



Central & West Marin County

Defensible Space & Home Hardening Inspection Program

Annual Report 2022

Improving wildfire resilience...

...the fire agencies of Central & West Marin partner together to help residents with an annual defensible space and home hardening evaluation program, funded by Measure C and member agencies.



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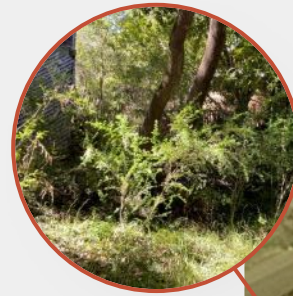
An aerial photograph of a lush, green valley. The foreground shows a grassy slope leading down into a dense forest of trees. In the middle ground, a small town or village is visible, with several houses and buildings scattered among the trees. The background features rolling hills and mountains under a clear blue sky with some light clouds. The overall scene is peaceful and scenic.

Helping Central & West Marin adapt to wildfire.

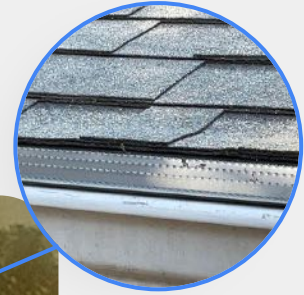
The DSI program...

...is designed to educate the public how to reduce structure ignitability and create effective defensible space.

Ensuring every resident in the Wildland Urban Interface has access to an in-person evaluation at least every 3 years.



Hazardous vegetation



Metal gutter covers



Vent greater than 1/8" opening



Tree within Zone 0, 10' of chimney, & overhanging roof

A map of a coastal region, likely the Chesapeake Bay area, showing numerous orange dots scattered across the landmass. The dots represent DSI activity. The map includes water bodies, landmasses, and some infrastructure like roads and buildings. The dots are concentrated in several areas, particularly along the coast and in the central part of the landmass.

DSI activity.

The **2022** defensible space program provided over **13,730** homeowners (**40.2% of homes**) with an in-person evaluation.

This led to over **140,000** personalized recommendations for the community and **2,700** hours of direct engagement.

The Defensible Space Program...

of Greater Ross Valley and West Marin provides home and landscape evaluations for property owners. By educating residents of their defensible space responsibilities and best practices, and providing support, we can reduce structure ignitability and can create fire adapted communities.



Program goals.

Every property owner should have the opportunity to learn what they can do to make their home safer from the threat of wildfire.

Provide follow-up inspections to encourage residents to create defensible space emphasizing local fire code violations and best practices.

Provide excellent customer service while educating the public about the need to maintain defensible space and home hardening.

Provide comprehensive, consistent, and accurate defensible space reports for residents.

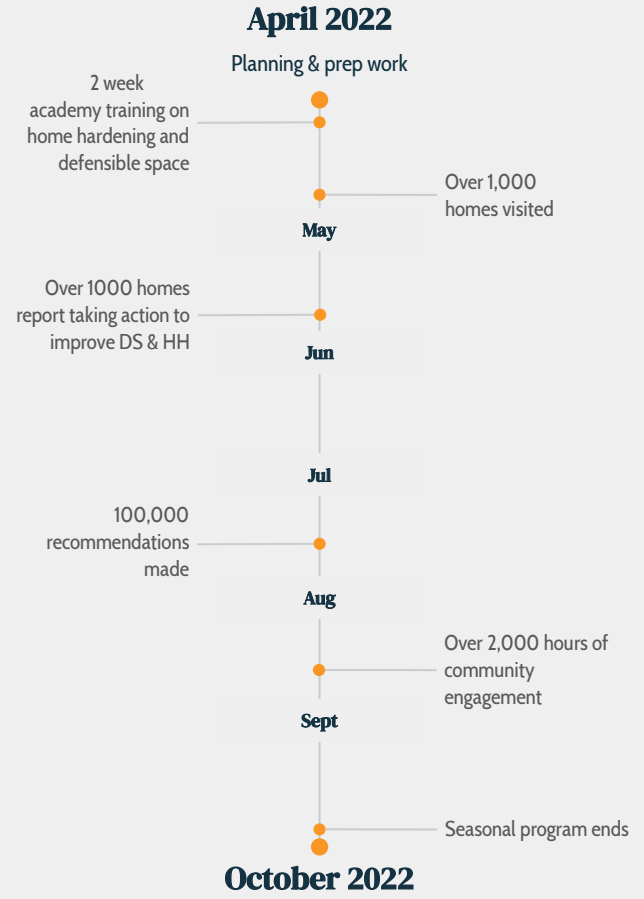
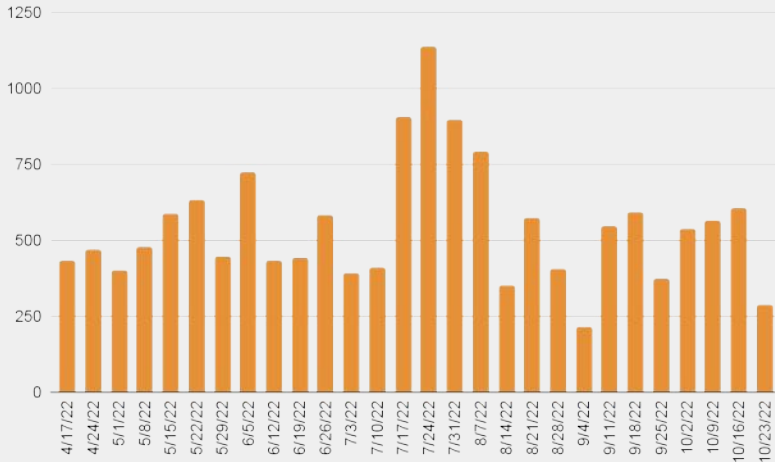
Meet or exceed the MWPA mandate that each jurisdiction provide defensible space evaluations to every WUI parcel at least every 3 years

Connect residents to resources such as MWPA's curbside chipper program, and grant program for vegetation and home hardening assistance.

Ensure that residents are signed up to Alert Marin and Nixle Notification service as well as provide information on evacuation and Zone Haven.

The Season...

Annual inspections and evaluations are aligned with “fire-season.” Seasonal inspectors are hired and trained in late spring, and inspections continue through the peak of fire-season in October.

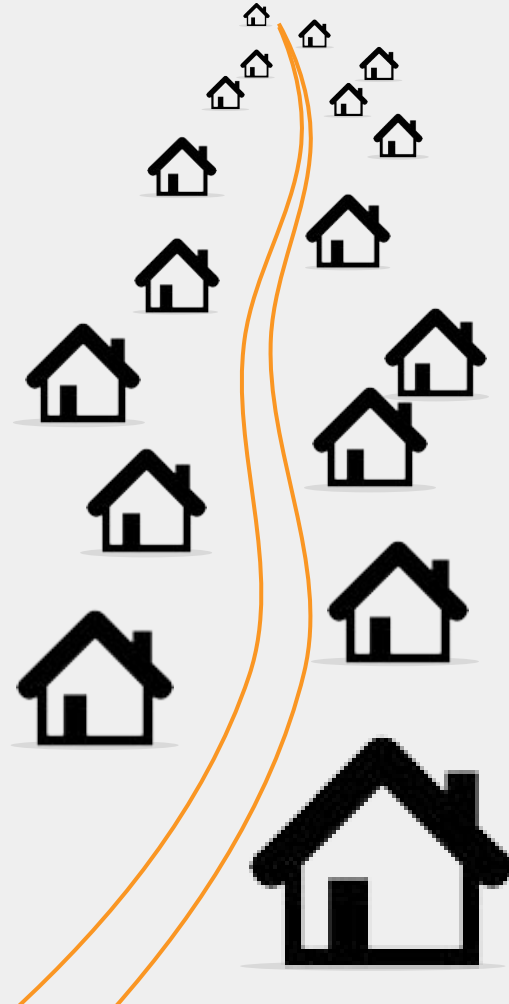


A typical day...

...inspectors each visit 20 homes in a community on average.

The process begins with an assessment from the public right-of-way before approaching the home.

When residents are home, inspectors explain the program and ask permission to evaluate the full property... 95% of residents say 'yes' and allow access to their property.



Helping residents adapt to wildfire.

"I'm grateful for the mandates and the suggestions. We have raked leaves and will do so several times during the dry season. We installed gutter screens, fine metal mesh on vents, removed dead vegetation and cleared foundation of leaves and soil. We plan to close gaps as well as we can around the sliding barn doors of the garage. It is satisfying to have done this."



...of residents have taken at least 1 action to improve defensible space and harden their home since their evaluation.

Pilot projects for Marin County Fire Department.

The Marin County Fire Department Vegetation and Fuels Management Program partnered with Defensible Space evaluators to pilot a “direct assistance” program.

Using data gathered during inspections and leveraging Defensible Space Inspectors, we were able to identify potential hazards for mitigation assistance, and notify residents of eligibility in-person with supportive materials.



Free Fire Hazardous Plant Removal Project

We have selected your community to receive free front yard, fire hazardous plant removal.

Juniper, bamboo, and Italian cypress are highly flammable and are among the most fire-hazardous plant species. Each of these plant species tends to build up large amounts of dead material, and can contain volatile oils that release large amounts of heat once ignited.

Fire hazardous plant removals will improve your home and neighborhood's resistance to the threat of wildfire. It will also help in the event of a safe evacuation for residents and increase the safety of our firefighters.

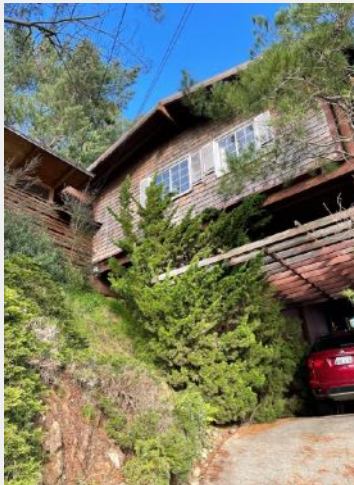


Project details:

- We will cut and remove: juniper, bamboo, and Italian cypress
- We will only work on the front yard of properties; we will not be accessing back or side yards behind fences.
- You will NOT be charged for this service
- The work will be done the week of May 23, 2022 between the hours of 8am-4pm
- You do NOT need to be present during the removal process

Focusing on hazardous Juniper & Italian Cypress.

Marin City: 31 properties mitigated on three streets with focus on removal of Juniper and dead trees along front and side yards.



Oak Manor Ridge: 35 properties had Juniper and Italian Cypress removed.

With high community participation.

Santa Venetia: 124 properties signed up for removal within 30 days of their first inspection. (87% of properties identified with Juniper participated in this removal program.)



Throckmorton: 14 properties had Juniper removed



Pilot project on reinspections.

A reinspection program was tested with Central Marin Fire in Larkspur and Ross Valley Fire in Sleepy Hollow.

The purpose of this pilot was to measure the impact of repeat engagements and stress community accountability for property owners to meet the required defensible space regulations.



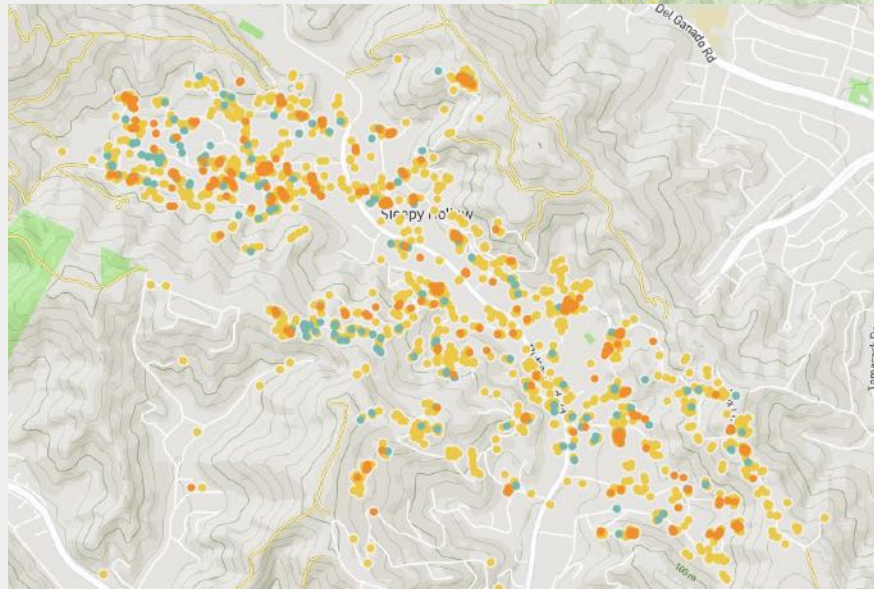
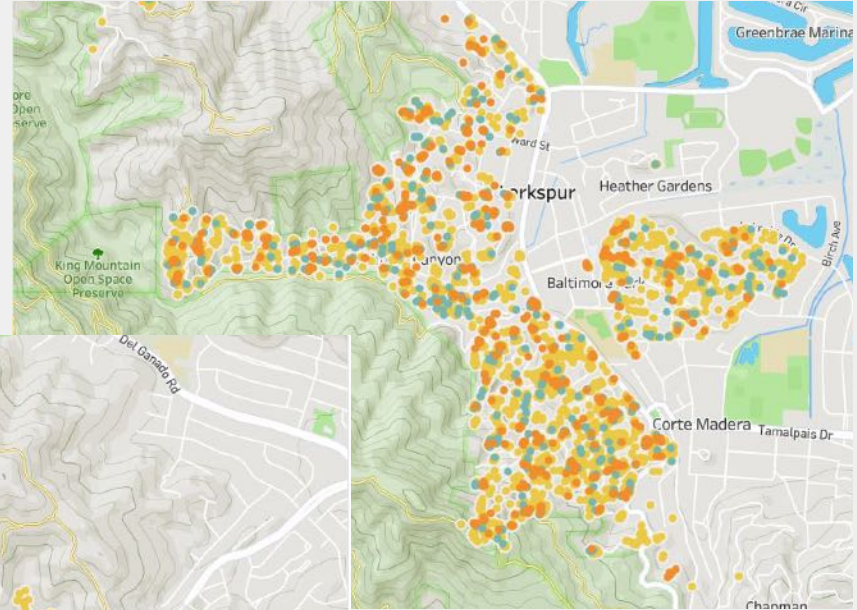
average improved resolution rate for homes with repeat inspections

Impact from reinspections.

The repeated interactions and follow up to highlight both required defensible space and recommended home hardening had a major impact on residents taking action.

	Larkspur	Sleepy Hollow	Other Communities
Overall Home Hardening vulnerabilities resolved	10.83%	13.71%	2.31%
High Risk Defensible Space resolved	40.72%	44.75%	11.08%
Medium Risk Defensible Space resolved	30.58%	29.22%	5.03%

Issues resolved by residents in Sleepy Hollow & Larkspur.



A photograph of four people standing on a grassy hillside at sunset. They are seen from behind, embracing each other. The sun is low on the horizon, creating a warm, golden glow and a lens flare effect. The background shows a vast, hazy landscape with rolling hills. The text 'Community Insights 2022.' is overlaid in white, bold, serif font on the left side of the image.

Community Insights 2022.

Residents invest in resilience.

“Following my evaluation I had a crew in to remove vegetation. The total cost was \$3,300. This program was exceptionally well run, including the email communications, response to queries and this excellent evaluation tool. Thank you”

“We weed whack our hill yearly, and we just trimmed our oaks and removed all juniper bushes. We now realize we need to make some major adjustment to our home's exterior to meet expectations. We will keep the list and proceed when possible”

“I appreciated the evaluation and will implement all the safety recs ASAP. As to the hardening, some are not really feasible but will do my best”

Spending time and money for wildfire adaptation.



**Hours and financial investment were calculated based on the average cost (time and/or money) to resolve each discovery type. Source on cost data came from resident self reported information, receipts from the MWPA grant program, and market research.*

Impact: Reducing risk for the community.



Before and After:
Firewood stored near home and roadway,
was removed.

Before and After:
Debris on roof was cleared
improving resilience for this home
and neighbors.



Home Hardening opportunities...

The program's top effort focuses on education and other support to help residents update and retrofit their homes to "harden" against embers and radiant heat during wildfires.

Top home hardening vulnerabilities:

Screens >1/8"	34.7% of homes
Combustible fence attached to structure	31.5% of homes
Exposed space under decks	20.8% of homes
Vinyl or uncovered gutters	10.0% of homes
Plastic skylights	7.2% of homes

Some opportunities to improve home hardening may come at significant cost. These should usually be addressed during renovations or after other DS & HH items are resolved:

Single pane windows	19.3% of homes
Softwood decks	17.2% of homes

...and vegetation management.

Marin homes need improvement in the critical “Zone 0.”

15% of homes still have combustible mulch, 6% store firewood within 5' of their home. These critical vulnerabilities are easily corrected and must be addressed to reduce loss during wildfires.



...of homes evaluated had some type of vegetation within 5' of their home



Designing a community based evaluation program.

Building off of lessons from previous years, the 2022 “DSpace” program was designed to improve coordination with other wildfire resources including the community chipper program and grants for defensible space & home hardening.

The program begins with hiring and training inspectors.

Inspectors attend a training academy, learning about basic wildland fire behavior, Marin's unique landscape, vegetation, and building construction, Basic First Aid, and CPR. The academy includes the National Fire Protection Association's "Assessing Structure Ignition Potential from Wildfire" training program.

Scenario based training prepares inspectors for real-world encounters in the field before actual inspections begin two weeks later.



Evaluation teams are trained to National Fire Protection Association (NFPA) standards.



Hiring Pool

- Recruit at local Fire Academies
- Bi-lingual team with 4 languages covered including ASL
- Record number of Defensible Space Inspector returnees from previous years



Academy

- Provide NFPA's two day certification course: Assessing Structure Ignition Potential from Wildfire for inspectors and other agencies
- Conduct mock Inspections before program launch
- Experienced Fire Suppression and Prevention speakers

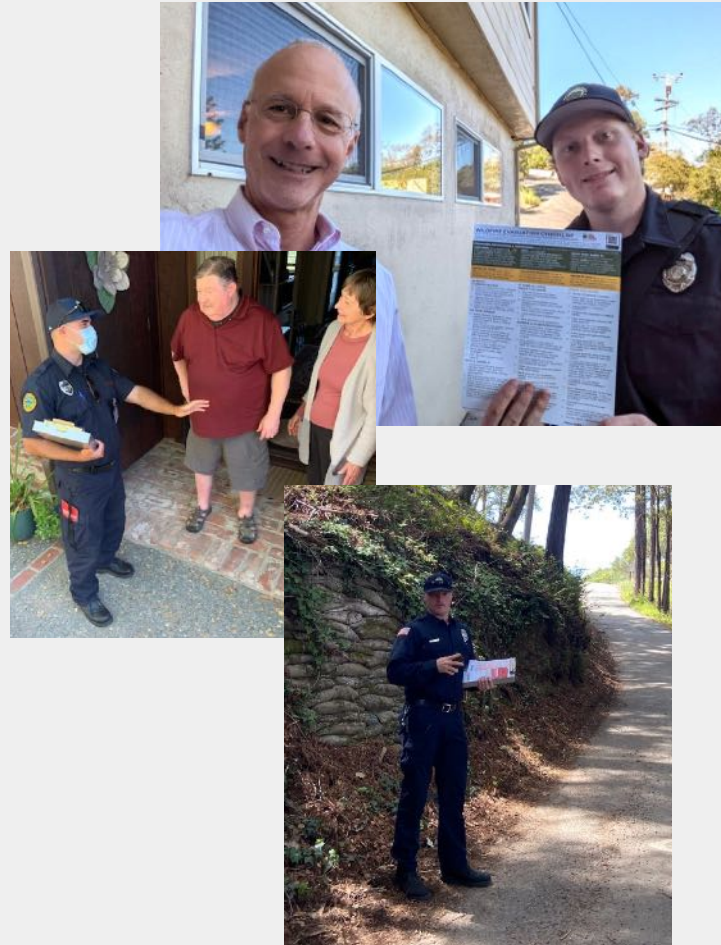


Continuing Education

- Basic Life Support (CPR and AED)
- S190 Introduction to Wildland Fire Behavior
- Shaded fuel break field trips with MWPA/SRFD
- Attend MCFD's Fire Academy Burn Day
- Instruct Fire Foundry members and other agencies in field of DS
- Expert speakers

“I wanted to take a minute and drop you a quick email to say how impressed I was with Sal and Heather today when they came to my home to discuss the defensible space report that was prepared for me. They were knowledgeable, personable, and extremely professional in every way.”

Ross Valley Resident



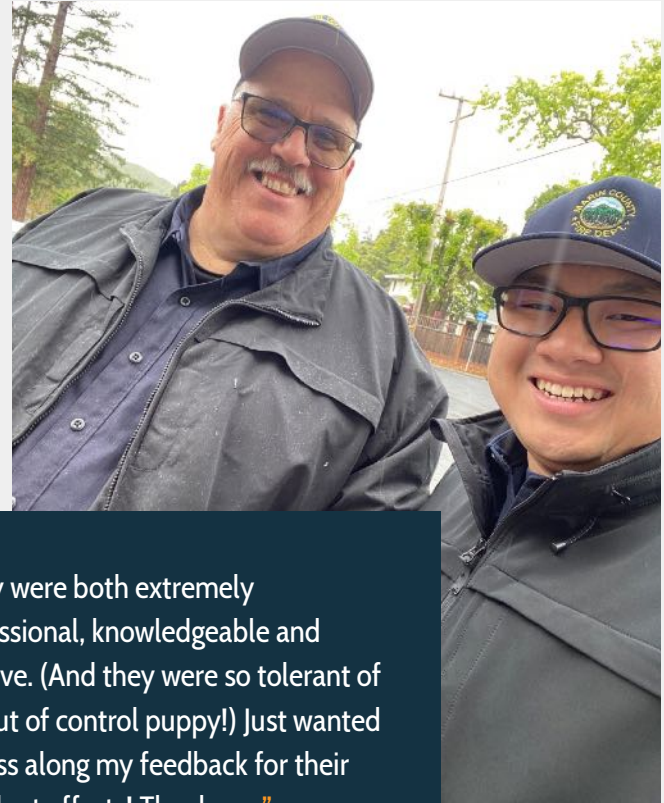
Field engagement.

Neighborhoods identified as being in the WUI (Wildland Urban Interface) are inspected every other year at a minimum.

Inspector teams carpool to a central point and then go door-to-door to canvas an entire neighborhood.

Inspectors evaluate each property, recording data in the tablet-based Fire Aside platform. The software allows for precise and accurate data capture while providing secure access for residents.

In addition to the inspection, inspectors provide information and resources on evacuation preparedness, grants, environmental considerations, and wildfire insurance.



“They were both extremely professional, knowledgeable and positive. (And they were so tolerant of my out of control puppy!) Just wanted to pass along my feedback for their excellent efforts! Thank you”

A wide range of notification methods are used to make residents aware of inspections.



Team visibility

Inspectors drive marked vehicles increasing visibility and awareness of our presence.



Neighborhood signs

While in the neighborhood, inspectors put up sandwich boards in a safe and highly visible spots.



Press release

Approximately a week ahead of entering areas to be inspected we share a press release with the local Fire Department, Town officials, and local Firewise Sites.

The receiving agency or group then publishes on their social media platforms.



Individual notifications

Each property has a door hanger left or given to the resident.



Social media

Utilizing MCFD's NextDoor account

Post evaluation:

Educating & Supporting residents

Following the evaluation, residents could access their customized defensible space & home hardening report online with paper copies available on request.

The report provided specific information on that property including resources to help with resolutions including grants from MWPA and information on their next ChipperDay.

65% of residents
accessed

their online report

86% of residents
indicated the

report helped them identify which vegetation to prioritize for removal

Post evaluation:

Educating & Supporting residents

The program includes a back office support to respond to resident questions and concerns. On average there were 100 resident requests a week. The goal was to respond to all residents within 1 business day.

As residents resolved items and submitted them via their report checklist, this team would review and clear or send feedback to the resident.

“Thank you for reading my email and for your prompt response!”



Over 2,000 resident resolutions were reviewed this year



Recognizing residents investing in fire adaptation.

The interactive tools implemented by Fire Aside within the report increases engagement from residents.

Residents upload photos and check off action items which go into the Admin workflow tool to be reviewed, followed up on or resolved.

Confirmation of the action(s) includes a 'thank you' email sent to the resident following engagement with our program

2022 Highlights...

Residents reduced risk by taking actions to harden their home and create defensible space.



Removed enough bamboo to feed 10 pandas for a year along with a lot more Juniper, Italian Cypress, and other hazardous vegetation



7,700 pickup trucks worth of combustible mulch



Enough vines & ladder fuel to reach the top of the Golden Gate Bridge

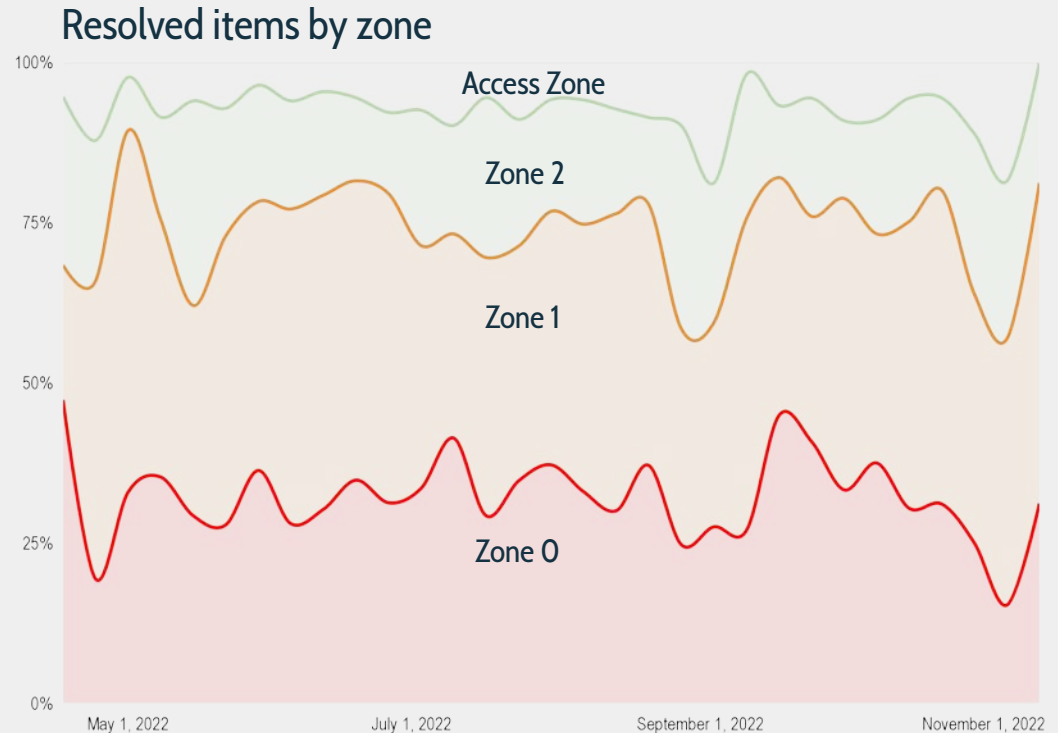


Replaced a half mile of vents with openings greater than 1/8"

And much more big & small actions... from replacing plastic skylights to relocating combustibles away from the home

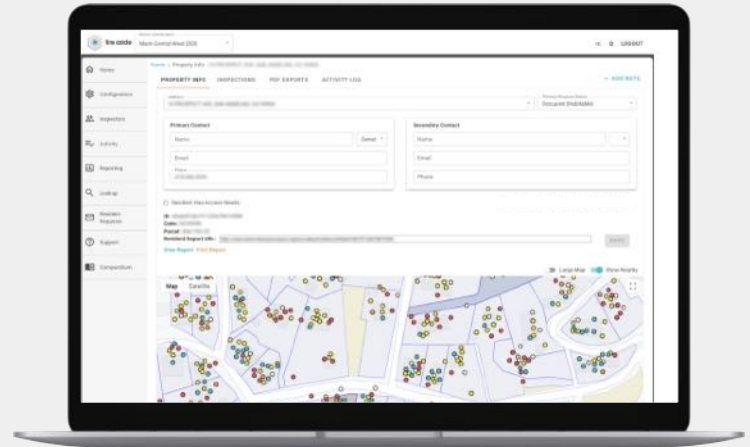
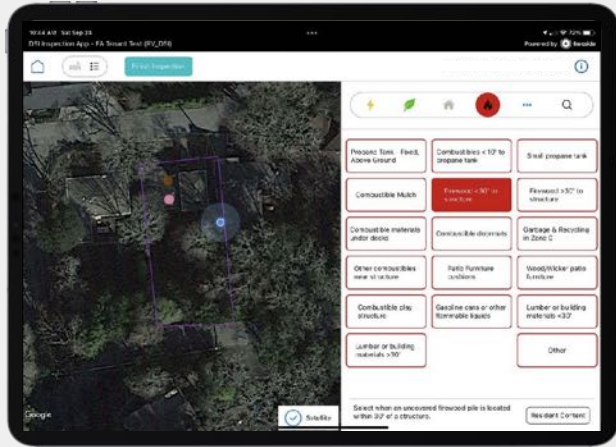
Prioritizing Issues...

Residents resolve issues in Zone 0 and Zone 1 at a higher rate, showing success with messaging that emphasizes prioritizing work from the structure out.



Increasing program efficiency.

Following the 2021 pilot, the Defensible Space Inspection software from Fire Aside was adopted county wide. This platform continues to improve efficiency in field evaluations, increase resident engagement, and support admin operations & data analytics.



Integrating ChipperDay resources.

Both the evaluators in the field and the online report reinforce the availability of curbside community chipping funded by Measure C.



Residents who utilize a Chipper Day after an inspection increase their “pile” size by 72%

Residents who use ChipperDay were 3.5x more likely to have resolved high risk vegetation items on their property than a non-chipper user. They were also 4.5x more likely to have resolved vulnerable items on their home.

Avg. fuel removed via ChipperDay prior to an inspection was 2.45 cubic yards. Following an inspection the average increases to 4.22

Promoting MWPA grants.

Inspectors advise residents on the availability of financial grants to offset the cost of home hardening updates and vegetation management.

Information on grants was reinforced by Fire Aside integrating grant availability information into the online report, and providing a direct link for residents to apply for grant funds.



MWPA Grants may be available to help ([learn more](#)).

[Click here to start your application](#)



Top household vulnerability resolved by grants: vent screens.



Top defensible space vulnerability resolved by grants: Trees overhanging structures

Awareness drives action.

We continue to see a strong adoption and usage of the customized online report*. The average user spent 7m 57s with the report

*While supporting over 200 requests a version via US Mail.

Residents educated on issues are...

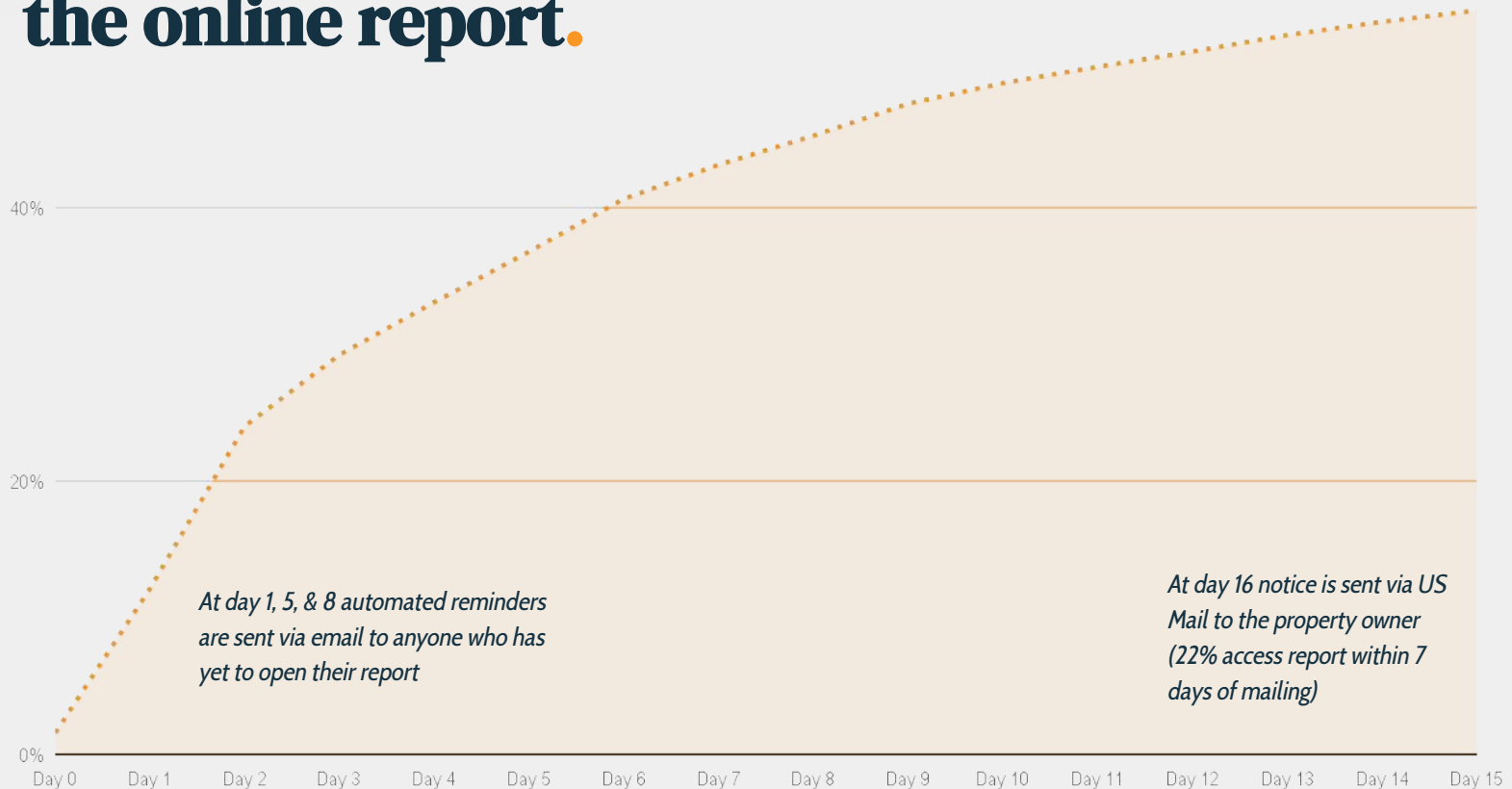
6 times more likely to resolve achievable Home Hardening vulnerabilities**

5 times more likely to resolve Defensible Space “High Severity” Issues

7 times more likely to resolve Defensible Space “Medium Severity” Issues

**Achievable House Hold vulnerabilities focuses on items that don't require a building permit or extensive remodeling. Example is replacing vents, whereas removing all siding is not achievable, except in a major remodel

Continuing to improve access to the online report.



Lessons learned & **2023** planning.

Evolving the program.

The stand-alone Defensible Space and Home Hardening program was established in 2016. With support from the member agencies and funding from Measure C, the program expanded dramatically. Continued development is based on feedback from the community and extensive data analysis of risk reduction effectiveness in Central and West Marin.

2021.

Program expansion with MWPA funding. Development of process for communications and community support. Baseline data established & pilot Fire Aside software

2022.

Improvements made and (almost) all of homes visited at least once. Promotion of MWPA grants & financial assistance. Expand software rollout.

2023.

Expanding into reinspections and introduction of enforcement as needed. Expanding financial assistance. Improved resident support.

2023 DSI program goals.

1.

Improve community notification of upcoming inspections.

2.

Improve coordination of inspection and resolutions resources (direct assistance, matching grants, ChipperDay, etc).

3.

Motivate resident to resolve identified fire code violations and act on home hardening recommendations.

4.

Conduct follow up inspections for every parcel inspected in 2023.

5.

Refer unresolved hazards to Fire Prevention Bureau(s) for code enforcement and potential abatement.



Operating in partnership with the community as Marin adapts to wildfire.



Appendix.

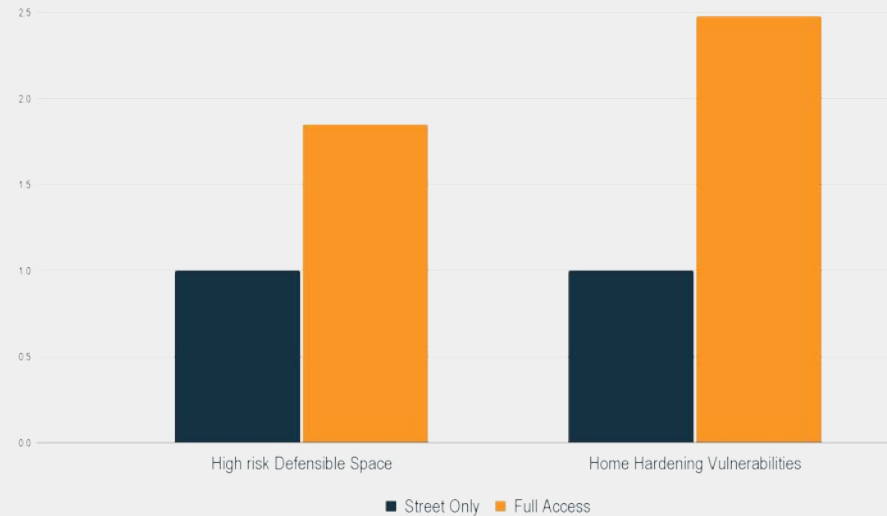
Impact of access to the property.

When inspectors are granted full access to a property they identify **70%** more discoveries vs inspecting from the street-only. These discoveries tend to be higher risk issues and significant vulnerabilities.

Residents who grant full access are **45%** more likely to have resolved items upon reinspection vs those who receive a street-only.

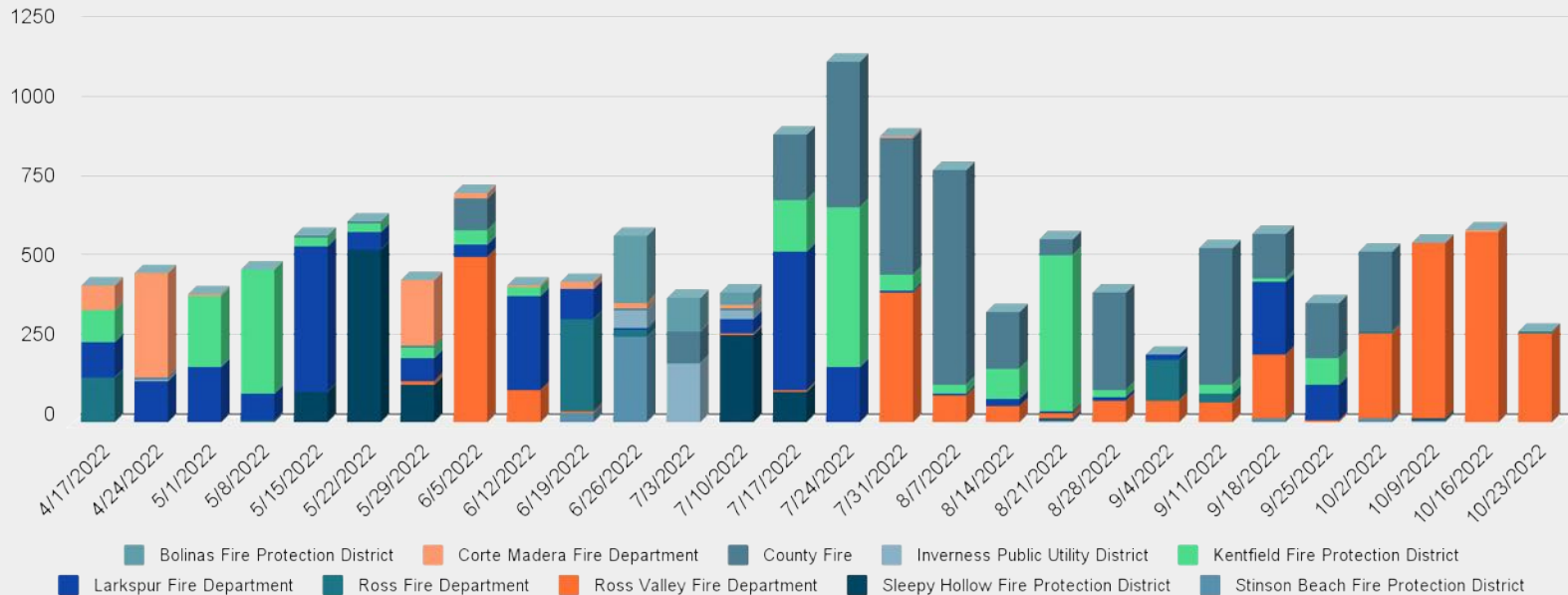
Full access inspections take **120%** longer on-average (than a street-only inspection), but the increase in risk identification and resident resolutions may justify the added investment.

Ratio of discoveries based on access



Activity by week by participating agency.

The program was designed to ensure all communities had access to inspections before peak fire season



Participating Fire Agency Details

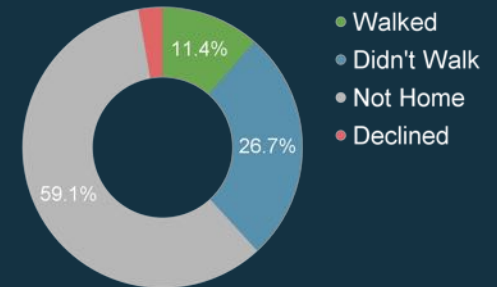


Bolinas Fire Department.

2022 Defensible Space & Home Hardening

Inspections Completed	355
Re-inspections Completed	4
Defensible Space Issues	1139
Home Hardening Vulnerabilities	1157
Report Open Rate	43.8%

Resident Engagement



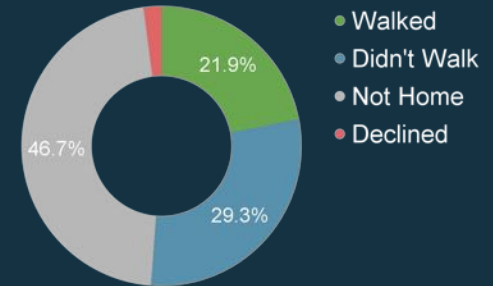


Central Marin Fire Dept.

2022 Defensible Space & Home Hardening

Inspections Completed	2144
Re-inspections Completed	2294
Defensible Space Issues	10822
Home Hardening Vulnerabilities	8759
Report Open Rate	77.8%

Resident Engagement



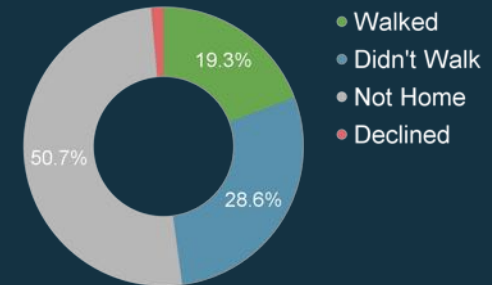


Inverness Public Utility District.

2022 Defensible Space & Home Hardening

Inspections Completed	278
Re-inspections Completed	6
Defensible Space Issues	1195
Home Hardening Vulnerabilities	1199
Report Open Rate	61.4%

Resident Engagement



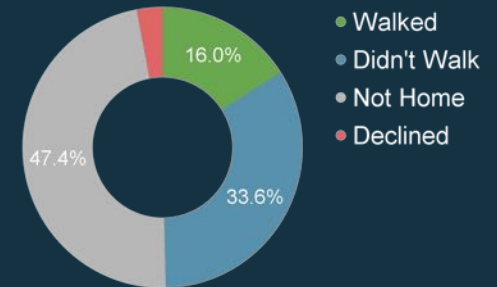


Kentfield Fire District.

2022 Defensible Space & Home Hardening

Inspections Completed	2241
Re-inspections Completed	247
Defensible Space Issues	6938
Home Hardening Vulnerabilities	5113
Report Open Rate	60.5%

Resident Engagement



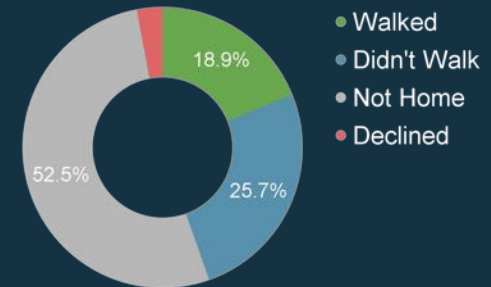


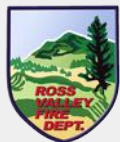
Marin County Fire Dept.

2022 Defensible Space & Home Hardening

Inspections Completed	3607
Re-inspections Completed	76
Defensible Space Issues	9585
Home Hardening Vulnerabilities	11369
Report Open Rate	55.3%

Resident Engagement



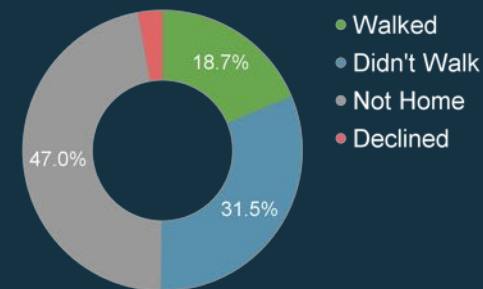


Ross Valley Fire Dept.

2022 Defensible Space & Home Hardening

Inspections Completed	4733
Re-inspections Completed	976
Defensible Space Issues	15851
Home Hardening Vulnerabilities	17240
Report Open Rate	65.7%

Resident Engagement



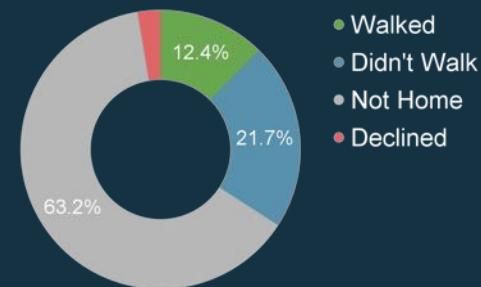


Stinson Beach Fire Department.

2022 Defensible Space & Home Hardening

Inspections Completed	403
Re-inspections Completed	2
Defensible Space Issues	650
Home Hardening Vulnerabilities	933
Report Open Rate	42.0%

Resident Engagement



Central Marin Jurisdictions Details

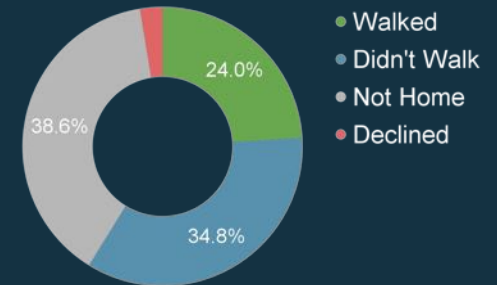


Town of Corte Madera.

2022 Defensible Space & Home Hardening

Inspections Completed	527
Re-inspections Completed	575
Defensible Space Issues	3074
Home Hardening Vulnerabilities	2150
Report Open Rate	77.5%

Resident Engagement



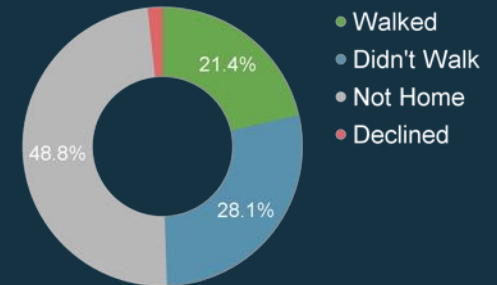


City of Larkspur.

2022 Defensible Space & Home Hardening

Inspections Completed	1617
Re-inspections Completed	1716
Defensible Space Issues	7748
Home Hardening Vulnerabilities	6609
Report Open Rate	77.9%

Resident Engagement



Ross Valley Fire Jurisdictions Details

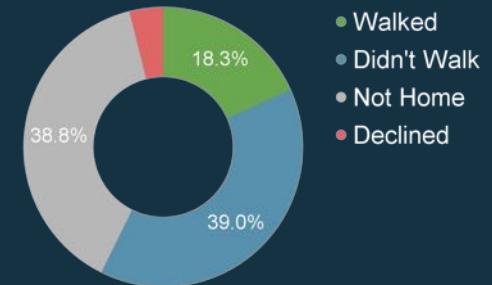


Town of Fairfax.

2022 Defensible Space & Home Hardening

Inspections Completed	710
Re-inspections Completed	44
Defensible Space Issues	3113
Home Hardening Vulnerabilities	3260
Report Open Rate	66.3%

Resident Engagement



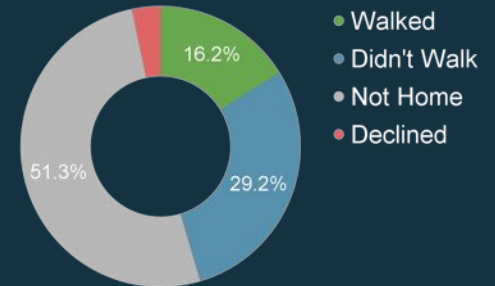


Town of Ross.

2022 Defensible Space & Home Hardening

Inspections Completed	605
Re-inspections Completed	37
Defensible Space Issues	2304
Home Hardening Vulnerabilities	2133
Report Open Rate	52.5%

Resident Engagement



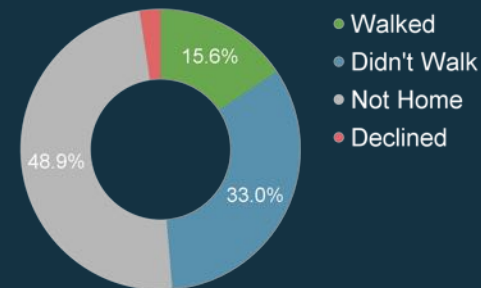


Town of San Anselmo.

2022 Defensible Space & Home Hardening

Inspections Completed	2547
Re-inspections Completed	75
Defensible Space Issues	5896
Home Hardening Vulnerabilities	7522
Report Open Rate	62.1%

Resident Engagement



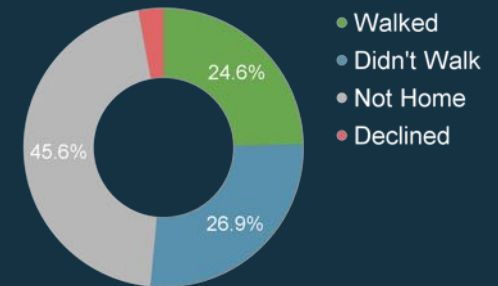


Sleepy Hollow Fire Protection District.

2022 Defensible Space & Home Hardening

Inspections Completed	871
Re-inspections Completed	820
Defensible Space Issues	4538
Home Hardening Vulnerabilities	4325
Report Open Rate	84.9%

Resident Engagement



Marin County Service Areas



Marin County Service Areas.

2022 Defensible Space & Home Hardening

	CSA 13	CSA 19	CSA 31
Inspections Completed	566	1356	1685
Re-inspections Completed	7	17	52
Defensible Space Issues	1803	2720	5062
Home Hardening Vulnerabilities	2685	2787	5987
Report Open Rate	60.6%	50.7%	57.3%