In Search of the Fair Share of FAIR Plan Policies Among Northern California Counties

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Abstract: Due to wildfire risk, conventional fire insurance has become difficult to obtain in a several areas of Northern California. As a consequence, many residents have been forced to obtain more expensive policies through the last-resort option, the California FAIR Plan. The lack of conventional insurance is particularly acute in the Central Sierra region. In 2022, the latest year for which county data is available, FAIR Plan policies in several Central Sierras counties comprised nearly 40% of the homeowner insurance market. The number of FAIR Plan policies compared to at-risk homes in the Central Sierras is nearly 1.5 times higher than in the Northern Sierras and 4.8 times higher than in the San Francisco Bay Area. This disparity exists despite the fact that losses as a percentage of at-risk homes have been much lower in the Central Sierras.

In June, 2024, the California Department of Insurance (CDI) proposed regulations to limit FAIR Plan policies to a maximum of 15% of homeowner policies by county. The intent was to achieve a more balanced distribution of FAIR Plan policies. The following analysis examines what would happen if the number of FAIR Plan policies in effect in Northern California in 2022 were distributed among counties on the basis of each county's total risk. What would be the resulting percentage of FAIR Plan policies in each county? And what would be the impact on the total number of FAIR Plan policies by region in Northern California?

Four different methods for calculating risk by county are analyzed. In each case, the CDI estimates for the number of high-risk dwelling units by county are used as the starting point. On method simply uses the CDI numbers directly as the risk metric. In other risk assessments, factors such as the proportion of structures by Fire Hazard Severity Zone (CAL FIRE, 2024), the proportion of structures in high-wind areas, and past loss rates by zone are used to weight the CDI numbers.

If based on the results of this analysis, the number of FAIR Plan policies in the Central and Southern Sierras would be reduced by at least 40% compared to 2022 levels. Policies would be reduced by over 70% if risk calculations reflected the relatively small extent of high-wind areas in those regions. In the Northern Sierras the change in the number of FAIR Plan policies ranges from -22% to +22%. The +22% increase would result if recent loss rates in high-wind areas were taken into account. FAIR Plan policies would increase substantially in the San Francisco Bay Area, anywhere from 148% to 225%. Compared to the Sierra regions, the Bay Area has the highest number of at-risk homes but currently has the lowest percentage of FAIR Plan policies for those homes.

The percentage of FAIR Plan policies in most counties would be at or below the 15% cap proposed by the CDI under any of the risk calculations. In the Central Sierras, Tuolumne and Mariposa counties would be slightly above the cap at 19% under some risk scenarios but would drop as low as 8% in others. A few counties in other regions (Trinity, Lake, Butte and Plumas counties) would have FAIR Plan percentages in the 20% to 33% range in one or more of the risk calculations.

1. At-Risk Dwelling Units by County: Table 1 displays the CDI county estimates for the number and percentage of dwelling units that are at a "High" or "Very High" (HVH) risk from wildfire in California. Six of the top 10 counties with the highest percentage of HVH dwellings are located in the Central Sierras (Tuolumne, Mariposa, Alpine, Calaveras, Amador, and El Dorado) along with three in the Northern Sierras (Nevada, Plumas and Sierra). Counties in Northern California occupy the first 26 places on the list.

Table 1. CDI Risk Estimates by County

CALIFORNIA DEPARTMENT OF INSURANCE

Modelers Weighted Average Risk Score

County Name	Weighted Average Risk Score			County Name	Weighted Average Risk Score		
	Dwelling Units [1]	High / Very High	% in High Very High [2]		Dwelling Units [1]	High / Very High	% in High Very High [2]
Tuolumne	29,978	24,607	82.1%	Santa Barbara	124,442	22,643	18.2%
Trinity	8,481	6,270	73.9%	Sonoma	181,094	29,825	16.5%
Nevada	50,271	35,282	70.2%	San Diego	849,189	137,786	16.2%
Mariposa	10,117	6,766	66.9%	San Benito	17,112	2,461	14.4%
Plumas	15,082	9,948	66.0%	San Bernardino	618,761	84,096	13.6%
Alpine	1,143	711	62.2%	San Mateo	201,602	22,293	11.1%
Calaveras	27,907	17,059	61.1%	Los Angeles	2,295,246	232,886	10.1%
Sierra	2,264	1,384	61.1%	Colusa	7,591	704	9.3%
Amador	17,473	10,358	59.3%	Alameda	432,155	38,647	8.9%
El Dorado	83,563	47,715	57.1%	Riverside	728,856	60,079	8.2%
Mono	9,457	4,893	51.7%	Kern	267,772	21,988	8.2%
Lake	34,110	17,116	50.2%	Contra Costa	339,443	24,022	7.1%
Mendocino	37,998	18,438	48.5%	Glenn	10,295	722	7.0%
Siskiyou	22,267	10,227	45.9%	Inyo	9,021	617	6.8%
Butte	87,242	36,644	42.0%	Santa Clara	478,939	29,440	6.1%
Lassen	11,999	4,805	40.0%	Orange	796,844	45,389	5.7%
Shasta	71,352	24,645	34.5%	Tulare	136,797	6,394	4.7%
Tehama	25,616	8,602	33.6%	Fresno	274,781	11,348	4.1%
Santa Cruz	92,392	28,889	31.3%	Solano	133,925	2,374	1.8%
Humboldt	56,727	16,786	29.6%	San Francisco	207,028	3,324	1.6%
Napa	48,677	14,210	29.2%	Stanislaus	163,080	1,734	1.1%
Del Norte	10,465	2,767	26.4%	Sacramento	457,240	2,750	0.6%
Modoc	5,088	1,290	25.4%	Yolo	59,668	306	0.5%
Placer	140,309	34,571	24.6%	Merced	76,884	311	0.4%
Monterey	114,945	24,872	21.6%	Sutter	29,554	61	0.2%
Marin	90,040	18,943	21.0%	Imperial	49,604	95	0.2%
San Luis Obispo	107,552	22,368	20.8%	Kings	40,626	63	0.2%
Ventura	241,918	49,865	20.6%	San Joaquin	208,741	214	0.1%
Madera	47,138	9,200	19.5%				
Yuba	25,597	4,913	19.2%				
				California	**10,723,458**	**1,296,716**	**12.1%**

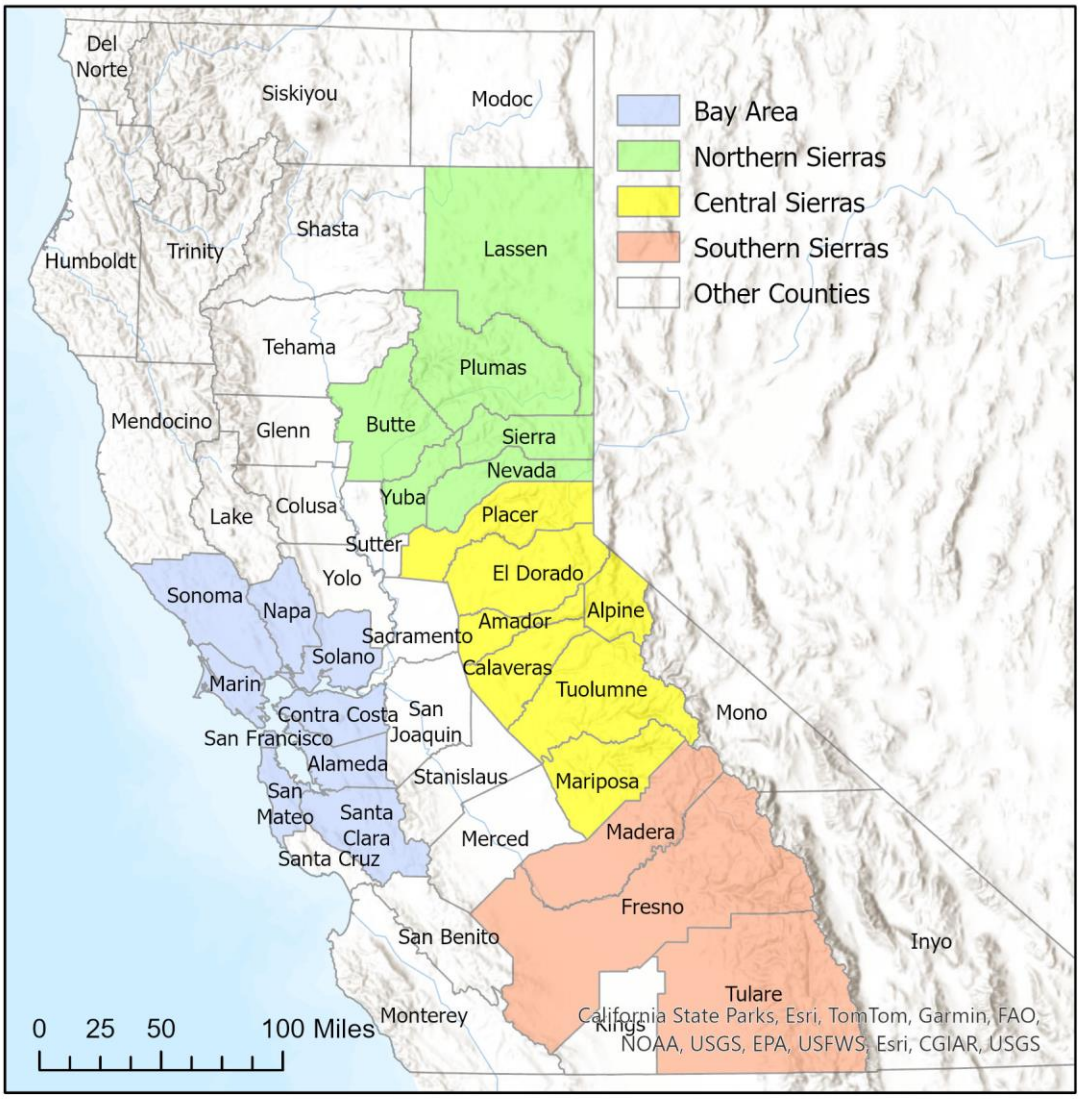
Footnote 1: Dwelling Units is provided by the Department of Finance's Demographic Research Unit. Dwelling units include single family dwellings, condomium units, residential dwelling complexes of 2 to 4, and mobile homes. Data is as of January 1, 2015. Dwelling units exclude residential dwelling complexes of 5 or more units that are normally written under a commercial policy.

Footnote 2: The % in High / Very High is a weighted average of the modelers' risk scores.

Source: https://www.insurance.ca.gov/01-consumers/200-wrr/upload/Availability-and-Affordability-Report-Appendix-C.pdf

2. Analysis Regions: For purposes of this analysis, counties in Northern California are grouped into sub-regions, as shown in Figure 1.

Figure 1: Analysis Regions, Northern California



3. FAIR Plan Policy Distribution: FAIR Plan fire insurance policies are policies of last resort, available only to those who are unable to find fire coverage through the conventional insurance market. These policies are placed in a common risk pool shared by all insurers in the state in proportion to their market share. FAIR Plan policies are generally more expensive than conventional insurance and cover only loss due to fire. Additional insurance must be purchased to cover other types of loss. Table 2 shows the number of FAIR Plan policies issued in each Northern California county in 2022 along with the ratio of FAIR Plan policies to HVH dwelling units (DU), sorted from high to low. Table 3 summarizes the data by region.

Counties in the Central Sierras (highlighted in yellow in Table 2) have the highest ratios of FAIR Plan policies to HVH dwellings compared to other regions of the Northern California. Southern Sierra counties (highlighted in orange) also have high ratios, but have a much lower percentage of HVH dwelling units (Table 1). Northern Sierra counties (highlighted in green) have lower ratios than the Central Sierras, with the exception of Nevada County. Bay Area counties (highlighted in blue) have lower ratios than any of the Sierra counties.

Table 2. The Ratio of FAIR Plan Policies (2022) to High and Very High Risk Dwelling Units by County, Northern California

County	Dwelling Units (CDI)	HVH Dwelling Units (CDI)	FAIR Plan Policies, 2022	FAIR Plan Policies per HVH DU		County	Dwelling Units (CDI)	HVH Dwelling Units (CDI)	FAIR Plan Policies, 2022	FAIR Plan Policies per HVH DU
San Joaquin	208,741	214	413	1.930		NS - Butte	87,242	36,644	3,999	0.109
Kings	40,626	63	53	0.841		Mendocino	37,998	18,438	1,972	0.107
CS - Calaveras	27,907	17,059	7,177	0.421		Monterey	114,945	24872	2,653	0.107
CS - Tuolumne	29,978	24,607	10,056	0.409		Shasta	71,352	24,645	2,628	0.107
NS - Nevada	50,271	35,282	13,696	0.388		BA - Napa	48,677	14210	1,424	0.100
CS - Amador	17,473	10,358	4,002	0.386		Santa Cruz	92,392	28,889	2,783	0.096
SS - Madera	47,138	9,200	3,314	0.360		Siskiyou	22,267	10,227	984	0.096
CS - Mariposa	10,117	6,766	2,378	0.351		BA - San Francisco	207,028	3,324	318	0.096
CS - El Dorado	83,563	47,715	15,533	0.326		BA - Sonoma	181,094	29,825	2,827	0.095
CS - Placer	140,309	34,571	10,619	0.307		Inyo	9,021	617	52	0.084
SS - Fresno	274,781	11,348	3,238	0.285		BA - Alameda	432,155	38,647	2,925	0.076
Sutter	29,554	61	17	0.279		BA - Solano	133,925	2,374	177	0.075
CS - Alpine	1,143	711	194	0.273		Humboldt	56,727	16,786	1,211	0.072
SS - Tulare	136,797	6,394	1,524	0.238		BA - Marin	90,040	18,943	1,327	0.070
NS - Sierra	2,264	1384	314	0.227		BA - Santa Clara	478,939	29,440	2,055	0.070
Yolo	59,668	306	68	0.222		San Benito	17,112	2,461	152	0.062
NS - Yuba	25,597	4,913	1,079	0.220		Stanislaus	163,080	1734	103	0.059
Sacramento	457,240	2,750	530	0.193		BA - Contra Costa	339,443	24,022	1,366	0.057
Merced	76,884	311	59	0.190		Del Norte	10,465	2767	155	0.056
NS - Lassen	11,999	4,805	886	0.184		Tehama	25,616	8,602	434	0.050
Trinity	8,481	6,270	888	0.142		Colusa	7,591	704	29	0.041
Lake	34,110	17,116	2,370	0.138		Modoc	5,088	1,290	53	0.041
NS - Plumas	15,082	9,948	1,377	0.138		BA - San Mateo	201,602	22,293	898	0.040
Mono	9,457	4,893	602	0.123		Glenn	10,295	722	25	0.035
						Totals	**4,643,274**	**619,521**	**110,937**	**0.179**

Sources: Dwelling Units from California Department of Insurance (CDI): https://www.insurance.ca.gov/01-consumers/200-wrr/upload/Availability-and-Affordability-Report-Appendix-C.pdf. *FAIR Plan Policy data for 2022 from the CDI: https://www.insurance.ca.gov/01-consumers/200-wrr/DataAnalysisOnWildfiresAndInsurance.cfm*

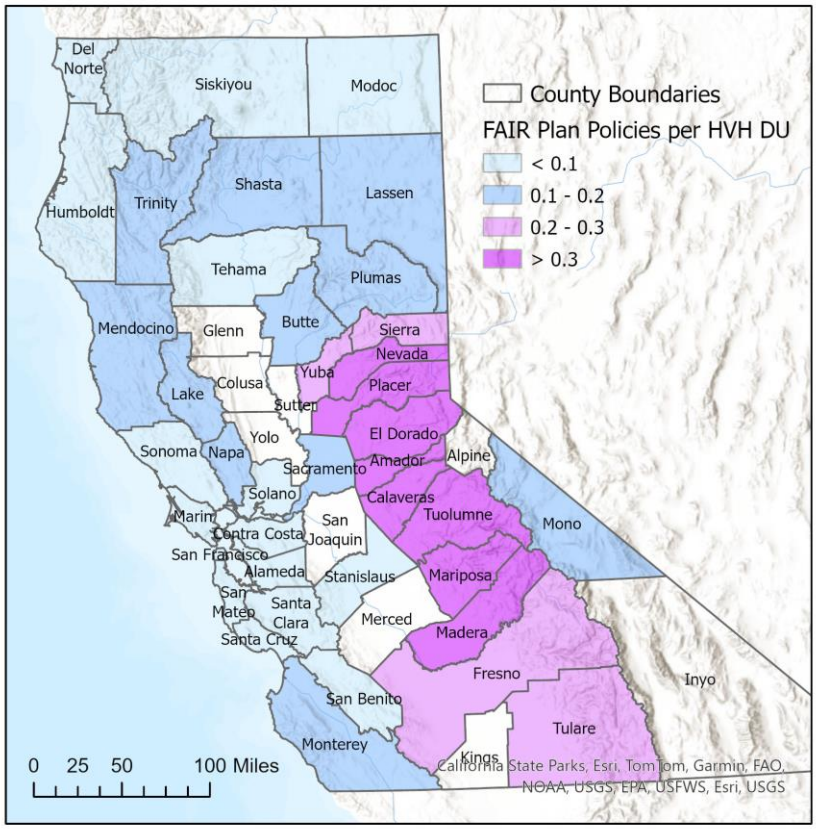
On a regional basis the ratio of FAIR Plan policies to houses with a significant wildfire risk in the Central Sierras is nearly 1.5 times higher than in the Northern Sierras and 4.8 times higher than in the San Francisco Bay Area.

Table 3. The Ratio of FAIR Plan Policies (2022) to High and Very High Risk Dwelling Units by Region, Northern California

Region	HVH DU (CDI)	HVH DU as % of All Units	FAIR Plan Policies, 2022	FAIR Plan Policies per HVH DU
Central Sierras	141,787	45.7%	49,959	0.352
Southern Sierras	26,942	5.9%	8,076	0.300
Northern Sierras	92,976	48.3%	21,351	0.230
Bay Area	183,078	8.7%	13,317	0.073

The map in Figure 2 displays the ratio of FAIR Plan policies to HVH Dwelling Units in each Northern California county, excluding those counties with fewer than 1,000 HVH dwelling units. All of the Central Sierra counties, plus Nevada County to the north and Madera County to the south, have ratios above 30%.

Figure 2: FAIR Plan Policies per High and Very High Risk Dwelling Units by County, Northern California, 2022



Note: Counties with no color have less than 1,000 HVH Dwelling Units

Sources: HVH Dwelling Units from California Department of Insurance (CDI): https://www.insurance.ca.gov/01-consumers/200-wrr/upload/Availability-and-Affordability-Report-Appendix-C.pdf. *FAIR Plan Policy data for 2022 from the CDI:* *https://www.insurance.ca.gov/01-consumers/200-wrr/DataAnalysisOnWildfiresAndInsurance.cfm*

The high incidence of FAIR Plan policies in the Central Sierras cannot be attributed to past wildfire losses in the region. Table 4 shows that, for the 2013-2022 decade, the Central Sierras had the lowest rate of single residence losses per HVH dwelling unit. That apparent contradiction may arise, in part, because insurance companies have focused on the high percentage of HVH dwelling units in Central Sierra counties (Table 1). For insurance companies seeking to reduce wildfire risk exposure, cancelling conventional policies in counties with a high percentage of HVH dwelling units is a relatively straightforward way to reduce risk. But the end result of that strategy is to concentrate FAIR Plan policies in those counties with high average risk while counties with a higher total risk (due to a higher number of HVH dwelling units and higher HVH loss rates) receive less attention.

Table 4. Loss Rates per HVH Dwelling Unit by Region, 2013-2022

Region	HVH DU (CDI)	Single Residences Destroyed	Loss Rate per HVH DU
Central Sierras	141,787	1,644	0.012
Southern Sierras	26,942	734	0.027
Bay Area	183,078	7,403	0.040
Northern Sierras	92,976	15,973	0.172

Sources: HVH Dwelling Units from California Department of Insurance (CDI): https://www.insurance.ca.gov/01-consumers/200-wrr/upload/Availability-and-Affordability-Report-Appendix-C.pdf. *Single Residence Losses from CAL FIRE Damage Inspection (DINS) Data* (*https://data.ca.gov/dataset/cal-fire-damage-inspection-dins-data*)

The CDI has recognized that a high percentage of FAIR Plan policies in a given location can cause serious economic hardship. High policy costs can depress home prices and cause low-income homeowners to forego fire insurance altogether. The CDI proposed in June, 2024 (https://www.insurance.ca.gov/0400-news/0100-press-releases/2024/release023-2024.cfm) that insurance companies limit FAIR Plan policies to 15% of the homeowner insurance market in counties with a high wildfire risk. In return for meeting these requirements, insurance companies would be allowed to incorporate the results of "catastrophe models" in setting rates.

The goal of the proposed CDI guidelines is to create an upper limit on the percentage of FAIR Plan policies by county so that access to conventional insurance is more evenly distributed across the state. But what constitutes a "fair share" of FAIR Plan policies for each county? In this analysis the fair share is defined as the proportion of FAIR Plan policies that would represent each county's share of the overall wildfire risk to dwelling units in Northern California. For purposes of the analysis, it is assumed that the total number of FAIR Plan policies in effect in Northern California would remain at 2022 levels.

Four different methods for calculating risk are considered. In each case, the number of HVH dwelling units per county is taken from the CDI estimates in Table 1. But the risk score assigned to those dwelling units varies by risk assessment method.

4. Risk Assessments:

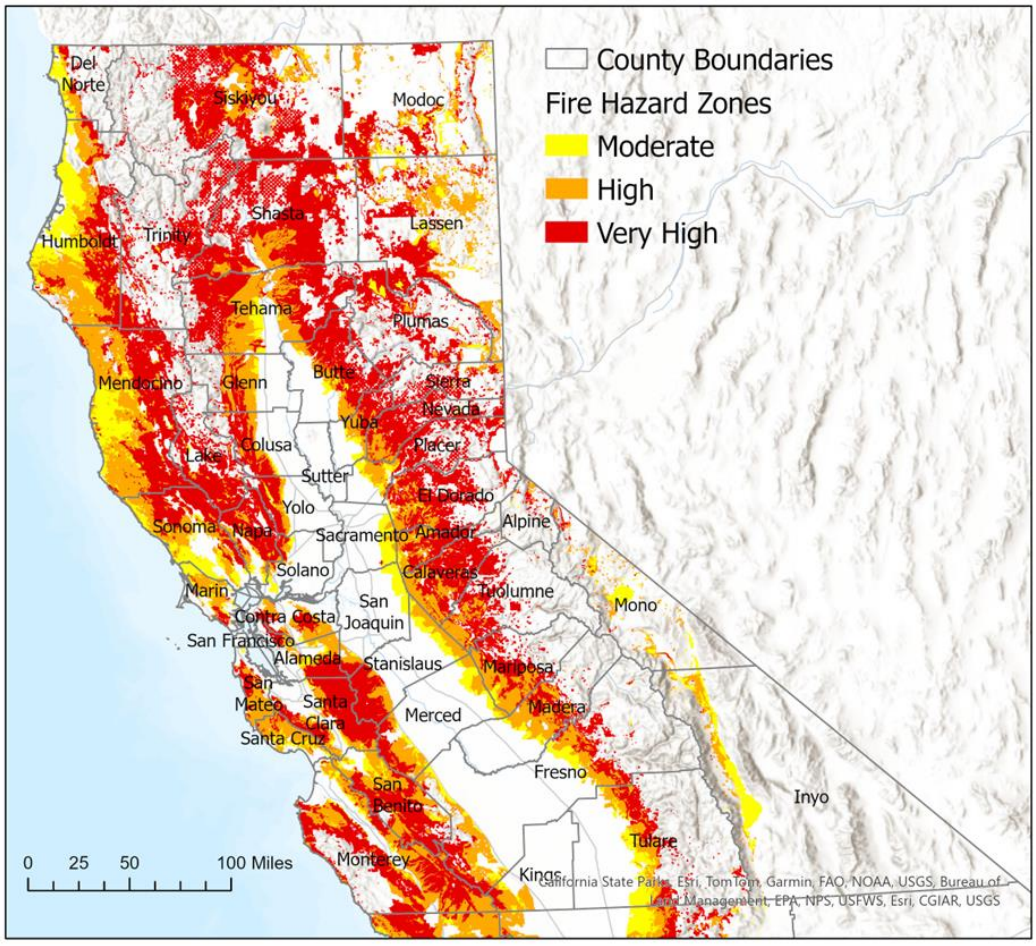
- **RA-1** – Base Risk Scores on CDI HVH Estimates

In RA-1, the total risk score by county is assumed to be equal to the number of HVH dwelling units as estimated by the CDI in Table 1. This risk assessment method implies that the average risk for an HVH dwelling unit is the same in every county.

- **RA-2** – Adjust Risk Scores Based on CAL FIRE Fire Hazard Severity Zones and Past Loss Rates

This risk assessment method modifies the risk rating for HVH dwellings in each county based on the Fire Hazard Severity Zone (FHSZ) map published by CAL FIRE in 2024. Figure 3 displays the CAL FIRE FHSZ map for Northern California, including both the State Responsibility Areas (SRA) and the Local Responsibility Areas (LRA).

Figure 3: CAL FIRE Fire Hazard Severity Zones for SRA's and LRA's in Northern California, 2024



Source: California Natural Resources Agency GIS: https://gis.data.cnra.ca.gov/datasets/CALFIRE-Forestry::fire-hazard-severity-zones-in-sra-effective-april-1-2024-with-lra-recommended-2007-2011/explore)

The SRA\LRA FHSZs do not cover all private land, but they do include most of the dwelling units at risk from wildfires. In the decade from 2013 through 2022, for example, over 85% of the single residences lost to wildfires in Northern California were located within the SRA\LRA areas, based on the CAL FIRE Damage Inspection Database (DINS, 2022).

Using the map in Figure 3 along with the Microsoft Building Footprint dataset (Microsoft, 2018), the number of structures in each FHSZ is estimated by county. Loss rates for each FHSZ in Northern California are calculated by dividing the number of structures destroyed in wildfires in each zone during the 2013-2022 decade (DINS, 2022) by total Microsoft building footprints in each zone (Table 5).

Table 5: Estimated Loss Rates, Northern California, by CAL FIRE Fire Hazard Severity Zone, 2013-2022

	Moderate	High	Very High	Total
Losses, All Structures	937	6,299	35,820	43,056
Total Building Footprints	145,944	256,437	441,777	844,158
Loss Rate	**0.006**	**0.025**	**0.081**	**0.051**

Source: Structure Losses from the CAL FIRE Inspection Data (DINS, 2022). Structures with 10% damage or greater are counted as a loss. Building Footprints are from the Microsoft Building Footprint database (2018).

A weighted average risk score per structure is calculated for each county using the number of building footprints in the "High" and "Very High" FHSZ's in each county and their respective loss rates from Table 5. The county average risk score per structure is then multiplied by the number of HVH structures listed by the CDI in Table 1 to arrive at a total risk score for each county. As in RA-1, FAIR Plan policies are apportioned to each county according to that county's share of the total risk score for Northern California. County data used in this risk assessment along with the formula used to calculate county risk scores can be found in Appendix 1.

- **RA-3 & RA-4** – Modify FHSZ's for High-Wind Areas; Estimate the Effect of Alternative Loss Rates Applied to High-Wind Areas

Keeley and Syphard (2019) noted the high correlation between structure losses and wind-driven fires. Abatzoglou, et al., (2023) found that downslope wind fires alone accounted for 60% of structure losses and 52% of lives lost in the western US since 1999. Most single residence losses in Northern California in the 2013-2022 decade occurred in fires where Red Flag Warnings for high winds and low humidity had been issued by the National Weather Service (Schmidt, 2024).

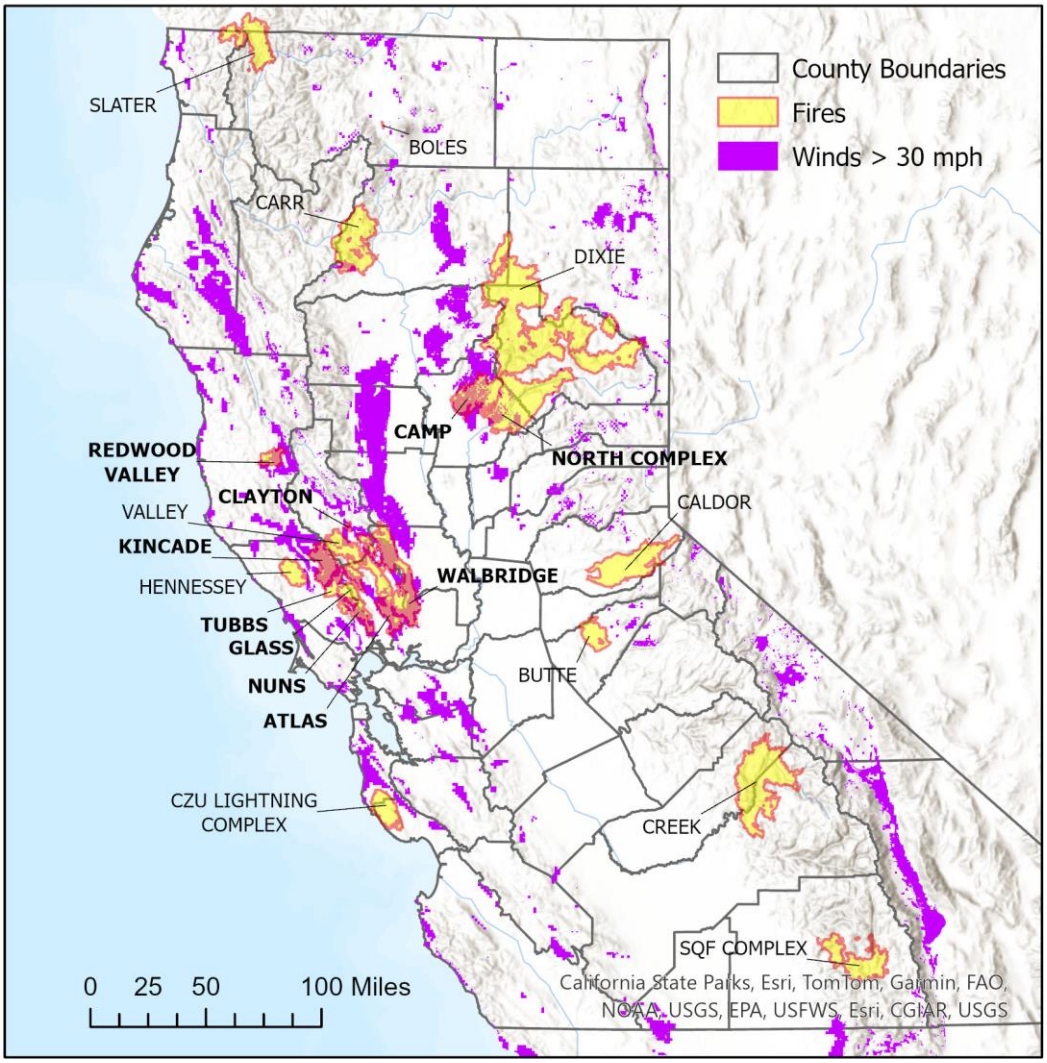
Using recently published wind maps from CALFIRE (https://osfmfhsz.blob.core.windows.net/public/index.html), it is possible to identify areas with a history of high winds during high fire danger days. These 2-km gridded maps, developed by the Desert Research Institute, provide estimates of hourly wind speeds during days when the Energy Release Component was above the 90th percentile and the Fosberg Fire Weather Index exceeded the 95th percentile. Estimates are based on weather data for the years 2003 to 2018.

For purposes of this analysis, high-wind areas are defined as those areas within the SRA or LRA where hourly winds can exceed 30 mph on high fire danger days. A 30-mph hourly wind corresponds to maximum wind gusts of 48

mph, assuming a gust factor of 1.6. About 53% of all structure losses in Northern California in the 2013-2022 decade occurred in these high-wind areas despite that fact that they represented only 8% of the total area burned.

The map in Figure 4 displays the high-wind areas. Wind estimates have been extended into LRA areas using the nearest SRA grid cell. The high-wind areas are concentrated in the Northern Sierras and the north coastal mountain ranges and are largely absent from the Central and Southern Sierras. Also shown on the map in Figure 4 are fire footprints for the 20 fires with the highest number of single residences destroyed in wildfires during the 2013-2022 decade. Fire names in bold lettering identify those fires where at least 100 single residences were destroyed within the high-wind areas.

Figure 4: 20 Highest Housing Loss Fires, 2013-2022, vs. High-Wind Areas



Sources: Wind data for SRA from CAL FIRE Intermediate Data Sets (https://osfmfhsz.blob.core.windows.net/public/index.html) Fire Perimeters from CAL FIRE FRAP https://frap.fire.ca.gov/frap-projects/fire-perimeters/ Wind data for LRA estimated using nearest SRA wind data.

Table 6 compares the estimated loss rates in the areas with 30+ mph hourly winds to areas with lesser winds by CAL FIRE FHSZ. Within a given FHSZ, the high-wind areas experienced loss rates 2 to 10 times higher than the rates for low-wind areas.

Table 6: Structure Loss Rates by CAL FIRE Fire Hazard Severity Zone
Low-Wind vs. High-Wind Areas, 2013-2022

	Moderate	High	Very High	Total
Wind Category < 30 mph				
Losses, All Structures	541	4,259	12,530	17,330
Total Building Footprints	120,673	216,570	369,338	706,581
Loss Rate	**0.004**	**0.020**	**0.034**	**0.025**
Wind Category 30+ mph				
Losses, All Structures	396	2,040	23,290	25,726
Total Building Footprints	25,271	39,867	72,439	137,577
Loss Rate	**0.016**	**0.051**	**0.322**	**0.187**

Sources: Structure losses from CAL FIRE Damage Inspection Data (DINS, 2022). Building footprints from Microsoft Building Footprint database. Wind categories from DRI 2-km gridded wind data.

To reflect the higher loss rates in the high-winds areas, the FHSZ's for RA-3 and RA-4 were modified as follows: High-wind areas in each CAL FIRE FHSZ were moved into the next highest FHSZ. That is, high-wind areas located in the Moderate FHSZ were moved to the High FHSZ. High-wind areas located in the High FHSZ were moved into the Very High FHSZ. A new FHSZ (termed "Max") was created for the high-wind areas formerly included in the Very High FHSZ.

Figure 5 shows the modified FHSZ's for the SRA\LRA. Estimated loss rates for the modified FHSZ's are shown in Table 7.

Figure 5: Modified Fire Hazard Severity Zones, 2024, Northern California

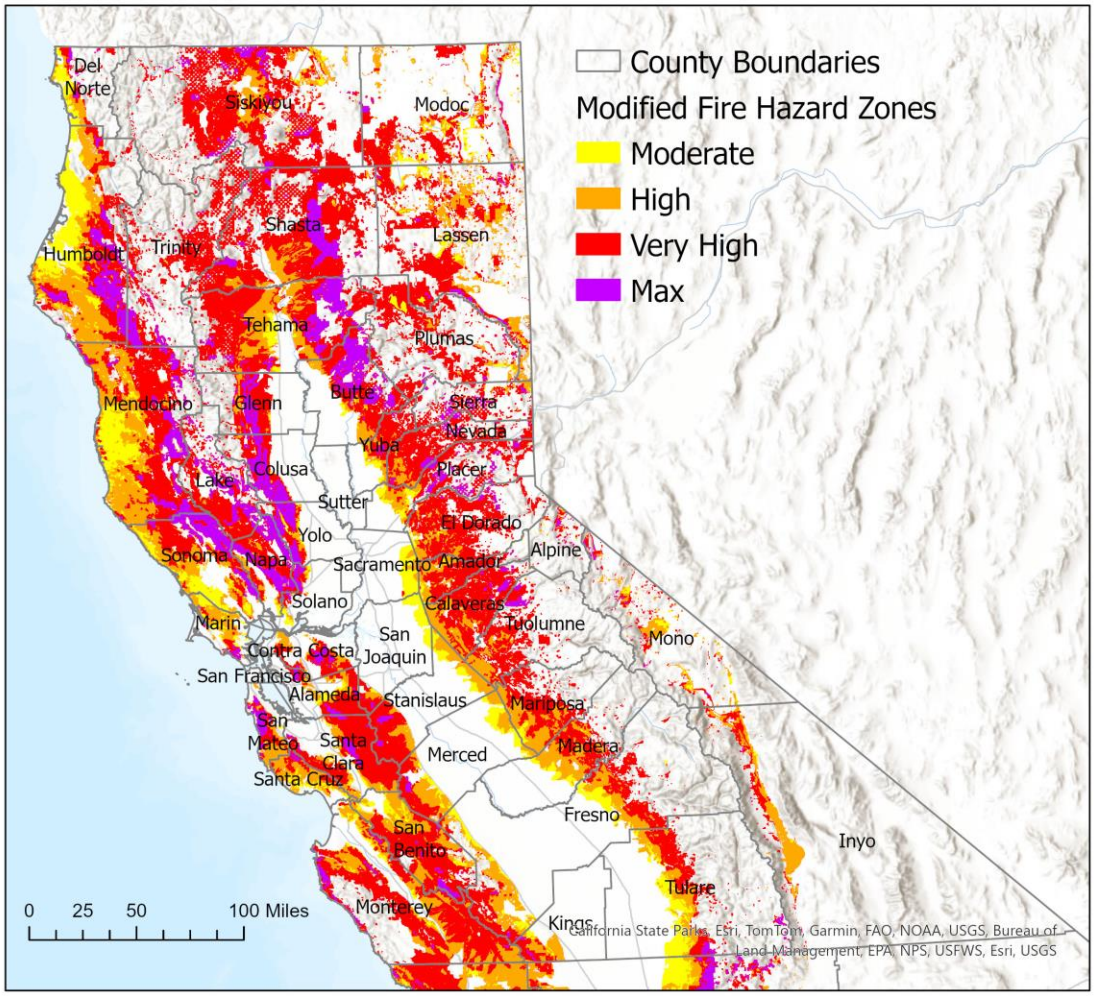


Table 7: Loss Rates in SRA\LRA by Modified Fire Hazard Severity Classes, 2013-2022

	Moderate	High	Very High	Max	Total
Losses, All Structures	541	4,656	14,569	23,290	43,056
Total Building Footprints	120,673	241,841	409,205	72,439	844,158
Loss Rate	**0.004**	**0.019**	**0.036**	**0.322**	**0.051**

Sources: Structure Losses from CAL FIRE Damage Inspection Database (DINS, 2022). Building footprints from Microsoft Building Footprint database.

In **RA-3**, the dwelling units in the revised High and Very High FHSZ's in each county are weighted with the loss rates from Table 7 (0.019 and 0.036). For analysis purposes, a loss rate of 0.08 is applied to the Max FHSZ, a loss rate which is ¼ the loss rate shown in Table 7. This approximates a 4-decade time interval between losses for the Max FHSZ of the magnitude seen in 2013-2022. For comparison, the interval was 26 years between the 2017 Tubbs Fire and the wind-driven 1991 Oakland Hills fire, which held the previous record for the most structure losses in

Northern California (Parker, 1992). In **RA-4** the full 2013-2022 loss rate (0.322) is applied to the Max FHSZ. That implies that the losses in 2013-2022 would continue at that rate into the future.

Using the FHSZ's in Figure 5 and loss rates described above, a new weighted-average risk score per dwelling unit is calculated for each county. That risk score is multiplied by the HVH dwelling units from Table 1 to produce a county risk scores for RA-3 and RA-4. County data used in these risk assessments along with the formulas used to calculate county risk scores can be found in Appendices 2 and 3.

5. Results:

- **RA-1** – If FAIR Plan policies were allocated to counties based on the number of HVH dwelling units, the number of FAIR Plan policies in the Central Sierra region would decrease by 49% compared to 2022 levels (Table 8). FAIR Plan policies in the Southern Sierras would decrease by 40% and in the Northern Sierras by 22% The Bay Area, on the other hand, would see a 148% increase. Results by county are shown in Table 9. FAIR Plan policies would exceed 15% of the market in only two counties in the Central Sierras: Mariposa (19%) and Tuolumne (18%). Trinity and Plumas counties would have the highest percentages in Northern California at 23% and 20% respectively.

- **RA-2** – If the risk for HVH dwelling units were weighted to reflect the proportion that are "Very High" risk vs. "High" risk in each county and to reflect the loss rates for those risk categories, the number of FAIR Plan policies in the Central Sierra region would decrease by 46% compared to 2022 levels (Table 8). The Southern Sierras would decrease by 54% and the Northern Sierras by 12%. The Bay Area would increase by 151%. As in RA-1, FAIR Plan policies would exceed 15% of the market in only two counties in the Central Sierras: Tuolumne (19%) and Mariposa (18%). Trinity and Plumas counties would have the highest percentages in Northern California at 30% and 24% respectively (Table 9).

- **RA-3** – Adding a hazard zone for high-wind areas and assuming a loss rate of 8% per decade for that zone would result in a decrease of FAIR Plan policies in the Central Sierras by 55% and the Southern Sierras by 56% compared to 2022 levels. FAIR Plan policies would show a small decrease (-5%) in the Northern Sierras but increase by 172% in the Bay Area (Table 8). Alpine County, at 17%, would be the only county in the Central Sierras with a FAIR Plan market percentage above 15% (Table 9). Trinity County would have the highest percentage in Northern California at 24%. No other counties would be above 18%.

- **RA-4** -- Adding a hazard zone for high-wind areas and assuming a loss rate of 32% per decade for that zone would result in a decrease in FAIR Plan policies in the Central Sierras by 73% and by 70% in the Southern Sierras compared to 2022 levels (Table 8). RA-4 is the only risk calculation that results in an increase in FAIR Plan policies for the Northern Sierras (+22%) and it also causes the largest increase in the Bay Area (+225%). FAIR Plan percentages would fall to 8% or less in all Central Sierra counties except for Alpine County at 16% (Table 9). Percentages for Butte and Lake counties rise to 33% and 29% respectively. Trinity County, however, declines to 17%.

Table 8: FAIR Plan Policies by Northern California Region and Risk Assessment Method

Region	Current (2022)	RA-1 RA - 1	% Change	RA-2 RA - 2	% Change	RA-3 RA - 3	% Change	RA-4 RA - 4	% Change
Southern Sierras	8,076	4,836	-40%	3,691	-54%	3,546	-56%	2,400	-70%
Central Sierras	49,959	25,452	-49%	26,923	-46%	22,362	-55%	13,598	-73%
Northern Sierras	21,351	16,690	-22%	18,734	-12%	20,197	-5%	25,994	22%
Bay Area	12,999	32,267	148%	32,589	151%	35,403	172%	42,255	225%

Table 9. FAIR Plan Policy Percentages by County and Risk Assessment Method, Northern California

County	Current	RA - 1	RA - 2	RA - 3	RA - 4	County	Current	RA - 1	RA - 2	RA - 3	RA - 4
CS - Tuolumne	40%	18%	19%	15%	8%	Humboldt	3%	7%	6%	7%	7%
CS -Mariposa	38%	19%	18%	15%	8%	Tehama	3%	10%	8%	8%	6%
NS - Nevada	31%	14%	17%	13%	9%	Del Norte	2%	7%	7%	6%	7%
CS - Calaveras	29%	13%	13%	11%	6%	Modoc	2%	9%	7%	7%	5%
CS - Alpine	27%	18%	12%	17%	16%	BA - Sonoma	2%	4%	3%	3%	4%
CS - Amador	26%	12%	13%	10%	6%	BA -Marin	2%	5%	3%	5%	6%
CS -El Dorado	21%	11%	13%	10%	6%	SS - Fresno	1%	1%	1%	1%	0%
NS - Sierra	21%	16%	19%	17%	17%	SS - Tulare	1%	1%	1%	1%	1%
Trinity	18%	23%	30%	24%	17%	San Benito	1%	3%	2%	2%	1%
NS - Plumas	15%	20%	24%	18%	10%	Inyo	1%	2%	1%	2%	1%
Mono	12%	17%	11%	18%	20%	BA - Alameda	1%	2%	2%	2%	2%
Lake	10%	12%	16%	18%	29%	Colusa	1%	3%	2%	3%	4%
SS - Madera	8%	4%	3%	3%	2%	BA - San Mateo	1%	2%	3%	3%	5%
NS - Lassen	8%	8%	6%	7%	5%	BA - Santa Clara	1%	1%	2%	1%	1%
CS - Placer	8%	5%	5%	4%	3%	BA - Contra Costa	0%	1%	2%	1%	1%
Mendocino	7%	12%	10%	12%	11%	Glenn	0%	2%	1%	2%	1%
NS - Butte	7%	11%	13%	18%	33%	San Joaquin	0%	0%	0%	0%	0%
Siskiyou	6%	11%	13%	11%	9%	Kings	0%	0%	0%	0%	0%
NS - Yuba	5%	4%	3%	4%	2%	BA - Solano	0%	0%	0%	0%	0%
Shasta	4%	7%	8%	7%	4%	Yolo	0%	0%	0%	0%	0%
Santa Cruz	4%	7%	4%	5%	3%	Sacramento	0%	0%	0%	0%	0%
BA - Napa	4%	6%	7%	8%	13%	Merced	0%	0%	0%	0%	0%
Monterey	3%	5%	5%	4%	3%	Stanislaus	0%	0%	0%	0%	0%
						Average	**3%**	**3%**	**3%**	**3%**	**3%**

Source: Current FAIR Plan Policy data for 2022 from California Department of Insurance: https://www.insurance.ca.gov/01-consumers/200-wrr/DataAnalysisOnWildfiresAndInsurance.cfm

5. Discussion:

In most cases, if FAIR Plan policies were distributed based on total risk by county, FAIR Plan percentages would not exceed the 15% cap proposed by the CDI. For those counties in the Central Sierras that are currently far above the 15% level, the cap would result in a much closer match between relative risk and the burden of FAIR Plan policies. For Placer County, however, whose current FAIR Plan market share is only 8%, the 15% limit would not move the county toward the FAIR Plan share of 3-5% based on county risk (Table 9).

There are a few counties where apportioning FAIR Plan policies according to risk would result in a percentage of FAIR Plan policies that would exceed the 15% limit by a significant amount. FAIR Plan percentages for Trinity County go as high as 30% in RA-2 and 23% in RA-1 and RA-3. Butte and Lake counties reach 33% and 29% respectively in RA-4. Plumas County is at 24% under RA-2. Limiting FAIR Plan policies to 15% of the market in those cases could necessitate a shift of FAIR Plan policies to counties with lower total risk.

Accounting for the loss rates in the Max wind zone in RA-3 and RA-4 causes the largest decreases in FAIR Plan policies in the Southern and Central Sierras and the largest increases in the Bay Area (Table 8). There are very few houses in the Max wind zone in the Southern and Central Sierras compared to the Northern Sierras and the Bay Area (Table 10). Although the Northern Sierras have a relatively high number of HVH dwelling units in the Max wind zone (almost all of which are located in Butte County), FAIR Plan policies actually decrease slightly in RA-3 and increase by only 22% in RA-4 compared to the 226% increase in the Bay Area. As noted in Table 3, FAIR Plan policies per HVH dwelling unit are already at a much higher level in the Northern Sierras (0.23) compared to the Bay Area (0.073), so they have less need to rise further in proportion to risk levels.

Table 10: Estimated Dwelling Units in Max Wind Zone by Northern California Region*

Region	Max Zone HVH Dwelling Units
Southern Sierras	748
Central Sierras	2,066
Northern Sierras	22,373
Bay Area	34,268

**Based on distribution of building footprints by zone*.

Losses in the Max wind zone in 2013-2022 were an order of magnitude larger than any losses in past decades, making projecting future losses in that zone particularly difficult. Much depends on whether fire starts during high-wind events can be prevented (Keeley and Syphard, 2019). Wind damage to the electrical grid has been a recurring cause of fire starts, accounting for seven fires in the high-wind zone and 67% of homes destroyed in Northern California in 2013-2022 (Schmidt, 2024). Moves by utility companies to de-energize the electrical grid during high winds (Abatzoglou, et al., 2020) could significantly reduce the number of grid-caused fire starts in coming years.

Any decrease in fires caused by wind damage to the grid, however, could be offset by increases in other types of fire starts. The hot, dry conditions that allow fires to easily ignite and spread are becoming more common (Goss, et al., 2020). The persistence of those conditions can lead to long-duration fires, raising the chances that a wildfire will already be in progress when a wind event does occur. The North Complex Fire illustrates that phenomenon. Started by lightning on August 17, 2020, the fire continued to burn until September 8, when high winds propelled it 30 miles into the community of Berry Creek, resulting in 15 fatalities and the destruction of more than 1,000 homes.

Fire models, such as those used by CAL FIRE to produce its FHSZ maps, primarily rely on vegetation and past fire history to estimate fire hazard. Winds are taken into account in predicting fire intensity and ember production, but those predictions tend to reflect average weather conditions, not the infrequent wind events in the high-wind areas that have resulted in most housing losses. If the objective is to predict structures burned, rather than area burned, the likelihood of strong winds during the fire season should be a defining characteristic for the zones with the highest fire hazard. Models that recognize the primacy of wind in determining structure losses in wildfires would lead to a more realistic evaluation of risk in the Central and Southern Sierras compared to the Northern Sierras and the Bay Area. A substantial reduction in the share of FAIR Plan policies in the Central and Southern Sierras should logically follow.

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Note: Basemap for all maps from ESRI.

Appendix 1: Calculations for RA-2 Sorted by County Risk Score

County	SRA\LRA Building Footprints			Weighted Risk Score Per Bldg*	CDI HVH Dwelling Units	County Risk Score**	% of Total Risk Score	Target FAIR Plan Policies
	High FHSZ (LR=0.025)	Very High FHSZ (LR= .081)	Total					
CS -El Dorado	18,030	51,966	69,996	0.067	47,715	3,174	8.7%	9,616
BA - Alameda	4,254	19,912	24,166	0.071	38,647	2,749	7.5%	8,328
NS - Butte	8,361	26,906	35,267	0.068	36,644	2,480	6.8%	7,514
NS - Nevada	10,769	41,235	52,004	0.069	35,282	2,448	6.7%	7,416
CS - Placer	13,665	23,397	37,062	0.060	34,571	2,083	5.7%	6,309
BA - Santa Clara	3,971	11,048	15,019	0.066	29,440	1,947	5.3%	5,899
Shasta	10,730	36,860	47,590	0.068	24,645	1,684	4.6%	5,102
CS - Tuolumne	10,476	23,046	33,522	0.063	24,607	1,561	4.3%	4,728
BA - Contra Costa	6,489	14,479	20,968	0.064	24,022	1,528	4.2%	4,628
BA - San Mateo	3,005	9,901	12,906	0.068	22,293	1,514	4.1%	4,587
Monterey	12,090	16,301	28,391	0.057	24,872	1,418	3.9%	4,296
BA - Sonoma	15,871	8,050	23,921	0.044	29,825	1,300	3.5%	3,938
Lake	2,603	20,596	23,199	0.075	17,116	1,279	3.5%	3,876
CS - Calaveras	11,053	19,094	30,147	0.060	17,059	1,030	2.8%	3,119
Santa Cruz	15,739	2,336	18,075	0.032	28,889	921	2.5%	2,789
Mendocino	12,495	9,426	21,921	0.049	18,438	901	2.5%	2,730
BA - Napa	3,281	6,421	9,702	0.062	14,210	881	2.4%	2,668
Humboldt	6,582	4,566	11,148	0.048	16,786	801	2.2%	2,426
BA -Marin	7,055	2,968	10,023	0.041	18,943	782	2.1%	2,370
NS - Plumas	2,399	11,555	13,954	0.071	9,948	710	1.9%	2,151
Siskiyou	4,652	16,654	21,306	0.069	10,227	703	1.9%	2,130
CS - Amador	4,641	10,931	15,572	0.064	10,358	665	1.8%	2,016
SS - Fresno	9,405	5,057	14,462	0.044	11,348	503	1.4%	1,524
Trinity	862	10,389	11,251	0.077	6,270	481	1.3%	1,458
Tehama	7,489	5,935	13,424	0.050	8,602	426	1.2%	1,291
SS - Madera	12,780	6,098	18,878	0.043	9,200	394	1.1%	1,193
CS -Mariposa	6,504	7,552	14,056	0.055	6,766	372	1.0%	1,126
SS - Tulare	2,600	2,881	5,481	0.054	6,394	347	0.9%	1,051
NS - Yuba	4,393	4,174	8,567	0.052	4,913	256	0.7%	775
NS - Lassen	5,705	3,060	8,765	0.044	4,805	213	0.6%	645
Mono	3,082	867	3,949	0.037	4,893	181	0.5%	548
Del Norte	284	699	983	0.065	2,767	179	0.5%	543
Sacramento	304	254	558	0.050	2,750	138	0.4%	419
San Benito	2,260	1,214	3,474	0.044	2,461	109	0.3%	330
NS - Sierra	459	1,730	2,189	0.069	1,384	96	0.3%	290
BA - Solano	1,964	583	2,547	0.038	2,374	89	0.2%	270
Stanislaus	1,283	528	1,811	0.041	1,734	71	0.2%	216
Modoc	2,401	1,309	3,710	0.045	1,290	57	0.2%	174
Colusa	471	624	1,095	0.057	704	40	0.1%	121
CS - Alpine	739	325	1,064	0.042	711	30	0.1%	90
Glenn	754	259	1,013	0.039	722	28	0.1%	85
Inyo	3,183	17	3,200	0.025	617	15	0.0%	46
Yolo	845	460	1,305	0.044	306	14	0.0%	41
Merced	225	38	263	0.033	311	10	0.0%	31
San Joaquin	167	65	232	0.040	214	9	0.0%	26
Kings	67	11	78	0.033	63	2	0.0%	6
Total	**256,437**	**441,777**	**698,214**	**0.060**	**616,136**	**36,619**	**100.0%**	**110,937**

LR = Loss Rate

***Weighted Risk Score Per Bldg = ((High FHSZ * 0.025) + (Very High FHSZ * 0.081))/ Total**

**** County Risk Score = Weighted Risk Score * CDI HVH Dwelling Units**

Appendix 2: Calculations for RA-3 Sorted by County Risk Score

County	SRA\LRA Building Footprints High FHSZ (LR=0.019)	Very High FHSZ (LR=0.036)	Max FHSZ (LR=0.08)	Total	Weighted Risk Score Per Bldg *	CDI HVH Dwelling Units	County Risk Score**	% of Total Risk Score	Target FAIR Plan Policies
NS - Butte	6,222	9,862	20,711	36,795	0.058	36,644	2,119	9.7%	10,773
BA - Alameda	2,751	18,748	3,451	24,950	0.040	38,647	1,544	7.1%	7,848
CS -El Dorado	18,032	51,938	31	70,001	0.031	47,715	1,499	6.9%	7,620
NS - Nevada	10,577	39,796	1,639	52,012	0.034	35,282	1,188	5.4%	6,041
BA - San Mateo	1,972	6,018	5,172	13,162	0.051	22,293	1,128	5.2%	5,735
CS - Placer	12,610	22,433	2,019	37,062	0.032	34,571	1,122	5.1%	5,705
BA - Santa Clara	4,003	9,558	1,600	15,161	0.036	29,440	1,059	4.9%	5,384
BA - Sonoma	19,971	6,182	5,806	31,959	0.033	29,825	998	4.6%	5,072
Lake	1,668	12,212	9,541	23,421	0.053	17,116	899	4.1%	4,570
BA - Contra Costa	6,565	14,142	2,837	23,544	0.036	24,022	874	4.0%	4,445
Shasta	10,730	35,263	1,597	47,590	0.033	24,645	823	3.8%	4,186
Monterey	11,804	15,511	1,112	28,427	0.031	24,872	760	3.5%	3,863
CS - Tuolumne	10,475	23,030	17	33,522	0.031	24,607	751	3.4%	3,818
BA - Napa	3,293	4,040	3,928	11,261	0.046	14,210	658	3.0%	3,345
Santa Cruz	14,806	3,169	128	18,103	0.023	28,889	651	3.0%	3,311
BA -Marin	7,403	2,462	2,162	12,027	0.034	18,943	635	2.9%	3,228
Mendocino	9,760	11,811	2,590	24,161	0.034	18,438	622	2.9%	3,164
Humboldt	5,659	4,577	1,220	11,456	0.032	16,786	541	2.5%	2,753
CS - Calaveras	11,053	18,973	121	30,147	0.030	17,059	508	2.3%	2,583
Siskiyou	4,591	15,336	1,444	21,371	0.035	10,227	359	1.6%	1,824
NS - Plumas	2,395	11,473	95	13,963	0.033	9,948	329	1.5%	1,674
CS - Amador	4,648	10,920	11	15,579	0.031	10,358	319	1.5%	1,620
SS - Fresno	9,394	5,064	4	14,462	0.025	11,348	284	1.3%	1,442
Tehama	7,003	6,257	433	13,693	0.029	8,602	246	1.1%	1,253
Trinity	775	10,000	476	11,251	0.036	6,270	228	1.0%	1,159
SS - Madera	12,780	5,995	103	18,878	0.025	9,200	228	1.0%	1,159
SS - Tulare	2,451	2,435	596	5,482	0.033	6,394	212	1.0%	1,077
CS -Mariposa	6,504	7,552	0	14,056	0.028	6,766	190	0.9%	964
Mono	1,850	2,012	760	4,622	0.036	4,893	178	0.8%	904
NS - Yuba	2,451	5,848	280	8,579	0.032	4,913	159	0.7%	809
NS - Lassen	5,048	3,505	432	8,985	0.029	4,805	137	0.6%	697
Del Norte	872	569	272	1,713	0.034	2,767	95	0.4%	483
BA - Solano	1,095	1,839	561	3,495	0.038	2,374	89	0.4%	454
Sacramento	304	254	0	558	0.027	2,750	73	0.3%	373
San Benito	2,252	1,200	22	3,474	0.025	2,461	62	0.3%	316
NS - Sierra	514	1,457	287	2,258	0.038	1,384	52	0.2%	264
Stanislaus	1,283	510	18	1,811	0.024	1,734	42	0.2%	216
Modoc	2,055	1,674	173	3,902	0.029	1,290	37	0.2%	190
Colusa	308	547	297	1,152	0.043	704	30	0.1%	153
CS - Alpine	443	521	111	1,075	0.033	711	24	0.1%	121
Glenn	353	709	45	1,107	0.032	722	23	0.1%	118
Inyo	2,010	3,115	17	5,142	0.029	617	18	0.1%	92
Yolo	716	470	311	1,497	0.037	306	11	0.1%	58
Merced	222	38	3	263	0.022	311	7	0.0%	35
San Joaquin	132	134	6	272	0.029	214	6	0.0%	31
Kings	38	46	0	84	0.028	63	2	0.0%	9
Total	**241,841**	**409,205**	**72,439**	**723,485**	**0.035**	**616,136**	**21,821**	**100.0%**	**110,937**

LR = Loss Rate

***Weighted Risk Score Per Bldg = ((High FHSZ * 0.019) + (Very High FHSZ * 0.036) + (Max FHSZ * 0.08))/ Total**

****** County Risk Score = Weighted Risk Score * CDI HVH Dwelling Units**

Appendix 3: Calculations for RA-4 Sorted by County Risk Score

County	High FHSZ (LR=0.019)	Very High FHSZ (LR=0.036)	Max FHSZ (LR=0.322)	Total	Weighted Risk Score Per Bldg *	CDI HVH Dwelling Units	County Risk Score**	% of Total Risk Score	Target FAIR Plan Policies
NS - Butte	6,222	9,862	20,711	36,795	0.194	36,644	7,100	17.8%	19,720
BA - San Mateo	1,972	6,018	5,172	13,162	0.146	22,293	3,244	8.1%	9,008
BA - Alameda	2,751	18,748	3,451	24,950	0.073	38,647	2,835	7.1%	7,872
Lake	1,668	12,212	9,541	23,421	0.151	17,116	2,583	6.5%	7,173
BA - Sonoma	19,971	6,182	5,806	31,959	0.077	29,825	2,306	5.8%	6,405
BA - Napa	3,293	4,040	3,928	11,261	0.131	14,210	1,855	4.6%	5,152
BA - Santa Clara	4,003	9,558	1,600	15,161	0.061	29,440	1,809	4.5%	5,025
CS - Placer	12,610	22,433	2,019	37,062	0.046	34,571	1,577	3.9%	4,380
BA - Contra Costa	6,565	14,142	2,837	23,544	0.065	24,022	1,573	3.9%	4,369
CS -El Dorado	18,032	51,938	31	70,001	0.032	47,715	1,504	3.8%	4,177
BA -Marin	7,403	2,462	2,162	12,027	0.077	18,943	1,457	3.6%	4,047
NS - Nevada	10,577	39,796	1,639	52,012	0.041	35,282	1,457	3.6%	4,046
Mendocino	9,760	11,811	2,590	24,161	0.060	18,438	1,100	2.8%	3,054
Shasta	10,730	35,263	1,597	47,590	0.042	24,645	1,023	2.6%	2,841
Monterey	11,804	15,511	1,112	28,427	0.040	24,872	995	2.5%	2,763
Humboldt	5,659	4,577	1,220	11,456	0.058	16,786	973	2.4%	2,703
CS - Tuolumne	10,475	23,030	17	33,522	0.031	24,607	754	1.9%	2,094
Santa Cruz	14,806	3,169	128	18,103	0.024	28,889	701	1.8%	1,946
Siskiyou	4,591	15,336	1,444	21,371	0.051	10,227	526	1.3%	1,460
CS - Calaveras	11,053	18,973	121	30,147	0.031	17,059	525	1.3%	1,457
SS - Tulare	2,451	2,435	596	5,482	0.059	6,394	380	1.0%	1,054
Mono	1,850	2,012	760	4,622	0.076	4,893	372	0.9%	1,034
NS - Plumas	2,395	11,473	95	13,963	0.035	9,948	346	0.9%	960
CS - Amador	4,648	10,920	11	15,579	0.031	10,358	320	0.8%	890
Tehama	7,003	6,257	433	13,693	0.036	8,602	312	0.8%	867
Trinity	775	10,000	476	11,251	0.047	6,270	292	0.7%	811
SS - Fresno	9,394	5,064	4	14,462	0.025	11,348	284	0.7%	790
SS - Madera	12,780	5,995	103	18,878	0.026	9,200	240	0.6%	667
Del Norte	872	569	272	1,713	0.073	2,767	201	0.5%	559
NS - Yuba	2,451	5,848	280	8,579	0.040	4,913	198	0.5%	549
NS - Lassen	5,048	3,505	432	8,985	0.040	4,805	193	0.5%	536
CS -Mariposa	6,504	7,552	0	14,056	0.028	6,766	190	0.5%	527
BA - Solano	1,095	1,839	561	3,495	0.076	2,374	181	0.5%	504
NS - Sierra	514	1,457	287	2,258	0.068	1,384	94	0.2%	262
Colusa	308	547	297	1,152	0.105	704	74	0.2%	205
Sacramento	304	254	0	558	0.027	2,750	73	0.2%	204
San Benito	2,252	1,200	22	3,474	0.027	2,461	66	0.2%	183
Modoc	2,055	1,674	173	3,902	0.040	1,290	51	0.1%	142
Stanislaus	1,283	510	18	1,811	0.027	1,734	47	0.1%	129
CS - Alpine	443	521	111	1,075	0.058	711	42	0.1%	115
Glenn	353	709	45	1,107	0.042	722	30	0.1%	84
Yolo	716	470	311	1,497	0.087	306	27	0.1%	74
Inyo	2,010	3,115	17	5,142	0.030	617	19	0.0%	52
Merced	222	38	3	263	0.025	311	8	0.0%	22
San Joaquin	132	134	6	272	0.034	214	7	0.0%	20
Kings	38	46	0	84	0.028	63	2	0.0%	5
Total	**241,841**	**409,205**	**72,439**	**723,485**	**0.059**	**616,136**	**39,945**	**100.0%**	**110,937**

LR = Loss Rate

***Weighted Risk Score Per Bldg = ((High FHSZ * 0.019) + (Very High FHSZ * 0.036) + (Max FHSZ * 0.322))/ Total**

****** County Risk Score = Weighted Risk Score * CDI HVH Dwelling Units**