

Town of Paradise  
Community Recovery Plan  
**Review of Fire Resiliency  
Code Changes**

Presented to the Paradise Town Council June  
2018



# Background

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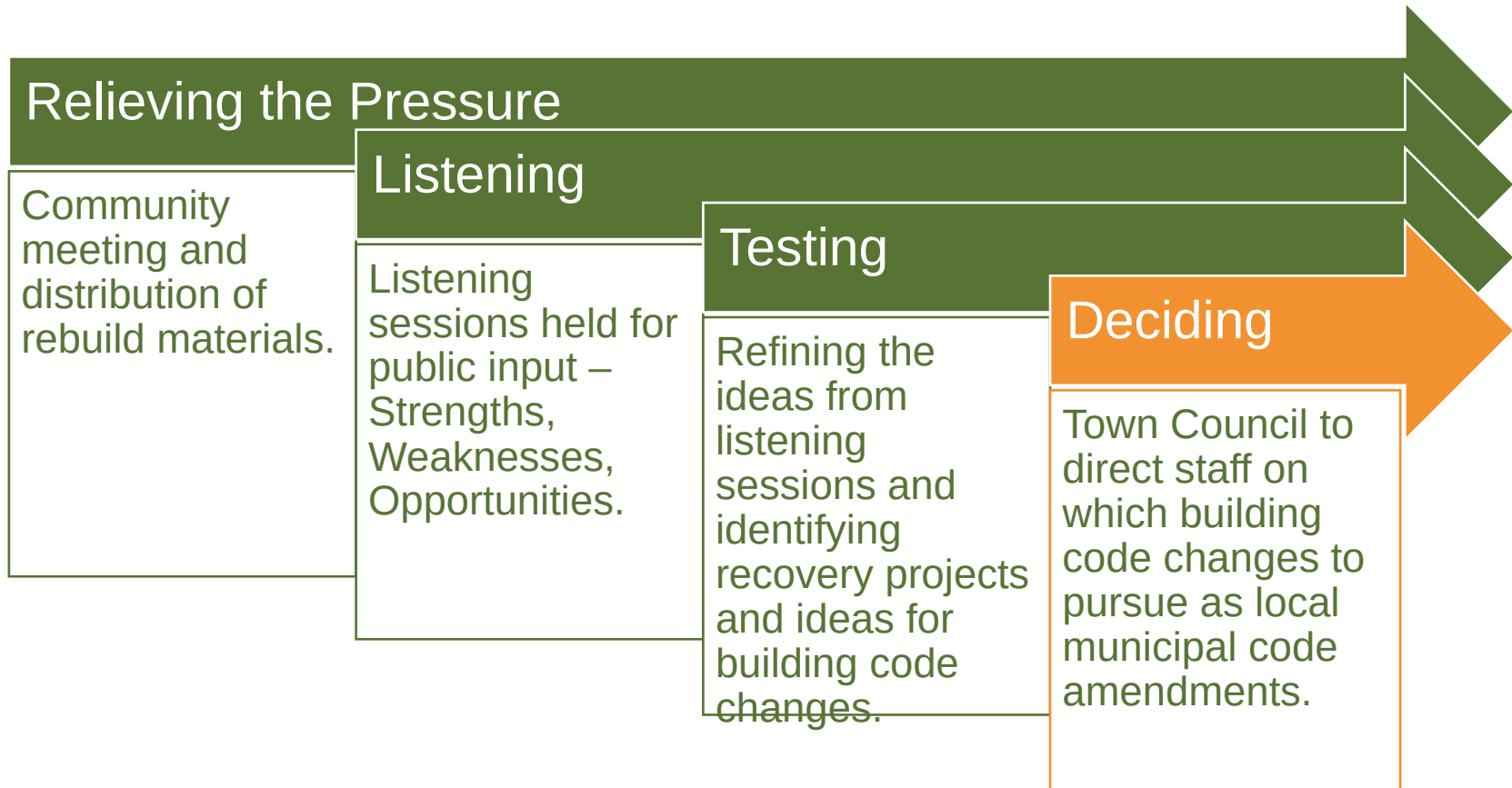


- Paradise Housing Stock
  - 1979 – 69% already built-out
  - 1989 – 87% already built out
  - 2011 – New construction required to comply with the Wildland Urban Interface (WUI) fire resistant construction standards
  - 2018 – 90-95% of all housing destroyed by Camp Fire, only 205 homes built to the WUI standards since 2011
- Community Recovery Plan
  - Urban Design Associates (UDA), gifted by the Butte Strong Fund
  - Mission to guide the Town towards recovery, including reviewing the physical aspects of the rebuild.

# Public Engagement



- Town-Led process including four steps:



# Rebuilding & Current Codes

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- Rebuilding to current code will make housing stock vastly more resilient to wildfire.
- Codes will not make structures “fireproof”.
- WUI requirements add additional protection to the California Building Codes.
- Strategy for code changes to reduce chances of property loss:
  - Defensible Space
  - Exterior Wildfire Exposure Protection

# Proposed Fire Safety Code Changes



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# #1 – Interior Sprinklers



## Recommendation

Interior sprinklers required in manufactured homes.

## Cost Estimate

\$6,000 to \$8,000



FIRE SAFETY  
CODES

# #2 – Perimeter Foundation

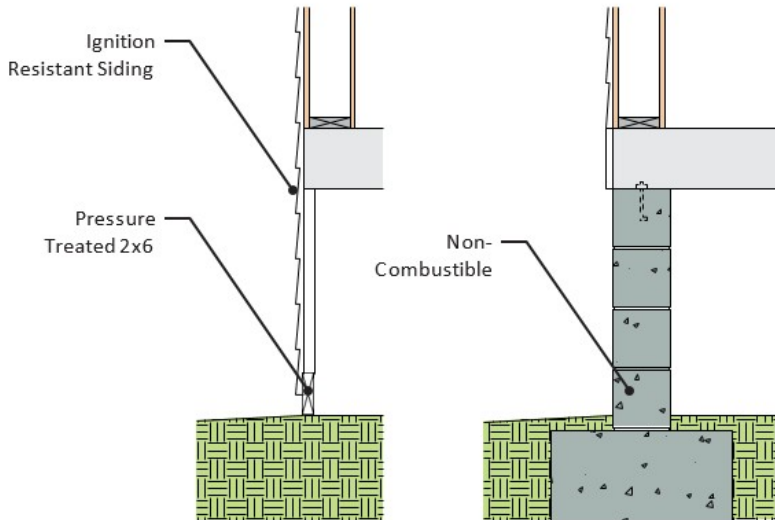


## Recommendation

Permanent perimeter masonry foundation required (State approved xi2 foundation does not meet this requirement).

## Cost Estimate

\$15,000



Standard  
Manufactured  
Home Skirt

Permanent Perimeter  
Masonry Foundation



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CODES

# #3 – Roof Obstructions

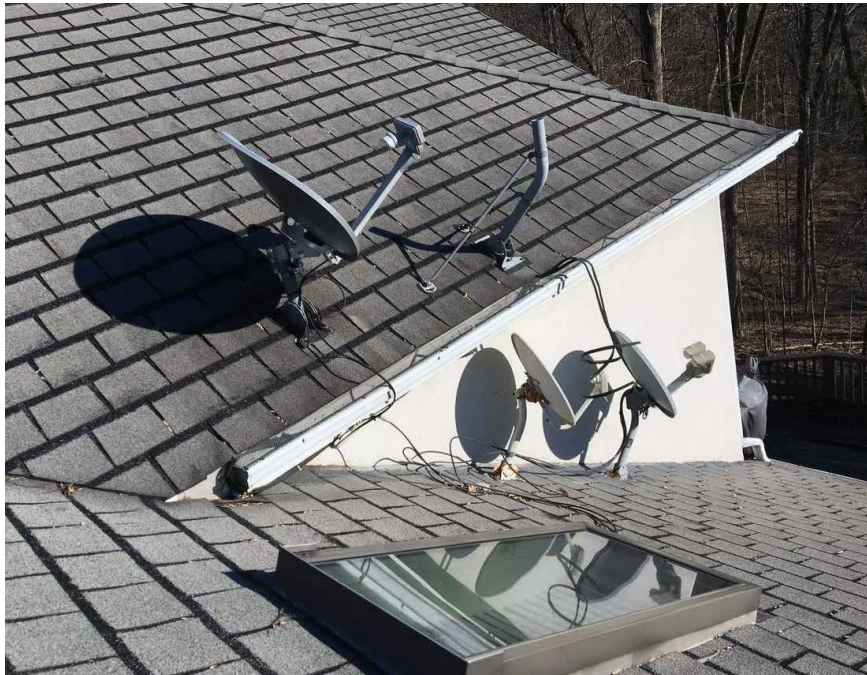


## Recommendation

Roof obstructions (panels, communication devices, etc.) shall not allow for the collection of debris.

## Cost Estimate

\$0



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CODES



# #4 – Gutters

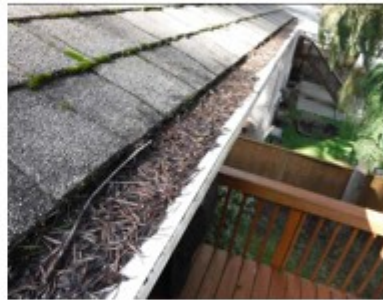


## Recommendation

Gutters prohibited, except over entries and/or to prevent erosion.

## Cost Estimate

\$0



**REVISED**



FIRE SAFETY  
CODES

# #5 – Roof Overhang



## Recommendation

Minimum 10-inch roof overhang required.

## Cost Estimate

\$0



**DECLINED**



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CODES

# #6 – Siding 12” Above Grade

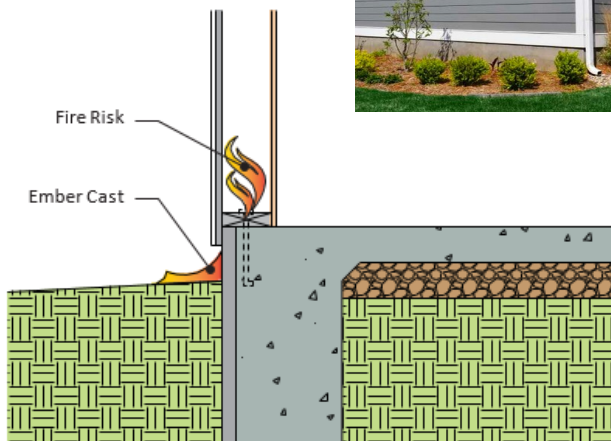


## Recommendation

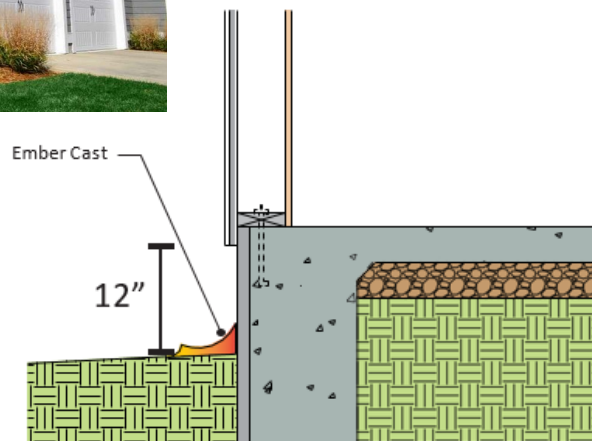
Siding must be a minimum of 12” above finished grade for stick-built homes.

## Cost Estimate

Nominal



Siding Less Than 12 Inches Above Grade



Siding 12 Inches Above Grade



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# #7 – Detached Structures > 120SF



## Recommendation

Accessory buildings and structures requiring a building permit shall comply with Wildland-Urban Interface building standards.

## Cost Estimate

Nominal



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# #8 – Detached Structures < 120SF

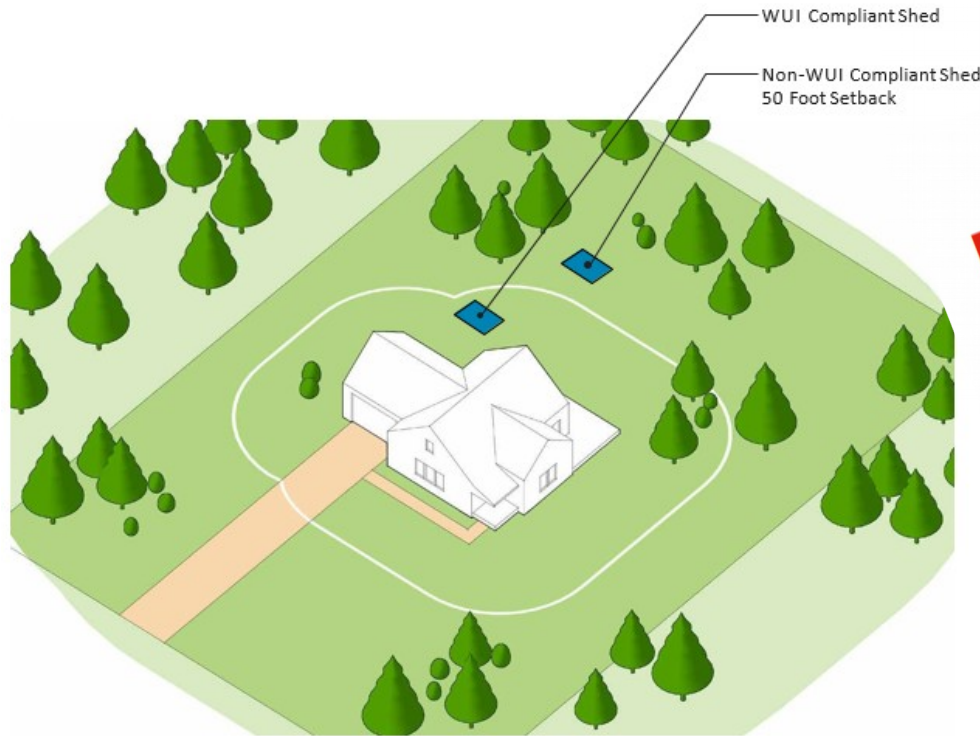


## Recommendation

The Town of Paradise should enforce the California Building Code requirement that any non-WUI compliant accessory structure be located at least 50 feet away from other structure(s).

## Cost Estimate

Nominal



**REVISED**



FIRE SAFETY  
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# #9 – Garage or Shed



## Recommendation

Garage or minimum 80 square foot storage shed required

## Cost Estimate

- 2-car garage: \$25,000 to \$40,000
- 8'x10' storage shed: \$320



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# #10 – Carports



## Recommendation

Carports that include storage, beyond vehicles, must be setback a minimum of 50 feet from any building/structure.

## Estimate

\$0

**DECLINED**



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# #11 – RxR Tie Retaining Walls



## Recommendation

Railroad tie retaining walls prohibited.

## Estimate

\$0



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CODES



# #12 – Defensible Space



## Recommendation

Defensible Space ordinance (PRC 4291) should be adopted by the Town.

Estimate

\$0



## DEFENSIBLE SPACE

Defensible space is essential to improve your home's chance of surviving a wildfire. It's the buffer you create between a building on your property and the grass, trees, shrubs or any wildland area that surround it. This space is needed to slow or stop the spread of wildfire and it protects your home from catching fire—either from direct flame contact or radiant heat. Defensible space is also important for the protection of the firefighters defending your home.

Two zones make up the required 100 feet of defensible space:

### ZONE 1—Extends 30 feet out from buildings, decks, and other structures

- 1 Remove all dead plants, grass and weeds.
- 2 Remove dead or dry leaves and pine needles from your yard, roof and rain gutters.
- 3 Trim trees regularly to keep branches a minimum of 10 feet from other trees.
- 4 Remove dead branches that hang over your roof. And keep branches 10 feet away from your chimney.
- 5 Relocate wood piles into Zone 2.
- 6 Remove or prune flammable plants and shrubs near windows.
- 7 Remove vegetation and items that could catch fire from around and under decks.
- 8 Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, swing sets, etc.

### ZONE 2—Extends 30 to 100 feet from buildings and other structures

- 9 Cut or mow annual grass down to a maximum height of 4 inches.
- 10 Create horizontal spacing between shrubs and trees. (See diagram)
- 11 Create vertical spacing between grass, shrubs and trees. (See diagram)
- 12 Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches if erosion control is an issue.

### BOTH ZONES—0 to 100 feet from buildings and other structures

- 13 Mow before 10 a.m., but never when it's windy or excessively dry.
- 14 Protect water quality. Do not clear vegetation near waterways to bare soil. Vegetation removal can cause soil erosion—especially on steep slopes.



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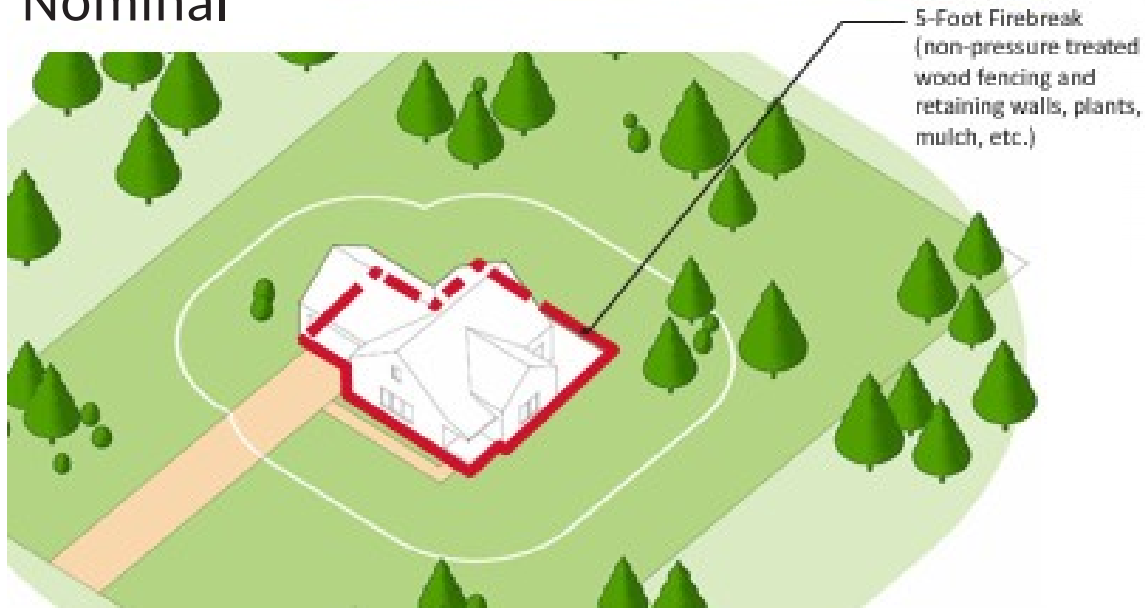
# #13 – 5' Firebreak



## Recommendation

5-foot setback required around any structure to combustible material (non-pressure treated wood fencing and retaining walls, plants, mulch, etc.).

Estimate  
Nominal



**REVISED**



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# #14 – Underground Svc. Lines

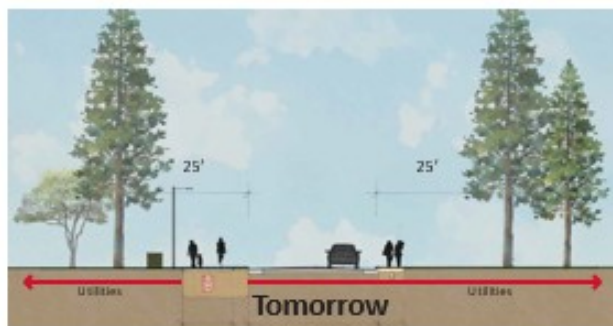
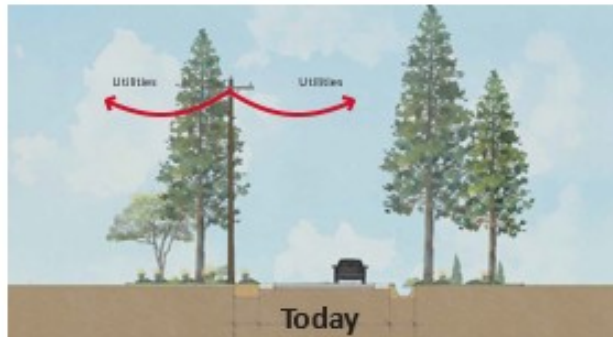


## Recommendation

Electric, gas and communication service lines shall be located underground for residential and commercial

## Estimate

Less than retrofitting later



FIRE SAFETY  
CODES

# Community Feedback

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- Dot Exercise at Community Meeting & Town Hall
- Online Make it Paradise Surveys
- Three categories of evaluation
  - Supportive: 65%+ approval
  - Mixed
  - Not Supportive: 65%+ disapproval
- Use representative sample to represent community feelings on each item

# Community Feedback 1-5



Item No.	Description	Not Supportive	Mixed	Supportive
1	Interior Sprinklers		X	
2	Permanent Perimeter Foundations		X	
3	Roof Obstructions		X	
4	Gutters	X		
5	Roof Overhang			X

# Community Feedback 6-10



Item No.	Description	Not Supportive	Mixed	Supportive
6	Siding 12 Inches Above Grade			X
7	Detached Accessory Structures over 120 sqft		X	
8	Detached Accessory Structures 120 sqft or less		X	
9	Garage or Storage Shed		X	
10	Carports	X		

# Community Feedback 11-14



Item No.	Description	Not Supportive	Mixed	Supportive
11	Railroad Tie Retaining Walls			X
12	Defensible Space			X
13	5' Firebreak			X
14	Underground Utilities (Service Lines)			X

# Industry Expert Feedback

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National Institute of Safety and Technology  
(NIST)



The National Institute of Standards and Technology (NIST) was founded in 1901 and is now part of the U.S. 54 Department of Commerce. NIST is one of the nation's oldest physical science laboratories.

[www.nist.gov](http://www.nist.gov)



# Industry Expert Feedback



## CAL FIRE



CAL FIRE is a State agency responsible for protecting natural resources from fire on land designated by the State Board of Forestry as State Responsibility Area (SRA) including the Town of Paradise through a contractual relationship. CAL FIRE also manages the State Forest system and has responsibility to enforce the forest practice regulations, which govern forestry practices on private and other non-federal lands.

[www.calfire.ca.gov](http://www.calfire.ca.gov)

# Industry Expert Feedback



## Insurance Institute for Business & Housing Safety



The IBHS Research Center is a state-of-the-art research facility located in South Carolina. This unique facility enables researchers to more fully and accurately evaluate residential and commercial construction materials and systems under realistic re-creations of severe weather hazards. This facility is also a tangible, public demonstration of the property insurance industry's deep commitment to reducing and preventing losses that disrupt the lives of millions of home and business owners each year. The research conducted here significantly advances building science and influences residential and commercial structural design and construction, helping to create more resilient communities.

<https://disastersafety.org>

# Industry Expert Feedback



## Wildfire Planning International (WPI)



Wildfire Planning International (WPI) works with communities across the United States and Canada to help address challenges associated with the wildland-urban interface (WUI) — the area where homes or other structures meet or mingle with wildland vegetation. WPI is passionate about helping communities find creative ways to address their wildfire risk in the WUI through land use planning tools and strategies.

<https://wildfireplanning.com/>

# Industry Expert Feedback

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- Informal guidance
- Not mandates or endorsements
- Divide support into three categories
  - Do not support
  - Optional Best Management Practice
  - Support
- Only commented on items 1-14 related to Fire Codes

# Industry Feedback 1-5



Item No.	Description	Do Not Support	Optional BMP	Support
1	Interior Sprinklers		WPI, IBHS	NIST, Cal Fire
2	Permanent Perimeter Foundations		Cal Fire, WPI, IBHS	NIST
3	Roof Obstructions		NIST, Cal Fire, WPI, IBHS	
4	Prohibit Gutters		IBHS	NIST, Cal Fire, WIP
5	Roof Overhang	NIST, WPI, IBHS Cal Fire		

# Industry Feedback 6-10



Item No.	Description	Do Not Support	Optional BMP	Support
6	Siding 12 Inches Above Grade		Cal Fire, WPI	NIST, IBHS
7	Detached Accessory Structures over 120 sqft			NIST, Cal Fire, WPI, IBHS
8	Detached Accessory Structures 120 sqft or less			NIST, Cal Fire, WPI, IBHS
9	Garage or Storage Shed		Cal Fire, WPI, IBHS	NIST
10	Carpools		Cal Fire, WPI	NIST

# Industry Feedback 11-14



Item No.	Description	Do Not Support	Optional BMP	Support
11	Railroad Tie Retaining Walls			NIST, Cal Fire, WPI, IBHS
12	Defensible Space			NIST, Cal Fire, WPI, IBHS
13	5' Firebreak			NIST, Cal Fire, WPI, IBHS
14	Underground Utilities		IBHS	NIST, Cal Fire

# Summary of Recommendations



Item No.	Description	Community Support	Industry Expert Support	Staff Rec. to Move Forward
1	Interior Sprinklers	Mixed	2 of 4	Yes
2	Permanent Perimeter Foundations	Mixed	1 of 4	No
3	Roof Obstructions	Mixed	0 of 4	No
4	Prohibit Gutters	Not Supportive	3 of 4	Yes (Modified)
5	Roof Overhang	Supportive	0 of 4	No



# Summary of Recommendations



Item No.	Description	Community Support	Industry Expert Support	Staff Rec. to Move Forward
6	Siding 12 Inches Above Grade	Supportive	2 of 4	Yes (Modified)
7	Detached Accessory Structures over 120 sqft	Mixed	4 of 4	Yes
8	Detached Accessory Structures 120 sqft or less	Mixed	4 of 4	Yes (Modified)
9	Garage or Storage Shed	Mixed	1 of 4	No
10	Carports	Not Supportive	1 of 4	No

# Summary of Recommendations



Item No.	Description	Community Support	Industry Expert Support	Staff Rec. to Move Forward
11	Railroad Tie Retaining Walls	Supportive	4 of 4	Yes
12	Defensible Space	Supportive	4 of 4	Yes
13	5' Firebreak	Supportive	4 of 4	Yes
14	Underground Utilities (Service Lines)	Supportive	3 of 4	Yes

# Next Steps

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- Prioritize and start on town-led long-term recovery projects such as:
  - A Resiliency Permit and Housing Resource Center;
  - Removing burned trees on private property;
  - Emergency notification system;
  - Improving evacuation routes;
  - Interconnected path system;
  - Secure missing road segments;
  - Address long dead-end streets;
  - New fire station;
  - Sewer system for the commercial district;
  - Fuels management plan; and
  - Updated General Plan

# Thank You!



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