

Golden Gate CWPP 2025 Update

Scope of Work

The Ember Alliance | March 2024

Summary

TEA is a nonprofit founded in 2019. Our mission is to restore the relationship between communities and fire on the landscape. TEA consists of the Resilient Communities and Ecosystems team, which will lead this Community Wildfire Protection Plan (CWPP) project, and the Fire Operations Team. We have a growing staff of 12 full-time employees and 5 field-based fuels crew members. TEA is proud to be a majority-women organization. Our team has over 40 years of combined fire experience and wide-ranging knowledge and technical expertise, including wildfire pre-planning, fire suppression and response, fire behavior modeling, fire adapted communities, collaborative decision-making, outreach and education, design and implementation of fuel treatments, and forest ecology.

Our Resilient Communities and Ecosystems team advances fire-adapted communities in collaboration with communities, nonprofit partners, fire protection districts, and government agencies by (1) leading community wildfire planning efforts, (2) collaboratively enabling wildfire risk mitigation from the local to state level, and (3) providing technical assistance and applied research to support fire and forest management. We are recognized as a leader in CWPP developing in Colorado and have earned a reputation for collaboratively developing holistic and actionable plans. To date, the team has developed eight CWPPs in Colorado, one CWPP in Washington State, two additional wildfire risk assessments, and conducted a CWPP training course for fire protection districts, NGO's, state agencies, and other contractors. [The completed CWPPs we have worked on can be found at this link.](#)

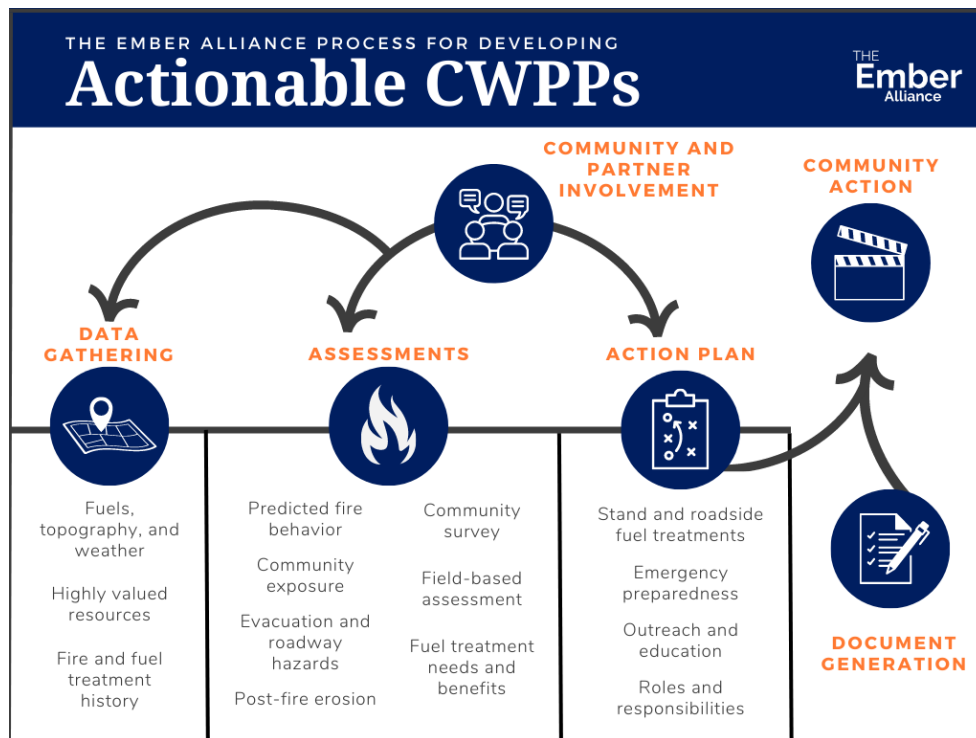
Updating the Golden Gate FPD (GGFPD) CWPP is a crucial step towards reducing wildfire risk, increasing emergency preparedness, and promoting community resilience. TEA will develop a CWPP in partnership with GGFPD that will meet the Colorado State Forest Service (CSFS) 2022 CWPP minimum standards which encompass and expand upon the 2003 Healthy Forest Restoration Act (HRFA) standards. This project will provide an assessment of current fire risk in the area, engage citizens and partners in identifying strategic wildfire risk reduction projects, and foster a collaborative approach to wildfire mitigation that reduce risk of loss of life and property and harmful impacts to natural resources.

This CWPP update will build off the 2011 CWPP update and incorporate other local plans and strategies, including the ongoing Jefferson County CWPP. The updated CWPP will identify wildland-urban interface (WUI), assess wildfire hazards in the District, develop and identify implementable fuels reduction projects, prioritize community action to promote fire adaptation, and consider community and stakeholder input.

The final deliverable of the project will be a CWPP document that follows the 2022 CSFS minimum standards, a synthesized version of the CWPP in the form of a resident action plan, and quality-controlled GIS data including the location of highly valued resources, wildfire and fuel treatment history, landownership, and fire behavior output. The CWPP will include maps of wildfire risk and priority areas/projects, a detailed risk assessment, incorporation of municipal and fire district plans, and an actionable plan that can enable fire adaptation and meaningful wildfire protection efforts in GGFPD.

Approach

The development of the Golden Gate CWPP will have four main focal areas: community & partner engagement, wildfire risk assessment, action planning, and document generation. The process involves gathering community input on concerns and values at risk to wildfire, robust wildfire behavior modeling, assessment of evacuation capacity and concerns, on-the-ground assessment of conditions across the District, meetings with partners to identify fuel treatments, and developing the final document and companion resident action plan. TEA's CWPP process is flexible to ensure that collaboration and consistent engagement are central to the development of the CWPP and tailored to the needs and capacity of the community. Collaboration throughout the process ensures the final CWPP is actionable and can serve as the basis for continued wildfire mitigation and preparation.



Project Area

The project area will encompass the 43 square mile extent of the Golden Gate Fire Protection District. Modeling and the Wildland Urban Interface delineation will extend beyond the boundary to include influences external to the district.

Community & Partner Engagement

Core Team

Strong, implementable CWPPs are informed by local leadership and their place-based knowledge. With the input of the GGFPD, we will convene a CWPP Core Team. The Core Team will regularly meet with TEA to provide feedback on the overall goals, objectives, and direction of the CWPP. They will provide important local context on ecological and social conditions, review findings from the community survey and wildfire risk assessment, help prioritize feasible solutions to wildfire risk mitigation, and review the CWPP document. The Core Team will help us review accomplishments since the District's 2011 CWPP.

Partner Engagement

Organizations responsible for land management, emergency response, and land use regulations are vital partners in CWPP development. Key partners include Jefferson County Office of Emergency Management, Jefferson County Sheriff's Office, Jefferson County Road & Bridge, Jefferson County Open Space, United States Forest Service, Colorado Parks and Wildlife, utility providers, and neighboring jurisdictions, agencies, and organizations. Some of these organizations will be represented on the CWPP Core Team. TEA has existing relationships with many organizations in the District and across the County.

Partners and stakeholders will be involved during the following stages of the process:

- Quality control of data on highly values resources, historical and ongoing fuel treatments, and roads and addresses and reviewing fuels and fire weather data.
- Discussing District and community priorities, values, and concerns.
- Reviewing results of the wildfire risk assessment.
- Providing input and feedback on fuel treatment recommendations.

It is important for stakeholders to understand and support the recommendations and resulting action plan, as they will be largely responsible for implementation. It is critical for the CWPP process to maintain a flexible and adaptive approach, which includes engaging with new stakeholders identified throughout the process.

Community Outreach and Education

Members of the community are integral to mitigating wildfire risk and are invaluable to the CWPP. We use the CWPP process to encourage a sense of shared risk and responsibility across the community. Consulting with the public can help identify barriers to treatment implementation on private lands and result in creative solutions to wildfire adaptation.

At the outset of the project, TEA will create a community outreach and education plan with input from the Core Team. This plan will include timing of CWPP outreach events, venues and meeting agendas, educational materials, social media posts, and other locally relevant outreach materials. We will facilitate and provide support for community engagement while empowering the District to serve as the face of the CWPP to the community. Results from our previous CWPP surveys, as well as peer-reviewed research on fire adapted communities, demonstrate that local agencies and fire departments are one of the preferred, most trusted, and helpful sources of information on wildfire risk and mitigation (McCaffrey & Olsen, 2012).

TEA will co-host community meetings with the Core Team. This will include a kickoff meeting at the outset of the project and a final meeting to share results and encourage resident action.

Hazard and Risk Analyses

From our previous work in the area, we have most of the required basic fire behavior model inputs including data on fuels, weather, and topography which will need minor modifications to be utilized for GGFPD. Secondary analyses are conducted over the entire district as well as each individual planning unit to provide relative community risk.

Fire Behavior

Using our fire behavior models, we produce maps that identify areas most at risk from fires within the project area. The fire behavior analyses will inform fuel treatment recommendations.

Wildland Urban Interface (WUI) Delineation

Identifying the wildland urban interface (WUI) is an important, required component of a CWPP. The USFS has special authority to conduct fuel treatments in WUI areas defined by CWPPs, and some funding sources are specifically for WUI areas. The WUI boundary for GGFPD will be the same as that identified in the Jefferson County CWPP.

Exposure of Highly Valued Resources

TEA will assess the risk that radiant heat and short-range and long-range ember cast pose to structures. Ember production and transport and their ability to ignite recipient fuels are guided by complex processes, so we utilize the simplified approach from peer-reviewed research of Beverly et al., (2010) to assess home exposure to radiant heating and short- and long-range ember cast. Exposure is based on distance from long flame lengths and potential active crown fire.

We will also identify highly valued resources in areas with the potential for extreme fire behavior and high burn probabilities. Highly valued resources include inhabited areas, medical facilities, schools, community venues, local landmarks, recreation areas, suppression resources, and critical infrastructure. This spatial analysis will build on the qualitative discussion of values at risk in the 2011 CWPP update.

Evacuation Modeling and Roadway Survivability

Evacuation analyses performed for the CWPP will model evacuation time and roadway congestion, with the intent to minimize evacuation time for the entire district. Tragedies have occurred when flames from fast-moving wildfires burn over roads while residents are evacuating. Residents can perish in their vehicles trapped on the road, and egress routes can become blocked from flames. We utilize fire behavior predictions to identify road segments that could experience non-survivable conditions during a wildfire. “Non-survivable roadways” are portions of roads adjacent to areas with predicted flame lengths greater than 8 feet. Drivers stopped or trapped on these roadways could have a low chance of survival due to radiant heat emitted from fires of this intensity. This assumption is based on the Haul Chart, which is a standard tool used by firefighters to relate flame lengths to tactical decisions (NWCG, 2019). This will serve as a tool for reviewing the road network, prioritizing zones for mitigation, and providing local partners a communication tool with residents.

The quantitative analysis will be paired with expert-driven qualitative assessment of congestion potential to determine areas of concern. With input from local experts, we will review the road network and housing density to identify congestion points and roads of concern. We will combine insights about potential congestion with roadway survivability modeling to determine areas of high concern for life safety.

Community Relative Risk Ratings

Per the 2022 CWPP minimum standards from the CSFS, CWPPs must include relative risk ratings for sub-communities across the planning area. We will use the plan units identified in past CWPPs, output from our fire behavior modeling, evacuation assessment, and an on-the-ground assessment to determine potential fire behavior, evacuation concerns, suppression challenges, and home ignition zone hazards in each plan unit. TEA will visit each plan unit and use our modified version of the NFPA Wildfire Hazard Severity Form Checklist (NFPA 299 / 1144) to rate hazards within each plan unit. The assessment includes considerations about suppression challenges, including accessibility of roads to fire engines and water sources for firefighting. Relative risk ratings feed into plan unit recommendations as part of the CWPP action plan.

Fuel Treatment Assessment

We will assess the potential need for fuel treatments across GGFPD based on predicted fire behavior, exposure of homes and other highly valued resources, presence of potentially non-survivable roadways, and locations of features with strategic importance of firefighting (also known as potential operations delineations). We will produce maps of relative treatment needs overlaid with the location of previous and ongoing fuel treatments and use these as the basis of discussions with land manager partners about the strategic value and feasibility of fuel treatments. This will include any proposed projects from the 2011 CWPP update so partners can determine which of these projects are still a high priority. See “Fuel Treatment Recommendations” below under the “Action Plan” for more information on defining priority fuel treatment areas.

Action Plan

Following analyses and stakeholder engagement, we will facilitate discussions to establish priorities for a CWPP Action Plan. Priorities actions that may be addressed include emergency preparedness, firefighting capability, evacuation safety, fuels mitigation, and community education. The action plan will establish the relative urgency of potential wildfire projects by comparing their strategic value, degree of readiness, and estimated cost. Action planning will include reassessment of the 2011 Action Items.

To create accountability and meet updated CSFS CWPP standards, the action plan will include prioritization of projects, designated project leads, a general description of the project prescription, and suggestions for subject matter expert involvement. New CSFS standards require that CWPPs identify community leaders and that they sign on to implementation project plans. The Core Team will help TEA identify and contact these leaders early in the CWPP process. Community leaders can represent towns, HOAs, or other spatially distinct community groups.

Fuel Treatment Recommendations

Fuel treatment recommendations are a critical component of community wildfire risk mitigation. Well-designed fuel treatments can also restore ecological conditions and improve wildfire habitat, protect riparian areas, and improve recreation opportunities. The action plan will identify specific treatment areas in GGFPD based on our fuel treatment assessment and in-person discussions with land management partners and community leaders about treatment benefits, feasibility, and the potential to expand upon and link together existing fuel treatments to magnify impact.

Cross-jurisdictional treatments will be prioritized per updated CSFS CWPP standards, and a project leader and relevant stakeholders will be identified to implement fuel treatment projects. Wildfires do not conform to property boundaries, and wildfire risk mitigation must include continuous fuel removal that spans large spatial scales and different management agencies.

The Action Plan will explicitly address how the community can address slash management. Residents in many of the communities where we work identify the inability to dispose of slash as a key barrier to wildfire mitigation. Examples of slash management options are pile burn cooperatives, community slash piles, and chipping programs.

Evacuation and Roadway Treatment Recommendations

Evaluation of evacuations are new requirements for the CSFS CWPP standards and are vitally important for the protection of lives during emergencies. Recommendations from evacuation analyses may include

fuel treatments along roadways, improvements to road networks and evacuation routes, evacuation drills, educational events focused on the “ready, set, go” program, outreach to encourage 100% participation in the Jefferson County emergency phone notification system, signage at recreation areas to inform visitors about emergency alerts and evacuation protocols, and inclusive emergency communications.

Plan Unit Recommendations

We will make specific recommendations for each CWPP plan unit based on potential fire behavior, evacuation concerns, suppression challenges, and home ignition zone hazards. Specific recommendations for each plan unit help guide residents and business owners to address the most important concerns where they live and work. Examples include neighborhood walking tours to discuss exemplary defensible space, partnership with land management agencies to conduct fuel treatments spanning public and private land, coordination with fire departments to develop community cisterns, and modifications to HOA regulations to permit effective home hardening and defensible space.

Other Community Recommendations

The Action Plan will also include priority recommendations for outreach and education efforts, WUI regulations, and considerations for vulnerable populations before, during, and after wildfires. Examples include neighborhood ambassador programs, HVAC programs, WUI regulations, homeowner and short-term rental certification, social media campaigns, grant programs for homeowners, and targeted outreach to underserved communities. These recommendations will be developed collaboratively during the project as we learn about needs specific to the community.

Document Generation

CWPP Document

The final CWPP document will formally capture all model inputs, methods, analyses, results, stakeholder and community engagement, and recommendations that will guide implementation after the CWPP is completed. The Core Team will give input on what content to share in the document. This CWPP will adhere to the 2022 CSFS minimum standards for CWPPs. TEA will write a complete CWPP update that the Core Team will collect signatures for. We will provide editable documents and data for future use.

Summary Document

CWPPs are often lengthy, unapproachable documents. To ensure that the information relevant to residents is easily accessible, we provide a shorter, secondary document that the public can utilize. The focus of the summary document is to provide an aesthetically pleasing, easy to understand summary of specific wildfire risks and what residents can do to mitigate their risk.

Projected Timeline

This timeline includes items listed in the proposal as well as those listed as optional additions. If the scope of work is amended or the additional analyses are not desired, this timeline will be amended at that time. Some of the additional analyses add substantial time to the project, so excluding them would reduce the timeline. The following is an estimate and is subject to revision with consultation with the client. The schedule will be adjusted to allow review from local fire professionals as needed.

Assumptions

The Ember Alliance assumes that stakeholders have spatial data that can be used for fire behavior, evacuation, and neighborhood risk analyses. We will collaborate with partners to identify data availability of fire behavior inputs and roadway networks, but additional data such as address points, community values, and other data specific to GGFPD, we assume the state or District will provide.

Phase 1: Data Gathering and Groundwork

Estimated timeline: *October– November 2024*

- Compile existing resources from relevant stakeholders, including GIS layers, planning documents, information on previous and planned fuels treatments.
- Conduct site visits for ground-based plan unit hazard assessments.

Meetings

- Project kick off: project management / communication and Core Team roles and responsibilities.
- Community kickoff (in person).
- Core Team / Partner: Review of fire behavior models.
- Core Team / Partner: realistic evacuation routes, destinations, and groups.
- District capacity assessment.
- Monthly, biweekly, or weekly client meetings as appropriate.

Deliverables

- Map of Fire Behavior Fuel Models.
- Map of Plan Units.
- Draft Introduction with a description of district capacity and fire history for Core Team review.

Phase 2: Wildfire and Hazard Modeling

Estimated timeline: *December 2024– February 2025*

- Map WUI based off Jefferson County and revise based on Core Team feedback.
- Develop a draft map of community values at risk (VAR) and revise based on Core Team feedback.
- Conduct roadway survivability and structure exposure analyses.
- Conduct evacuation modeling to assess potential evacuation times and roadway congestion.
- Share model results with Core Team for review and adjust output based on feedback.

Meetings

- Core Team / Partner: review of fire behavior, roadway survivability, structure exposure, VAR.
- Core Team / Partner: review of evacuation models.
- Mid-project community meeting (in-person).
- Monthly, biweekly, or weekly client meetings as appropriate.

Deliverables

- Maps of the community's WUI and values at risk.
- Draft maps of roadway survivability and structure exposure to radiant heat and ember cast.

- Draft maps of evacuation times and roadway congestion.
- Map of wildfire and ignitions history.

Phase 3: Wildfire Risk Assessment

Estimated timeline: *March 2024 – April 2025*

- Summarize fire behavior model output and on-the-ground assessments to prepare relative risk ratings for CWPP plan units.
- Conduct values at risk assessment as a function of burn probability and potential flame lengths.
- Prepare draft recommendations for defensible space and home hardening measures.
- Continued synthesis of community survey results.

Meetings

- Core Team / Partner: draft recommendations for defensible space and home hardening measures (may be part of a regular client meeting if other stakeholder feedback unnecessary).
- Monthly, biweekly, or weekly client meetings as appropriate.

Deliverables

- Draft maps of plan unit relative risk ratings.
- Draft maps and figures from Values at Risk assessment.
- Table of priority actions for residents in each plan unit to reduce individual and shared risk.
- Draft recommendations for defensible space and home hardening measures.

Phase 4: Action Planning

Estimated timeline: *May – July 2025*

- Conduct prioritization assessment for landscape-level and roadway fuel treatments.
- Revise treatment prioritization based on feedback from Core Team and stakeholders.

Meetings

- Core Team / Partner: priority treatment units, ongoing and planned fuel treatments, and plans for implementation (full day, in-person).
- Monthly, biweekly, or weekly client meetings as appropriate.

Deliverables

- Draft maps of landscape-level and roadway fuel treatment priorities.
- Draft recommendations for fuel treatments at the landscape, neighborhood, and roadway-scale Core Team review.
- Draft CWPP implementation plan.

Phase 5: Final Document Generation

Estimated timeline: *August – October 2025*

- Prepare a draft CWPP document that adheres to the 2022 CSFS minimum standards and includes analyses, outcomes of stakeholder and community engagement, recommendations for individuals, community groups, and GGFPD, and an Action Plan.
- Share draft with Core Team for review and make revisions based on feedback.
- Conduct a community-wide meeting to share findings and recommendations from the CWPP.

Meetings

- Core Team: draft document feedback (may be part of a regular client meeting if other stakeholder feedback unnecessary).
- Monthly, biweekly, or weekly client meetings as appropriate.
- Community-wide meeting to share findings and recommendations from the CWPP (in person).

Deliverables

- Completed CWPP.
- Completed summary document.
- All spatial data and model output packaged with ArcGIS for GGFPD.

Budget

Community and Partner Engagement	\$ 13,353.00
Hazard and Risk Assessment	\$ 18,414.10
Action Plan	\$ 12,088.25
Document Generation and Project Management	\$ 22,800.00
Total Cost	\$ 66,655.35

Accuracy

The contents of this SOW are accurate. Our costs will remain effective for a period not to exceed 60 days from the date the SOW is sent. Projected timeline subject to change.