various utility providers and some consensus on points of stress.</p> <p><b>3</b> There is a shared understanding of risks between the community and various utility providers – the points of stress and interdependencies within the system / risks at the community scale are acknowledged.</p>	<p>Is there a multi-agency / task force that assess issues of infrastructure and operational resilience?</p> <p>Does the community hold a comprehensive inventory / map of all critical infrastructure?</p> <p>Is the community sufficiently investing in maintenance and upgrade of critical infrastructure?</p> <p>This criterion should consider all public and private utilities, but could also extend to, for example, trucking companies, fuel suppliers, cargo airlines, unions etc.</p>
<b>Knowledge of exposure and vulnerability</b>	<p><b>Q8</b> Are there agreed scenarios setting out community-wide exposure and vulnerability from each hazard, or groups of hazards (see above)?</p>	<p><b>0</b> No disaster scenario information is available.</p> <p><b>1</b> Some disaster scenario information is available.</p> <p><b>2</b> A comprehensive suite of disaster scenarios is available, no background information or supporting notes exist to support use of these scenarios.</p> <p><b>3</b> A comprehensive suite of disaster scenarios is available, with relevant background information and supporting notes. This is updated at agreed intervals.</p>	<p>Scenarios are narratives of the total impact of a hazard across the community</p> <p>- Note: Use of the UN Disaster Risk Reduction Quick Risk Estimator Tool (QRE) can be utilized to help satisfy this criteria.</p>
<b>Cascading impacts</b>	<p><b>Q9</b> Is there a collective understanding of potentially cascading failures between different community and infrastructure systems, under different scenarios?</p>	<p><b>0</b> No clear understanding of cascading impacts.</p> <p><b>1</b> Some understanding of cascading impacts under some disaster scenarios.</p> <p><b>2</b> Relatively complete / collective understanding of cascading impacts under some disaster scenarios.</p> <p><b>3</b> Relatively complete / collective understanding of cascading impacts under numerous disaster scenarios</p>	<p>- The “failure chains” between different elements of a community’s infrastructure (for example, where an energy system failure triggers loss of water treatment) can be a critical vulnerability – and one that may be hidden unless specifically identified, and thus come as an unwelcome shock when responding to a disaster</p>
<b>Presentation and update process for risk information</b>	<p><b>Q10</b> Do clear hazard maps and data on risk exist? Are these regularly updated?</p>	<p><b>0</b> No hazard maps exist.</p> <p><b>1</b> Hazard maps exist for some hazards.</p> <p><b>2</b> Hazard maps exist, for most hazards, update plans are not known.</p> <p><b>3</b> High quality hazard maps exist, for most hazards, and are regularly updated (at agreed intervals).</p>	<p>- Updates need as a minimum to be sufficiently frequent to keep up with changing urban extents, and changing views of risk. Many countries aim at updates every 5 years, and this is unlikely to be adequate.</p>

### **03 - STRENGTHEN FINANCIAL CAPACITY FOR RESILIENCE**

**Understand the economic impact of disasters and the need for investment in resilience. Identify and develop financial mechanisms that can support resilience activities.**

Key actions might include:

- Understanding and assessing the significant direct and indirect costs of disasters (informed by past experience, taking into account future risk), and the relative impact of investment in prevention rather than incurring more significant costs during recovery
- Assigning a ring-fenced capital budget for any major works found to be necessary to improve resilience
- Including risk management allocations in operating budget as required to maintain the required state of resilience over time
- Assessing disaster risk levels and implications from all planning, permitting and capital spending decisions, and adjusting those decisions as needed
- Creating incentives for homeowners, low-income families, communities, businesses and public sector to invest in reducing the risks they face (e.g. business continuity planning, redundancy, building upgrades)
- Applying (and if necessary generating) insurance coverage for lives, livelihoods, community and private assets
- Exploring as needed innovative financing mechanisms such as specialized bonds, specialized insurance, tax efficient finance, development impact bonds, etc.

**FIGURE 5. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Knowledge of approaches for attracting new investment to the community</b></p>	<p><b>Q11</b> The community understand all sources of funding, and the resilience strategies and are actively pursuing funds for major resilience investments.</p>	<p><b>0</b> There is little understanding / awareness of available sources to fund resilience strategies</p> <p><b>1</b> There is some understanding of funding sources/routes, but picture is incomplete and little is done to pursue these funds.</p> <p><b>2</b> The community is aware of numerous routes to secure funding and is actively pursuing a range of these.</p> <p><b>3</b> The community understands all routes to secure funding, is actively pursuing a range of these and has had some success.</p>	<p>Examples include:</p> <ul style="list-style-type: none"> <li>- Leasing, Government grants, Social impact or resilience bonds, Development banks and aid organizations, Foundations, Other government agencies with funds that may be relevant to some aspect of resilience, Crowd-funding, Development fees, Public-private partnerships. Taxes and surcharges.</li> </ul> <p>“Resilience dividends” – sometimes called co-benefits - arise in two ways:</p> <ul style="list-style-type: none"> <li>- “Inbound” dividends – where investments elsewhere in the community have additional resilience benefits.</li> <li>- “Outbound” dividends – where an investment in resilience also provides an additional benefit.</li> </ul>

**FIGURE 5. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Financial plan and budget for resilience, including contingency funds</b></p>	<p><b>Q12</b> Does the community have in place a specific protected budget, the necessary resources and contingency fund arrangements for local disaster risk reduction (mitigation, prevention, response and recovery)?</p>	<p><b>0</b> No clear plan.</p> <p><b>1</b> There are some plans in different agencies / organizations but they are not coordinated.</p> <p><b>2</b> The community financial plan allows for resilience activities, and budgets are protected.</p> <p><b>3</b> The community financial plan is comprehensive in relation to resilience strategies, budgets are protected and contingency plans are in place</p>	<p>It is key to assess here both the presence and size of the budget, and the protection for these funds that stops them being diverted to other uses.</p>
<p><b>Insurance</b></p>	<p><b>Q13</b> What level of insurance cover exists in the community, across all sectors - business and community?</p>	<p><b>0</b> Little or no insurance cover exists in the community.</p> <p><b>1</b> The level of insurance varies significantly by sector or by area. The community is not actively promoting greater uptake of insurance products.</p> <p><b>2</b> The level of insurance varies significantly by sector or by area. The community actively promotes insurance cover across all sectors.</p> <p><b>3</b> The uptake for insurance products across all sectors / services is high.</p>	<p>This assessment covers both the adequacy of coverage (will insurance pay out enough?) and the extent of coverage (are enough people and businesses insured?)</p> <p>Consider levels of insurance for:</p> <ul style="list-style-type: none"> <li>- domestic housing, contents and personal transport (e.g., car insurance)</li> <li>- commercial and public infrastructure.</li> </ul> <p>Personal health insurance is not included.</p>
<p><b>Incentives</b></p>	<p><b>Q14</b> What incentives exist for different sectors and segments of business and society to support resilience building?</p>	<p><b>0</b> Few or no incentives exist.</p> <p><b>1</b> Some incentives exist, but it is patchy.</p> <p><b>2</b> A range of incentives exist, across all sectors to increase resilience, but there are known gaps / opportunities.</p> <p><b>3</b> A range of incentives exist, across all sectors to increase resilience, and these meet known needs.</p>	

## **04 - PURSUE RESILIENT URBAN DEVELOPMENT**

**The built environment needs to be assessed and made resilient as applicable.**

Making the built environment more resilient will include:

- Zoning and management of growth to avoid exacerbating resilience issues – identification of suitable land for future development taking into consideration of how low-income households can access suitable land and housing
- Risk-aware planning, design and implementation of new buildings, neighborhoods and infrastructure, using innovative or existing/traditional techniques as applicable
- Development and implementation of

appropriate building codes, and using these to assess existing structures for resiliency to potential hazards, incorporating appropriate retro-fitting of prevention measures, and retrofitting with sustainability measures

- Maximizing use of urban design solutions such as impermeable surfaces, green infrastructure, shadowing, water retention areas, ventilation corridors etc) that can cope with risks and also reduce the dependency on technical infrastructure like sewage systems, dikes etc
- Engaging affected stakeholders in decision-making processes when making development decisions
- Incorporating exemplary sustainable design principles into new development. Link to other existing standards where appropriate (LEED, etc)
- Updating building regulations and standards regularly (or periodically) to take account of changing data and evidence on risks

**FIGURE 6. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
Land use zoning	<p><b>Q15</b> Is the community appropriately zoned considering, for example, the impact from key risk scenarios on economic activity, agricultural production, and population centers?</p>	<p><b>0</b> No known / clear zoning.</p> <p><b>1</b> The zoning is not thorough / complete and is not reviewed regularly against hazards / risks.</p> <p><b>2</b> The community is zoned according to land use, and this connects loosely with hazards and risk mapping (see Section 2). Plans for updating this zoning are not well understood</p> <p><b>3</b> The community is zoned according to land use, and this connects well with hazards and risk mapping (see Section 2). The zoning is updated at agreed intervals</p>	<p>Displacement for 3 months or longer as a consequence of housing being destroyed or rendered uninhabitable, or the area in which it is located being rendered uninhabitable.</p> <p>Effectiveness of zoning should ideally be independently validated (see also Section 2)</p>

**FIGURE 6. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>New urban development</b>	<b>Q16</b> Are resilience strategies promoted throughout the design and development process?	<p><b>0</b> Little or no promotion of resilience in new development.</p> <p><b>1</b> Resilience approaches are promoted, but not in a consistent manner, and not underpinned by community policy.</p> <p><b>2</b> Policy exist but supporting guidance is inadequate.</p> <p><b>3</b> Clear policy exists at community level. Guidance has been prepared for a range of practitioners (e.g. Architects, landscape architects, engineers, etc.)</p>	Is there policy promoting physical measures in new development that can enhance resilience to one or multiple hazards. For example, appropriate locations for new development, water sensitive urban design, proper integration of disaster refuge areas, proper access and egress routes (street widths) etc.
<b>Building codes and standards</b>	<b>Q17</b> Do building codes or standards exist, and do they address specific known hazards and risks for the community? Are these standards regularly updated?	<p><b>0</b> No real use / existence of relevant building codes and standards.</p> <p><b>1</b> Some codes exist covering some hazards. No clear plan for updating the codes.</p> <p><b>2</b> Local codes and standards exist; these address main community hazards and are regularly updated.</p> <p><b>3</b> Local codes and standards exist; these address all known community hazards and are regularly updated.</p>	This includes mandatory codes (regulations) or voluntary standards (e.g. LEED, etc.) where these are promoted by the community through policy or incentives. It is important to be clear that the codes in use actually improve resilience to the identified hazards.
<b>Application of zoning, building codes and standards</b>	<b>Q18</b> Are zoning rules, building codes and standards widely applied, properly enforced and verified?	<p><b>0</b> There is no real focus on enforcing zones and building codes.</p> <p><b>1</b> Application of existing zones and building codes is partial and / or inconsistent.</p> <p><b>2</b> Zones and building codes are applied and enforced / verified in greater than 50% of cases.</p> <p><b>3</b> Zones and building codes are 100% applied and enforced / verified.</p>	Zone verification requires proof that in any given zone, only appropriate activity is occurring.  Code verification generally refers to a third party check by someone external to the design and construction team.

### **05 - SAFEGUARD NATURAL BUFFERS TO ENHANCE THE PROTECTIVE FUNCTIONS OFFERED BY NATURAL ECOSYSTEMS**

***Identify, protect and monitor critical ecosystems services that confer a disaster resilience benefit.***

Relevant ecosystem services may include, but are not limited to: water retention or water infiltration; afforestation; urban wild-land interface; urban vegetation; floodplains; sand dunes; and pollination. Many ecosystem services that are relevant to the community's resilience may be provided well outside its geographical area.

This Section includes:

- *Recognizing value and benefits from ecosystem services for disaster risk prevention, protecting and /or enhancing them as part of risk reduction strategies for communities.*

- *Considering also natural buffers surrounding urban areas, watershed and wider region, and cooperation with other communities there to establish a regional approach of land use planning to protect the buffers.*
- *Anticipating changes from climate trends and urbanization, and planning to enable ecosystem services to withstand these, enhanced as required by green and blue infrastructure.*

Ecosystem services that benefit a community may be located many miles away (for example, where upstream forests may manage floodwater run-off to the benefit of communities on downstream floodplains). Ecosystem services may not be recognized or even suspected, and you may require external expertise to identify them. Ecosystem services that offer a generalized, planetary benefit (for example, polar icecaps) are excluded.

**FIGURE 7. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Awareness and understanding of ecosystem services/ functions</b></p>	<p><b>Q19</b> Beyond just an awareness of the natural assets, does the community understand the functions (or services) that this natural system provides for the community?</p>	<p><b>0</b> Very little / no awareness of this topic area in the community.</p> <p><b>1</b> There is an incomplete, awareness and understanding of the functions delivered by the community natural system.</p> <p><b>2</b> The community and key stakeholders understand the majority of the functions provided by key local natural assets. These are not economically valued.</p> <p><b>3</b> The community and key stakeholders are familiar with the term ecosystem services and understand and economic value all of the functions provided by key local natural assets.</p>	<p>Ecosystem functions include: water attenuation, food growing, fuel, carbon sequestration, air filtration, heat attenuation, pollination, aesthetic value etc.</p>
<p><b>Integration of green and blue infrastructure into community policy and projects</b></p>	<p><b>Q20</b> Is green and blue infrastructure being promoted on development and infrastructure projects through policy?</p>	<p><b>0</b> There is little / no active push to promote green infrastructure in new development or infrastructure projects</p> <p><b>1</b> Some green and blue infrastructure is being promoted, but this is not universal and it is not supported by policy.</p> <p><b>2</b> Green and blue infrastructure is being promoted through policy, but there is little supporting guidance for practitioners.</p> <p><b>3</b> Green and blue infrastructure is being promoted on development and infrastructure projects through policy and supporting guidance material in the community.</p>	<p>Green Infrastructure includes: greening streets, squares and roadsides; greening roofs and facades, developing urban agriculture; creating urban green corridors; replace impermeable surfaces; natural water filtration; daylighting urban rivers and restoring embankments, etc.</p> <p>Blue Infrastructure includes: river corridors, wetlands and other waterways.</p>
<p><b>Transboundary environmental issues</b></p>	<p><b>Q21</b> Is the community aware of ecosystem services being provided to the community from natural systems beyond its administrative borders? Are agreements in place with neighboring administrations to support the protection and management of these assets?</p>	<p><b>0</b> Little to no awareness</p> <p><b>1</b> The community has some awareness of the functions provided by natural capital beyond the community administrative borders, but has taken no action</p> <p><b>2</b> The community is aware of the functions provided by natural systems beyond the community administrative borders; there have been some early discussions with neighboring administrations.</p> <p><b>3</b> The community is aware of the importance of natural system beyond its administrative borders and has plans in place with neighboring administrations to support the protection and management of these assets.</p>	

**ASSESSING RESILIENCE**

**06 - STRENGTHEN  
INSTITUTIONAL  
COMMUNITY FOR RESILIENCE**

*It is important to ensure that all private and public organizations relevant to a community’s resilience have the capabilities to do their work.*

“Private and public organizations” include, but are not limited to state, county, and local government organizations; private sector organizations providing public services; (this may include utility, cellphone healthcare, road operations, and others as well as those volunteering community or equipment in the event of a disaster); industrial facility owners and operators; building owners (individual or corporate); NGOs; professional, employers’ and labor organizations, and cultural and civil society organization.

Community should be developed across the following five key areas of understanding, prevention, mitigation, response and recovery

planning. Factors affecting community will include:

1. *Skills, including but not limited to: hazard/risk assessment, risk-sensitive planning (spatial and socio- economic), integrating disaster and climate risk considerations in project evaluation/design (including engineering design, coordination, communication, data and technology management, and disaster management, response, recovery, assessment of structures post disaster; business and services continuity planning).*
2. *Training, based ideally on case studies of how resilience strategies can be implemented and what business continuity requires.*
3. *Creating and implementing information and data frameworks for resilience and disaster risk preparedness. This information and data hub should be accessible and updated on a regular basis.*

Shared understanding of roles and responsibilities, and a framework of shared and open information on resilience are also important to community.

**FIGURE 8. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Skills and experience</b></p>	<p><b>Q22</b> Does the community have clear access to all the skills and experience it needs to respond to reduce risks and respond to identified disaster scenarios?</p>	<p><b>0</b> There are significant gaps in the skills / experience and resources that the community can quickly access to respond to identified scenarios.</p> <p><b>1</b> The community can access most of the skills / experience and resources it needs to respond to identified threats and challenges scenarios, but there are some gaps.</p> <p><b>2</b> The community has quick access to most of the skills / experience and resources required to respond to identified threats and challenges scenarios; other required skills can be obtained from nearby communities/counties/regions.</p> <p><b>3</b> The community itself has quick access to all the required skills / experience and resources it would need to respond to identified disaster scenarios.</p>	<p>The community should consider skills and experience relating to pre-event planning, and during and post-event response.</p> <p>Skills may come from within the community itself, or from external organizations based in the community (for example, utilities), or on a paid basis from consultancies and so on.</p>

**FIGURE 8. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Public education and awareness</b>	<p><b>Q23</b> Does a co-ordinated public relations and education campaign exist, with structured messaging and channels to ensure hazard, risk and disaster information (that can be understood and used) is properly disseminated to the public?</p>	<p><b>0</b> Systems for disseminating critical information on threats and challenges risk are wholly inadequate.</p> <p><b>1</b> Some useful programs / channels exist for disseminating hazard, risk information, but there is significant room for improvement to reach a greater proportion of the public. 25% of the community population is reached.</p> <p><b>2</b> Campaigns and programs (PR and education) exist to ensure proper dissemination of hazard, risk and threats and challenges information. Key messages reach over 50% of the community population.</p> <p><b>3</b> Fully coordinated campaigns and programs (PR and education) exist to ensure proper dissemination of hazard, risk and threats and challenges information. Key messages reach over 75% of the community population.</p>	<p>Here we are assessing the community's ability to communicate with the public. There will be numerous other communications channels managed by other stakeholders.</p>
<b>Data sharing</b>	<p><b>Q24</b> Extent to which data on the community's resilience approach is shared with other organizations involved with the community's resilience.</p>	<p><b>0</b> Little or no useful community data is available / shared.</p> <p><b>1</b> Some but not all of the communities data layers are shared / accessible but the data is raw and requires interpretation.</p> <p><b>2</b> The community has done a good job at synthesizing and sharing some data layers to enhance resilience in a particular sector or area.</p> <p><b>3</b> The community has a portal (or other method) for bringing together / synthesizing numerous community data sets, useful to build a picture of community resilience.</p>	<p>The types of community data that are useful in understanding a community's resilience context include, e.g. population, demographics, vulnerabilities, infrastructure risks, flooding, disaster event records.</p> <p>Best practice may include a full stakeholder / public outreach plan and data portal and / or licensing of risk information to key community stakeholders.</p> <p>The key question is whether there is "one version of the truth" shared as applicable between all stakeholders – in other words, do all stakeholders have consistent and compatible information and assumptions?</p>
<b>Training delivery</b>	<p><b>Q25</b> Are there training courses covering risk and resilience issues offered to all sectors of the community including government, business, NGOs and the general public?</p>	<p><b>0</b> Little or no relevant training exists that is tailored for the community.</p> <p><b>1</b> Some training modules are available. Coverage and content needs to be significantly improved.</p> <p><b>2</b> The community has a track record of delivering resilience training to some sectors, but other sectors lack training and engagement.</p> <p><b>3</b> There are training courses covering risk, resilience and disaster response offered across all sectors of the community including government, business, NGO's and community?</p>	<p>Note that emergency response drills are covered under Section 9. Training delivery in Section 6 relates to professional training.</p>

FIGURE 8. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Languages</b>	<p><b>Q26</b> Are training materials available in the majority of languages in common use in the community?</p>	<p><b>0</b> No translations have been made</p> <p><b>1</b> All training materials are available in some of the languages common in use in the community.</p> <p><b>2</b> All training materials are available in most of the languages common in use in the community.</p> <p><b>3</b> All training materials are available in all of the languages in common use in the community.</p>	<p>Communities with high numbers of different languages may need to settle for a selection of languages that reaches everyone as a first or second language.</p>
<b>Learning from others</b>	<p><b>Q27</b> Is the community proactively seeking to exchange knowledge and learn from other communities facing similar challenges?</p>	<p><b>0</b> Any knowledge share that does take place relies on individuals.</p> <p><b>1</b> Some knowledge share happens between communities, but it tends to be sporadic.</p> <p><b>2</b> The community understands the importance of knowledge sharing and is connected to a range of other communities. The networks are not leveraged for maximum benefit.</p> <p><b>3</b> The community proactively seeks to exchange knowledge and learn from other communities facing similar challenges and is active in a range of networks to facilitate this.</p>	<p>This might be via a direct exchange with peer communities, or through industry groups, national resilience and emergency management forums, community groups such as C40, ICLEI and others, or NGOs such as the UN.</p>

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### **07 - UNDERSTAND AND STRENGTHEN SOCIETAL CAPACITY FOR RESILIENCE**

***Ensure understanding and strengthening of societal capacity for resilience. Cultivate an environment for social connectedness which promotes a culture of mutual help through recognition of the role of cultural heritage and education in disaster risk reduction.***

Social connectedness and a culture of mutual help have a major impact on the actual outcomes of disasters of any given magnitude. These can be encouraged by measures that include:

1. *Establishing and maintaining neighborhood emergency response groups and training*
2. *Engaging and co-opting civil society organizations— youth groups, clubs, religious groups, advocacy groups (e.g. for the disabled)*
3. *Encouraging diversity to support decision making and outreach (e.g. gender, racial and ethnic, socioeconomic, geographic, academic, professional, political, sexual orientation and life experience.)*
4. *Offering education, training and support to community groups*
5. *Providing community groups with clear data on risk scenarios, the current level of response capabilities and thus the situation they may need to deal with.*
6. *Undertaking formal or informal censuses of those who may be vulnerable and less able to help themselves, in each neighborhood, and understanding from them what their needs are*
7. *Engaging the general public by going to community hubs, events, cultural facilities, and other areas in which the communities meet, to build awareness and understanding*
8. *Engaging with employers as a communications channel with their workforces for disaster awareness, business continuity planning and training*
9. *Engage local media in community building (TV, print, social media, etc.)*
10. *Mobile (phone / tablet) and web-based systems of engagement (for example, crowd-sourcing or disseminating data on preparedness)*
11. *Translation of all materials into all languages used in the community*
12. *Ensuring that the education curriculum within schools, higher education, universities and the workplace includes disaster awareness activities and training is a key element of social resilience – this is covered in Section 6.*

FIGURE 9. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Community or “grassroots” organizations, networks and training</b>	<p><b>Q28</b> Are grassroots or community organizations participating in pre-event planning and post-event response for each neighborhood in the community?</p>	<p><b>0</b> There is very little involvement from grassroots organizations in the community</p> <p><b>1</b> There is awareness amongst key grassroots organizations of the importance of resilience strategies, they support with awareness raising but not with active participation around response or planning.</p> <p><b>2</b> There is involvement in diverse grassroots organizations, either in some locations, or in some aspect of the planning or response, but it is not comprehensive.</p> <p><b>3</b> Community organizations that cover a significant proportion of the community’s population are actively participating in pre-event planning and post-event response right across the community.</p>	<p>The types of grassroots organizations actively supporting disaster risk reduction activities will vary by community. It could include youth groups, YMCA, sports clubs etc.</p>
<b>Social networks “Leave no one behind”</b>	<p><b>Q29</b> Are there regular training programs provided to the most vulnerable and at need populations in the community?</p>	<p><b>0</b> There is no mapping of socially vulnerable population</p> <p><b>1</b> No training programs. But mapping of socially vulnerable population is available.</p> <p><b>2</b> Once a year training programs are conducted.</p> <p><b>3</b> Once every six-months training programs are conducted.</p>	<p>Social vulnerability is the result of pre-disaster social factors that create a lack of community or capability to prepare for, respond to, and recover from emergencies. Social vulnerability includes people who are more likely to suffer disproportionately because of their existing social circumstances such as those associated with age, gender, race, medical illness, disability, literacy and social isolation.</p>
<b>Private sector / employers</b>	<p><b>Q30</b> What proportion of businesses have a documented business continuity plan that has been reviewed within the last 18 months?</p>	<p><b>0</b> Under 20%.</p> <p><b>1</b> 20 – 40% businesses.</p> <p><b>2</b> 40 – 60% businesses.</p> <p><b>3</b> 60 – 100% businesses.</p>	<p>Businesses over 10 people / employees.</p>
<b>Citizen engagement techniques</b>	<p><b>Q31</b> How effective is the community at public engagement and communications in relation to resiliency?</p>	<p><b>0</b> Poor or no engagement on resilience.</p> <p><b>1</b> Some channels, semi-regular updates.</p> <p><b>2</b> Multiple media channels. No inbound data collection from mobiles. Majority of community stakeholders reached several times per year.</p> <p><b>3</b> Engagement through multiple media channels (e.g. social, radio, email, newspaper, mobile device). Mobile used for inbound data flow, crowd management etc. Result is multiple contacts per resident per year</p>	

### **08 - INCREASE INFRASTRUCTURE RESILIENCE**

***Assess the capacity and adequacy of, as well as linkages between, critical infrastructure systems and upgrade these as necessary according to risks identified in Section 2.***

This section addresses how critical infrastructure systems will cope with disasters the community might experience and developing contingencies to manage risks and damage caused by these outcomes. This should be addressed through measures including, but not limited to:

- 1. Assessment of community and adequacy in the light of the scenarios in Section 2. Consider possible damage to parallel infrastructure (for example, impact on evacuation capacity if one of two roads out of a community is blocked), as well as linkages between different systems (for example, impact if a hospital loses its power or water supply).*
- 2. Collaborating with, and building connections between infrastructure agencies (including those that may be in the private sector) to ensure resilience is considered appropriately in project prioritization, planning, design, implementation and maintenance cycles.*
- 3. Tendering and procurement processes that include resilience criteria agreed upon by the community and stakeholders and is consistent throughout.*
- 4. For emergency management infrastructure, assessment of “surge” community, which refers to the ability to deal with suddenly increased loadings from law and order issues, casualties, evacuees, and so on.*

*Systematically triaged processes are also required for prioritization of retrofit or replacement of unsafe infrastructure. These are covered in Section 2.*

Critical infrastructure includes those required for the operation of the community and those required specifically for emergency response. Infrastructure required for operation includes but is not limited to:

- > Transport – roads, rail, airports and other ports*
- > Vehicle and heating fuel supplies*
- > Telecommunication systems*
- > Utilities systems (water, wastewater, communication, gas, waste disposal)*
- > Health care centers, hospitals*
- > Schools and higher educational institutions*
- > Community centers, community service facilities*
- > Food supply chain*
- > Emergency response including ambulance, police and fire services*
- > Jails*
- > “Back office” administration – welfare payments, housing*
- > Computer systems and data supporting the above*
- > As resources allow, safety and survivability of cultural heritage sites and artifacts.*

Infrastructure required for disaster response may include the above, and others such as:

- > Emergency or incident command centers, and associated communications and monitoring/situation awareness systems – these may include cameras, sensors and crowd-sourcing mechanisms such as reading of SMS and Twitter feeds*
- > Additional fire, police and ambulance vehicles*
- > National guard or other military services*
- > Earth and debris-removing equipment*
- > Pumps*
- > Generators*
- > Sports facilities, school buildings and so on that provide places of shelter*
- > Mortuaries*
- > Back-up computing facilities.*

FIGURE 10. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Critical infrastructure overview</b></p>	<p><b>Q32</b> <i>Is critical infrastructure resilience a community priority, does the community own and implement a critical infrastructure plan or strategy?</i></p>	<p><b>0</b> <i>There are no plans or task forces. Critical infrastructure risks are not well understood in the community.</i></p> <p><b>1</b> <i>Risks are understood for some but not all of the major infrastructure types.</i></p> <p><b>2</b> <i>There is a critical infrastructure task force or other means to establish a shared understanding of risks between the community and various utility providers upon the points of stress on the system / risks at the community scale?</i></p> <p><b>3</b> <i>The community owns and implements (in collaboration with other stakeholders) a critical infrastructure plan or strategy to protect its critical infrastructure, utilities and services. The strategy highlights risks / stresses and includes continuity plans for essential services.</i></p>	
<p><b>Protective infrastructure</b></p>	<p><b>Q33</b> <i>Is existing protective infrastructure well-designed and well-built based on risk information?</i></p>	<p><b>0</b> <i>Significant parts of the community are unprotected from known risks / hazards.</i></p> <p><b>1</b> <i>In some cases protective infrastructure is in place but some strategic protective infrastructure is missing. Design and management may not be consistent with best practice.</i></p> <p><b>2</b> <i>In most cases protective infrastructure is in place and consistent with best practice for asset design and management, based on relevant risk information.</i></p> <p><b>3</b> <i>In all cases protective infrastructure is in place and consistent with best practice for asset design and management, based on relevant risk information.</i></p>	<p><i>Examples of protective infrastructure:</i></p> <ul style="list-style-type: none"> <li>- Levees and flood barriers;</li> <li>- Flood basins;</li> <li>- Shelters, such as tornado shelters;</li> <li>- Storm drains and storm water holding tanks;</li> <li>- Shock absorption capabilities fitted to infrastructure to deal with earthquakes</li> </ul>

FIGURE 10. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Water - Potable and Sanitation</b>	<p><b>Q34</b> Would a significant loss of service be expected for a significant proportion of the community during a disaster?</p>	<p><b>0</b> Significant loss of service would be experienced from the “most probable” scenario.</p> <p><b>1</b> Some loss of service would be experienced from the “most probable” scenario.</p> <p><b>2</b> Some loss of service would be experienced from the “most severe” scenario.</p> <p><b>3</b> There would be no loss of service even from “most severe” scenario.</p>	
<b>Energy</b>	<p><b>Q35</b> Would a significant loss of service be expected for a significant proportion of the community in the ‘worst case’ scenario event? In the event of failure would energy infrastructure corridors remain safe (i.e. free from risk of leaks, electrocution hazards etc.)?</p>	<p><b>0</b> Significant loss of service would be experienced from the “most probable” scenario.</p> <p><b>1</b> Some loss of service would be experienced from the “most probable” scenario.</p> <p><b>2</b> Some loss of service would be experienced from the “most severe” scenario.</p> <p><b>3</b> There would be no loss of service even from “most severe” scenario.</p>	
<b>Transport</b>	<p><b>Q36</b> Would a significant loss of service be expected for a significant proportion of the community in the ‘worst case’ scenario event? In the event of failure would transport infrastructure corridors remain safe (i.e. free from risk of flood, shocks etc) and passable?</p>	<p><b>0</b> Significant loss of service would be experienced from the “most probable” scenario.</p> <p><b>1</b> Some loss of service would be experienced from the “most probable” scenario.</p> <p><b>2</b> Some loss of service would be experienced from the “most severe” scenario.</p> <p><b>3</b> There would be no loss of service even from “most severe” scenario.</p>	
	<p><b>Q37</b> Would a significant loss of service be expected for a significant proportion of the community in the ‘worst case’ scenario event?</p>	<p><b>0</b> Significant loss of service would be experienced from the “most probable” scenario.</p> <p><b>1</b> Some loss of service would be experienced from the “most probable” scenario.</p> <p><b>2</b> Some loss of service would be experienced from the “most severe” scenario.</p> <p><b>3</b> There would be no loss of service even from “most severe” scenario.</p>	

FIGURE 10. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Healthcare</b>	<p><b>Q38</b> <i>Would there be sufficient acute healthcare capabilities to deal with expected major injuries in 'worst case' scenario?</i></p>	<p><b>0</b> <i>Longer than 36 hours, or no emergency healthcare capability.</i></p> <p><b>1</b> <i>&gt;90% of major injuries in "most severe" scenario, can be treated within 36 hours.</i></p> <p><b>2</b> <i>&gt;90% of major injuries in "most severe" scenario, can be treated within 24 hours.</i></p> <p><b>3</b> <i>&gt;90% of major injuries in "most severe" scenario, can be treated within 6 hours.</i></p>	
<b>Education facilities</b>	<p><b>Q39</b> <i>% of education structures at risk of damage from "most probable" and "most severe" scenarios</i></p>	<p><b>0</b> <i>&gt;15% of teaching facilities at risk in "most probable" scenario.</i></p> <p><b>1</b> <i>5-10% of teaching facilities at risk in "most probable" scenario.</i></p> <p><b>2</b> <i>No teaching facilities at risk in "most probable" scenario.</i></p> <p><b>3</b> <i>No teaching facilities at risk in "most severe" scenario.</i></p>	

FIGURE 10. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>First Responder assets</b></p>	<p><b>Q40</b> Will there be sufficient first responder equipment, with military or civilian back up as required?</p>	<p><b>0</b> Significant gaps in ability to meet needs even under “most likely” scenario.</p> <p><b>1</b> Assets will meet basic needs under “most severe” scenario, but gaps are known to exist.</p> <p><b>2</b> Equipment levels and assets have either been modeled or proven to be adequate in practice to deal with a “most severe” scenario, although this relies on mutual aid arrangements. Mutual aid agreements are tested for likelihood of being affected by the same disaster.</p> <p><b>3</b> Equipment levels and assets have either been modeled or proven to be adequate in practice to deal with a “most severe” scenario.</p>	<p>First responder staffing – see Section 9.</p> <p>Critical law and order/responder assets include such items as:</p> <ul style="list-style-type: none"> <li>- Vehicles (fire-fighting, ambulances, police vehicles)</li> <li>- Helicopters and aircraft;</li> <li>- Emergency food and first aid stocks/supplies</li> <li>- Shelters</li> <li>- Back-up generators</li> <li>- (Communications systems – see above)</li> <li>- (Operations centers – see below)</li> <li>- (Key buildings – see below)</li> <li>- (Critical IT systems – see below).</li> <li>- Utility vehicles, as required to restore energy, communications, water and sanitation services;</li> <li>- Other critical equipment such as earthmovers, trucks, winches, chainsaws, etc.</li> </ul> <p>Service may be provided either from the asset itself or via a designated alternative/back-up.</p>

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## **09 - ENSURE EFFECTIVE DISASTER RESPONSE**

**Building on the scenarios in Section 2, ensure effective disaster response, for example by:**

1. *Creating and regularly updating contingency and preparedness plans, communicated to all stakeholders through the structure in Section 1 (especially including other levels of government and adjacent communities, infrastructure operators, community groups). Contingency plans to include law and order, providing vulnerable populations with food, water, medical supplies, shelter, and staple goods (e.g. for housing repairs).*
2. *Developing and installing detection and monitoring equipment and early warning systems and effective associated communication systems to all stakeholders and community groups.*
3. *Ensuring interoperability of emergency response systems in adjacent communities or counties, between agencies and with neighboring communities.*
4. *Holding regular training drills/tests and exercises for all aspects of the wider emergency response “system” including community elements and volunteers.*
5. *Integration of risk reduction and emergency response with engineers, contractors, and others, to be able to effectively and efficiently engage in preparedness, response and recovery operations.*
6. *Coordinating and managing response activities and relief agencies’ inputs.*
7. *Ensuring in advance that a viable mechanism will exist for the rapid, rational and transparent disbursement of funds after a disaster (Section 10).*
8. *Assigning and ring-fencing adequate contingency funds for post event response and recovery (Section 3).*

**FIGURE 11. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Early warning</b>	<p><b>Q41</b> Does the community have a plan or standard operating procedure to act on early warnings and forecasts? What proportion of the population is reachable by early warning system?</p>	<p><b>0</b> Less than half of the population is reachable by early warning system.</p> <p><b>1</b> Estimated that more than half of the population is reachable by early warning system.</p> <p><b>2</b> Estimated that over 75% of the population is reachable by early warning system.</p> <p><b>3</b> Estimated that over 90% of the population is reachable by early warning system.</p>	<p>At this time, meaningful early warning for earthquakes is not technologically possible.</p>

**FIGURE 11. PRIORITY THREATS AND CHALLENGES**

Subject / Issue	Question / Assessment Area	Scoring	Comments
<b>Event management plans</b>	<p><b>Q42</b> Is there a disaster management / preparedness / emergency response plan outlining community mitigation, preparedness and response to local emergencies?</p>	<p><b>0</b> No known plan.</p> <p><b>1</b> Some plans exist, but they are not comprehensive or joined up.</p> <p><b>2</b> A comprehensive plan exists but it contains significant gaps in coverage for community mitigation, preparedness and response to local emergencies.</p> <p><b>3</b> There is a disaster management / preparedness / emergency response plan outlining community mitigation, preparedness and response to local emergencies.</p>	<p>Does the plan provide the community strategy, organization and structure for disaster preparedness and response directions? Does it set out roles, responsibilities, resources, cooperation and coordination modalities among key community stakeholders?</p>
<b>Staffing / responder needs</b>	<p><b>Q43</b> Does the responsible disaster management authority/ task force have sufficient staffing to support first responder duties in surge event scenario?</p>	<p><b>0</b> No surge community identified.</p> <p><b>1</b> Coverage of all neighborhoods within 48-72 hours.</p> <p><b>2</b> Coverage of all neighborhoods within 24-48 hours.</p> <p><b>3</b> Surge capacity exists and is tested either via actual events or practice drills for disaster and risk scenarios in Section 2 – coverage of all neighborhoods will be possible within 4 hours.</p>	<p>Adequacy of equipment levels is covered in Section 8.</p>
<b>Equipment and relief supply needs</b>	<p><b>Q44</b> Are equipment and supply needs, as well as the availability of equipment, clearly defined?</p>	<p><b>0</b> No needs defined (or no plan).</p> <p><b>1</b> Needs definition is essentially nominal or guesswork.</p> <p><b>2</b> Needs defined, linked to disaster scenarios.</p> <p><b>3</b> Needs defined, linked to disaster scenarios, and taking into account the role of volunteers.</p>	
<b>Food, shelter, staple goods and fuel supply</b>	<p><b>Q45</b> Would the community be able to continue to feed and shelter its population post-event?</p>	<p><b>0</b> In “most severe” scenario, supply of emergency food and basic relief items is less than estimated need by 5% or more / food gap exceeds 24 hours.</p> <p><b>1</b> In “most severe” scenario, supply of emergency food and basic relief items is less than estimated need by 2% or more.</p> <p><b>2</b> In “most severe” scenario, supply of emergency food and basic relief items is equal to estimated need.</p> <p><b>3</b> In “most severe” scenario, supply of emergency food and basic relief items exceeds estimated need.</p>	

## ASSESSING RESILIENCE

FIGURE 11. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Interoperability and inter-agency working</b></p>	<p><b>Q46</b> Is there an emergency operations center, with participation from all agencies, automating standard operating procedures specifically designed to deal with “most probable” and “most severe” scenarios?</p>	<p><b>0</b> No emergency operations center .</p> <p><b>1</b> Emergency operations center designated but with vulnerable communications and/or one or more relevant agencies not participating.</p> <p><b>2</b> Emergency operations center exists with hardened / redundant communications, designed to deal with “most severe” scenario; core agencies only participate.</p> <p><b>3</b> Emergency operations center exists with hardened / redundant communications, designed to deal with “most severe” scenario; all relevant agencies participate.</p>	
<p><b>Drills</b></p>	<p><b>Q47</b> Do practices and drills involve both the public and professionals?</p>	<p><b>0</b> No exercises (or no plans – see above).</p> <p><b>1</b> Ad hoc partial exercises – not all scenarios tested, not realistic.</p> <p><b>2</b> Annual drills validated by professionals, limited test scenarios.</p> <p><b>3</b> Annual suite of drills validated by professionals to be realistic representation of “most severe” and “most probable” scenarios.</p>	<p>Skills training is covered in Section 6.</p>

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### **10 - EXPEDITE RECOVERY AND BUILDING BACK IN A MORE RESILIENT MANNER**

***Ensure sufficient pre-disaster plans according to risks are identified. Ensure that after any disaster, the needs of the affected are at the center of recovery and reconstruction, with their support to design and implement rebuilding.***

Building back in a more resilient manner is a key element of becoming more resilient. After any disaster there will be a need to:

1. *Ensure that the needs of disaster survivors and affected communities are placed at the center of recovery and reconstruction, with support for them and their community organizations to design and rebuilding shelter, assets and livelihoods at higher standards of resilience.*
2. *Planners should ensure that the recovery programs are consistent with the long-term priorities and development of the disaster-affected areas.*

Recovery, rehabilitation and reconstruction can be planned ahead of the disaster. This is critical to building back more resilient and making communities more resilient to disasters than they were before the event. Pre-disaster plans for post-event recovery should cover the following and with necessary community building, where relevant:

1. *Providing shelter, food, water, communication, addressing psychological needs, etc.*
2. *Limiting and planning for any use of schools as temporary shelters.*
3. *Identifying the dead and notifying next of kin.*
4. *Debris clearing and management.*
5. *Taking over abandoned property.*
6. *Management of local, national and international aid and funding, and coordination of efforts and prioritizing and managing resources for maximum efficiency, benefit and transparency.*
7. *Integration of further disaster risk reduction in all investment decisions for recovery and reconstruction.*
8. *Business continuity and economic reboot.*
9. *Learning loops: undertake retrospective/post-disaster assessments to assess potential new vulnerabilities and build learning into future planning and response activities.*

FIGURE 12. PRIORITY THREATS AND CHALLENGES

Subject / Issue	Question / Assessment Area	Scoring	Comments
<p><b>Post event recovery planning – pre event</b></p>	<p><b>Q48</b> <i>Is there a strategy or process in place for post-event recovery and reconstruction, including economic reboot, societal aspects etc.?</i></p>	<p><b>0</b> No known plans.</p> <p><b>1</b> Some plans / strategies exist but they are not comprehensive or joined up or understood by relevant stakeholders.</p> <p><b>2</b> There is a strategy / process in place. It is well-understood by relevant stakeholders but has known weaknesses.</p> <p><b>3</b> There is a strategy / process in place. It is robust and well-understood by relevant stakeholders.</p>	<p><i>Comprehensive post event recovery plans will need to detail, for example,</i></p> <ul style="list-style-type: none"> <li>- <i>Interim arrangements for damaged facilities;</i></li> <li>- <i>Locations and sources of temporary housing;</i></li> <li>- <i>Triage policies for inspection, repairs and debris removal;</i></li> <li>- <i>Counseling and personal support arrangements;</i></li> <li>- <i>Community support arrangements;</i></li> <li>- <i>Economic reboot arrangements;</i></li> <li>- <i>Improvements to community layout and operations as rebuilding takes place.</i></li> </ul> <p><i>Plans may be from several organizations, but these should be reviewed for consistency of assumptions and priorities.</i></p>
<p><b>Lessons learned / learning loops</b></p>	<p><b>Q49</b> <i>Do post-event assessment processes incorporate failure analyses and the ability to capture lessons learned that then feed into design and delivery of rebuilding projects?</i></p>	<p><b>0</b> Lesson learned are unplanned / ad-hoc and rely on individuals.</p> <p><b>1</b> Some lessons are captured and disseminated but not in a thorough or systematic way.</p> <p><b>2</b> Clear processes are in place to capture lessons from failures post event, mechanisms / processes to feed these lessons into design and delivery of rebuilding projects require improvement.</p> <p><b>3</b> Clear processes are in place to capture lessons from failures post-event. There are clear and effective mechanisms / processes to feed these lessons into design and delivery of rebuilding projects.</p>	<p><i>This learning is critical in helping a community understand how it can build more resilience into its future framework and also in improving comprehension of risks. New risks and learning from real events can be re-incorporated into to community risk management framework, as outlined under Section 2.</i></p>



# ECONOMIC RECOVERY & RESILIENCY PLAN

FOR SANDOVAL, BERNALILLO, VALENCIA, TORRANCE, & SOUTHERN SANTA FE COUNTIES

AUGUST 2022

# DESIGN THINKING PROCESS

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# Design Thinking Process

Design Thinking is a process for creative problem solving. The methodology takes a human-centered approach to innovation, helping us transform how we solve complex issues, develop products, deliver successful services, improve processes and more. With the design thinking approach, we make decisions based on what our customers/stakeholders *really* need and want. The hands-on approach teaches us to listen, think and move quickly to create strategies that are both actionable and effective.

Design thinking helps us focus on achieving practical results that meet the following three criteria:

1. **Desirable for the user.**  
Do the ideas/strategies meet a real human need?
2. **Technically feasible.**  
Can the ideas/strategies be developed into functional programs, products or processes?
3. **Economically viable.**  
Can the community afford to implement and maintain the strategies/ideas?

There are several different phases to design thinking, and the process is not always linear or sequential. In general, design thinking includes the following steps:

1. **Gather information (Empathize).**  
To solve complex problems and provide solutions that are meaningful, we have to put ourselves in user's shoes to understand and empathize with the target audiences' issues. This can be accomplished in many ways, such as the stakeholder interviews and focus groups MRCOG already conducted with local community leaders.
2. **Define the problem (Define).**  
Based on what you learn from your target audiences, the next step is to define clear problem statements. A problem statement should identify a specific problem you plan to address – it should be specific enough to provide direction but broad enough to spark creativity.
3. **Generate ideas (Ideate).**  
With clear problem statements defined, the next step is to come up with as many ideas and potential solutions as possible in a short amount of time. The intention is to get us to think outside the box, explore new angles and get to innovation and creativity more quickly.

4. Make ideas tangible (Prototype).  
After the ideation phase, review the best ideas – those that would likely be the most successful – and think about how to put them into action. This is the *how* you will achieve measurable success – what is the program, the tool, the service or the process that will be created and implemented.
5. Test, get feedback and evolve (Test).  
Test the strategies and prototypes you come up with on real people. Do they like it? Does it seem to help? Do we need to change anything to make it more successful?

## Design Thinking in Action

### Example 1:

In Albuquerque, the unemployment rate for young people ages 16-24 is higher than the national average. Why might that be, and what can we do to help more people gain meaningful employment?

1. The City of Albuquerque hosted focus groups with area high school seniors, college students and people who were not in school or working but belonged to the target audience. Some important insights included, “I can’t get a job because I don’t have work experience; but I can’t get work experience if nobody will give me a job”; “Young people lack soft skills to be attractive to hiring managers”;
2. Young people in Albuquerque ages 16-24 were struggling to develop skills that are attractive to employers, and employers were struggling to find qualified job candidates. This led to higher unemployment in this key demographic, and local employers struggled to fill positions with qualified candidates.
3. Some winning ideas included creating training opportunities, using the City of Albuquerque as an employer to help people gain valuable skills and employment, creating a digital skills platform that would help people prove competence with or without work experience (and where employers would agree to accept that in place of work experience), etc.
4. The Innovation Team worked with CNM, Mission:Graduate, APS and other educational systems to create Got Skills ABQ, a digital certificate platform that would allow people to demonstrate valuable skills from experiences such as sports, music, school and more and would teach them how to translate those skills to being valuable for an employer.
5. Creating the system was great, but the group found that without employers committing as partners, it wasn’t valuable enough. Bringing employers in as partners made the program more motivating for participants and more valuable to employers looking for talent.

## Example 2:

An area along the waterfront in Memphis was run down, lacking investment and falling apart. The vacancies, rising incidents of crime and lack of foot traffic were causing problems in an area that was previously attractive to visitors and investors. Could the area be revitalized?

1. Organizations in Memphis worked together to meet with residents in the neighborhood, local business owners, lending institutions and more to try and understand why the area was falling apart.
2. The area along the waterfront in Memphis is rundown, attracts crime and prohibits investment and foot traffic. Knowing that retail plays a critical role in revitalizing neighborhoods, could we use vacant storefronts to re-energize the area, help people launch businesses, and create more opportunities for residents in the area?
3. The winning strategy was to create a place-based program called MEMShop, which creates partnerships to activate vacant and underused storefronts to help build local businesses and increase the community's visibility and vibrancy.
4. The MEMShop 6-month incubator model:
  - a. Recruits startups and existing businesses that want to test a new concept, test a new product, or test a new location. Business owners have to provide some of their own funds for operating expenses, and must agree to requirements such as:
    - i. Signing a 6-month lease with a property owner
    - ii. Purchasing and managing general liability insurance and utilities
    - iii. Submit monthly reporting to MEMShop
    - iv. Comply with MEMShop storefront façade and cleanliness requirements
    - v. Hold monthly marketing events and activities to drive foot traffic
    - vi. Participate in managerial training to help people grow and sustain their new retail businesses
  - b. Accepted participants receive a pre-negotiated lease, rental assistance, training, marketing services and access to other services.
5. In the testing phase, the organizations realized that if people weren't coming to the area, there wouldn't be customers to help these new businesses get off the ground. They added important pop-up events such as "A New Face on an Old Broad," which took place on Broad Avenue and kickstarted the revitalization.

## Success Stories from DT Exercises

### Example 1:

Since 2009, New York City has used more than 2.9 million square feet of white paint in free roof upgrades to nonprofits, hospitals, and affordable housing buildings, significantly decreasing energy costs. The CoolRoofs program also employs several people each year who are otherwise traditionally disconnected from the workplace. The program is also bringing the city closer to its goal of reducing carbon emissions by 80% by 2050.

### Example 2:

Los Angeles County is the largest voting jurisdiction in the United States. Designed in the 1960s, its voting system was outdated and was not serving the needs of its diverse residents. LA County used the design thinking process to come up with a new voting device that was intuitive and accessible to all residents, including people with hearing and eyesight issues, mobility issues, learning disabilities, language barriers and more. The resulting voting system included touchscreens in voting locations that would walk voters through the process based on their specific needs, creating an adaptable system with equal access.

### Example 3:

When AirBNB was founded in 2008, it was based on the idea that people needed places to stay for conferences, concerts and more when traditional hotel rooms were sold out. In the beginning, people weren't booking rooms through the company and revenue was not increasing much. The company spent time meeting with hosts and guests to find out what they really needed and wanted. One kernel of information the company discovered was that people were hesitant to book when the photos were bad or low-resolution. The company came up with a solution to spend time with hosts and teach them how to take high-quality photos. This one simple innovation led to AirBNB doubling its revenue.

### Example 4:

In the United States, a significant amount of people do not have cash or savings to cover emergency expenses. American Family Insurance made the assumption that working families simply needed a budgeting tool. However, the research revealed that what people really needed was a way to create a financial cushion from extra income. The resulting innovation was the creation of Moonrise, a digital platform that matches workers looking for extra shifts with potential employers. Since its launch in 2018, thousands of people have applied and collectively earned hundreds of thousands of dollars.

### Example 5:

MassMutual, an insurance firm, found that it was struggling to get young adults to care about or purchase life insurance. The company spent two years conducting research and prototyping, learning that young people lacked financial literacy and didn't have a good way to learn, which is why they shied away from insurance. The end result was a suite of digital tools (called the Society of Grownups) that helps educate young people to make smart financial decisions.

