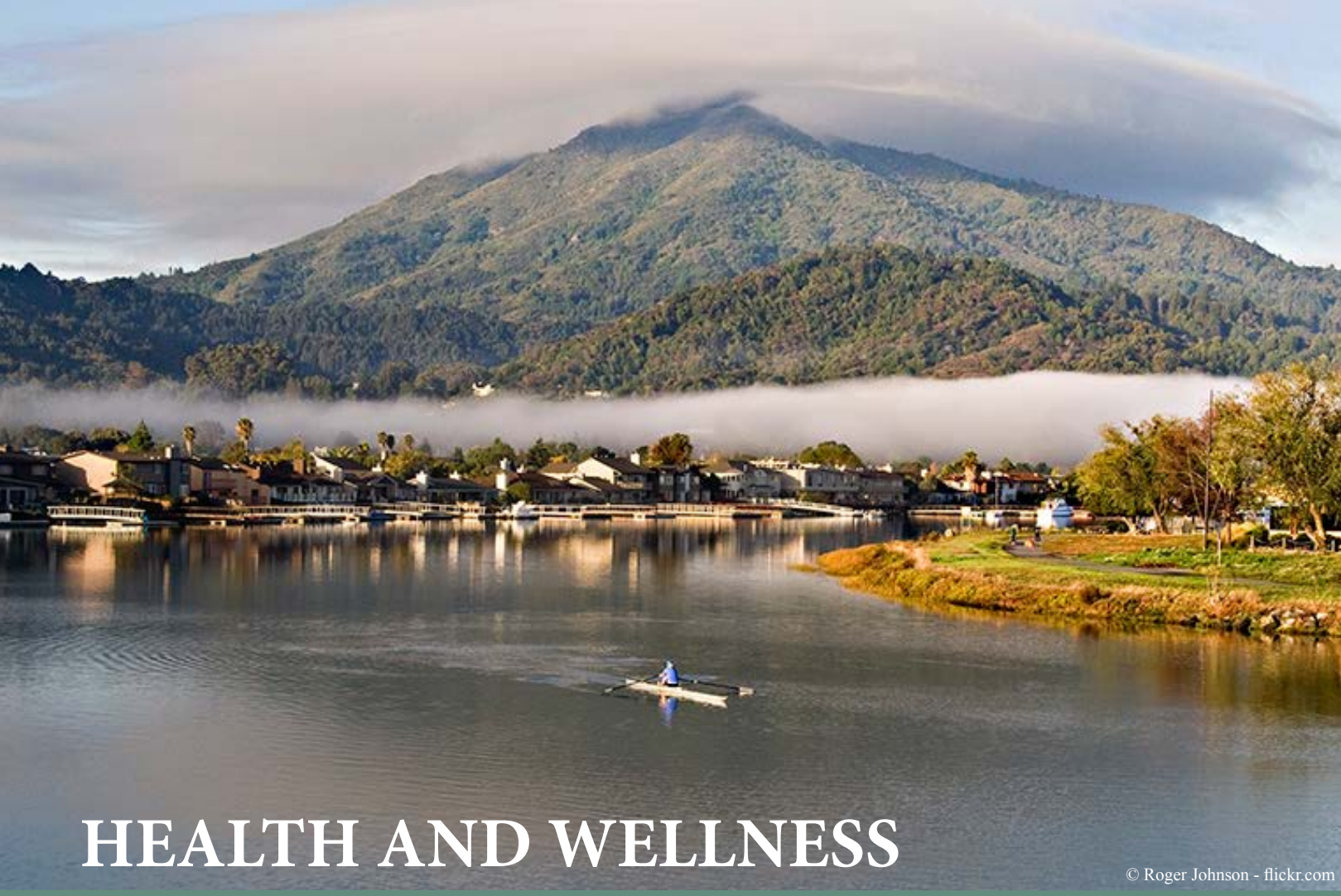




2
town-wide



HEALTH AND WELLNESS

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The events of the last few summers have shown that summer heat waves and smoke from regional wildfires, can affect everyone in the community. Dense wildfire smoke, which directly impacts physical health, mental health, and limits the ability of all Corte Maderans to go outside (*100 AQI or above for sensitive populations, and 150 AQI and above for healthy adults*),⁵⁹ has become a regular occurrence. While extreme heat events are uncommon in Corte Madera, hot summer days and warm nights are projected to become more frequent and last longer. Wildfires not only affect the health and safety of residents but have lasting mental health impacts related to the trauma of leaving one's home or the loss of possessions and income. Both the direct and indirect impacts from heat and wildfire smoke can be

particularly damaging to the health of frontline community members such as older adults, youth, those with chronic health conditions, outdoor workers, and the unhoused.⁶⁰ The Public Safety Power Shutoff (PSPS) program by PG&E is designed to reduce the likelihood of wildfire ignitions due to downed power lines or other system malfunctions during red flag warning days (days with high temperatures, high winds, and low humidity) has created lasting power outages throughout the region, county, and Town. Experiences from these events have shown that power outages that last more than a day affect the functionality of critical infrastructure in Corte Madera, including cell-towers, traffic signals, sanitary district pump stations, and refrigeration.⁶¹



FEATURED ACTIONS: HEALTH AND WELLNESS

Coordinate with community organizations, especially environmental justice, LatinX, and other community organizations to identify gaps in frontline community resilience planning and further engage frontline community members in wildfire risk, evacuation, and resilience work.

Project
Lead: TBD

Collaborating with regional organizations dedicated to engaging and supporting frontline communities are key to building trust and ensuring the health, safety, and well-being of all residents.

Identify climate change-related mental health and trauma treatment measures to incorporate into existing town plans, trainings, programs, and policies.

Project
Lead: TBD

Extreme weather events can have significant impacts on mental health,⁶² and this connection is often challenging to integrate into regional planning efforts. Yet it is critical that this issue receives dedicated attention and resources. Example organizations include the Psychological First Aid (PFA), Skills for Psychological Recovery (SPR), or the Good Grief Network.



Develop and adopt a Green Infrastructure Plan with a focus on climate resilient tree species.

Project
Lead: TBD

A Green Infrastructure Plan would provide the framework for understanding, defining, and planning green infrastructure. Corte Madera's urban forest provides a number of services including detaining stormwater, absorbing air pollutants, and creating shade that cools sidewalks, streets, and buildings. Continuing to invest in green infrastructure, including climate-resilient tree species, will not only enhance resilience, but also add to resident well-being and quality of life.

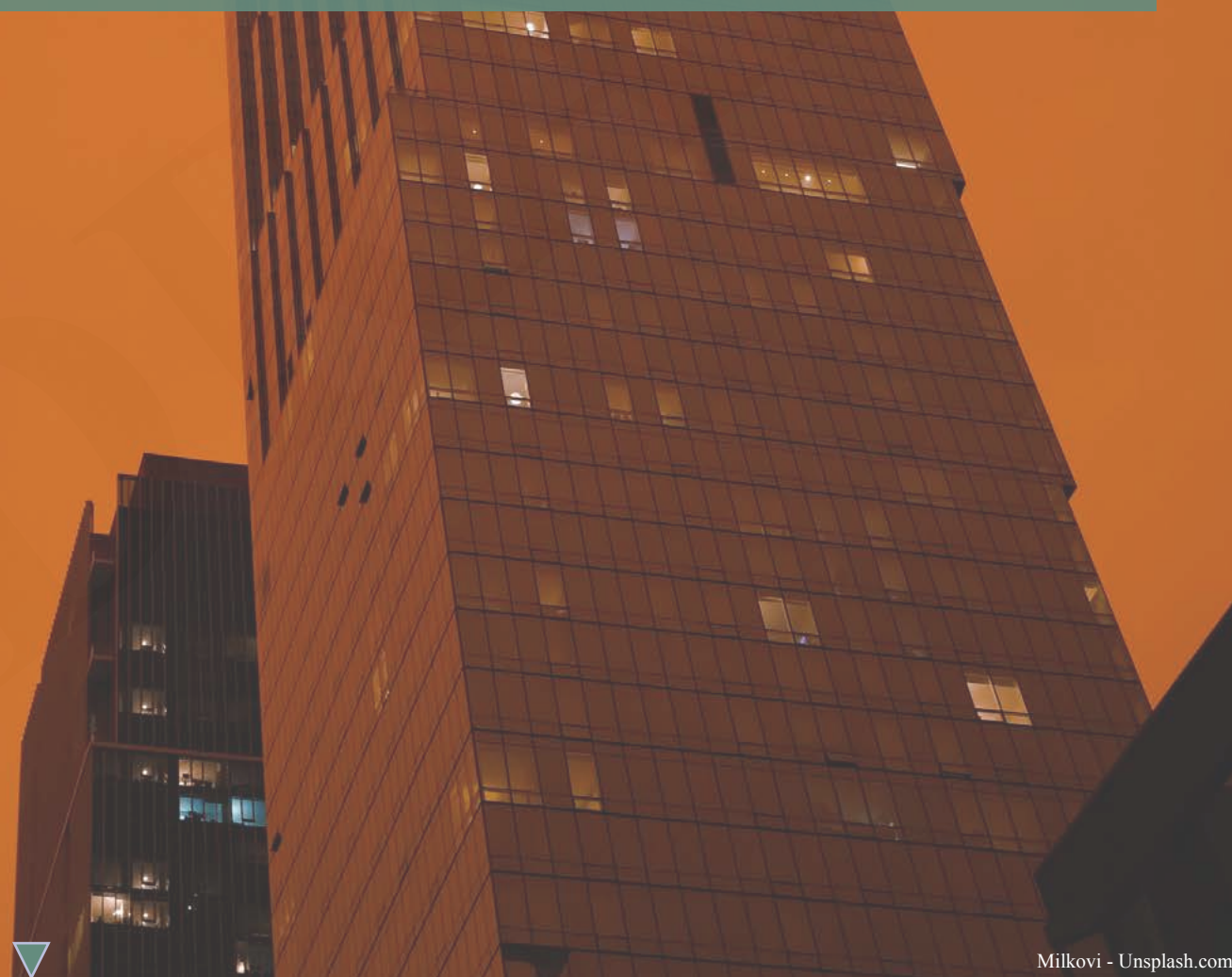




Ensure all Town buildings have smoke and particulate filtration systems, especially dedicated emergency evacuation shelters and resilience hubs.

Project
Lead: TBD

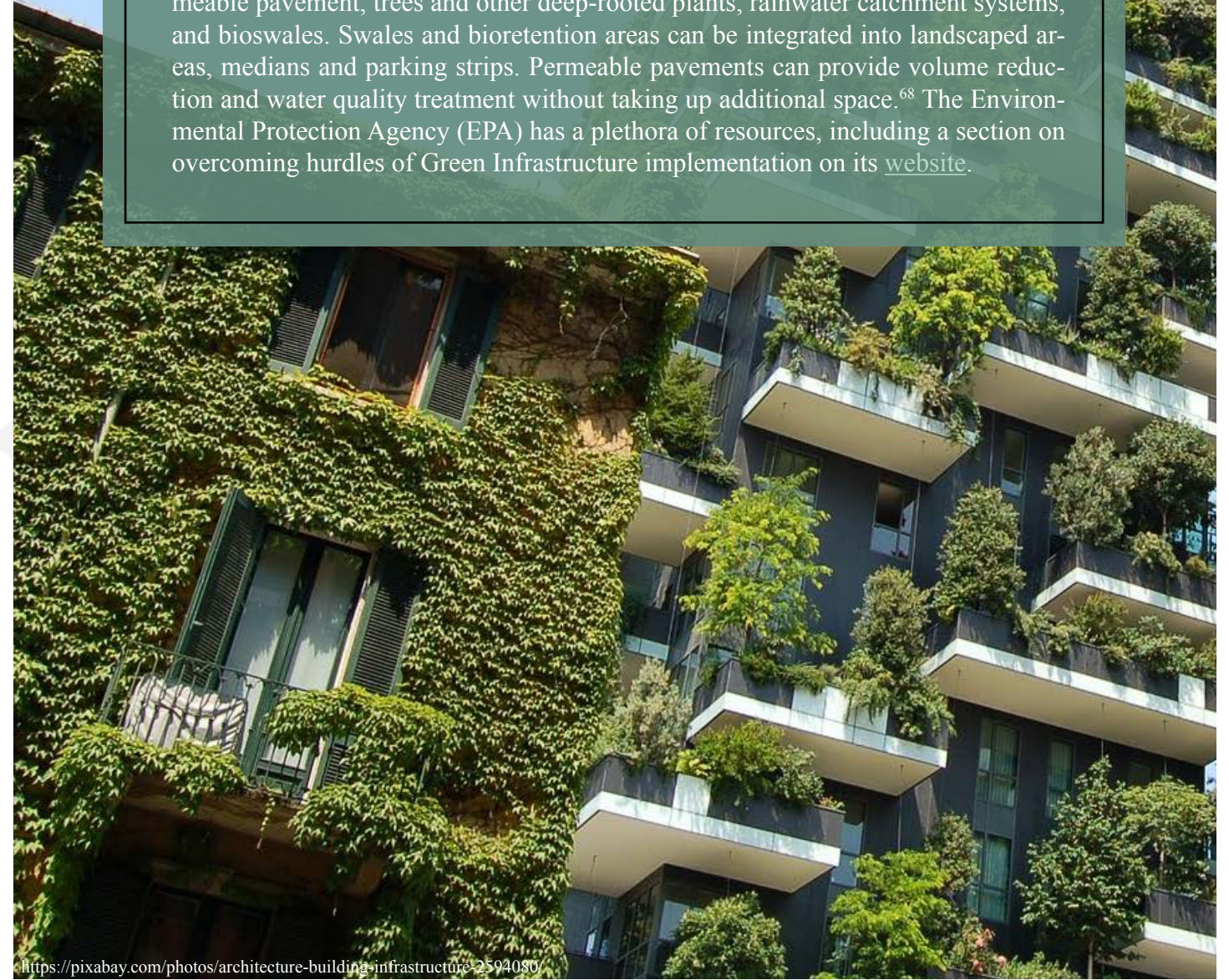
Ensuring that buildings and resilience hubs in Corte Madera have effective smoke and particulate filtration systems is key to ensuring the health and well-being of residents, especially during an emergency. Additional actions include deploying low-cost particulate matter sensors in relevant Town locations that provide data for indoor and outdoor levels in real-time. Resilience hubs can also incorporate solar and battery storage systems to provide a reliable center for cooling, water, power, and communications during power outages and reduce utility costs during daily operations.



Green Infrastructure and LID

Green infrastructure relies on plants, soils and natural systems to manage rainfall by absorbing, delaying, and/or treating stormwater.^{63,64} Green infrastructure solutions are multi-beneficial in that they can help reduce pollution from runoff, prepare for extended droughts by retaining water, reduce temperatures in urban areas during hot weather, improve air quality, lower building energy demands, protect coastal areas, and reduce energy spent on managing water.⁶⁵ Additionally, green infrastructure in urban areas has been proven to improve mental health and wellbeing.⁶⁶ Similarly, low impact development (LID) is a method of building design and community development with the intention of minimizing and mitigating climate impacts like flooding or urban heat.⁶⁷

Green infrastructure can be woven into the community from small-scale site specific elements to larger-scale elements across the entire watershed. Examples include permeable pavement, trees and other deep-rooted plants, rainwater catchment systems, and bioswales. Swales and bioretention areas can be integrated into landscaped areas, medians and parking strips. Permeable pavements can provide volume reduction and water quality treatment without taking up additional space.⁶⁸ The Environmental Protection Agency (EPA) has a plethora of resources, including a section on overcoming hurdles of Green Infrastructure implementation on its [website](#).



<https://pixabay.com/photos/architecture-building-infrastructure-2594080/>



EMERGENCY PREPAREDNESS

Emergency preparedness requires individual awareness, strong communication, and reliable sources of information available through multiple channels. In order to minimize the impact of potential disasters for community members, the Town plays an important role in making sure residents and visitors have the correct information about what to do and where to go in the event of a disaster. Individuals also have a responsibility in emergency preparedness, and should stay informed, prepare emergency kits, and otherwise take precautions to minimize risk to themselves and their families.

Reaching all Town residents with clear and up-to-date information in emergency situations remains one of the biggest challenges Corte Madera currently faces. For example, the Town currently relies on Alert Marin and Nixle which are free, opt-in emergency alert systems. Yet as of 2019, only around 10% of the county's residents had signed up to receive alerts.⁶⁹ Communication challenges are compounded by difficulties reaching residents who do not have internet service or those who lose power during a PSPS event or an emergency.

FIRESafe Marin currently has an agreement with all Marin municipalities (except Tiburon and Belvedere) to develop wildfire evacuation maps and plans to be published in 2020.

Future planning efforts should focus on regional connectivity and communication, engaging the right regional partners in Town evacuation planning, optimizing the Town and Counties evacuation protocols, and identifying key potential challenges in regional evacuations. For example, there have not been any regional evacuation-focused traffic studies done necessary to determine important details regarding regional choke points, the amount of time required to evacuate the entire Town, and other important details. In addition, several of the county's transit services and partner agencies are not adequately integrated into the emergency operations or chain of command, nor are they properly integrated into the Marin Emergency Radio Authority (MERA) communications system and therefore don't have an effective and efficient way of communicating with the public during an emergency.⁷⁰

Rethinking Evacuation Notification Systems in Corte Madera

Over the last several years, catastrophic and deadly wildfires have ignited critical reviews of inconsistent emergency management measures and notification systems across the State of California. Concerns have been focused on “gaping holes in the state’s county-controlled warning systems - a mix of services from multiple vendors, subscriber programs with low participation rates, outdated landline lists, and a federal cellphone alert system so imprecise some emergency managers are afraid to use it.”⁷¹ Some lawmakers have pushed for measures that would “override state privacy laws” to create automatic, mandatory, opt-out emergency notification systems. In addition, several counties (including Sonoma County) are improving the way they communicate with and engage non-English speaking residents and other frontline community members in emergencies.

Currently, the Town uses several key emergency notification systems to ensure that residents have the most pertinent and up-to-date information about emergency and evacuation measures including:

- **Alert Marin** - The single most important source for specific emergency and evacuation notifications in Marin County (i.e. shelter in place, flood or wildfire notices, house or neighborhood specific evacuation warnings and orders). Residents can sign up for this opt-in notification service from Alert Marin at www.alertmarin.org
- **Nixle** - A service used by regional agencies to send out informational notices about an issue in the community (i.e. Red Flag days, vehicle accidents, or road closures). Nixle notifications are sent to users by zip code, therefore has less specificity than Alert Marin. Residents can sign up for opt-in notifications from Nixle at www.nixle.com/
- **Social Media** - The Central Marin Fire Department and the Marin County Sheriff’s office uses Twitter, Facebook, and NextDoor to relay pertinent information about evacuation, road closures, and resources. Residents can follow the County Sheriffs office on Twitter, Facebook, and NextDoor using the handle @marinsheriff and the County Fire Department at @marincountyfire
- **Local TV and Radio Stations** - Local media sources are often reliable sources of specific information regarding evacuation and wildfire preparedness.
- **Wireless Emergency Alerts (WEA)** - This notification service sends “push notifications” by text message to residents by zip-code who have a compatible cell phone and who sign up for the service. Notably, if power lines or cell towers are disrupted or damaged due to wildfire, these notifications may no longer work. Additional critiques across the State have pointed out inadequacies and distrust of the WEA system and have requested broad improvements.

All residents should review, understand, and complete the following checklist to ensure that they are prepared for an emergency evacuation in the case of a catastrophic wildfire. The full checklist and additional information about these systems can be found on the FIRESafe Marin website at <https://www.firesafemarin.org/evacuation> Broader town and county-wide discussions about the current emergency notification systems Corte Madera relies should focus on addressing gaps in planning and engagement as well as integrating emerging best practices from around the State. Guidelines from the State can be found [here](#). Overall, there are no silver bullet solutions for this complex problem. Yet, additional attention to, and continued collaboration with regional entities to improve these systems may save lives.



FEATURED ACTIONS: EMERGENCY PREPAREDNESS

Require that climate change is included in Town or multi-jurisdictional planning documents, policies, programs, and ordinances as they are reviewed or updated.

Policy and Project

Lead: TBD

Ensuring that all Town plans are consistent, reflect best available knowledge of regional climate projections, and support the Town's efforts to reduce climate change and extreme weather impacts is essential. It is also critical that updated climate projections are used to inform capital improvement projects (i.e. new or upgraded roads) which should meet design standards that incorporate flood risk, landslides, and sea level rise projections.

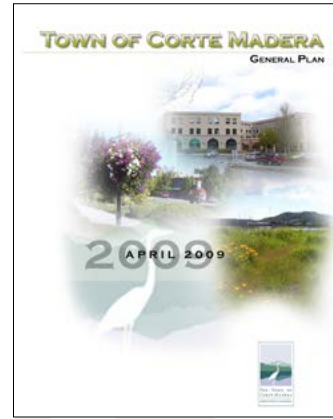


Figure 2.1 - The Corte Madera General Plan (2009).

Ensure all residents are able to access emergency and evacuation notices via multiple sources, including voice, text, siren, radio, and outdoor broadcasts.

Program

Lead: TBD

In the 2018 Camp Fire in Paradise, California, all communications went down for residents due to telecommunications infrastructure being destroyed in the fire. This disaster highlighted many flaws in an antiquated notification system that many communities (including Corte Madera) rely on. Recently, the California Public Utilities Commission ordered wireless communication service providers to develop resilience plans and investments in their networks (including generators that run 72 hours following an emergency) in order to make sure users have access to communications and notifications during an emergency.⁷⁵ The Town should also identify opportunities to increase engagement and subscription of Town residents to key evacuation notification systems (i.e. *Alert Marin*). This includes considering a mandatory alert notification system or creating an opt-out system.

Educate ALL community members about evacuation protocols, maps, and procedures for emergency preparedness and evacuation.

Program

Lead: Central Marin Fire Authority

The Town needs to more proactively identify and address gaps in their communication and messaging when it comes to evacuation. This includes consistent messaging around Alert Marin and the nationally recognized *Ready, Set, Go* program,⁷² participating in and integrating the regional collaboration and current evacuation mapping work into Town materials and presentations, coordinating with County evacuation notification partners (Central Marin Fire and Sheriff's Office) and working with FIRESafe Marin to make sure that residents have access to and are engaging in their wildfire preparedness and evacuation programs. This includes putting people on the ground in neighborhoods to engage with residents directly.⁷³ In 2018, the Central Marin Fire Authority conducted a public evacuation drill in which only 18% of residents participated. A recent report also indicated that residents in Marin County were presented with inconsistent information specific to wildfire preparedness and this message "failed to reach most citizens, especially parents of young children", prompting a call by the Marin County Civil Grand Jury to better educate, inform, and engage the public about emergency preparedness in the case of a catastrophic wildfire.⁷⁴

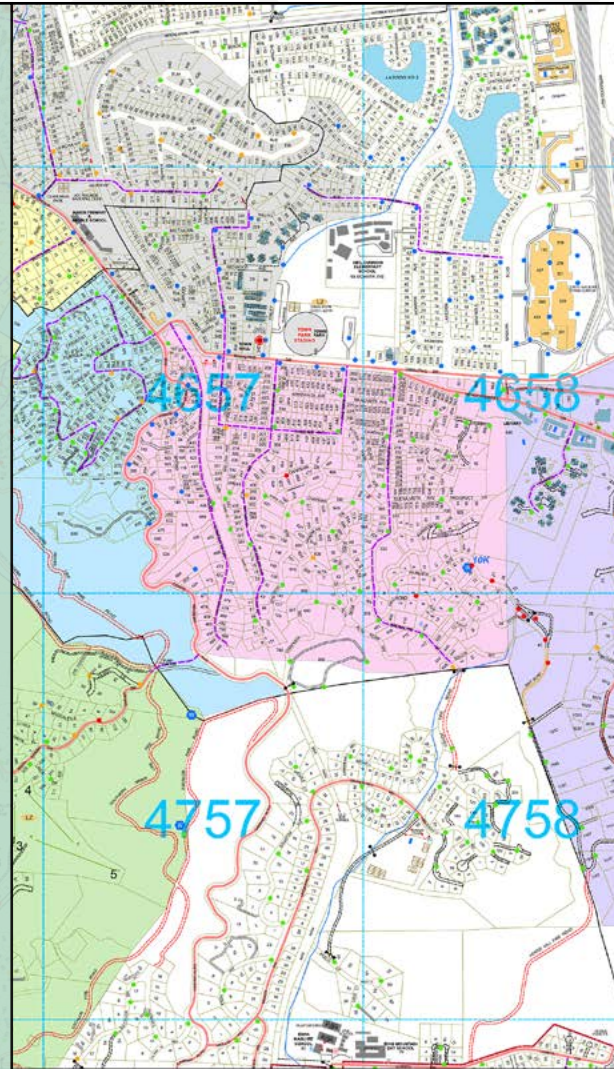


Figure 2.2 - The Corte Madera area featured in the Marin mutual threat zone plan evacuation zone maps.

Integrate protocols, systems, and planning best practices for managing the impacts of evacuation, emergency response, and health care during a global pandemic from federal emergency response agencies (i.e. Red Cross and FEMA).

Project

Lead: TBD

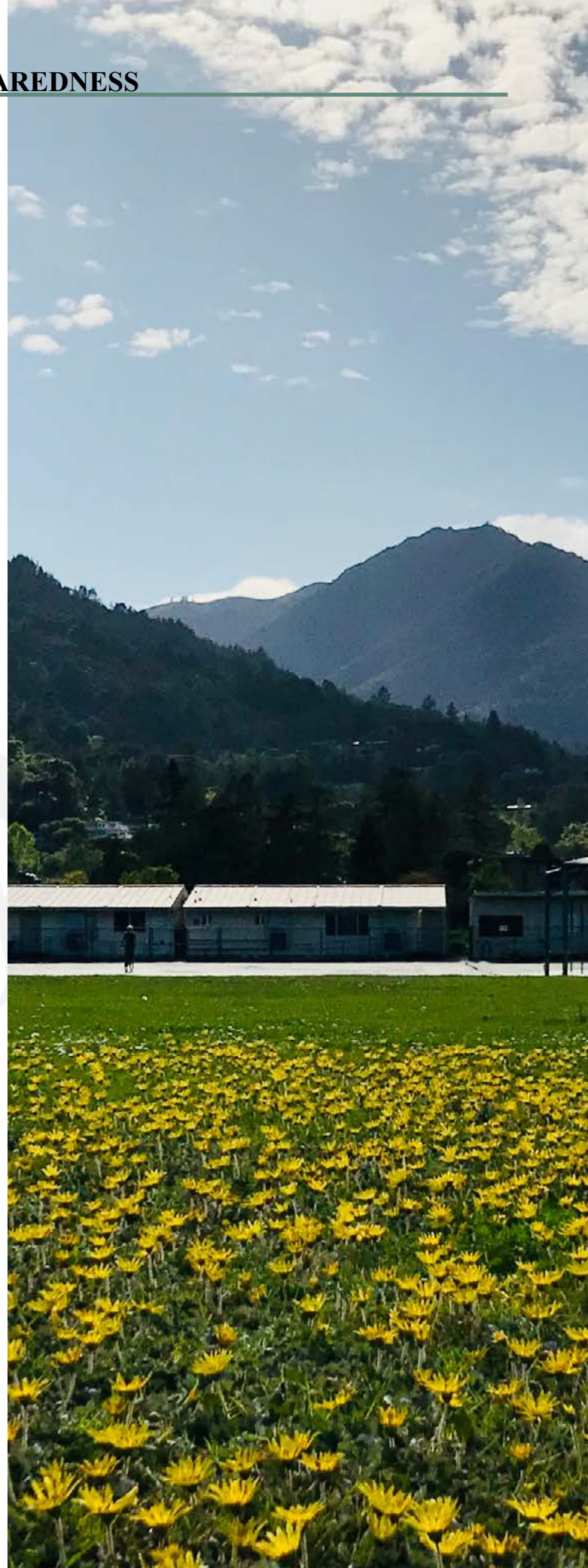
There is no denying that the COVID-19 pandemic has changed the way communities, schools, and organizations operate. It is unlikely to be the last such sweeping health crisis that changes how we deal with emergency response during a pandemic. Currently, new protocols are being written and tested by groups like FEMA and the Red Cross to address this issue, such as how best to protect evacuees and use hotels instead of communal shelters to house. These protocols incorporate the 5 C's - Communication, coordination, cooperation, collaboration, and connection, and ensure that we break down agency and jurisdictional silos and integrate public health planning into emergency operations. Corte Madera can learn from these experiences and should incorporate key findings and recommendations into its emergency plans and protocols.



Identify opportunities to enhance the capacity of community centers and school facilities to become Resilience Hubs, evacuation centers, cooling centers, and charging stations, during extreme heat or weather events.

Project
Lead: Corte Madera Public Works

The Town has applied for a grant to help make the new Town Hall expansion a Resilience Hub for the community. The building will be earthquake resistant, provide shelter for people during extreme weather events, provide resources and information for residents on emergency management and preparedness, power for public uses during power outages, and provide other public services.



Resilience Hubs in Corte Madera

Resilience Hubs are unique “community-serving facilities” that are emerging in cities across the country in order to support residents, enhance communication, and serve as a centralized location for distributing services before, during, and after a natural hazard. They use a physical space - a building and its surrounding infrastructure - to meet numerous goals, both physical and social. Resilience hubs can effectively improve emergency preparedness, reduce climate pollution, and enhance community resilience.⁷⁶ By retrofitting, or augmenting established, trusted, and community-managed facilities, Resilience Hubs also provide community members and decision-makers with an opportunity to work together on climate mitigation, adaptation, and equity efforts in a holistic way that also builds community resilience and community well-being.⁷⁷

Work by the Urban Sustainability Directors Network has brought this emerging practice to the forefront of adaptation and resilience efforts for leading communities across the country. Corte Madera knows first hand how wildfire smoke, power shutoffs, flood events, and extreme heat events can stress the Town’s infrastructure and its community members. Older adults, kids, those with disabilities, low-income residents, BIPOC (Black, Indigenous, and people of color), LGBTQ, English as a Second Language (ESL) communities, the unhoused, those who lack transportation, and those with chronic illnesses or specific ongoing medical needs are particularly at risk during natural hazards or extended periods without power. PG&E’s PSPS events,⁷⁸ or other extended periods without power, can limit the ability of residents to cook, work, complete schoolwork, or communicate with friends and family. Resilience Hubs should be designed by and built with the neighborhoods they serve in collaboration with local businesses, nonprofits, and others invested in community resilience and well-being. If done well, Resilience Hubs are co-designed with the neighborhoods they serve and effectively support at-risk community members. They also serve as a focal point for additional community investment, are managed by community members, and support and strengthen individual neighborhoods.

- **Buildings** - The best locations to house Resilience Hubs are trusted community locations in different neighborhoods across the Town such as the new Town Hall, Cove School, or Neil Commings Elementary. Idea buildings are safe, have solar energy storage or generator backup systems, are ADA accessible, have air-conditioning and heat, are earthquake resistant, are equipped with air filtration systems (in the case of extreme wildfire smoke), have kitchens, and provide enough space to shelter residents in case of an emergency are all important considerations. In addition, Hubs should be located in safe areas away from (or above) flood plains or high fire risk areas.
- **Emergency Needs** - Hubs should be able to supply needs during a crisis such as freshwater, food, ice, refrigeration, charging stations, and emergency medical supplies. Ideally, the hub could supply power for at least 72 hours via renewable sources and battery storage or generators. These energy systems can reduce the use of fossil fuels on normal days (and thus reduce GHG emissions) and support critical services during emergencies.
- **Supporting Activities** - These Hubs shouldn’t only be used in times of disaster. They can support community activities, after school programs, health screenings, or other important community functions. In addition, those amenities should be designed with the community/neighborhood to ensure that it meets the needs of its residents.
- **Social Cohesion** - Building on the long standing tradition and support of Neighborhood Response Groups, the Resilience Hubs can act as safe spaces for community members to gather, strengthen relationships, and foster an inclusive year-round community. These investments will pay off in times of emergency as neighbors continue to find opportunities to support each other.

Resilience Hubs in Action

The City of Los Angeles set the goal of creating Resilience Hubs in the City’s most vulnerable neighborhoods by 2028. Since setting that goal, the LA Regional Climate Collaborative and non-profits in the region have been further exploring this concept, holding webinars and discussions on how best to move forward and achieve this goal.



RESILIENT INFRASTRUCTURE

Throughout the community, people are generally reliant on personal vehicles and utilize a limited number of roadways. This leads to congestion throughout the transportation network, which is especially dangerous during an emergency. Where and how the Town's infrastructure is built will determine how well it can protect residents and accommodate or mitigate future climate and extreme weather impacts. Further, the Town does not own electricity, drinking water, or telecommunications infrastructure directly, but must work directly with those companies, agencies, and organizations to enhance the resilience of those systems.

This report discusses three types of infrastructure: critical facilities (clinics, fire and police stations, schools), residential and commercial buildings, and the multimodal transportation network.

Increased investment in transportation infrastructure and policies are needed to facilitate mobility throughout the town in both everyday life and an emergency. Such investments will create a more resilient transportation network and simultaneously support the Town's environmental, health, economic activity, and equity values and goals.



FEATURED ACTIONS: RESILIENT INFRASTRUCTURE

Work with regional utilities to enhance the preparedness, protection, and resilience of water, energy, and telecommunications infrastructure.

Project

Lead: Corte Madera Public Works

The infrastructure we rely on is far more than just our roads, ferries, trains, and planes. We rely on telecommunications, water, and energy systems, all of which have their own unique challenges and characteristics when it comes to climate resilience. Each partner operates differently, and each partner plays a key role in supporting the Town. For example, Corte Madera obtains its drinking water from the Marin Municipal Water District (MMWD) which services ~190,000 customers within 147 square miles along the eastern corridor of Marin County from seven local reservoirs.⁷⁹ If a fire were to happen in the hills North and West of the Town, silting, erosion, and landslides would inevitably impact the water quality throughout the watershed. In addition, there are areas of the Town in which there is minimal water supply (Casa Buena Drive) or no water mains at all constructed (Meadow Valley).⁸⁰

Invest in and expand bike infrastructure and e-bike policies and programs.

Program

Lead: Corte Madera Public Works

Corte Madera has a strong culture of outdoor recreation, including bicycling. While the hillside neighborhoods don't seem the most hospitable to bicycling, the rapid and accelerating adoption of e-bikes (bicycles with an electric assist motor) offers mobility choices that could prove crucial in emergencies while providing additional benefits. Corte Madera, should consider policies to support the use of e-bikes such as designating charging stations to subsidize adoption.

Explore a regional approach to meeting housing development goals that locates new housing areas within the County that are less vulnerable to climate hazards.

Program

Lead: Corte Madera Planning Department

See Climate, Housing, and Resilience section on pages 130-131 for more details.

Ensure that transit agencies are involved in the Town's evacuation preparedness planning, comprehensive safety protocols, and emergency command structure.

Project

Lead: Corte Madera Planning Department

Regional transit representatives are key partners in the chain of command responsible for planning and implementing emergency evacuation. According to the Marin County Civil Grand Jury Report on Wildfire Preparedness, Marin Transit is the only transit provider represented in the Marin Emergency Operations Center (EOC). In addition, key regional partners are not included in these discussions (including Golden Gate Transit emergency managers, SMART representatives, Whistlestop, Marin Airporter and ferry operators). Proper communication and close collaboration would enable the County and Town to evacuate residents as quickly and as safely as possible.



Improve transportation network capacity with multimodal and local access improvements.

Project

Lead: Corte Madera Public Works

Rather than solely accommodating vehicles, the Town should cultivate strategies that increase community members' ability to regularly utilize pedestrian pathways, bikeways, and transit, including improving and expanding multimodal infrastructure. Specific policies and infrastructure improvements can be referenced on page 104. Lastly, the Town should also work with regional agencies to incorporate statewide and regional transportation goals and land use plans to produce a cohesive multimodal adaptation approach.

Improve transportation infrastructure to streamline traffic flow in case of an emergency evacuation.

Program

Lead: Corte Madera Public Works

This includes updating traffic control centers, solar powered signs, and optimizing merge conditions and signals that can operate reliably during PSPS and emergency events. Preserving and improving the transportation network will require time, resources, and planning. The Marin Wildfire Protection Authority (MWPA) will publish an evacuation study that will assess Town and County evacuation connections including a focus on transportation infrastructure, roadways, and traffic control centers in 2021. As appropriate, recommendations from this effort should be integrated into all existing local and county plans, including the General Plan, the Capital Improvement Plan, and the Hazard Mitigation Plan, among others.

While there is access to both the Larkspur Ferry Terminal and Sonoma-Marin Rail Transit (SMART), the town straddles US Highway 101 and most trips are made by car. Due to the town's sparse multimodal transportation network, people are reliant on personal vehicles and also funneled through a limited number of roadways. This leads to congestion throughout the network, which is especially dangerous during an emergency. In particular, the hillside neighborhoods have very limited connectivity within and between them and also lack multimodal connections. In some cases, the transportation network across the town is supplemented by paths and stairways; however, the existing pedestrian paths are limited - not all are ADA-compliant and bicycle facilities are very limited. Given Corte Madera's vulnerability to climate change, the redundancy and resilience of the transportation network is especially important to ensuring the safety of the town's residents, employees, and visitors.

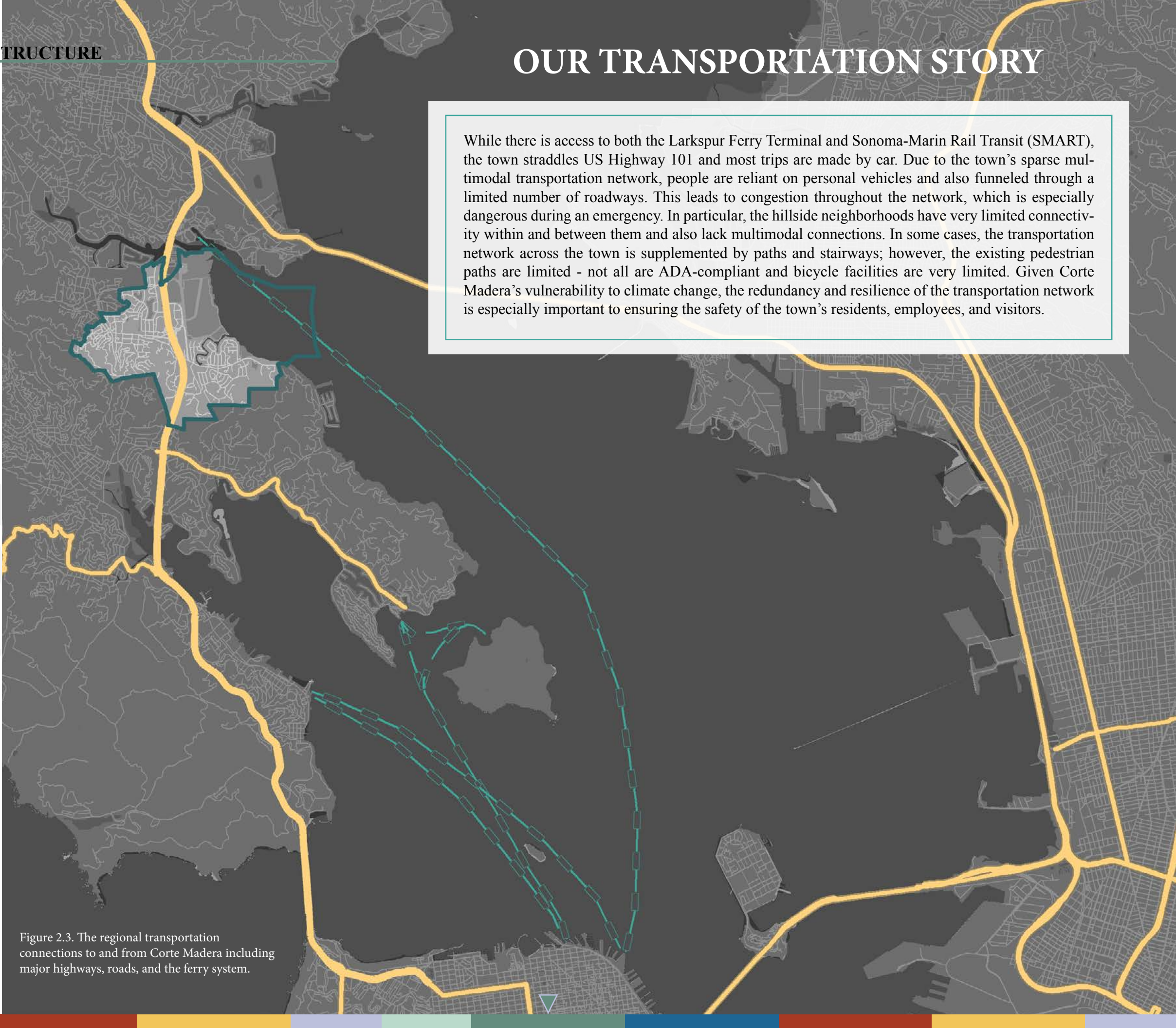


Figure 2.3. The regional transportation connections to and from Corte Madera including major highways, roads, and the ferry system.



COLLABORATE AND EDUCATE

The complexity and interconnectedness of climate change requires a significant investment in community engagement and education in order to increase awareness and resilience. In addition, Marin County’s unique land-use, geography, and transportation network necessitates comprehensive and multi-jurisdictional adaptation approaches and solutions in partnership with local, regional, and state partners.

Programs that educate and inform residents, visitors, businesses, and local decision-makers can empower individuals to take actions to reduce risk for themselves. Programs that seek to bring community members together can create lasting connectivity among neighbors who can plan together to get out of harm’s way.



FEATURED ACTIONS: COLLABORATE AND EDUCATE

Develop a climate awareness communications program and campaign that helps community members understand potential risks, solutions, and opportunities to address climate impacts.

Program
Lead: TBD

Community awareness is a foundation for community action. Although the climate crisis is an immediate and urgent issue, it is complex and requires a dedicated effort to build broad awareness.

Support the creation of a county-focused Task Force that guides a single, comprehensive, and multi-jurisdictional adaptation strategy for all of Marin County.

Program
Lead: The Town of Corte Madera and the Marin Climate and Energy Partnership

According to the Marin County Civil Grand Jury, more coordination is needed between municipalities, agencies, and the board of supervisors with regards to climate change adaptation planning. This task force would help efficiently coordinate regional efforts and make decisions in partnership with municipalities.⁸¹ The Marin Climate and Energy Partnership is supportive of broadening its mission and increasing the funding dedicated to supporting regional climate change mitigation and adaptation efforts, which should be given consideration.

Identify additional staff and/or resources to focus on implementation and monitoring of the Climate Adaptation Plan.

Policy
Lead: Corte Madera Planning Department

Corte Madera is a small town with a limited number of staff members who often have a wide range of duties. The Town could benefit from having an adaptation and resilience coordinator to help work across departments and guide the execution, implementation, and tracking of the resilience actions identified in this plan. In accordance with recommendations by the Marin County Civil Grand Jury, this coordinator could work directly with the Marin Climate Adaptation Task Force in order to better coordinate regional efforts.

Publish a guide or online portal of actions that commercial and residential property owners can take to make their homes and buildings more resilient to climate change.

Program
Lead: TBD

Supporting commercial and residential property owners to make their homes and businesses more resilient by providing resources, tools, and knowledge is an effective and efficient way to enhance resilience across the Town.

Expand the Town’s Climate Action Committee to include Adaptation and Resilience.

Program
Lead: TBD

Climate change adaptation and mitigation planning must happen simultaneously. The new Town Climate Action Committee could help support, monitor, and report on climate mitigation and adaptation efforts happening across the community.