

Ramona-Barona Climate Adaptation and Resilience Plan (CARP)

Adaptation Planning Grant Program: Final Case Study

Project Summary

The purpose of the Ramona-Barona Climate Adaptation and Resilience Plan (CARP) is to identify the region's most pressing climate threats, establish a coordinated strategy to address those threats, and create a framework for integrating resilience into future planning and decision-making. Major emission sources in the region include transportation, energy use, and solid waste. The region's natural and working lands such as shrublands, grasslands, and oak woodlands serve as important carbon sinks.

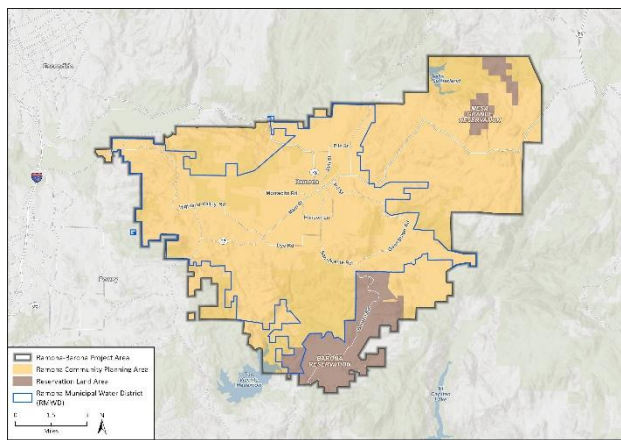


Figure 1: Map of Project Area

The Ramona-Barona CARP was developed collaboratively by the Ramona Municipal Water District, the Ramona community, and the Barona Band of Mission Indians, reflecting a shared commitment to protect resources, honor cultural heritage, and safeguard community well-being. Beyond reducing vulnerability and improving emergency preparedness, the plan empowers local leaders and residents with actionable strategies that align with community values and guide future decisions.

The plan, which covers an area in unincorporated San Diego County, strengthens coordination across jurisdictions and builds on San Diego County's resilience efforts while complying with state climate legislation (SB 379, SB 32, AB 1279), where applicable. The CARP also bridges geographic and institutional gaps, integrating regional strategies shaped by rural voices.

During the initial phase, the project team analyzed existing conditions. The work included compiling greenhouse gas (GHG) emissions inventories, assessing carbon stock and sequestration potential, conducting a Climate Change Vulnerability Assessment (CCVA), evaluating accessibility of evacuation routes, and reviewing wildfire hazards and risks. The results of these analyses provide the foundation for a roadmap that guides implementation, funding, and progress tracking.

The CARP’s impact extends beyond traditional planning. It establishes a strong foundation for long-term resilience by shaping land use, guiding infrastructure investments, and informing emergency response strategies. By integrating climate considerations into policy and development decisions, the region is not only positioned to withstand future challenges, but also to thrive. This approach safeguards the environment, strengthens the economy, and preserves cultural identity for generations to come.

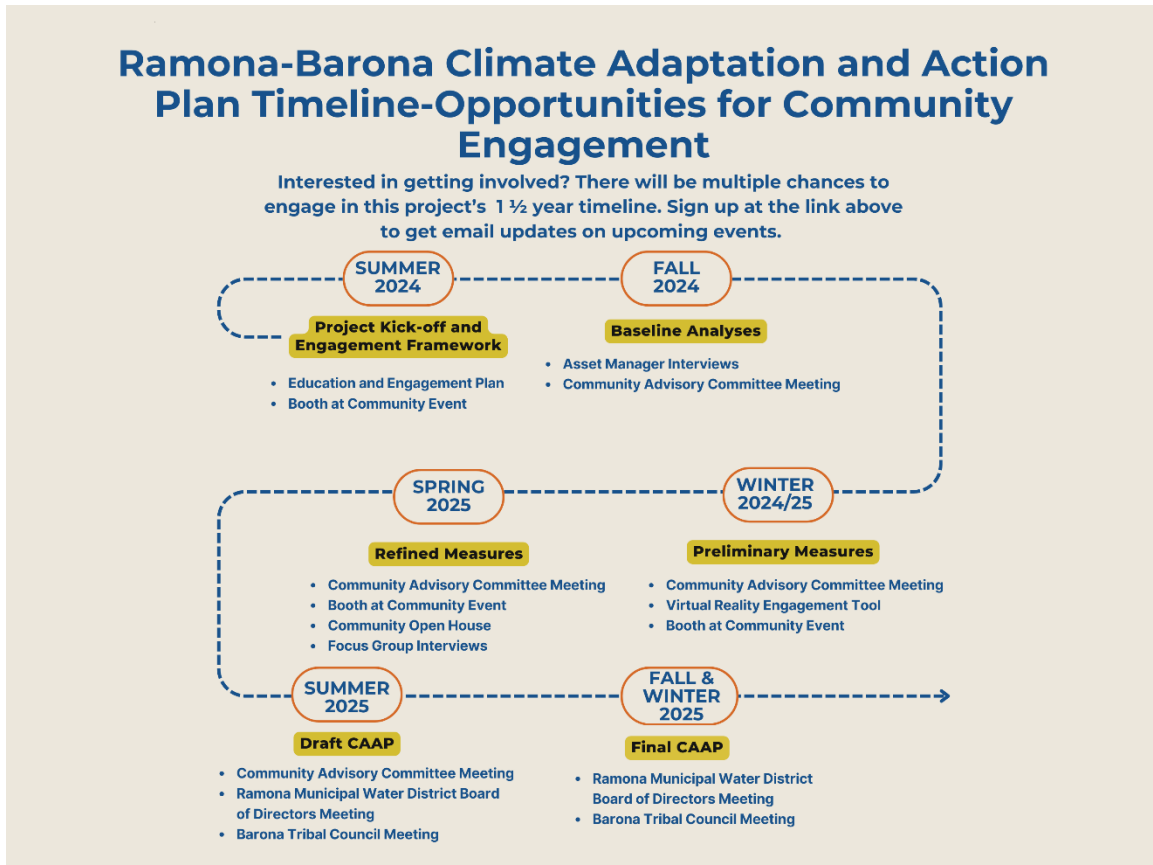


Figure 2: Project Timeline

Climate Risks & Vulnerabilities

Initially, GHG emissions inventories and Natural Working Lands analysis were developed to establish a regional emissions baseline and understand the region’s contribution to climate change. The inventories were completed in accordance with state guidance and using the Local Governments for Sustainability International Council for Local Environmental Initiatives (ICLEI) protocols, which provide standardized methods for community-scale emissions accounting. Future GHG emissions were estimated based on projected activity and land use data using the baseline results.

The CCVA was developed using the California Adaptation Planning Guide framework, along with regional climate projections provided through the State’s Cal-Adapt platform and local input from a series of focused outreach and engagement activities. The CCVA evaluates how extreme weather

and gradual shifts in weather patterns may affect people, ecosystems, and essential community services, and identifies the most at-risk assets such as water supply, emergency routes, and critical facilities. To prioritize populations facing highest vulnerability to climate change, the project team employed several strategies:

- **Data-driven identification:** The CCVA used demographic, health, and socioeconomic data (including census tract-level information and tools like the California Heat Assessment Tool and Tree Equity Score) to map areas with higher concentrations of low-income households, seniors, people with disabilities, and other groups with heightened sensitivity to climate impacts.
- **Community engagement:** Recognizing that rural communities and Tribal populations (such as Ramona and Barona) are often underrepresented in planning, the process was designed to be inclusive and accessible. Outreach included Asset Manager meetings, Tribal Asset Manager meetings, and community pop-up events at locations like food and clothes pantries, where vulnerable residents could access resources and provide input on climate risks and adaptation strategies. These meetings identified the climate hazards of greatest concern, including extreme heat, wildfire, drought, flooding, and cascading impacts. They also revealed how these events are already affecting community members, infrastructure, and natural systems.
- **Qualitative and quantitative assessment:** Vulnerability scoring combined both impact and adaptive capacity, as outlined in the CCVA. This approach allowed the team to prioritize adaptation actions for populations facing the greatest threats, such as those with limited mobility, economic constraints, or health challenges.



Figure 3: Food and Clothes Pantry Pop-Up Event

Emergency evacuation analysis consistent with SB 99, AB 747, and AB 1409, was completed to inform the CARP and subsequent planning documents. Traffic engineers (Fehr & Peers) used existing methodologies in transportation planning to assess roadway capacity for evacuation. The analysis informed the development of specific strategies to improve access and evacuation of the rural region.

Finally, a fire hazard analysis was completed. Through use of the modeling software programs FireFamilyPlus and FlamMap, outputs for flame length, crown fire potential and rate of spread were produced and are used to evaluate regional wildfire hazards.

The findings of each of these background reports were used to identify regional climate vulnerabilities and provide the foundation for developing adaptation strategies in the CARP. These findings were used to develop strategies that address regional vulnerabilities, identify priority projects, strengthen coordination with San Diego County, and advance actions that reduce risks and future emissions.

Project Impact on Community Planning & Capacity

The project significantly improved local capacity to plan for and respond to climate hazards by creating a CARP that brings the region together, addresses local climate hazards, and reflects community priorities. The process fostered awareness of current and future hazards and the role the regional community plays in increased resilience. The process also strengthened relationships between Tribes, local agencies, and emergency service providers, laying the groundwork for more coordinated emergency preparation and response to hazards like wildfire and drought. The CARP includes strategy Social Governance-1, which calls for the establishment of a Regional Climate Adaptation Coalition to formalize and strengthen partnerships between RMWD, Ramona, Barona,

Implementation Pillars

Successful resilience planning for Ramona-Barona is grounded in a set of guiding pillars that support effective implementation. Figure 19 shows the six Implementation Pillars: feasibility, education, fairness, funding, partnerships, and structural change. These pillars form the foundation of the CARP, and each strategy and supporting action was developed and evaluated through their lens to support effective implementation.

Figure 19 – Ramona-Barona’s Implementation Pillars

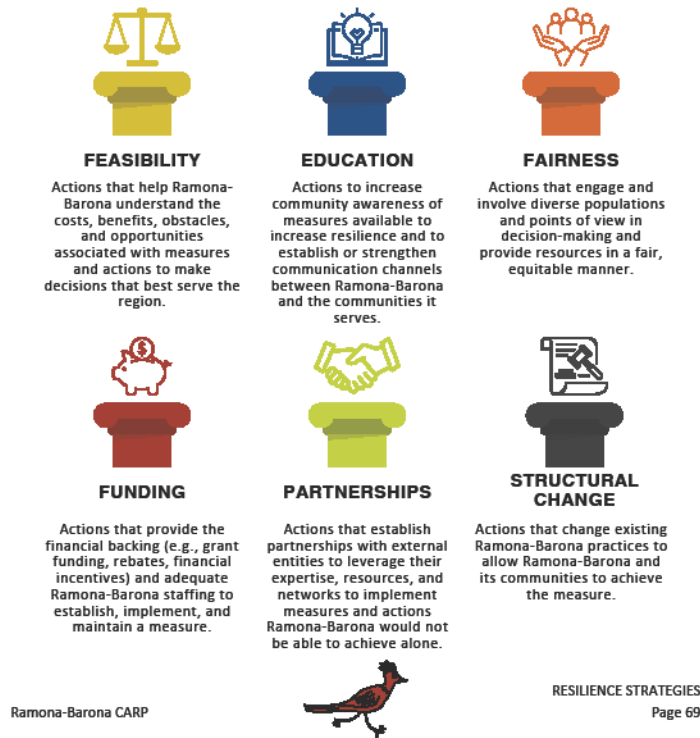


Figure 4: CARP Implementation Pillars

and neighboring jurisdictions with the mission of accelerating climate adaptation efforts, coordinating funding pursuits, implementing regional resilience strategies, and leading fair and culturally responsive community engagement. By formalizing partnerships and emphasizing fair regional representation, the coalition will streamline efforts and increase the region’s capacity to prepare for and respond to climate hazards.

This project broke traditional silos and provided an opportunity for the region to work together to develop a framework of regional specific strategies and actions to reduce local climate hazards. The CARP is a catalyst for regional collaboration to pursue funding opportunities and implement the specific projects and policies identified and needed by the community. Included in the CARP are strategies with supporting actions that align with the community’s top priorities including improved evacuation planning and infrastructure, minimizing wildfire risks by promoting fuel reduction standards and enhancing defensible space around buildings, and increasing resilience through water supply diversification in the face of climate impacts. The collaboration developed through this CARP program is already on track to achieve key resilience goals as the coalition received \$10 million in grant funding for a Community Resilience Center, a key resilience need identified in the CARP. This multi-purpose resilience center is anticipated to be in the design stage in early 2026.

Community Engagement

A Community Engagement Action Plan was developed with the community at the start of the project and used throughout to inform individual engagement activities and larger project decisions. The Engagement Plan identified the specific communities and populations for engagement including traditionally hard-to-reach populations in Ramona-Barona, such as outdoor workers, Tribal members, older adults, youth, people who speak English as a second language, and community members with limited internet access.

The engagement consisted of hosting project workshops and a community survey. The project team also hosted booths (pop-ups) at existing events throughout the community including at a food and clothes pantry to reach community members who may not typically participate in the planning process. Flyers in English and Spanish announced the project team’s attendance, and a fluent Spanish speaker provided real-time translation. Additionally, a project logo was created using a roadrunner, which is a species local to both communities that represents protection, good luck, bravery, adaptability, and endurance – all quite fitting for a CARP.



Figure 5: CARP Roadrunner Logo



Figure 6: Virtual Reality in Action

A video was also created by Virtual Planet telling the story of our changing climate and how we can prepare and adapt together through community voices. “Connected Lands: Stories of Change and Resilience in Ramona and Barona” is a powerful 360-VR (virtual reality) experience that blends Indigenous wisdom, local heritage, and climate science through the voices of a young community member from Ramona and a Tribal Elder from Barona. Including real community voices adds

authenticity and depth, grounding climate science in lived experience and cultural knowledge. These voices make the story relatable, foster trust, and highlight practical resilience strategies that resonate with local values. By weaving personal reflections with scientific insights, the video transforms abstract climate risks into tangible challenges and solutions that matter to the people who call Ramona and Barona home.

A Community Advisory Committee (CAC) was also established at the start of the CARP process to ensure local perspectives guided the plan’s development. The seven-member committee included representatives from the Barona Tribal Council, the Barona Fire Department, the Ramona Community Planning Group, the Ramona Chamber of Commerce, the Ramona Valley Vineyard Association, and local climate and emergency services professionals. Serving as liaisons between the community, Barona, RMWD, and CAC members helped identify challenges and solutions, reviewed technical analyses including the CCVA, Wildfire Hazard and Risk Assessment, Natural and Working Lands Analysis, GHG Emissions Inventory, and Emergency Evacuation Assessment, and provided feedback on adaptation strategies and actions to confirm the plan reflects local knowledge and priorities.



Figure 7: Virtual Reality in Action

Overall, pop-up events proved to be the most effective approach, allowing the project team to meet people where they are and reach residents who might not attend traditional workshops. In future efforts, we would continue prioritizing pop-ups and low-barrier engagement methods while

refining early community surveys to better tailor outreach. Nearly two-thirds of participants were engaging in a planning process for the very first time through the CARP development, bringing fresh perspectives, diverse voices, and new community energy to shaping climate resilience strategies. This level of first-time involvement reflects the plan’s success in reaching beyond traditional frameworks and fostering inclusive participation.

Partnerships & Governance

Throughout this project, the narrative around climate resilience and adaptive capacity shifted increasingly from surviving to thriving. Partnership was the foundation of this plan and led to creative solutions that were both needed and reasonable. The project started as a partnership between RMWD, Barona, and Sustainable Ramona, and grew to much more than that. Throughout the project development process, it was clear that there were synergies between the goals of the individual entities and the broader collective region which were brought to the forefront of the plan.

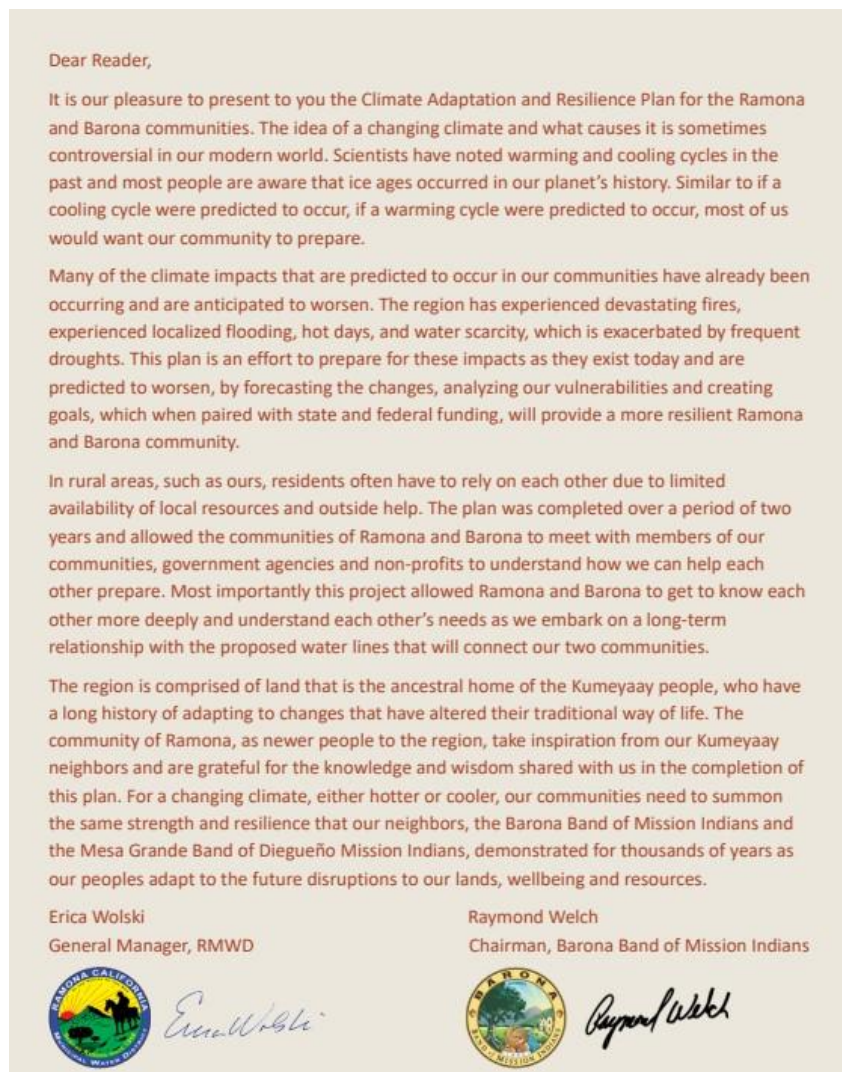


Figure 8: Partnership Project Intro Letter

In addition to the core project partners, there were dozens of additional entities and individuals participating throughout the process, including, but not limited to:

- Barona Fire Department
- Barona Indian Charter School
- CALFIRE
- Caltrans
- Community-based organizations
- County of San Diego (County), Department of Animal Services
- County, Department of Environmental Health and Quality
- County, Department of Public Works
- County, Emergency Services
- County, Land Use and the Environment
- County, Parks and Recreation
- Federal Highway Administration
- Ramona Chamber of Commerce
- Ramona Unified School District
- Ramona Valley Vineyard Association
- Ramona West End Fire Safe Council
- Resource Conservation District of Greater San Diego County
- San Diego Association of Governments
- San Diego Community Power
- San Diego County Fire
- San Diego County Sherriff's Department
- San Diego Fire Department
- San Diego Gas & Electric
- San Diego Regional Water Quality Control Board
- Transit providers
- University of California, Cooperative Extension
- Waste management
- Wildlife Research Institute

This robust project partnership is not only integral to the development of the CARP, but also the implementation of the plan into the future as we work with project partners to complete the actions identified. Collaborating with a diverse team is vital for achieving shared goals. However, this approach also presents the challenge of bringing together the appropriate decision-makers, especially given the varying levels of operational control across agencies and jurisdictions. Despite this challenge, these partnerships enabled knowledge sharing, culturally relevant planning, and resource coordination. Collaborative structures such as advisory groups and Tribal liaison roles are expected to persist through continued partnerships with Barona and increased opportunities to

work with Mesa Grande, supported by ongoing County hazard mitigation updates and joint funding pursuits.

A major outcome of this collective effort is the nearly \$10 million award for the Ramona Community Resilience Campus (CRC). The campus will provide secure, accessible spaces for priority populations, including low-income and rural residents, to access essential services before, during, and after emergencies. Planned improvements include solar panels, upgraded facilities, and amenities like a shuttle program to improve town mobility, directly addressing local needs and strengthening adaptive capacity.

Ramona Community Resilience Campus (RCRC)

Lead Applicant: Ramona Municipal Water District (RMWD)

Co-applicants:

- Pacific Educational Facilities, Inc. (dba Ramona Senior Center/RSC)
- Facilitating Access to Coordinated Transportation (FACT)

Partners: Ramona Senior Center

Score: 211.00

Award Amount: \$9,996,195.00

County and CalOES Region: San Diego, Region 6

Priority Community Status: AB 1550-Designated Low-Income Community, Unincorporated Community, Rural Community

The Ramona Municipal Water District aims to provide a secure, convenient, and accessible multi-benefit space for community members to congregate safely before, during, and after an emergency. The campus will be comprised of three sites that will provide a strong backbone for the CRC to bring existing community services together. The capital projects address the greatest needs of the priority populations in the community in order to effectively, efficiently, and thoughtfully respond to climate hazards and other local emergencies/impacts.

Proposed grant activities include renovation and retrofitting of existing structures, including installation of solar panels and roof upgrades, window and sealant upgrades, and building envelope strengthening. The proposal will also fund water efficient fixtures, upgrades to HVAC system, and outdoor cooling stations. Site improvements of new sidewalk and new parking will improve the CRC's accessibility. Campus amenities and CRC offerings would include operation of an EV fleet on-site, space and supplies for sheltering, distributing food and water from a food pantry, and tree and shrub planting throughout the campus.

Figure 9: CRC Grant Summary

These partnerships and investments lay the groundwork for ongoing collaboration, implementation, and future funding opportunities, ensuring the CARP remains a living plan that delivers tangible benefits for the region.

Lessons Learned & Next Steps

The greatest success of this project has been building trust and collaboration between Ramona, RMWD, and Barona, which deepened mutual understanding and created a foundation for shared

resilience efforts. Institutional changes, such as increased rural and Tribal inclusion in county emergency planning, as well as securing significant funding for the resilience center also stand out as major achievements. This process demonstrated that when communities work together and leverage shared knowledge and resources, they can create more meaningful and lasting change than any jurisdiction could accomplish alone.

The greatest challenge was making climate issues resonate without sounding alarmist or overly catastrophic. Abstract concepts like GHG emissions can feel distant and hard to visualize, whereas immediate, tangible risks such as wildfire connect more strongly because of lived experiences. If starting over, we would begin by surveying the community early to understand their concerns, values, and priority hazards, then use those insights to ground climate adaptation discussions in issues residents already see and feel. We overcame some of these challenges by creating project-specific materials that centered around clear communication and transparency. For example, images of rural areas and chaparral habitat were included to connect the community with the project.

Project partners also faced challenges in dedicating time while managing multiple demands, and efforts to engage Spanish-speaking residents were complicated by concerns among some community members about potential immigration enforcement. More broadly, climate change was not top of mind for many community members, and many lacked the time to participate in planning activities. Beginning with an early community survey, focused on concerns, values, preferred communication methods, and participation barriers, would help tailor engagement strategies and support more culturally responsive and accessible outreach.

The CARP will serve as catalyst for increased community resilience and provides an opportunity to collaborate and secure funding for clearly identified projects and initiatives. Next steps include pursuing funding for implementation, developing rebate and incentive programs, confirming community members are informed about the CARP, tabulating and sharing implementation progress, and pursuing additional funding opportunities such as the \$10 million for the resilience center.

Additional Resources

[Ramona Baraona CARP Project Website](#)

Further Information

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About the Adaptation Planning Grant Program (APGP)

This Project was funded through Round 1 of APGP from 2024-2026. APGP is a part of LCI's ICARP grants portfolio, which distributed \$8 million in funding for adaptation planning efforts across the state.