

San Rafael Wildfire Prevention and Protection Action Plan

Background: In 2007, the City of San Rafael adopted a model ordinance for vegetation management. As we experience continued fire risk and activity associated with climate change, the City of San Rafael has been actively evaluating methods to further reduce our community's susceptibility to devastating wildfires. Wildfire risks will persist under extreme conditions; however, we can significantly mitigate those risk factors through enhanced regulations, education and enforcement. Public policy and programs provide a framework for a more resilient San Rafael but will require public support, compliance, effective implementation, and individual effort.

Currently, the City's wildfire prevention efforts focus on our Wildland Urban Interface (WUI) areas, which were established to identify areas most at risk for being impacted by a wildfire. Specific vegetation standards, including those adopted by San Rafael in 2007, apply only to property in the WUI. However, as climate change and increased fuel build-up contribute to more devastating fires, these boundaries no longer are sufficient or effective. Ember storms, explained in more detail below, can spread fire miles ahead of the flame front, regardless of WUI boundaries. To adequately protect communities, more universal standards and approaches are necessary. Each structure burned in a fire not only is a personal and communal loss, but also contributes to additional fire spread.

The three primary methods of wildfire spread are described below:

Embers: According to recent research, embers are the most prolific cause of home ignition at a rate of two out of every three homes destroyed. Embers are glowing or burning pieces of vegetation or construction debris that are lofted during the wildfire. Embers can move up to a mile ahead of a firestorm. These small embers or sparks may fall on the vegetation near your home – on dry leaves, needles or twigs on the roof– and then subsequently ignite and burn down the home. The concentration of embers that land on the roof and roll off makes the removal of all flammable materials close to the house critical.

Direct flame contact: Direct flame impingement refers to the transfer of heat by direct flame exposure. Direct contact will heat the building materials of the home; if the time and intensity of exposure is severe enough, windows will break and materials will ignite.

Radiant heat: A house can catch on fire from the heat that is transferred to it from nearby burning objects, even in the absence of direct flames or embers. By creating defensible space around homes, we can significantly reduce the risk from radiant heat. A home with 100 feet of clearance from forest or shrubs will usually have minimal impact from radiant heat or direct flame.

Establishing strong guidelines for defensible space and fire-resistant building materials helps prevent ignition from radiant heat and embers. Limiting fuel and available vegetation reduces the possibility of direct flame contact igniting structures or other vegetation.

This document lists a series of prescriptions, programs, and ordinance changes needed to make San Rafael more fire and disaster-resistant. These action items reflect the need for a comprehensive approach to reducing wildfire risk. Removing dangerous vegetation, using fire-resistant building materials, and avoiding risky activities all are vital for protecting the community.

The action items are organized into four categories: 1) prepared ordinance changes, 2) immediate programs and projects, 3) planned ordinance changes, and 4) planned programs and projects. Each action item includes the objective, rationale, required actions, concerns, costs, potential stakeholders, and a proposed timeline in the following format:

OBJECTIVE

Action	This section includes a description of the proposed action.
What this means	This section should explain in more detail what this action would mean to those impacted by it.
Rationale	This section includes a discussion of why we recommend this, including the scale of impact we believe it will have.
Concerns	This section includes a discussion of political, legal, or cost feasibility concerns that we've identified. List any trade-offs, such as the dedication of existing staffing resources away from other projects to do this work.
Costs	This section includes estimated one-time and on-going costs to the City, as well as any costs the community may incur. The standards for evaluation are listed below.
Stakeholders	This section includes a list of stakeholders.
Timeline	This section says if the action is underway and if not, why. For example, note here if the action requires further or extensive legal review, future City Council action, community outreach, program design work, etc.

Impacts on Budget and Staff Time

The funding, required staff time, and proposed timelines for each objective have been individually evaluated. If action is requested on the entire action plan, timelines may need to be extended and additional staff may be required. Financial costs have been evaluated and are identified using the following standard:

- \$ Efforts are supported by current program budget
- \$\$ Efforts could be supported with reprogramming of current budget
- \$\$\$ Efforts require additional funding

Staff time required to achieve each objective has been estimated and identified using the following standard:

- @ Efforts are supported with currently allocated staff time. No significant impact on other programming is anticipated.
- @@ Efforts can be accomplished with existing staff reallocating time. Other projects will be deprioritized.
- @@@ Efforts will require additional staff time than is currently available. Requires additional staff or increasing hours of part time staff.

Definitions

For the purposes of this document, the following words are defined:

“Fuel” means any combustible vegetation, including grass, leaves, ground litter, plants, shrubs and trees, that can feed a fire.

“Vegetation Management Plan” means a site-specific written plan for a property to mitigate the risk of wildfire through strategic reduction of combustible vegetation.

“Wildfire” means a fire that originates in an area of combustible vegetation, as opposed to a structure fire, which originates in or adjacent to a building.

“Wildland-Urban Interface” is an area where human development (e.g., houses) abut or intermingle with undeveloped vegetation and where the risk of wildfire is high.

A table of acronyms is provided below:

Table 1 – Acronyms

Acronym	Description
CERT	Community Emergency Response Team
CWPP	Community Wildfire Protection Plan
DPW	Department of Public Works
EOC	Emergency Operations Center
GETS	Government Emergency Telecommunications Service
HEAT	Homeless Emergency Action Team
MCSO	Marin County Sheriff’s Office
MMWD	Marin Municipal Water District
NCCC	National Civilian Conservation Corps, An AmeriCorps Program
NFPA	National Fire Protection Association
OES	Office of Emergency Services
PG&E	Pacific Gas and Electric
PRC	Public Resource Code
SRFD	San Rafael Fire Department
SRMC	San Rafael Municipal Code
SRPD	San Rafael Police Department
VMP	Vegetation Management Plan
WEA	Wireless Emergency Alerts
WPS	Wireless Priority Services
WUI	Wildland-Urban Interface

PREPARED ORDINANCE CHANGES

The following items are proposed for upcoming review and adoption.

1. Eliminate highly flammable vegetation throughout San Rafael

Action	Ordinance change. Revise the existing provisions that prohibit Juniper and Bamboo to include Acacia and Italian Cypress, and universally apply these regulations to all properties in San Rafael.
What this means	All property owners in San Rafael, both public and private, would be required to remove all Juniper, Bamboo, Acacia, and Italian Cypress from their property by July 1, 2020. Support for property owners to meet this deadline may include an enhanced Chipper Day program and the ability to apply for the City to fund additional green waste bins for a limited time.
Rationale	These species are known to propagate fire at a high rate of spread and create unnecessary risks to the property owners, first responders, and community at large. The ordinance update will help reduce fire ignition, the spread of wildfire, and improve responder safety throughout the entire community by eliminating highly combustible vegetation. Establishing and maintaining citywide vegetation standards will simplify education and enforcement efforts. To address ascetics and erosion, outreach and education efforts will include information about fire resistant plants and landscaping.
Concerns	Difficult to proactively enforce citywide. Costs to residents and City to remove and dispose of vegetative debris. Cost to City to meet vegetation standards on City property.
Costs	<p>§ Ordinance change can be accomplished with current funding and staffing levels.</p> <p>@@@ Implementation and enforcement of the updated ordinance will require significant staff time.</p> <p>\$\$\$ Program support to help property owners meet the requirements will require additional funding. Implementation would include an increased number of ‘Free Chipper Days’ at a rate of roughly \$1,800 per day to support community efforts. The City may also support residents requesting the \$2.20-per-month charge per parcel for an additional green waste bin for a set period. Grant applications have been submitted to help cover the cost of the increased ‘Chipper Days’. To encourage compliance, an additional 40 chipper days would be offered prior to the July 1 deadline, for a total cost of \$64,000.</p> <p>Property owners not already in compliance will incur costs to remove vegetation to meet updated vegetation standards.</p>
Stakeholders	All property owners in San Rafael, both public and private. Fire Department. Public Works.
Timeline	The ordinance update establishing city wide vegetation standards is prepared to be presented at an upcoming community meeting, with the formal adoption process to follow. Education, outreach, and assistance with vegetation removal for property owners will begin within 30 days of the ordinance passing.

2. Apply vegetation management standards citywide

Action	Ordinance change. Update SRMC to apply all wildfire, building codes and ordinances citywide. No boundary would limit where these provisions are applied.
What this means	Requirements that are currently applied only to parcels in the WUI would be applicable to all parcels within the City of San Rafael. New ordinances will outline new citywide vegetation standards. References to the WUI will be removed from specific ordinances, in order to apply them citywide.
Rationale	Uniform application of all vegetation management and fire prevention related codes and ordinances are easier to apply and enforce and create more wildfire defensible community. Increased public safety and defensible space throughout San Rafael. Additional income for fire prevention through additional building permit fees.
Concerns	Public will have varying costs to meet new vegetation management standards. Would require staff training on updated Municipal Code. High cost burden for properties not currently up to the new code. High cost to obtain compliance with new code; could trigger substantial rehab/ or tax reassessment, and possible new insurance costs. Could disincentivize development.
Costs	\$\$\$ Costs to support residents meeting updated standards and assuring city property meets standards will require additional funding. @ Ordinance updates can be updated with existing staff @@@ Outreach, education, and enforcement will require additional staffing.
Stakeholders	Fire Department, Building Department, residents, businesses, landowners, Marin Builders Associations,
Timeline	Universal vegetation standards are incorporated into the proposed SRMC addition, 4.11 prepared to be presented at an upcoming community meeting with formal adoption to follow. Additional effort is needed to determine the best way to update and apply building codes universally.

3. Adopt Public Resource Code 4290 and 4291

Action	Ordinance change. Adopt Public Resources Code (PRC) sections 4290 and 4291, which serve as guidelines for defensible space and fuel management regulations.
What this means	At a minimum, San Rafael vegetation standards will meet the state minimum outlined in PRC sections 4290 and 4291. Proposed amendments to the language would apply the standards citywide.
Rationale	Adopting PRC sections 4290 and 4291 assures San Rafael complies with State vegetation management standards and simplifies the existing San Rafael vegetation management standards. PRC sections 4290 and 4291 do not relax our existing codes. Adopting PRC sections 4290 and 4291 would also allow for immediate enforcement of PRC changes.
Concerns	If PRC sections 4290 or 4291 is revised in the future in ways that are deemed detrimental to the city, those additional municipal code amendments may be necessary.
Costs	\$ Ordinance change can be accomplished with current funding and staffing levels. \$\$\$ Providing support to homeowners meeting the updated vegetation standards, through chipper days and increased inspections will require additional funding.

	@@@ Implementation and enforcement of the updated ordinance will require more staff time than currently available.
Stakeholders	Fire Department, property owners
Timeline	Incorporated into SRMC 4.11 which is prepared to be presented in an upcoming community meeting with formal adoption to follow. Enforcement would begin July 1, 2020.

4. Reduce ember ignitions within immediate structure ignition zone standards

Action	Ordinance change. Update SRMC Title 4 (“Fire”) to include a series of standards outlined below near structures.
What this means	<p>The perimeter around a structure would need to meet a set of standards designed to reduce the likelihood of embers creating spot fires and igniting structures, on or before July 1, 2020. These proposed standards may include a selection of the proposed components:</p> <ul style="list-style-type: none"> a) Immediate area hardscape: no vegetation except for 3-inch grass or succulent plants shall be present. Exemptions may be considered for erosion control. b) No vegetation in the zone shall make direct contact with the structure. c) Hardwood trees are permitted within the zone provided they are well-irrigated, limbed five feet or one-third of the tree height, and have five feet between other tree canopies. d) Any vegetation within the ignition zone shall not grow under a window, stairs, decks, and combustible structures or encroach within two feet thereof. e) Vines and Ivy shall be well-irrigated and maintained to eliminate any dead or dying material build-up. f) Mulch or similar ground covering within the ignition zone is only permitted when no contact is made with combustible exterior walls or plants. <p>All properties requesting an exemption to vegetation standards are required to complete a VMP and have approval from the Fire Chief.</p>
Rationale	If properly enforced, a series of vegetation and other fuel standards should reduce structure ignitions during an active wildfire by reducing the combustible fuel needed to develop embers into flames. Recent case studies show that urban fire conflagrations are not spreading as a wall of fire, but rather as embers starting hundreds of new fires. Reducing structural ignitability reduces property loss and creates less fuel to continue spreading the fire. This requirement accounts for embers falling from roofs and eaves onto the ground.
Concerns	Cost to private and public property owners. Ability to enforce. Erosion control.
Costs	<p>@ Ordinance change can be implemented with current staff.</p> <p>@@@ Increased inspections and enforcement could not be accomplished with current staffing levels. Increased public education and outreach.</p> <p>\$\$\$ Additional funding will be needed to support community vegetation removal, such as free chipper days and assistance to low income property owners.</p>

Stakeholders	All property owners in San Rafael, both public and private. Fire Department. Code Enforcement.
Timeline	The requirement, based in part on Mill Valley ordinance updates, can be incorporated into the new SRMC section 4.11 and presented at an upcoming community meeting, with the formal adoption process to follow. Property owners would have until July 1, 2020 to comply.

5. Apply fire mitigation codes 365 days a year

Action	Ordinance change. Update SRMC to remove any specific time period of fire season. Results in smoking being prohibited in City open space all year.
What this means	There will be no dates associated with fire season, expanding the ability of the Fire Chief to enforce fire safety regulations to prevent a wildfire in open spaces. Smoking will explicitly be prohibited year-round within open spaces. Currently, SRMC has some conflicting information and dates associated with smoking prohibition and fire season.
Rationale	Increased safety, clarity, and consistency within municipal code. Improved ability to protect community from a wildfire ignited in the open space.
Concerns	Enforcement is challenging; signage is not very effective. Additional staff is needed to enforce.
Costs	\$ Ordinance change can be accomplished with currently allocated funding. @ Ordinance change can be accomplished with current staff. @@@ Strong enforcement of open-space regulations requires additional staff.
Stakeholders	Fire Department, Police Rangers, Public
Timeline	An update to SRMC 19.10.060(13) is prepared for presentation at a community meeting with formal adoption to follow. Enforcement would begin immediately after adoption.

6. Eliminate fire hazard associated with shake and wooden roofs

Action	Ordinance change. Update building code to require all shake roofs be replaced by January 1, 2029 or at time of resale, whichever is first. Require no shake roof structures be eligible for resale.
What this means	Property owners and owners of commercial property with shake roofs will have 10 years to replace their roofs with a safer material and shake roofs will no longer be allowed in new construction. This will effectively result in the near-complete elimination of shake roofs from San Rafael by 2029.
Rationale	This ordinance would eliminate a known threat to structures and public, decreasing potential ignition and the rate and intensity of the spread of fire. This would in turn increase safety for firefighters and first responders. Per the 2016 Marin County Community Wildfire Protection Plan (CWPP), “homes with a non-combustible roof and defensible space at least 30 to 60 feet around the structure have an 85-95% chance of survival”.

Concerns	Roof replacement could be prohibitively expensive for some homeowners and businesses. Scope of issue (i.e., number of shake roofs) is unknown at this time and may require a roof census. An exemption for historical structures should be considered. Fine for having a shake roof after the deadline will need to be substantial to encourage compliance.
Costs	<p>\$\$\$ Property owners will incur large cost to replace roof. Assistance programs should be considered to encourage compliance. The City will also need to replace any wooden roofs on city owned buildings.</p> <p>@ Ordinance change, education, and enforcement can be supported with current staffing levels.</p>
Stakeholders	Fire Department, Community Development, Residents, Businesses
Timeline	The updated building code can be prepared to be introduced at an upcoming community meeting. The re-sale requirement would become effective within 30 days. There will be a ten-year period of compliance to minimize financial hardships. Inventory of structures with shake roofs can be completed by CERT volunteers and/or the use of drones within twelve months. Assistance programs, including hazard mitigation grants, should be considered over the implementation period.

IMMEDIATE PROJECTS AND PROGRAMS

The following projects and programs are underway or can be started with existing funds and staff.

7. Increase funding and resources available for wildfire mitigation

Action	City project. Seek to establish new funding avenues, partnerships, and revenue opportunities, including but not limited to grant funding, work with conservation corps, and volunteers.
What this means	San Rafael is applying to numerous grant programs for funding to help reduce the fire risk. Grant funding may provide one-time funding sources to help reduce heavy fuel loading. To accomplish this objective San Rafael will also seek and review project bids from non-traditional labor pools such as the Conservation Corps of the North Bay, AmeriCorps NCCC, Cal Fire Delta crews, and County fire crews.
Rationale	Heavy fuel loads create dangerous situations throughout the area. Aggressive strategies are needed to mitigate the current risk while implementing a long-term fuel maintenance program. Current funding and resources are not adequate to quickly reduce decades of fuel build up. Finding additional funding sources and utilizing new crews will be necessary to address the wildfire risk in a timely manner.
Concerns	Grant applications and management require substantial effort. Some grant funds may not be available within the desired timeline. Effective use of various crews will require strategic management. Grants are one-time applications and do not provide an ongoing, predictable funding source for long term strategic fuel management. Fuel maintenance will require additional funding to prevent new fuel build ups.
Costs	\$\$ - Grant applications can be submitted with the current program budget. Some grants have matching fund requirements that may require reprioritizing of programming.

	@@ Grant applications can be submitted with existing staff reallocating time. Grant management and tracking will require additional time reallocations. Crew management will require reallocation or additional staff time.
Stakeholders	Fire Department, Public Works, Finance
Timeline	In progress. Various projects, grants, and labor options are currently being explored. CAL FIRE prevention grants award notices will be in April with funding available in September of 2019. Hazard Mitigation Grants are due in April of 2019. A National Civilian Conservation Corps (NCCC) project concept form has been approved and a full project proposal will be submitted before February 12 th , 2019. If approved, crews would be available between April and July of 2019 for six to twelve weeks.

8. Immediately seize ignition sources at encampments and remove encampments as quickly as possible.

Action	City program. Continue collaborative Homeless Emergency Action Team (HEAT) efforts to limit homeless encampments' fire risk.
What this means	Continue immediate removal of flammable items and ignition sources posing a fire threat. Continue collaborative effort and improve coordination between Police Rangers, Public Works, Fire, and vegetation contractors to remove homeless encampments in open spaces.
Rationale	Eliminate potential ignition sources. Strong enforcement may serve as a deterrent.
Concerns	Resources required to store seized belongings.
Costs	\$\$\$ The additional removal and storing of items will require additional funding. @@@ Additional staff time is needed to effectively monitor open spaces year-round.
Stakeholders	Fire, Police, Public Works, Homeless Planning and Outreach
Timeline	Ongoing. Continually update strategies based on new case law and best practices.

9. Additional Vegetation Management staff

Action	City staffing. Convert the existing part-time employee to full-time, fixed-term. Hire an additional part time employee to support inspections, project management, and public education in the spring and summer of 2019.
What this means	Increased staff levels will allow for a more strategic approach to vegetation management and fire mitigation while staff continues to offer inspections. There are currently 1.5 Vegetation management specialists.
Rationale	Additional staff is needed to meet the demand for strategic fuel removal, fire road improvements, increased outreach/education, increased number of VMPs, and vegetation inspections. On-going maintenance will require less staffing to assure parcels and public space remain free of hazardous fuel loads. Additional staff can also help support volunteer efforts in open space, following Marin County model.
Concerns	Funding the position may require voters to approve additional revenue stream(s), which likely would mean FY 2020 at earliest.
Costs	\$\$\$ The fully burdened position will cost an additional \$76,000 annually.

	@ Recruitment, onboarding, and training can be managed by current staff.
Stakeholders	Fire Department, residents, businesses, public
Timeline	Research needed into best funding approach for position as well as timeline. Increasing staff hours can begin immediately with funding. Recruitment will be necessary to hire and train a seasonal vegetation inspector.

10. Increase Police Ranger staffing

Action	City staffing. Provide for one full-time fixed-term police Ranger in addition to the two part-time police rangers currently employed to patrol open spaces.
What this means	Increased ranger capability will allow for year-round open-space unlawful camping enforcement.
Rationale	A full-time ranger will allow for increased patrols and enforcements while also identifying and noticing homeless encampments sooner. Preventing encampments from becoming well established will help reduce fire risks.
Concerns	Funding the position may require voters to approve additional revenue stream(s), which likely would mean FY 2020 at earliest. Legal limitations on removal of campsites may limit effectiveness of enforcement, even with more personnel.
Costs	\$\$\$ The cost of fully-burdened Professional Temporary Ranger position will be about \$101,000 per year. Measure A funding currently supports two-part time positions. Additional funding is needed to support the request. @ Recruitment and training of the additional position can be supported with current staffing.
Stakeholders	Police Department, Public Works
Timeline	Additional funding is necessary before recruitment can begin.

11. Improve public education regarding fire-safe landscaping and planning for a wildfire

Action	SRFD program. Outreach and education efforts, including information about areas of refuge, emergency alerts, defensible space, and reducing structure ignitability will be conducted citywide.
What this means	Additional outreach and online resources will be created to support firesafe landscaping. Outreach will target residents, nurseries, and community groups with an emphasis on gardening and landscaping. Current outreach is focused on WUI areas. This item includes an expansion of outreach and improved online resources. In addition, education and outreach materials will be updated to reflect lessons learned from recent wildfires, including helping residents understand wildfire evacuations and areas of refuge.
Rationale	Education and outreach efforts need to be expanded to adequately reach the entire community. Residents want to maintain a beautiful community while increasing fire safety. Additional education and outreach is needed to assure residents are landscaping with wildfire risks in mind. Residents are concerned about wildfire

	evacuations and need to be better informed to make quick decisions. San Rafael needs to incorporate lessons learned from other devastating fires in our wildfire prevention and preparedness efforts.
Concerns	Multiple outreach strategies are needed to reach various demographics. Volunteer coordination can be time consuming and unreliable.
Costs	@@ Updating online materials, developing new outreach materials, and contacts with residents can be completed with current staff reallocating time and the support of volunteers. \$\$\$ Additional funding is needed to expand outreach, including printing additional materials, citywide.
Stakeholders	Fire Department, Community organizations, property owners, Open Government and Digital Services
Timeline	Outreach and education regarding updated ordinances will begin immediately following approval. Updates and lessons learned will be incorporated into future community presentations. Extensive outreach campaign will occur in the Spring of 2019 to align with fire season and vegetation inspections.

12. Increase capability for early fire warnings and detection

Action	City program and policy. Increase San Rafael’s access and control to partner technology, including cameras with heat detection and micro-weather stations. Install two additional cameras to cover the highest fire risk areas in San Rafael.
What this means	PG&E has and continues to install cameras and micro-weather stations to monitor fire and fire weather conditions. Only a limited number of County Fire employees can currently control the view on the cameras. The live stream of the existing cameras is publicly available at http://www.alertwildfire.org/northbay/ . To increase the camera coverage of San Rafael, new cameras could be installed on San Rafael Hill and San Pedro Ridge. San Rafael Fire staff could have direct control of the view and zoom of these additional cameras.
Rationale	Cameras would allow for increased ability to monitor open space, which in turn could mean early wildfire identification and response, increased knowledge of weather conditions impacting fire spread, and increased fire fighter safety. The ability to directly control cameras monitoring San Rafael increases internal capabilities and reduces the delay and reliance on third parties.
Concerns	Access to monitoring technology is determined through partnerships.
Costs	@ Efforts are supported with currently allocated staff time. No significant impact on other programming is anticipated. \$\$ Expanding the existing camera network with a greater focus on San Rafael will have additional costs. The camera’s costs about \$5,000 each. PG&E grants may be available to help cover the costs of the cameras.
Stakeholders	PG&E, Fire Department, Marin County Fire
Timeline	Discussions to install new cameras and/or gain further access to existing camera are ongoing. Installation of new cameras will require funding and an agreement with the site owners in the desired locations. Improved coordination with wildfire monitoring partners and new technology will be in place in the Summer of 2019.

13. Improve public emergency alerting capabilities and policies

Action	City project and county policy. In coordination with Marin County, develop a proactive policy for the use of Wireless Emergency Alerts (WEA) during emerging situations. Establish templates that clearly communicate risk and follow up information sources. Enhance internal capabilities.
What this means	Currently, the City of San Rafael relies on Marin County for non-opt in messaging. The City’s internal ability to message is limited to SRPD’s Nixle subscription, which only reaches those who opt-in for messaging. This item has two interacting parts; 1) a clear policy for when and how San Rafael can request the county issue emergency alerts on its behalf and; 2) Consideration of upgrading the internal ability to send messages that do not require users to opt-in. In both situations, policies, templates, and coordination will be needed. Considerations should also be given to other alerting methods including NOAA weather radios, sirens, or coordinated community efforts.
Rationale	Assure policy and templates in place empower WEA message to be sent if threat exists. Reduce likelihood that a message won’t be sent that should have been sent. Reduce risk for loss of life. WEA messaging was NOT issued during the North Bay fires of 2017 or the Butte County Camp Fire in 2018. Internally the City needs to improve its messaging capabilities, including access, training, and policies, to assure communication with residents in time of crisis.
Concerns	Over messaging. Causing panic or undue traffic congestion during evacuation. Messaging may over reach to nonimpacted areas. Coordination between County and City alerting authorities.
Costs	\$\$\$ To allow San Rafael the direct ability to message, without requiring a user opt-in, an annual \$6,000 increase in SRPD’s Nixle subscription is expected. @@ Efforts can be accomplished with existing staff reallocating time. The objective will require coordination between San Rafael PD, San Rafael Fire, and Marin County.
Stakeholders	County OES, MCSO, SROES, SRPD, SRFD, Residents
Timeline	Research and discussions are in progress. A streamlined policy will rely on agreement from Marin County Sheriff’s Office. A vendor meeting with Nixle, January 10 th , provided additional information on upgrades to San Rafael’s current Nixle subscription.

14. Complete an analysis of fire roads and strategic fuel breaks

Action	SRFD and DPW project. Develop a plan for a survey of all San Rafael fire roads to identify areas in need of strategic surface improvements, to be used as fuel breaks, and that need vegetation clearance for safe access.
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What this means	Identify high risk areas and assure the fire road surface and clearance will remain accessible. Increase fuel clearance along strategic fire roads (such as ridge lines) to create significant fuel breaks to stop or slow fire spread.
Rationale	Fire roads provide critical access to fire personnel to access and contain existing fires. Fire roads also serve as fuel breaks. Increasing fuel clearance along fire roads helps protect responders using the roads and creates existing fuel breaks to limit a fire’s spread.
Concerns	High costs and potential environmental impact to implement.
Costs	<p>\$\$\$ Additional funding, possibly via grants, is required to retain contracted labor to establish initial fuel breaks and fire road improvements.</p> <p>\$\$\$ Reoccurring costs will include maintenance of fuel breaks and road surfaces. It is possible to support some maintenance with reprogramming of existing budget and renewal of Measure A funds; however, comprehensive efforts will require an additional funding source.</p> <p>@@ Analysis of roads and potential fuel breaks can be completed by existing staff reallocating time.</p> <p>@@@ Maintenance will require current staff to reduce time spent on inspections and other projects. Developing and implementing a comprehensive and strategic maintenance plan will require additional staffing.</p>
Stakeholders	Fire Department, Public Works, public using fire roads, agencies with connecting fire roads
Timeline	In progress. Road and fuel break analysis is underway. Fire road surface maintenance is an ongoing effort. Additional focus and funds are needed to develop and implement a more strategic and effective approach. The timeline for implementing findings will be dependent on funding.

15. Expand goat grazing for vegetation maintenance

Action	SRFD program update. Increase the use of goat grazing through cooperative relationships with contractors, FireSafe Marin, Marin County and other land-owning agencies.
What this means	San Rafael currently leases goats from private industry for specific times throughout the year. The city is working to gain access to the County’s new goat resources for open-space vegetation clearance. In addition, new contractors are being considered to help meet the demand and reduce per acre cost. Coordination will also occur between various public and private landowners.
Rationale	Coordinated grazing reduces the costs associated with transporting the goats to new sites and creates more continuous fuel breaks. Goats are an effective way to manage reoccurring fuels, such as grasses and French Broom. Reducing mechanical removal of fuels, such as mowers and weed eaters, also reducing carbon emissions.
Concerns	Goats and vegetation management contractors are in high demand. Goats are most cost effective on larger treatment areas. In 2018, over \$80,000 was spent on goat grazing.
Costs	\$\$\$ Additional funding is needed to expand the goat grazing program and maintain fuel reduction work. Cost saving associated with reduced transport will support increased acreage.

	@ Goat grazing coordination can be accomplished with current staff. A recent grazing estimate was \$900 an acre and \$2,500 per transport. At least 55 acres need annual treatment, which will cost about \$65,000 annually.
Stakeholders	Fire Department, Public Works, FireSafe Marin, Marin County Fire
Timeline	In progress. Contract negotiations are underway. Goats will be available in late winter/early spring 2019. The majority of goat grazing is completed before July 1st and peak fire season. Grazing is needed annually.

16. Assure that residents can evacuate through garage doors if power is out

Action	City program. Develop program to encourage the implementation of garage door battery backup systems.
What this means	San Rafael Code Enforcement will need to start enforcing updated safety requirements for automatic garage doors. San Rafael Fire will immediately begin incorporating garage door functionality into evacuation and wildfire preparedness material. San Rafael could consider applying this standard to rental properties and/or encouraging battery back-up installation on legacy garage doors.
Rationale	Power failures, impacting the functionality of automatic garage doors, can make evacuation by car impossible during an emergency. Effective July 1, 2019, Senate Bill 969 requires all new and replacement automatic garage doors to have a backup battery or other means that assures the garage door can open in the event of a power failure. The new law does not have a retroactive requirement. Public education is necessary to alert people of the risk and relatively low-cost solutions available, as not everyone has the physical ability to open a garage door manually.
Concerns	The update to Health & Safety Code Section 19891 and addition to Section 19892 do not retroactively apply or protect people with existing garages. Outreach can help inform, but not require adherence to stronger safety requirements.
Costs	@@ Staff time to develop and coordinate information will require some time reallocation \$\$ Educational materials and outreach will require some reprogramming but can largely be incorporated into other wildfire prevention and protection outreach.
Stakeholders	Fire Department, Code Enforcement, Property owners.
Timeline	The Senate Bill requires installations and replacements on or after July 1, 2019 meet the new requirements. Education and outreach about this new requirement should begin immediately.

17. Improve development and implementation of Vegetation Management Plans (VMPs)

Action	City program and policy. Streamline the VMP process to support an increase in the number of Vegetation Management Plans. VMPs can be self-certified and will provide a reference for future inspections or developing concerns.
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What this means	SRFD will take the lead to streamline and automate the current Vegetation Management Plan forms and review process. Vegetation Management Plans will serve as a resource for enforcement with minimal maintenance effort. Ordinance changes will require more VMPs be submitted. Property owners completing the work outlines in the VMPs may need City support for vegetation removal, such as participation in ‘free chipper’ days.
Rationale	An improved and more accessible VMP process will help more homeowners establish and maintain fire resistant landscaping. Fire-resistant landscaping will help keep the whole community safe by reducing the chances of ignition and fire spread. An improved system will be necessary to support the additional VMPs submitted because of ordinance changes.
Concerns	Developing a comprehensive but simple system will be a challenge and require input from multiple stakeholders and staff.
Costs	<p>\$\$ Any costs associated with improvements can be funded by reallocating existing funds</p> <p>@@ Updates and improvements can be completed with existing fire staff reallocating time, and support from other departments.</p>
Stakeholders	Fire Department, Code Enforcement, Property Owners, Open Government and Digital Services
Timeline	Updates to streamline VMPs can begin after a review of the existing process, plan goals, and technical evaluation.

18. Assure that appropriate staff can send and receive emergency alerts

Action	<p>City program. Establish schedule to assure that all appropriate San Rafael staff members routinely issue Everbridge test messages.</p> <p>Maintain current database of all staff contact information to assure communication with staff during an emergency.</p>
What this means	Staff with Everbridge/alerting capability will be required to send test messages at least quarterly to assure access and proficiency. Staff will have templates and training materials to help develop proficiency. Citywide effort is needed to assure correct cell phone numbers are on file and can be used to reach staff in an emergency. Routine message tests will help maintain an accurate database.
Rationale	All staff with the authority to issue alerts must be able to log in and navigate the system to send time-sensitive information. A centralized system to communicate with staff in an emergency is necessary to confirm staff safety and communicate closures and requested actions.
Concerns	Potential to issue test messages broadly. Lack of participation. Ongoing database management is time consuming.
Costs	<p>\$ Program can be implemented with current funding.</p> <p>@@ Program will require multiple staff members reallocate time for testing and database management.</p>
Stakeholders	San Rafael Staff with emergency alert capabilities (about 10 people), Department Heads, Human Resources, All City staff
Timeline	A ‘how to’ guide is already created. Once City management agrees to the value of the tests, a routine test schedule can be developed and implemented. Maintaining an

accurate alerting database is an ongoing process that will require an established process.

19.Reduce fuels along roadways

Action	City program and policy. Develop a policy to clearly direct the enforcement of current State regulations and SRMC relating to vegetation clearance along public roadways. Updates to SRMC may also be needed to uniformly apply standards.
What this means	Stronger and more consistent enforcement and abatement of vegetation along roadways with a focus on pre-identified primary and secondary evacuation routes.
Rationale	Reduces the risk of fire ignition along roadways. Improves potential evacuation routes by limiting the fire fuel along roadways. Creates additional fuel breaks to stop and slow the spread of wildfire. Increased responder safety through improved visibility and decreased roadside fuel.
Concerns	Residents may be resistant to remove vegetation along roadways serving as a privacy fence for their property. Disposal of large amounts of woody biomass.
Costs	\$\$\$ Additional funding is needed to support community chipper days and support for property owners removing vegetation. @@ Policy can be developed with current staff reallocating time @@@ Additional staff time is needed to effectively enforce policy and support community chipper days.
Stakeholders	Fire Department, Public Works, property owners
Timeline	A policy can be drafted within 60 days. Enforcement can begin immediately. Fall and Winter are slower times for vegetation inspections, allowing for a concentrated effort relating to clearance along roadways. Community support, including chipper days, cannot begin until additional funding is secured. Additional evaluation is needed to determine what, if any, SRMC changes may be needed.

20.Reduce fuels around critical infrastructure

Action	SRFD program. In partnership with utility providers, determine best method(s) to reduce fuels around critical infrastructure such as power poles, power lines, and other combustible infrastructure.
What this means	The City will initiate an effort to identify the best approaches to vegetation management activities around critical infrastructure. This will include coordination with PG&E and Marin Municipal Water District (MMWD). Potential ordinance changes will be evaluated.
Rationale	Reduce the risk of fire ignition and protect critical infrastructure from fire. Share burden of protecting infrastructure with property owners and utility providers.
Concerns	Property owner confusion regarding the burden of maintaining clearance around the service lines from the pole to the structure. Aesthetics of vegetation and tree trimming and removal. Difficult to determine which homeowner is responsible for the cost of tree trimming. Jurisdictional issues also may be involved.

Costs	<p>\$\$\$ Funding needs will depend on partnerships with PG&E and other agencies responsible for maintaining infrastructure. Support for residents removing fuel around infrastructure on their property will require additional funding.</p> <p>@@ A policy can be developed with current staff reprioritizing projects.</p>
Stakeholders	Fire Department, Public Works, Community Development, property owners, PG&E
Timeline	In Progress. Guidelines for fuel reduction around critical infrastructure are being established and coordinated with utilities. Outreach and education can begin within 30 days of policy being finalized. Programs to support residents will be dependent on securing additional funding.

21. Assure that City staff can communicate during an emergency

Action	<p>City program. Determine and implement the best method to assure city staff with assigned emergency response duties can use cell phones and landlines. This will require a combination of Wireless Priority Service (WPS), First Net, and Government Emergency Telecommunications Service (GETS).</p>
What this means	Complete a cost-benefit analysis of using WPS, Verizon First Responder, and GETS options. Register all Fire, PD, DPW field staff, building inspectors, and EOC staff with WPS and/or Verizon priority accounts. A policy for personal cell phones registered on the system will need to be established.
Rationale	The ability to communicate via cell phone after a disaster is negatively impacted by infrastructure damage and peak usage. There are tools available to help cell phone providers prioritize responder traffic. Acting now will limit the impact on communications during an emergency.
Concerns	Staff time to implement. Data management and maintenance of multiple tools.
Costs	<p>\$ There is no cost directly associated with these programs.</p> <p>@@ Staff time will be needed to initially enroll all designated phones, estimated to be about 200. Routine maintenance will be required.</p>
Stakeholders	Impacted agency staff, City Information Technology
Timeline	WPS access can be requested immediately with cell phone account information. More research is needed to understand the new Verizon responder accounts and potential costs. GETS access can be requested immediately after determining additional needs. Usage policy can be developed within 120 days.

22. Establish more Firewise communities in San Rafael

Action	<p>SRFD program. Conduct outreach to identify communities interested in becoming Firewise and support them throughout the process.</p>
What this means	SRFD will dedicate time and effort to help additional communities meet “Firewise” standards. This will include increased education, disaster preparedness, and fuel reduction. There are currently three Firewise communities within the SRFD response area.

Rationale	Firewise is a National Fire Protection Association (NFPA) program that “teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action now to prevent losses.” The program provides valuable educational information and a roadmap that helps make San Rafael neighborhoods more resilient.
Concerns	Staff time
Costs	<p>§ There is minimal additional cost associated with the Firewise program. Programs of cost, such as community chipper days, are aligned with the overall City fuel reduction initiative, therefor do not represent new costs.</p> <p>@@ Firewise communities can be supported with current staff reallocating time.</p>
Stakeholders	Fire Department, Homeowners Associations and Neighborhood groups, property owners
Timeline	In progress. Two new Firewise communities were recognized for the first time in 2018 and more are expected in 2019.

23. Review and update WUI map

Action	SRFD project and resolution. Review and update the San Rafael WUI map for more practical application and consistency with County and other land management agencies maps.
What this means	SRFD will review and update the WUI map for consistency between maps and application of WUI code. The map will be simplified and updated to apply current fire behavior expectations to WUI boundaries.
Rationale	The current San Rafael WUI map has variations between jurisdictions and does not accurately reflect the threat posed to many areas in or near the currently defined WUI. Updating will improve education, vegetation management, and fire prevention efforts. Maintaining a designated WUI can help with resource prioritization, grant funding, and State code application.
Concerns	Potential insurance and code compliance changes for property owners being added to the WUI.
Costs	<p>§ Review and updates can be completed with existing funds.</p> <p>@@ Review, coordination, and map development will require existing staff to reallocate time.</p>
Stakeholders	Fire Department, property owners, land management agencies with current San Rafael WUI maps.
Timeline	160 days is needed for internal review and coordination with partners. The updated map will be presented to City Council within 60 days of completion to be adopted through a resolution.

PLANNED ORDINANCE CHANGES

The following items are proposed to be developed into ordinance changes and adoption at a later date.

24. Apply CA Fire Code 7A (fire resistant building material requirements) to additional structures

Action	Ordinance change. Review and propose updates to SRMC to apply CA Fire Code 7A outside the WUI and to additional structures.
What this means	7A outlines the materials and construction methods to reduce potential structure ignition during a wildfire for new construction and substantial remodels (50%) within the WUI. Updates to SRMC will apply 7A to a broader list of improvement and all new construction, regardless of WUI proximity. A potential list of improvements requiring 7A compliance anywhere in the City may include, reroofing, additions, remodels impacting 25% of the unit, adding alternative energy (solar panels, Tesla Roof, etc.), and utility replacement.
Rationale	Increase compliance with known fire prevention methods, including fire resistant building materials. Include all structures to reduce likelihood of an urban fire conflagration.
Concerns	Potential to discourage otherwise positive improvements because of additional costs associated with 7A compliance. Potential to discourage compliance with permits and inspections for fear of additional costs to meet 7A requirements.
Costs	<p>\$ Reviewing and updating the SRMC can be completed with available funds. Additional permits may increase revenue.</p> <p>\$\$\$ Construction costs may increase for property owners. Additional permits may be required.</p> <p>@@ Research, review and proposed SRMC updates can be completed with current staff reallocating time.</p>
Stakeholders	Fire Department, Community Development, Marin Builder’s Association.
Timeline	Additional research, review, and stakeholder input can be completed within 120 days, followed by a 60-day period to finalize proposed SRMC updates. Fire and Building Code adoptions will occur in concert with other agencies during 2019.

25. Establish a residential hillside “parking box” program

Action	Ordinance change and City project. Establish a residential hillside “parking box” program on narrow roadways in hillside areas. Parking will only be permitted in “boxed” areas which are designed to assure emergency vehicles can access all streets in San Rafael.
What this means	An ordinance change will establish the parking box program and require that in designated areas, street parking will only be permitted in designated parking boxes. A Fire engine will drive through high problem areas and be used to determine where street parking can safely be designated. DPW then will mark the parking boxes, and enforcement will occur via parking tickets and/or towing. Parking will only be permitted on roadways with a clear space of 10’ for access and a parking area that is

	a minimum of 8’ wide by 15’ in length. In designated areas, the parking box ordinance will replace the six feet from center parking ordinance.
Rationale	SRMC 5.40.080 currently prohibits parking on narrow street unless six (6) feet from center is maintained unobstructed. This standard is confusing, hard to enforce, and does not guarantee fire engines and other large vehicles can safely access all areas of San Rafael. The “parking box” concept is easy to observe and understand for both residents and visitors.
Concerns	Loss of parking spaces in impacted areas, traffic congestion during implementation, public cost and impact on other projects.
Costs	\$\$\$ Implementing and program maintenance will require additional funding. Simplified regulations will support strong enforcement may result in increased ticketing revenue. @@ The ordinance and program can be implemented with existing staff reallocating time. Contractors may need to be considered based on other concurrent priorities.
Stakeholders	Fire Department, Public Works, Parking Enforcement, Residents
Timeline	Within 180 days, a draft ordinance and proposed pilot project will be developed. Implementation will be dependent on funds, staff, and project prioritization. A full implementation could be completed in FY 2020.

26. Increase the number of completed VMPs

Action	Ordinance change. Require Vegetation Management Plans (VMPs) be completed for any of the following: All new construction, home improvements impacting more than 25% of the structure, replacing roofing or windows, all community owned space (i.e. HOA shared land), etc.
What this means	Rather than changing the definition of Substantial Remodel, requiring VMPs for specific projects and thresholds will increase the number of plans without impacting other areas of the existing building code. A VMP would be required for any property requesting an exemption from vegetation standards.
Rationale	Increasing Vegetation Management plans will help reduce and remove fuels. VMPs help property owners understand the impact that landscaping choices impact the threat of wildfire. Increasing number of VMPs required will increase public education and provide property owners with a path for more fire-resistant landscaping.
Concerns	The current VMP template and process will need to be streamlined to accommodate an increase in number of VMPs while minimizing impact to property owners.
Costs	A streamlined VMP process will reduce staff costs. The VMPs will be a resource for inspectors and should require minimal maintenance. Having VMPs to reference will support staff enforcement efforts and reduce reinspection's.
Stakeholders	SRFD, Community Development, Homeowners and Property Management companies
Timeline	The ordinance change requiring all new construction to develop a VMP is prepared to be introduced is prepared to be presented at an upcoming community meeting, with the formal adoption process to follow. Additional ordinance changes expanding the requirements for VMPs can be brought forth within 120 days. Enforcement of

changes will begin after the VMP template and process is updated. Update to vegetation standards will be reflected on the updated template.

27. Incorporate VMPs into residential property sales or transfers

Action	Ordinance change. Vegetation management plan approval will be part of residential building resale (RBR) inspections or if the property is transferred to a new owner (inheritance, donated, etc.) or the zoning or use of the building changes (including listed for short-term rental).
What this means	VMPs will become a part of the RBR process in some format to be determined, such as an advisory document. Property ownership/use transfers would include a VMP.
Rationale	Additional VMPs will reduce hazardous fuels and increase defensible space. New property owners will be educated on fire safe landscaping. Incorporating the VMP process into an established process will help increase VMP compliance. VMPs will <i>not</i> hold up a transfer and are advisory documents.
Concerns	Potential for additional fees for private property owners. Coordination required between Fire and Building inspectors.
Costs	Staff time should be offset by increased fee revenue.
Stakeholders	Building inspectors, Fire Department, Marin Association of Relators
Timeline	VMPs can be incorporated into existing RBR process within 90 days. Research is needed to determine the best method to assuring VMPs are completed with other changes in ownership and usage.

28. Prevent potential entrapments by requiring 2 gates in any fence in designated areas

Action	Ordinance change. Update building code to require new and replacement fences have two gates. Existing fences within designated single-lane access parcels must install 2 gates.
What this means	Designated parcels would be required to have more than one means and direction of egress in the event of a wildfire or other emergency. Fences over two (2) feet tall will be required to have two gates, accessing different cardinal directions installed. This will include new fences, replaced fences, and at property resale.
Rationale	This would help assure that multiple escape routes exist in the most vulnerable areas and provide ease of access for firefighters.
Concerns	Cost burden for property owners not currently up to the new code. Enforcement.
Costs	\$ Ordinance change can be accomplished with current funding. @@ Public education and ordinance enforcement would require reprioritization of staff time.
Stakeholders	Fire Department, Code Enforcement, Marin Association of Realtors, property owners
Timeline	An updated ordinance, incorporating stakeholder input, can be brought to City Council within 160 days. Updates may be incorporated into the 2019 planned code updates.

29.Reduce fire risk and keep visitors using short-term rentals safe

Action	Ordinance change and City project. Develop requirements for short-term rental units to reduce the risk posed by and to visitors. Require all short-term rental units to post emergency procedures, information on signing up for emergency alerts, and fire safety information. All short-term rentals will be required to have a Vegetation Management Plan (VMP) on file.
What this means	Visitors, potentially unfamiliar with the area or wildfire risk, will be informed about the emergency procedures and can register for emergency alerts during their stay. Vegetation Management Plans will be required for any rental any property in San Rafael to help reduce a potential ignition.
Rationale	Short-term rentals represent a unique fire risk for a variety of reasons. Those using short-term rentals may be from out of the area and unfamiliar with wildfire risk and safety procedures. The information will help assure the safety of visitors and provide important fire prevention information to visitors unfamiliar with wildfire risks and necessary ignition precautions. Having a VMP will help assure the property is safe, unlikely to ignite from a careless visitor, and support enforcement of vegetation standards for property owners.
Concerns	Increased cost of compliance could reduce the number of short-term rentals. Potential for increased cost of permit processing and code enforcement.
Costs	\$ Ordinance change can be accomplished with current funding and staffing levels. Potential revenue from fees and fines. @@ Outreach, monitoring, and enforcement can be accomplished with current staff reallocating time.
Stakeholders	Fire Department, Code Enforcement, property owners renting space, visitors
Timeline	In Progress. General guidelines are in development for short-term rental units and will include safety information requirements. Additional research is needed to determine the best method for developing VMPs for short-term rental properties.

PLANNED PROJECTS AND PROGRAMS

The following are proposed projects and programs that require additional funding, staff, time, or partner coordination to further develop.

30.Review and expand evacuation plans

Action	City project. Review Countywide evacuation plans and consider San Rafael’s unique needs and resources, including possible water evacuations.
What this means	Additional evacuation planning will establish additional redundancies and potentially reduce the burden on a single egress artery during an emergency. These efforts will consider evacuating to areas of refuge during a fast-moving wildfire.
Rationale	San Rafael has multiple areas with limited egress options, due to water, open space and narrow roads. San Rafael should review alternate options for evacuation,

	including establishing agreements with Golden Gate Transit and Dutra to support a water evacuation.
Concerns	Evacuations are dynamic and situation-dependent, making comprehensive planning ineffective. Efforts may create false sense of security or avoidance of individual planning.
Costs	\$ Planning efforts can be supported with current funding @@ Efforts can be supported with current staff reallocating time.
Stakeholders	Fire Department, Police Department, Golden Gate Transit, Dutra, Marin County, Residents
Timeline	Planning efforts are ongoing. Water evacuation planning can be established throughout 2019 with collaboration from partners. Updated evacuation plans will be incorporated in the City Emergency Operations Plan (EOP).

31. Develop comprehensive San Rafael hazardous vegetation study and mitigation measures

Action	City project. Contract with vendor for parcel level vegetation mapping. Identify areas with high-risk vegetation, including unmaintained Eucalyptus groves. Incorporate findings into mitigation and vegetation maintenance plans.
What this means	Studies will be conducted to gain a better understanding of high fuel density and risk areas. Specific attention will be paid to Eucalyptus grove locations, density, and nearness to structures. This data and imagery will help inform strategic vegetation management and forest health moving forward. For example, an identified high-risk Eucalyptus grove may be scheduled for pruning or thinning over the course of a few years, with ground fuel maintenance (removing leaves, dead limbs, etc.) every three to five years thereafter.
Rationale	Baseline information and imagery will help establish a comprehensive fuel management strategy. Identifying high risk areas will prioritize projects and available funding.
Concerns	Cost. Forest health.
Costs	\$\$\$ Imagery and plan development will require additional funding. @@ Efforts can be supported with current staff reallocating time.
Stakeholders	Fire Department, Public Works, Marin County
Timeline	Funding for parcel level mapping was included in the Cal Fire Prevention Grant. If approved, work could begin in September of 2019 and incorporated into the fuel management plan for 2020.

32. Establish additional fuel interruption zones

Action	SRFD and DPW program. Remove hazardous fuels within 30-50 feet of public property bordering private and improved land to create fuel interruption zones.
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What this means	San Rafael will take on the cost and burden of clearing vegetation on San Rafael owned and maintained land which abuts privately owned land or developed land owned by another public entity. Fuel interruption zones consist of low cut grasses, removed dead vegetation, and shaded fuel breaks.
Rationale	San Rafael must do its part to reduce fuels, particularly in areas bordering other property to assure efforts of one parcel are not negated by another's. This will reduce fuels to limit fire ignition and spread in San Rafael Open Spaces and help reduce the potential for a fire to spread from undeveloped to developed land. Aligns with Marin CWPP transition zone strategy.
Concerns	Cooperation and coordination with other public agencies and landowners may be difficult.
Costs	<p>\$\$\$ Efforts require extensive additional funding to achieve necessary results. Based on past costs, the current list of fuel reduction projects for 2019 is over \$500,000. Fire prevention and mitigation grants may help mitigate the cost. Measure A funding cannot cover the necessary fuel reduction work. Measure A funding can be used to support maintenance work once the significant fuel reduction is completed. Additional funding is needed to full fund maintenance and prevent additional fuel build ups.</p> <p>@@@ Substantial staff time is needed to strategically manage projects, contractors and conservation crews while continuing vegetation inspections and educational programming.</p>
Stakeholders	Fire, Public Works, landowners, other public agencies
Timeline	In progress. Fuel reduction work is ongoing but reliant on available funding. A funding request to the Cal Fire, Fire Prevention Grant was submitted December 19 th , 2018 requests \$922,000 to support fuel reduction in 2019 and 2020. Notifications of awards will be in April of 2019.

33. Engage CERT members in fire prevention

Action	SRFD program. Develop program and training to enable San Rafael CERT to support fuel reduction efforts through education, outreach, and data gathering.
What this means	Utilize existing volunteers to supplement the outreach, education, and hazard identification work of SRFD.
Rationale	San Rafael has over 400 trained CERT members, many anxious for ways to be more involved in disaster preparedness. Training and engaging CERT volunteers will help increase public outreach and education and help inform SRFDs vegetation inspection priorities. CERTS will utilize local knowledge and willpower while building more resiliency through education and relationship building. Volunteer hours dedicated to fuel reduction may be used as match dollars for fire grants.
Concerns	CERT safety and assuring the accurate distribution of information and data collection.
Costs	<p>\$ The program can be implemented with minimal cost and existing funds.</p> <p>@ The program can be implemented with existing staff. Initially, some time will need to be reallocated, but once active, CERT members will help save inspectors time.</p>
Stakeholders	Fire Department, CERT members, Marin County CERT

Timeline	In progress. San Rafael CERT steering committee is re-engaged and looking for ways to stay involved in disaster preparedness and response during ‘blue skies’. Training needs to be developed and presented by fire prevention staff. A pilot program in a limited geographic can be rolled out within three months.
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34.Reduce hazardous fuels through an abatement process on privately owned unimproved lots

Action	City Program. Develop program and policy to reduce hazardous fuels through increased vegetation removal mandates and abatements on unimproved lots. City and County ordinance and policy changes may be required.
What this means	After establishing a vacant parcel list, parcels will be inspected and noticed if they do not comply with the updated vegetation management standards. A public hearing will be conducted giving any property owner the opportunity to commit to compliance within a set period. If property owners do not mitigate the issue themselves, they will be fined and/or have the cost of the city clearing the hazardous fuels charged to the them.
Rationale	Many privately owned, unimproved parcels do not comply with vegetation management standards and create safety risks for the entire community. Establishing a consistent notification process, timeline for compliance, and recharge process will help address these risks.
Concerns	Potential challenges with recouping costs of abatement. Fines will need to be substantial to encourage compliance.
Costs	\$\$\$ The City will have to cover the additional costs of clearing unimproved hazardous property. Until costs are recuperated this will require additional funding. @@ Staff will need to establish a vacant parcel list, inspect, notice and inspect. Coordinating contractor work as necessary with require additional staff time.
Stakeholders	Fire Department, Public Works, Code Enforcement, Marin County, landowners
Timeline	Program can be developed and brought to council for approval within 90 days. Coordination with the County may delay this process.

35.Reengage volunteer “Broom Pull Days”

Action	City program. Work with the volunteer program to reestablish an ongoing volunteer program to pull invasive Scotch and French broom from public open space and high fire risk areas.
What this means	A previous program saw a great deal of success removing and eliminating French Broom in parts of San Rafael. Education and best practice materials exist and can be re-used to support a reinvigoration of this effort. City staff will be needed to support the effort and Law Enforcement may be required at the start of projects to assure work areas are clear of encampments and other threats.
Rationale	This project will engage community will and volunteer labor to work on eliminating French broom from high fire risk areas of San Rafael. Volunteer programs provide a

	path for residents to directly reduce wildfire risks. Volunteers will help reduce the need for contractors and support maintenance in previously cleared areas.
Concerns	Safety of volunteers. Time and effort needed to coordinate project sites, registration, and volunteer safety and technique training. Potential community conflicts over project areas.
Costs	\$\$ Reallocated or new funding is needed to purchase tools and safety equipment. Woody Biomass left on site will need to be removed. @@ The program can be implemented with current staff reallocating time. Additional staff time will help expand the project areas.
Stakeholders	Fire Department, Public Works, Police Department, Sustainability and Volunteer Program Coordinator
Timeline	A volunteer project could be scheduled within 60 days of having the necessary approvals, tools, safety equipment, and strategy in place.

36. Improve the public’s fire risk awareness with sign improvements and installation

Action	SRFD and DPW program. Install new and improve existing signage at all open space access areas and along roads in high fire-risk areas.
What this means	Signs will be installed across City open space explaining fire danger and risks associated with being in the open space. New signage will be installed in areas of high fire risk to help keep public alert and avoid risky fire behavior. Staff will need to survey all open space access points, and high fire risk areas to determine sign needs.
Rationale	Educate public and visitors. Support increased enforcement. Provide consistent messaging. Improve aesthetics and readability of signs.
Concerns	Aesthetic concerns of signs in natural areas. Potential to create culture of fear.
Costs	\$\$\$ Additional funding will be needed to develop, produce, and install improved signage. @@ Current staff can complete the project with time reallocation or support of contractors.
Stakeholders	Fire Department, Public Works, Police Rangers, residents
Timeline	Survey work can be completed within 60 days. With funding, message and signs can be developed within 90 days, with installation to occur shortly thereafter. With required funding, the project could be completed before peak 2019 fire season. If utilizing grant funding, the project would be completed before May of 2020.

37. Effectively coordinate the removal of vegetative debris

Action	City program. Work with Marin Sanitary to develop a plan to support increased vegetative debris. Consider identifying a city drop off site for removed hazardous fuels.
What this means	Research and stakeholder input is needed to determine if a vegetation debris removal site is necessary or beneficial to helping reduce hazardous fuels. Additional discussions will help determine if a drop off site should be always public, public on

	select days, or for city staff and contractors only. Other considerations include increasing green waste bins, chipper days, or a combination thereof.
Rationale	Stronger vegetation regulations will result in an increased amount of woody biomass and vegetative debris. Coordination will help determine the best way to dispose of this debris. Goals will include reducing the costs associated with City sponsored chipper days, diverting woody biomass from landfills to biomass markets, supporting property owners fuel reduction efforts.
Concerns	Cost. Security. Assuring appropriate use of space. Large piles of vegetative debris could pose additional fire risk if not properly protected. Fuel reduction in areas around drop-off sites would be required.
Costs	<p>\$\$\$ Unless an existing, unused site is identified, costs for implementation and maintenance would be extensive. Additional funding is also needed to support increased green waste bins and/or community chipper days.</p> <p>@@ Coordination can be accomplished with current staff reallocating time. @@@ If a full-time drop-off site was established, additional staff may be necessary.</p>
Stakeholders	Fire Department, Public Works, Sustainability Program, Residents, Marin Sanitary.
Timeline	Short and long-term recommendations will be drafted within 120 days. The timeline will consider the vegetation removal requirement deadlines placed on residents. Implementation will be impacted by funding.

Table 2. Objective Summary

Objective	Exists, Plan expands	\$	\$\$	\$\$\$	Additional Staff Needed
1. Eliminate highly flammable vegetation throughout San Rafael	X			X	X
2. Apply vegetation management standards citywide				X	X
3. Adopt Public Resource Code 4290 and 4291	X			X	X
4. Reduce ember ignitions within immediate structure ignition zone standards				X	X
5. Apply fire mitigation codes 365 days a year	X				X
6. Eliminate fire hazard associated with shake and wooden roofs				X	
7. Increase funding and resources available for wildfire mitigation	X		X		
8. Immediately seize ignition sources at encampments and remove encampments as quickly as possible				X	X
9. Provide for additional Vegetation Management staff	X			X	
10. Increase Police Ranger staffing	X			X	
11. Improve public education regarding fire-safe landscaping and planning for a wildfire	X		X		X
12. Increase capability for early fire warnings and detection	X		X		
13. Improve public emergency alerting capabilities and policies	X			X	
14. Complete an analysis of fire roads and strategic fuel breaks				X	X
15. Expand goat grazing for vegetation maintenance	X			X	

Wildfire Prevention and Protection Action Plan

January 2019

Objective	Exists, Plan expands	\$	\$\$	\$\$\$	Additional Staff Needed
16. Assure that residents can evacuate through garage doors if power is out			X		
17. Improve development and implementation of Vegetation Management Plans (VMPs)	X		X		
18. Assure that appropriate staff can send and receive emergency alerts		X			
19. Reduce fuels along roadways	X			X	X
20. Reduce fuels around critical infrastructure				X	
21. Assure that City staff can communicate during an emergency	X	X			
22. Establish more Firewise communities in San Rafael	X	X			
23. Review and update WUI map		X			
24. Apply CA Fire Code 7A (fire resistant building material requirements) to additional structures.	X			X	
25. Establish a residential hillside “parking box” program				X	X
26. Increase the number of completed Vegetation Management Plans	X	X			
27. Incorporate VMPs into residential property sales or transfers		X			
28. Prevent potential entrapments by requiring 2 gates in any fence in designated areas.		X			
29. Reduce fire risk and keep visitors using short-term rentals safe		X			
30. Review and expand evacuation plans	X	X			
31. Develop comprehensive San Rafael hazardous vegetation study and mitigation measures				X	
32. Establish additional fuel interruption zones	X			X	X
33. Engage CERT members in fire prevention		X			
34. Reduce hazardous fuels through an abatement process on privately owned unimproved lots			X		
35. Reengage volunteer “Broom Pull Days”				X	X
36. Improve the public’s fire risk awareness with sign improvements and installation	X			X	
37. Effectively coordinate the removal of vegetative debris	X			X	