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Wildfire Hazard Risk Report

Residential Wildfire Exposure Estimates for the Western United States

2015

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Executive Summary & Year in Review

Though the western region of the United States has endured a sustained period of intense drought conditions in many areas traditionally vulnerable to wildfires, the 2014 wildfire season was in many ways a surprise. On the tail of another historically low-activity season in 2013, wildfire incidents over the past year were noticeably low in total number of fires and acreage burned. There were 63,345 wildfires in 2014, which ranks second only to 2013 as the lowest annual number of wildfires over the past 20 years[1]*. The amount of area consumed by wildfires was also exceptionally low in 2014. In comparison with 2013, which was the second lowest annual total acreage burned in the past 10 years, the 2014 season saw even lower numbers, with 3,587,561 acres burned by wildfires[1]*. The 3.6 million acres lost now ranks as the second lowest total acreage burned total in the last decade[1].

The 2014 wildfire year in the U.S. began quickly, with California in particular experiencing a large number of wildfire events early in the year. Although California wildfires typically don't occur in January, the first month of 2014 was very active, exacerbated by continued drought conditions across the state. More than 400 wildfires occurred during January, in fact, highlighted by the Colby fire in Los Angeles County that burned nearly 2,000 acres and destroyed five homes[2]. Wildfire activity across California continued throughout early and mid-2014 with more than 4,000 additional fires (4,974) from January 1st to September 20th, above the five year average (3,951) for the state[1]. The worst fires in California included an outbreak of more than a dozen fires in early May in San Diego County as well as the 134,000 acre Happy Camp Complex fire in August in northern California[2].

Though none of the California fires resulted in large property losses, the same was not true for other parts of the western U.S. The Carlton Complex fire in Washington caused the most property damage anywhere in the country in 2014 and affected homes in and around the small towns of Pateros and Malott[2]. The Carlton Complex fire is the largest recorded in Washington's history, covering over 256,000 acres and destroying 322 homes[3]. The largest wildfire of the year in terms of acreage burned was the Buzzard Complex fire near Burns, Ore. which consumed more than 395,000 acres in July, but occurred primarily on rangeland and thereby did not cause significant property damage[2].

One possible explanation for the decline in fire occurrence and aggregate burned area in 2014 is a more intensive response to small fires and ignitions. Focusing equipment and resources from large-scale responses on smaller fires may have helped to reduce the overall size and related damage preventing escalation. The unfortunate consequence of this type of response, however, is the increased cost incurred to the responding agencies. In the case of California, the original $209 million that was budgeted for fighting wildfires was exhausted in the first three months of the fiscal year[4]. Other possible explanations for lower wildfire activity and property damage in 2014 could be related to an increase in overwinter snowpack and timely precipitation during the wildfire season. It is also possible that fewer damaging fires could be related to an increase in public awareness and more widespread homeowner mitigation. Reducing opportunities for wildfires at the property level is often an effective way to better control wildfire propagation.

A downturn in wildfire activity for 2013 and 2014 should not be considered a permanent trend in wildfire risk, however. As history indicates, wildfire events tend to be cyclical by nature, as they follow patterns of vegetation growth and meteorological conditions. Since parts of the western U.S. received additional precipitation in 2014, there will likely be a tendency for more vegetation growth and hence a greater fuel load for the coming year. Although preliminary forecasts for 2015 do not indicate the extreme drought conditions that were very recently commonplace in the west, there appears to be some continuation of drought in several states, including California and Texas[5]. Yet weather conditions and vegetation growth aside, as long as homes continue to be constructed beyond the urban edges of residential development and into the Wildland Urban Interface, wildfire risk will be ever-expanding. It is therefore imperative that homeowners and insurers not become complacent and continue to actively seek methods to mitigate risk to individual properties.

Understanding the geographic location and severity of wildfire risk is important at all levels, but especially critical at the individual property level. In addition to the need for homeowners themselves to mitigate risk to their homes, insurers, lenders, investors and disaster response teams all make decisions at the individual parcel level, enhancing the significance of risk data constructed at a very granular scale. Hazard data of this type will support critical underwriting, mortgage lending and a host of related financial decisions, as well as help sustain mitigation initiatives that are necessary to reduce or prevent property damage.

For that reason, the *2015 CoreLogic Wildfire Hazard Risk Report* examines the residential properties potentially exposed to wildfire risk in 13 western states. This report provides a comprehensive evaluation of the total number of properties at each risk level, along with the estimated reconstruction value of single-family residences at risk in the region. In addition to the total estimate, a summary of the properties at risk and associated single-family home reconstruction cost is provided for each individual state, as well as tables that provide similar information for several metropolitan areas across the country.

*The number of fires and number of acres burned for 2014 are preliminary figures that were accurate as of 12/29/2014. The final values will be released by the National Interagency Fire Center (NIFC) in February, 2015.

Residential Loss Estimates

The categorical risk assignment describes wildfire potential based on characteristics inside the property boundary; the numeric risk score combines wildfire risk factors both internal and external to the property boundary.

CoreLogic provides two measurements of wildfire risk for individual properties. The first is identified by a categorical description of risk (Low, Moderate, High, Very High) and is based on the risk that is located on the property itself. Two additional labels, "Urban" and "Agriculture," are also used as separate categorical descriptions for the purpose of accurately delineating these two important land use areas. Urban areas are comprised of concentrated areas of development that contain little to no natural fuels that support wildfire activity. The homes or buildings in an urban area may be located remotely from areas of wildfire risk, or they can be located on the edge of urban development and in close proximity to existing risk areas. Agriculture is also given its own category, as agricultural-based vegetation is very dissimilar to the naturally occurring vegetation that fuels wildfire activity. Agricultural vegetation may be irrigated, and, at the very least, is often green with no ground litter to support a wildfire event. Both Urban and Agriculture are listed separately from the four risk categories and are both assigned a risk value (for purposes of calculating the wildfire score) of Low.

The second measurement of wildfire risk is indicated by a score of 1-100, which represents a composite measurement of the risk located on the property, as well as the distance from the property to the nearest adjacent areas of High or Very High risk. The accompanying score was developed to account for the influence of nearby higher risk areas to the risk of the property. In many cases, a home and the property on which it is located may be at low risk due to homeowner mitigation and landscaping. But beyond the property boundary, expanses of natural vegetation may exist that present a high level of risk to any homes in the general vicinity through the windblown migration of airborne embers during a fire. The 1-100 score effectively accounts for the contribution of these off-property areas to the risk of the individual homes. It is important to note that even though the numbers reported in the distinct risk categories and the risk-score analysis are very different, both accurately represent potential property-level exposure to wildfire risk. Simply put, the categorical risk assignment describes wildfire potential based on characteristics inside the property boundary, while the numeric risk score combines wildfire risk factors both internal and external to the property boundary.

In addition, the estimation of property values CoreLogic uses for single-family residences is based upon Marshall & Swift/Boeckh (MSB™) reconstruction valuation data. CoreLogic acquired MSB in March 2014, and new valuations in this report are derived from MSB reconstruction cost estimates rather than market valuation data. Reconstruction cost estimates are a more accurate reflection of the actual cost of repairing or replacing residential buildings that could be damaged or destroyed in the event of a wildfire, and the values in this report are based on the complete destruction of each home. The reconstruction cost incorporates the cost of materials and labor, and also factors in geographical pricing differences. In the event that reconstruction costs were not available for the purposes of this analysis, CoreLogic reconstruction cost industry benchmark averages were used to calculate the property-level values.

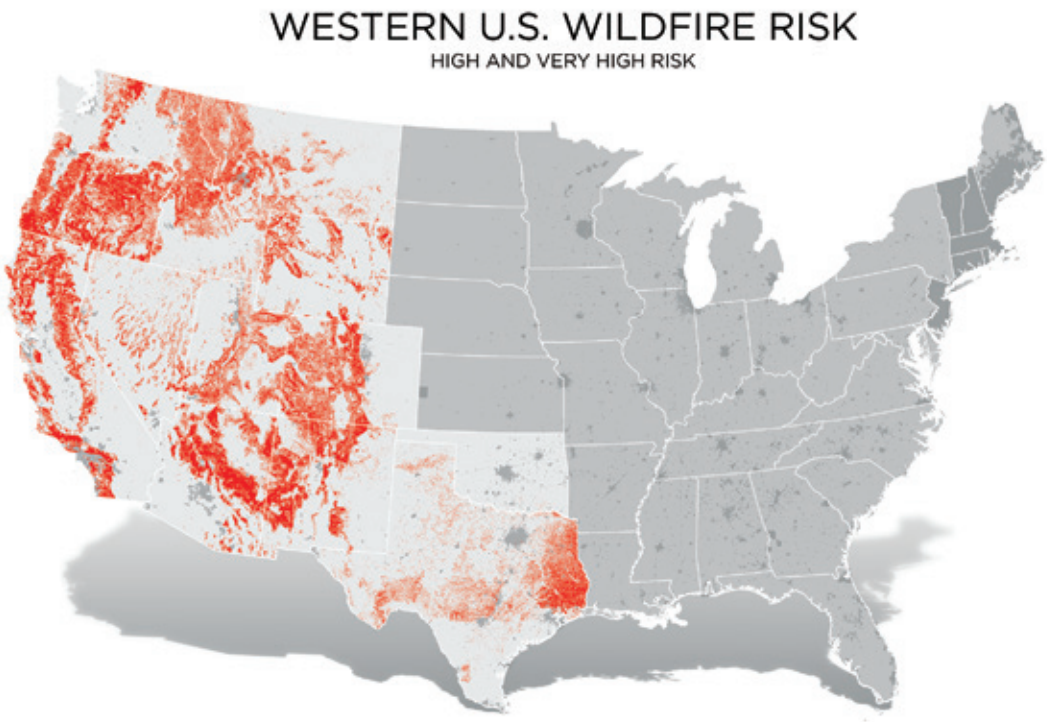
Based on CoreLogic wildfire analysis, there are 897,102 residential properties in the western U.S. that are currently located in High or Very High wildfire-risk categories, with a reconstruction value of more than $237 billion. In the Very High risk category alone, there are just over 192,000 residences with a reconstruction value of more than $49 billion. These are homes for which the High or Very High risk is located within the property boundary.

Taking into consideration the combination of risk factors both inside and outside the property boundary to assess numeric risk score, more than 1.1 million homes in the U.S. with a total reconstruction value of more than $268 billion fall into the highest wildfire risk segment of 81-100. This total is more than five times the number of homes that fall under the Very High risk category. In addition, the number of homes that score in the 61-and-above segment totals 2.2 million, with more than $606 billion in total reconstruction value. Since the 1-100 score incorporates risk located outside the property that can contribute to the potential for damage to the home, it is clear that in many instances homes that have little risk on the property are actually located near areas of higher risk concentrations. In many areas, this "borderline" is referred to as the Wildland Urban Interface (WUI).

At the regional level, the 13 western states at high risk for wildfire present an insightful look at the two separate measurements and the impact that property-specific characteristics, residential development and population can have on risk assessment. One of the most important factors discussed in this report is the value of understanding both the risk on the property and the risk posed by areas adjacent to, or within a short distance of, the property boundaries. Regional analysis provides a very sharp contrast between these two methods of evaluating wildfire risk.

Wildfire Risk Score Data

When looking at CoreLogic Wildfire Risk Score data, the number of properties scoring 81-100 is significantly more than the number of properties that fall within the Very High risk category. This is because the score takes into account the measured distance to outlying higher-risk areas, and therefore includes a number of properties designated as Urban that do not have high wildfire risk within the physical property boundary, but are located relatively close to higher-risk zones.



It is not uncommon for a property to be landscaped and the wildfire risk mitigated within the property boundary, only to have an area of much higher wildfire risk located just outside the property boundary. In those instances, a potential wildfire could, and in many cases would, migrate onto the home or other structures via windblown embers.

Table 1 – Residential Exposure for the Western U.S. by Wildfire Risk Category

Wildfire Risk Level	Total Properties	Total Estimated Reconstruction Value
Very High	192,242	$49,608,484,867
High	704,860	$187,661,388,760
Moderate	1,351,313	$292,811,373,342
Low	137,8104	$334,120,053,463
Agriculture	993,580	$244,167,729,666
Urban	23,778,799	$6,094,873,170,789

Table 2 – Residential Exposure for the Western U.S. by Wildfire Risk Score

Wildfire Risk Score (1-100)	Total Properties	Total Estimated Reconstruction Value
81-100	1,101,131	$268,549,008,333
61-80	1,193,814	$338,395,410,748
51-60	487,013	$131,081,392,801
1-50	25,616,940	$6,465,216,389,005

Comparing the number of properties within the Very High risk category for each region (Table 3), the total number of homes at risk range from 15,786 for the Pacific Northwest to 94,164 for the Southern Rockies and South Central U.S. region. Designated as having high-risk factors within property boundaries, the type and density of fuel along with terrain factors and historical propensity of wildfire activity indicate that these Very High risk properties are subject to the most immediate wildfire risk. However, it is not uncommon for a property to be landscaped and the wildfire risk mitigated within the property boundary, only to have an area of much higher wildfire risk located just outside the property boundary. In those instances, a potential wildfire could, and in many cases would, migrate onto the home or other structures via windblown embers.

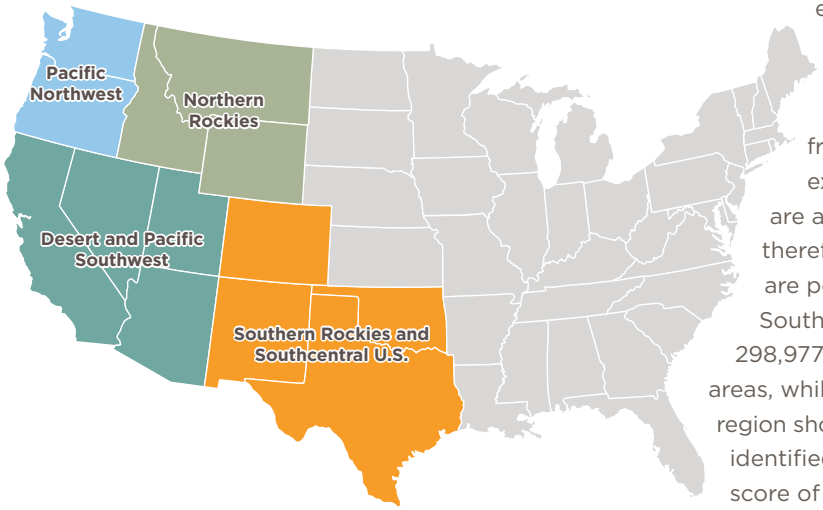
Table 3 – Regional Residential Properties Potentially at Risk of Wildfire Damage by Risk Category

Region	Low	Moderate	High	Very High	Agriculture	Urban
Pacific NW	345,198	113,233	64,375	15,786	377,085	2,564,053
Northern Rockies	114,834	53,782	27,051	22,949	138,168	703,126
Desert and Pacific SW	293,392	208,020	275,603	59,343	186,334	11,617,568
Southern Rockies and South Central U.S.	624,680	976,278	337,831	94,164	291,993	8,894,052

Table 4 – Regional Total Potential Exposure (Reconstruction Value) to Wildfire Damage by Risk Category

Region	Low	Moderate	High	Very High	Agriculture	Urban
Pacific NW	$92,303,511,691	$27,569,181,272	$14,788,681,309	$3,703,904,563	$91,959,784,909	$610,647,194,505
Northern Rockies	$27,511,560,387	$12,618,188,135	$6,483,730,556	$5,341,069,097	$31,720,008,002	$146,804,736,808
Desert and Pacific SW	$92,568,146,173	$72,013,925,792	$96,444,995,392	$17,853,868,755	$60,284,491,989	$3,520,355,853,518
Southern Rockies and South Central U.S.	$121,736,835,212	$180,610,078,143	$69,943,981,503	$22,709,642,452	$60,203,444,766	$1,817,065,385,958

The risk scores reported in Table 5 in the "81-100" column identify properties that experience the less obvious wildfire risk because they are adjacent to Very High risk areas. Based on the analysis, it is clear that a vast majority of at-risk homes fall into that category. In each of the regions, the number of homes in this highest risk score category vastly outnumbers the properties in the Very High risk category. In the Pacific Northwest, the number of homes increases from 15,786 (Very High) to 100,935 (81-100). As expected, the regions with the greatest difference are also those that have the highest populations and, therefore, the highest number of urban homes that are potentially within the WUI. The Desert and Pacific Southwest region increases from 59,343 (Very High) to 298,977 (81-100) when accounting for risk in surrounding areas, while the Southern Rockies and South Central U.S. region shows a very dramatic increase from 94,164 properties identified as Very High risk to 620,816 properties with a risk score of 81-100.



Overall, this regional comparison does vary based on population concentrations in the more southerly areas, but it is also an indicator of the importance of understanding how risk assessment can be affected by numerous relevant risk factors, especially the location of the WUI.

Table 5 – Regional Residential Properties Potentially at Risk of Wildfire Damage by Risk Score

Region	1-50	51-60	61-80	81-100
Pacific NW	3,283,861	31,278	63,656	100,935
Northern Rockies	897,137	24,436	57,934	80,403
Desert and Pacific SW	11,748,163	165,010	428,110	298,977
Southern Rockies and South Central U.S.	9,687,779	266,289	644,114	620,816

Table 6 – Regional Total Potential Exposure (Reconstruction Value) to Wildfire Damage by Risk Score

Region	1-50	51-60	61-80	81-100
Pacific NW	$795,662,558,031	$7,211,866,451	$14,967,350,238	$23,130,483,529
Northern Rockies	$191,892,202,501	$5,802,976,338	$13,851,684,310	$18,932,429,836
Desert and Pacific SW	$3,530,887,799,740	$60,973,575,786	$169,904,846,126	$97,755,059,967
Southern Rockies and South Central U.S.	$1,946,773,828,733	$57,092,974,226	$139,671,530,074	$128,731,035,001

Estimates for Individual States

The states that receive the most attention for seasonal wildfire activity are the states that have the most properties at risk. It is important not to overlook other western states however, since all of them experience annual wildfire activity. California, Colorado and Texas have the largest number of properties categorized as Very High risk, while other less populous states, or those not as frequently associated with wildfire, such as Wyoming, Utah and Nevada, have proportionally fewer properties identified as High or Very High risk. The total combined reconstruction cost of properties in California, Colorado and Texas that are located in Very High risk areas exceeds $36 billion. Adding the homes located in the High risk category increases the total reconstruction value by more than $152 billion. Though the locations of risk associated with wildfire-prone states varies, there are many communities in each state that are susceptible to wildfire and the total reconstruction value easily reaches into the hundreds of millions or even billions of dollars. State totals do not identify variance in risk within a state due to geographical differences, but these totals illustrate the potential extent of regional wildfire risk.

Table 7 – Residential Properties Potentially at Risk of Wildfire Damage by Risk Category

State	Low	Moderate	High	Very High	Agriculture	Urban
AZ	43,273	4,443	8,488	8,089	5,332	1,910,771
CA	221,104	169,468	255,023	50,905	146,013	8,208,625
CO	70,935	38,628	50,009	49,667	66,876	1,482,352
ID	37,352	22,968	15,197	11,078	86,542	384,018
MT	60,588	18,903	9,601	10,218	22,516	194,927
NV	17,845	20,520	8,653	281	3,166	816,975
NM	55,969	19,554	25,766	9,481	16,200	483,282
OK	165,009	88,642	187	0	33,225	968,210
OR	37,137	41,160	51,872	13,788	157,749	938,664
TX	332,766	829,457	261,855	35,016	175,691	5,960,221
UT	11,185	13,590	3,441	68	31,825	681,016
WA	308,066	72,069	12,509	1,997	219,334	1,625,394
WY	16,875	11,911	2,259	1,654	29,111	124,344

Table 8 – Total Potential Exposure (Reconstruction Value) to Wildfire Damage by Risk Category

State	Low	Moderate	High	Very High	Agriculture	Urban
AZ	$9,641,256,308	$976,410,271	$1,758,550,435	$1,572,563,175	$1,143,819,360	$366,495,664,312
CA	$75,842,726,208	$61,916,244,431	$89,354,295,530	$16,103,052,587	$49,993,071,641	$2,787,437,974,226
CO	$18,625,174,701	$11,531,765,722	$14,580,510,822	$13,914,663,160	$17,325,198,320	$341,298,432,193
ID	$9,201,487,848	$5,563,694,301	$3,712,505,829	$2,620,564,770	$19,821,299,748	$81,602,075,191
MT	$14,629,451,956	$4,430,244,606	$2,287,179,138	$2,395,322,719	$5,408,564,612	$40,511,274,596
NV	$4,236,711,357	$5,193,363,455	$4,565,346,511	$164,097,900	$804,282,891	$209,146,367,671
NM	$11,654,726,259	$4,622,802,292	$7,067,786,311	$2,461,741,365	$3,238,850,020	$98,567,625,878
OK	$31,924,967,489	$16,773,531,745	$32,840,233	0	$6,781,088,763	$175,933,722,480
OR	$8,237,043,811	$9,489,672,570	$11,913,602,274	$3,198,334,352	$37,257,178,708	$213,002,484,645
TX	$59,531,714,789	$147,682,544,644	$48,259,080,738	$6,333,237,927	$32,857,921,476	$1,201,265,765,342
UT	$2,849,584,240	$3,928,155,203	$768,151,716	$14,155,093	$8,343,607,261	$157,244,129,873
WA	$84,067,607,674	$18,078,389,368	$2,876,053,207	$505,435,568	$54,701,823,116	$397,645,668,540
WY	$3,677,600,823	$2,624,554,734	$485,486,016	$325,316,251	$6,491,023,750	$24,721,985,842

Table 9 shows an increase in the number of homes and total reconstruction value of properties at risk, as illustrated by their designated Wildfire Risk Score. Notably in Texas, only 35,016 homes were categorized as Very High risk, while more than 487,247 homes in the Lone Star state have a comprehensive risk score of 81 or above. This is a clear indication that some properties, especially those in the WUI, may not possess wildfire risk inside the parcel boundary, but may indeed be located near a high-risk area. All of the states in the table reflect a proportional increase in risk from the categorical analysis when incorporating the comprehensive 1-100 risk score calculations.

Table 9 – Residential Properties Potentially at Risk of Wildfire Damage by Risk Score

State	1-50	51-60	61-80	81-100
AZ	1,919,351	14,308	27,159	19,578
CA	8,286,708	133,654	367,457	263,319
CO	1,454,787	52,823	122,509	128,348
ID	476,310	9,554	27,868	43,423
MT	243,990	13,114	27,301	32,348
NV	848,682	2,337	9,184	7,237
NM	523,755	14,487	32,139	39,871
OK	1,250,888	1,431	2,219	735
OR	1,091,300	22,616	46,655	79,799
TX	6,458,363	197,548	487,247	451,848
UT	693,256	14,713	24,311	8,845
WA	2,192,567	8,662	17,001	21,139
WY	176,983	1,766	2,764	4,641

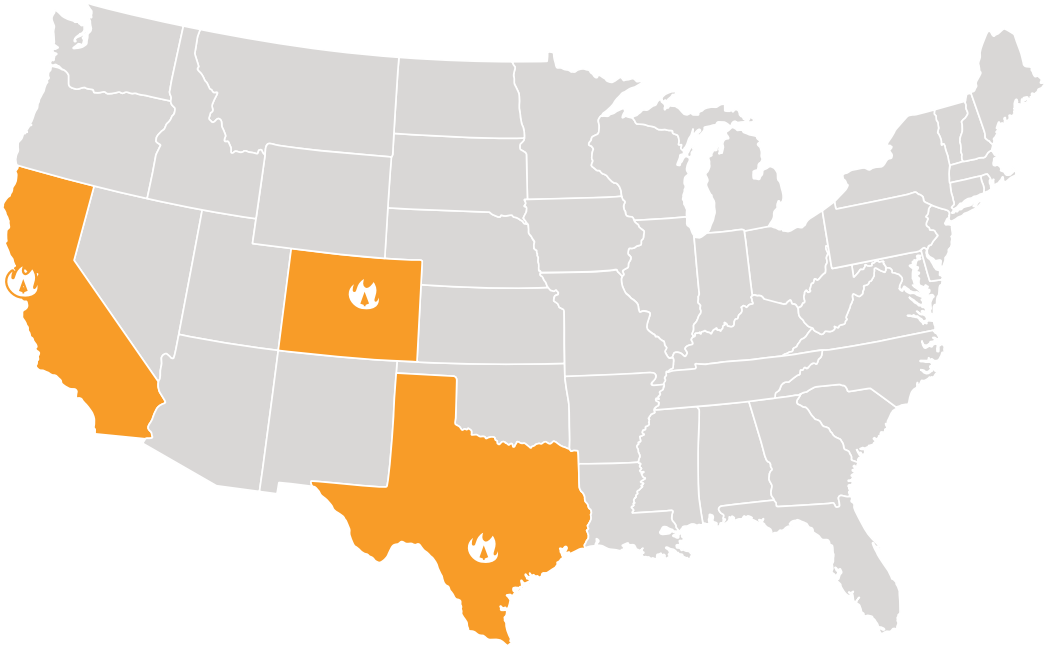
Table 10 – Total Potential Exposure (Reconstruction Value) to Wildfire Damage by Risk Score

State	1-50	51-60	61-80	81-100
AZ	$369,191,090,202	$2,781,562,044	$5,612,822,008	$4,002,789,607
CA	$2,785,871,424,591	$53,258,974,686	$153,067,995,013	$88,448,970,333
CO	$333,552,521,110	$13,769,558,737	$33,846,313,158	$36,107,351,913
ID	$102,894,072,845	$2,426,687,082	$6,899,872,812	$10,300,994,948
MT	$52,685,950,526	$2,997,541,855	$6,338,603,322	$7,639,941,924
NV	$216,436,292,731	$624,126,373	$3,860,921,144	$3,188,829,537
NM	$105,891,175,664	$3,334,262,905	$7,919,619,903	$10,468,473,653
OK	$230,716,181,496	$235,452,854	$370,084,424	$124,431,936
OR	$248,596,738,298	$5,247,235,235	$11,061,921,922	$18,192,420,905
TX	$1,276,614,038,497	$39,753,699,730	$97,535,512,589	$82,027,014,100
UT	$159,359,659,455	$4,309,214,977	$7,363,299,947	$2,115,609,007
WA	$547,066,785,312	$1,964,631,216	$3,905,374,051	$4,938,186,894
WY	$36,340,458,278	$378,445,107	$613,070,455	$993,993,576

Wildfire Risk in Major Metropolitan Areas

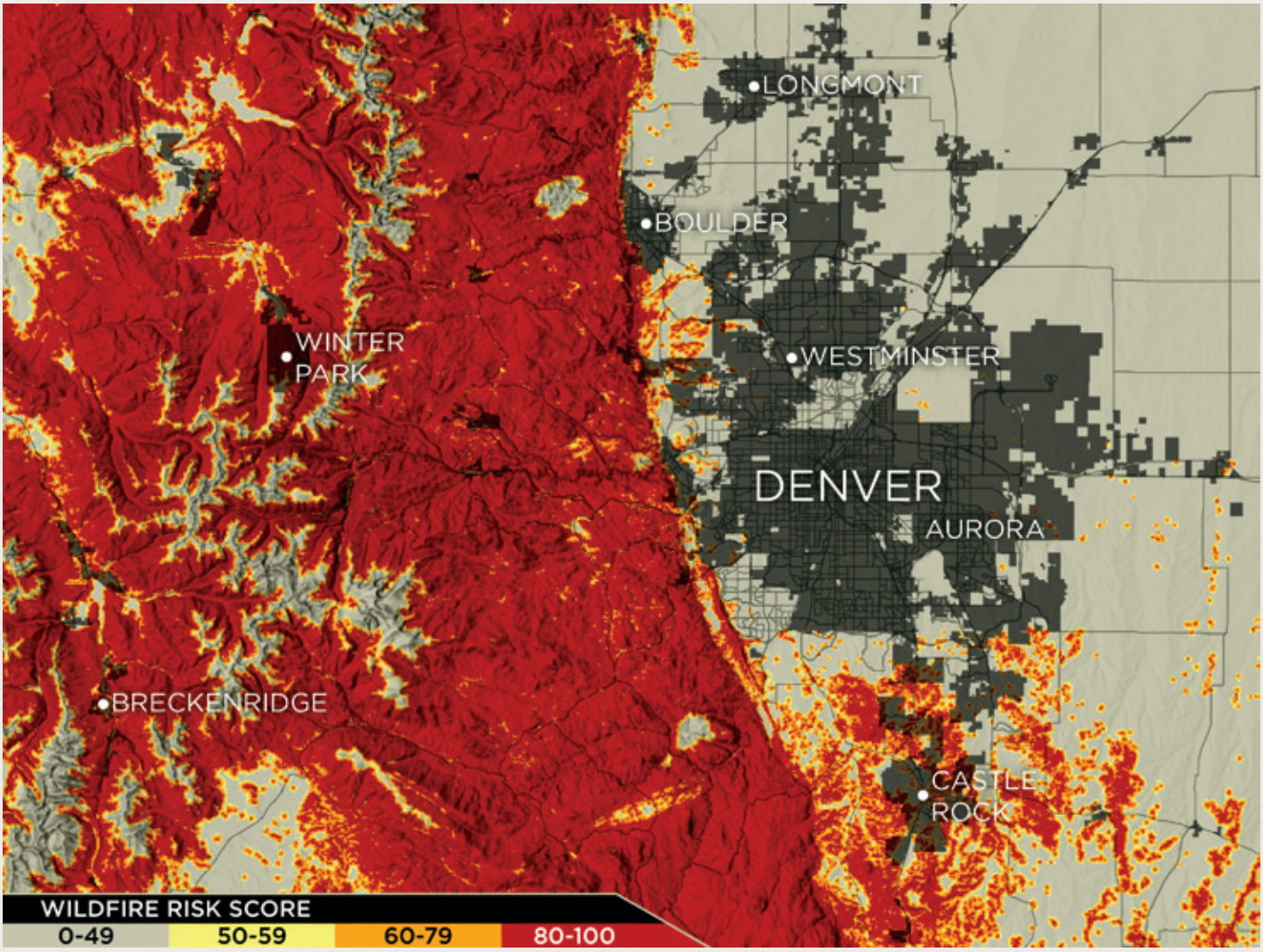
The metropolitan areas highlighted in this analysis represent Core Based Statistical Areas (CBSAs), which are defined by the Office of Management and Budget as a U.S. geographic area associated with at least one urban area or urban cluster with a population of 10,000 or more, plus any adjacent counties possessing a high degree of social and economic integration as measured through commuting ties[6]. As such, the cities identified in this report are primary urban centers, but each may contain additional urban areas. The three CBSAs that follow are intended to represent a geographic cross-section of cities at risk of wildfire. For each of these examples, a description of the area along with wildfire exposure is provided.

- **DENVER-AURORA-LAKEWOOD, CO**
- **SAN FRANCISCO-OAKLAND-HAYWARD, CA**
- **SAN ANTONIO-NEW BRAUNFELS, TX**



Denver-Aurora-Lakewood, Colo.

The largest city in Colorado is located along the Front Range and borders areas of increasing wildfire risk in the more mountainous region to the west. The highest risk areas (scoring 81+) in the Denver-Aurora-Lakewood, Colo. CBSA encompass more than 35,000 homes at an estimated reconstruction cost of more than $10 billion.



Source: CoreLogic 2015.

Denver-Aurora-Lakewood, Colo. CBSA

Wildfire Risk Category / Land Cover Class	Total Properties	Total Estimated Reconstruction Cost
Low	17,711	$5,658,963,665
Moderate	6,595	$2,337,149,495
High	12,387	$3,999,261,354
Very High	17,860	$5,358,513,217
Agriculture	7,713	$2,359,403,465
Urban	772,645	$186,839,351,611

Denver-Aurora-Lakewood, Colo. CBSA

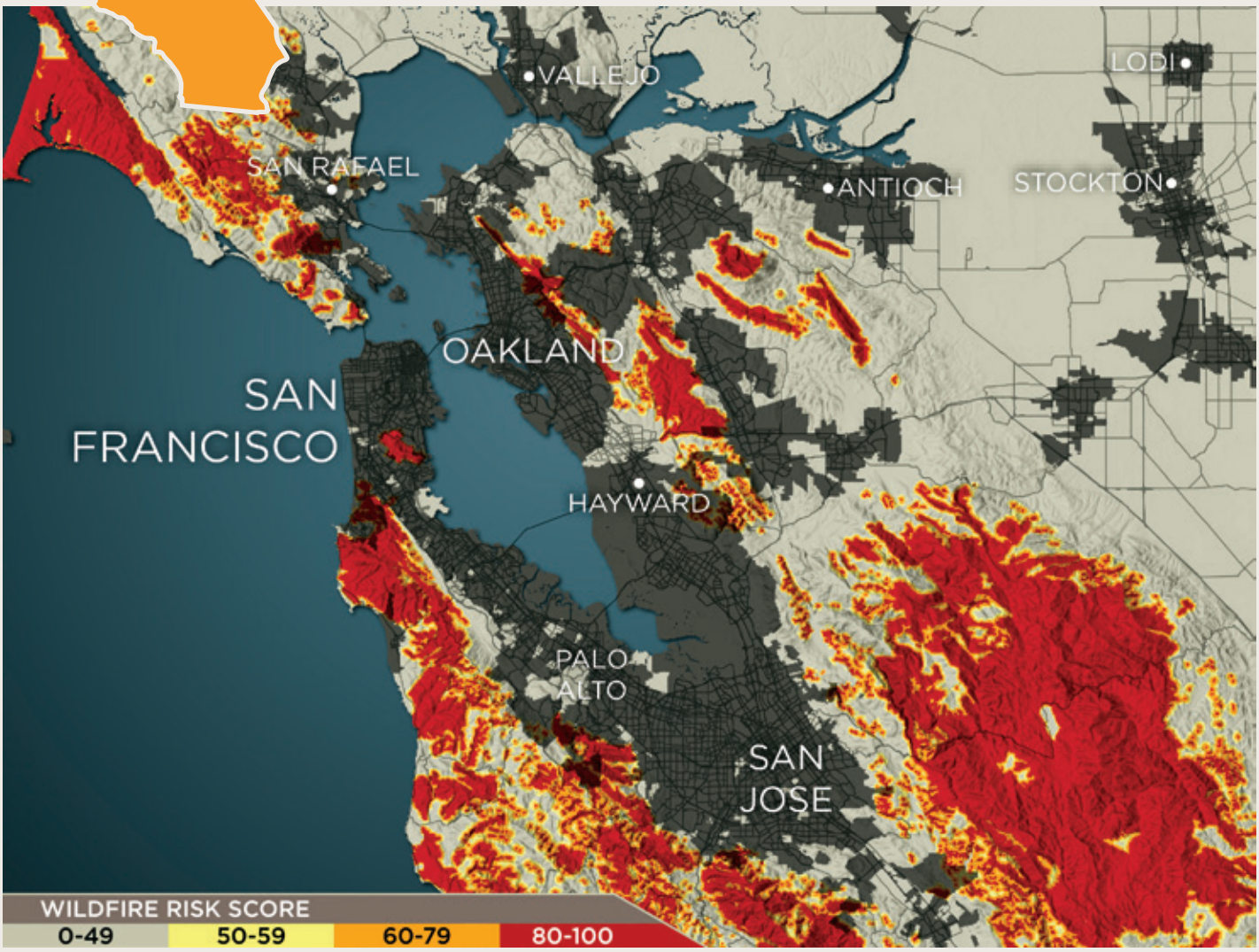
Wildfire Risk Score (1-100)	Total Properties	Total Estimated Reconstructions Cost
1-50	766,046	$ 183,613,204,003
51-60	10,705	$ 3,781,870,054
61-80	22,986	$ 8,349,940,289
81-100	35,174	$ 10,807,628,461

Denver-Aurora-Lakewood, Colo. CBSA

ZIP Code - Area Name	"81-100" Wildfire Risk Score Total Properties	"81-100" Wildfire Risk Score Total Estimated Reconstruction Cost	"Very High" Wildfire Risk Category Total Properties	"Very High" Wildfire Risk Category Total Estimated Reconstruction Cost
80439 - Evergreen	8,202	$2,909,892,154	5,847	$2,077,358,846
80433 - Conifer	3,243	$966,611,246	2,099	$630,616,535
80118 - Larkspur	1,653	$749,698,212	723	$317,652,582
80401 - Golden	2,038	$649,662,181	1,706	$540,483,210
80816 - Florissant	3,106	$636,771,398	1,552	$328,524,907
80421 - Bailey	3,345	$630,381,308	1,510	$285,171,337
80465 - Morrison	1,445	$516,811,416	783	$276,011,257
80422 - Black Hawk	2,052	$462,403,018	1,653	$369,168,800
80470 - Pine	1,584	$437,691,290	905	$250,162,856
80403 - Golden	1,773	$424,551,072	1,406	$329,148,932

San Francisco-Oakland-Hayward, Calif.

The Oakland area was the site of one of the most costly wildfires on record in the U.S. The 1991 wildfire that burned through the city destroyed more than 3,000 homes and caused more than $1.5 billion in damage[7]. Currently, there are more than 5,800 properties in the San Francisco-Oakland-Hayward, Calif. CBSA that are identified as being located in areas at the highest level of risk, with a total reconstruction value of more than $2.7 billion.



Source: CoreLogic 2015.

San Francisco-Oakland-Hayward, Calif. CBSA

Wildfire Risk Category / Land Cover Class	Total Properties	Total Estimated Reconstruction Cost
Low	14,746	$8,328,073,286
Moderate	13,084	$7,818,615,397
High	8,393	$4,050,708,046
Very High	202	$120,655,276
Agriculture	3,134	$964,948,409
Urban	1,098,393	$430,708,113,145

San Francisco-Oakland-Hayward, Calif. CBSA

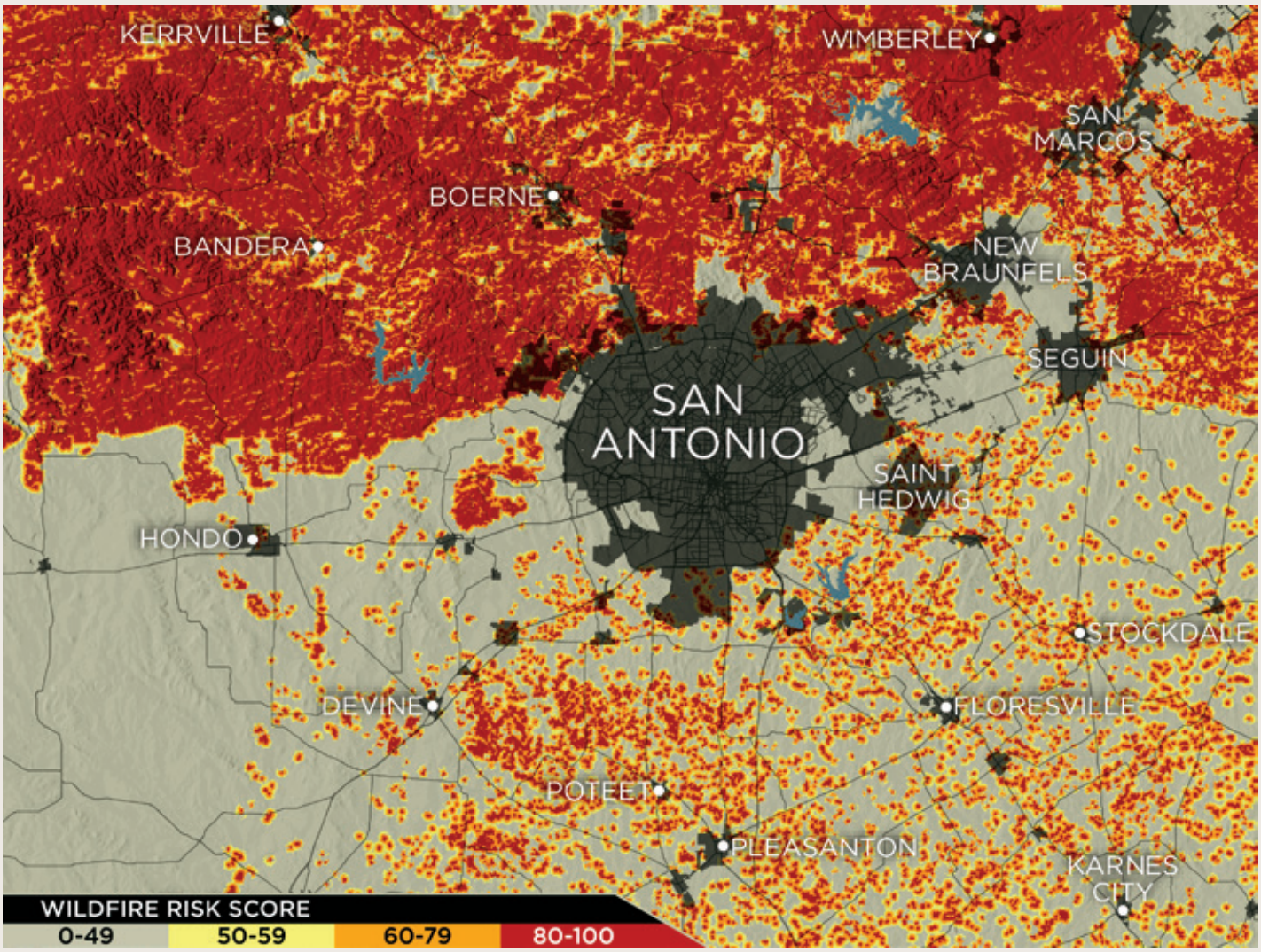
Wildfire Risk Score (1-100)	Total Properties	Total Estimated Reconstructions Cost
1-50	1,103,218	$435,637,900,349
51-60	7,610	$3,536,151,995
61-80	21,318	$10,051,838,154
81-100	5,806	$2,765,223,061

San Francisco-Oakland-Hayward, Calif. CBSA

ZIP Code - Area Name	"81-100" Wildfire Risk Score Total Properties	"81-100" Wildfire Risk Score Total Estimated Reconstruction Cost	"Very High" Wildfire Risk Category Total Properties	"Very High" Wildfire Risk Category Total Estimated Reconstruction Cost
94611 - Oakland	1,059	$669,081,018	0	$0
94937 - Inverness	643	$252,539,098	8	$2,513,964
94941 - Mill Valley	363	$235,077,992	102	$72,016,534
94019 - Half Moon Bay	415	$230,399,697	8	$3,849,980
94037 - Montara	245	$178,626,227	11	$8,200,703
94568 - Dublin	269	$158,976,711	16	$10,681,068
94973 - Woodacre	443	$141,371,546	0	$0
94044 - Pacifica	252	$111,220,205	9	$3,808,269
94708 - Berkeley	212	$107,581,804	0	$0
94552 - Castro Valley	190	$98,778,788	11	$5,262,085

San Antonio-New Braunfels, Texas

San Antonio is one of the most populous cities in Texas with a total population of more than 1.4 million[8]. In addition, it was the fastest growing city in Texas between 2000 and 2010[8]. With urban expansion, additional properties are often located nearer to wildland and areas of potentially higher wildfire risk. In the San Antonio metro area, there are more than 31,000 homes identified in the highest risk group, with a combined reconstruction cost of more than $7 billion.



Source: CoreLogic 2015.

San Antonio-New Braunfels, Texas CBSA

Wildfire Risk Category / Land Cover Class	Total Properties	Total Estimated Reconstruction Cost
Low	12,116	$2,164,783,857
Moderate	94,724	$18,319,963,352
High	16,536	$3,773,972,218
Very High	23	$5,234,235
Agriculture	9,059	$1,541,394,267
Urban	550,265	$101,692,855,325

San Antonio-New Braunfels, Texas CBSA

Wildfire Risk Score (1-100)	Total Properties	Total Estimated Reconstructions Cost
1-50	585,398	$105,547,661,243
51-60	20,903	$4,611,274,116
61-80	45,072	$10,242,056,416
81-100	31,350	$7,097,211,479

San Antonio-New Braunfels, Texas CBSA

ZIP Code - Area Name	"81-100" Wildfire Risk Score Total Properties	"81-100" Wildfire Risk Score Total Estimated Reconstruction Cost	"Very High" Wildfire Risk Category Total Properties	"Very High" Wildfire Risk Category Total Estimated Reconstruction Cost
78132 - New Braunfels	3,666	$969,867,051	8	$1,776,992
78006 - Boerne	3,013	$863,740,798	0	$0
78070 - Spring Branch	2,572	$614,552,571	0	$0
78676 - Wimberley	2,976	$600,045,311	14	$3,687,230
78133 - Canyon Lake	2,518	$487,306,626	7	$1,377,630
78666 - San Marcos	2,441	$413,216,751	2	$399,365
78063 - Pipe Creek	2,112	$355,648,234	0	$0
78023 - Helotes	1,098	$346,528,960	0	$0
78163 - Bulverde	1,284	$326,982,084	0	$0
78624 - Fredericksburg	1,405	$315,175,411	0	$0

Understanding Wildfire & Wildfire Risk

A wildfire can be characterized as an uncontrolled fire that is fueled by naturally occurring vegetation. Wildfires are not to be confused with a structure fire, since a wildfire does not typically originate inside a home or building and tends to cover a much larger area than a standard residential fire. Burn patterns can be very unpredictable, and changes in direction and intensity can occur frequently and unexpectedly.

Large wildfires can also generate their own microclimate, as they affect air temperature, wind and cloud development. From a biological perspective, they can have devastating effects on some vegetation, but yet are actually necessary in certain environments, helping to maintain the overall ecological health and biodiversity of an ecosystem. Some plant species associated with chaparral areas or conifer forests require a recurring fire regime to enable seeds to be released or to germinate, while prairie and grassland fires serve to remove invasive and competing plant species.

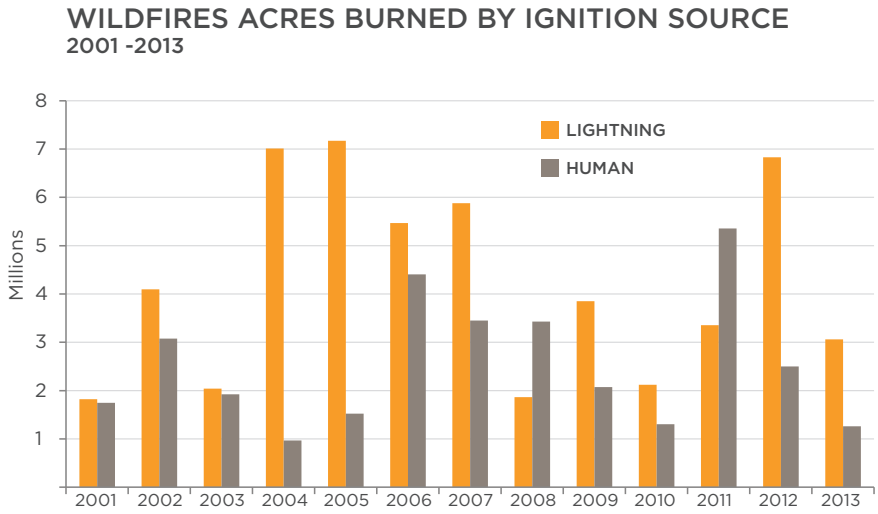
The source of ignition for wildfires in the U.S. can vary, with humans (including both accidental and intentional ignition) responsible for starting more wildfires each year than lightning strikes[1].

Wildfires occur throughout much of the U.S., but are considered a more common threat in the western states, as large expanses of wildland areas in this region contribute to the potential for large wildfires to propagate. Wildlands, as used in this context, are defined as sparsely populated regions with little to no residential development. In many areas, wildlands contain a variety of natural vegetation with some areas represented by very dense forest or brush.

In contrast to other natural hazards, such as tornados, earthquakes and hurricanes, wildfires are unique in two distinct ways. First, they are not limited to natural environmental causes. Though wildfires can be ignited naturally, for example, if lightning strikes and ignites ground-level vegetation, fires can just as easily ignite as a result of human activities, either intentionally (arson) or unintentionally (accidental). Accidental sources of ignition are many and varied, and often include carelessly discarded cigarettes, sparks from power transmission lines or campfires.

In addition to the source of ignition, wildfires differ from other natural hazards in that humans have the ability to eliminate the threat by extinguishing or containing the fire—a mitigation effort not feasible in the case of a hurricane, hail storm or other disaster. While quick termination of the fire is not always possible with wildfires, the use of air and ground equipment along with emergency response personnel may make it possible to redirect the fire movement before it has an opportunity to destroy or damage homes.

Figure 1: Acres Burned in the U.S. from Wildfires Based on Source of Ignition, 2001-2013.



Source: CoreLogic graphical representation of data from National Interagency Fire Center (NIFC), 2013.

The source of ignition for wildfires in the U.S. can vary, with humans (including both accidental and intentional ignition) responsible for starting more wildfires each year than lightning strikes[1]. That did not change in 2013, with more than four times the number of wildfires due to human ignitions. However, as Figure 1 indicates, the acreage destroyed by lightning-sourced wildfires is typically much greater than the area burned by human-induced ignitions. Only two of the 10 years shown in the graph indicate human-caused fires covering more acreage than lightning-strike ignitions. Lightning strikes were the source of ignition for three of the large 2014 fires; the Carlton Complex (Washington-256,108 acres), the Happy Camp Complex (California-134,056 acres), and the Buzzard Complex (Oregon-395,747 acres)[2].

These two factors, area burned and number of fires, seem contradictory, but are in fact based on the following premise. A wildfire that is human-ignited is often located in an area where it will be detected earlier and emergency responders will be able to access and extinguish it. On the other hand, many lightning-caused fires originate in areas that are remote from human habitation (mountainous and forested areas) in which case the fire may not be detected until it has grown to a relatively large size. Due to the size and remote location, responders are often not able to extinguish these fires quickly.

THE WILDLAND-URBAN INTERFACE

The area that has been of increasing concern for wildfire risk is where urban and residential development encroaches upon natural or wildland areas. The reason for this concern is that homes constructed near large areas of natural vegetation that are prone to wildfire activity will increase the risk for these properties. Often these developments are exceedingly large, thereby putting hundreds or even thousands of properties into harm's way. Unfortunately, as cities continue to expand, this is a likely scenario for current and future development.

Based on a 2008 report by the International Code Council, approximately 60 percent of all new homes built in the U.S. between 1990 and 2008 were constructed in the Wildland Urban Interface[9]. This will add to the more than 46 million single-family homes in the U.S. (as of 2008) that are located within this Wildland Urban Interface area. Figure 2 illustrates the progression of homes into the Wildland Urban Interface and the exposure of these properties to contact with higher wildfire risk areas.

Figure 2: Time Lapse of Residential Development in Cedar Park, TX.

Source: National Agricultural Imagery Program (NAIP), courtesy of the U.S. Geological Survey.

EVALUATING PROPERTY-LEVEL RISK

The initial risk-category analysis is based on a set of input variables that are relatively stable over time and do not reflect short-term changes in weather or climate conditions such as daily rainfall, temperature or humidity. Additionally, the CoreLogic Wildfire Risk Model does not identify ignition points or predict the progression of an existing fire, but rather is used to evaluate the relative risk that results from fuel, terrain and vegetation characteristics. The purpose of limiting the input risk to these specific variables is to provide an annual ranking of risk based on stable primary characteristics that are responsible for the occurrence of wildfire. In this manner, the risk data will provide a reliable evaluation platform that enables comparison of regions based on the same conditional criteria. It also ensures that decisions made by the insurance and mortgage industries, as well as other end users, will be consistent across a broad geographical area and the risk will not change with varying daily weather conditions.

To accurately assess and understand wildfire risk at the property level, it is necessary to evaluate it in two related, but distinctly different ways. First, risk is divided into categories based on modeling input variables related to terrain, fuel and vegetation characteristics. Fuel and vegetation characteristics are indicators of the likelihood and intensity of a wildfire based on the type and density of vegetation present and whether it is conducive to wildfire. Terrain factors, including aspect and slope, are also important considerations due to their contribution to fire ignition and movement. A south-facing slope is typically drier, and a steeper slope enables a fire to move more rapidly over the ground. All of these factors enhance the likelihood of wildfire and are, therefore, taken into account. The output that results from combining these input variables is then divided into the Low, Moderate, High, and Very High risk categories. In addition, the Urban and Agricultural categories help to accurately portray the landscape.

As the second layer of analysis, the CoreLogic Wildfire Risk Score assigns risk numerically as a means of evaluating the spatial relationship between a property boundary and another outlying high-risk area. The properties evaluated in this report received a score from 1-100, with risk defined by four ranges. A score of 50 or below indicates very little-to-no wildfire risk for the property. Homes that are located closer to the risk areas outside the property boundaries tend to have scores above 51 and would benefit, at least somewhat, from inspection and mitigation on the property. Scores in the three higher ranges (51-60, 61-80, and 81-100) are indicators of increasing risk, with the top category (81-100) indicating properties that are most susceptible to wildfire. The closer a property is to the risk area and the higher the risk level in that area, the higher the risk score will be for that home. A property that is adjacent to an area of high or very high risk will most often score above 81. Homes scoring in the two intermediate ranges are likely located farther away from very-high or high-risk areas, but should still be inspected to determine hazard.

According to CoreLogic data, of the 347 homes destroyed in the Waldo Canyon fire (Colorado, 2012), 322 of them were defined as Urban, and therefore within the Low risk category. However, based on the damage, it is likely that most of these homes fell victim to wind-driven embers that traveled from higher-risk areas outside of the property boundaries.

Since the expansion of a wildfire is not limited to movement along the ground and can just as easily migrate through airborne embers (firebrands) carried by the wind over relatively long distances, it is necessary to include an evaluation of distance to nearby high-risk areas to fully understand property exposure to wildfire. Often, a home located in an urban area may not be designated as high risk, but may be located near the "urban edge," or the boundary between property development and outlying wildland areas, and therefore in close proximity to land that faces high-wildfire risk. Basing risk assessment solely on fuel within the parcel boundary may in some cases overlook relevant risk and result in a partial evaluation. For example, windblown embers can in fact cause a significant amount of property loss, as was the case during the Waldo Canyon fire in Colorado in 2012[10]. According to CoreLogic data, of the 347 homes destroyed in the fire, 322 of them were defined as Urban, and therefore within the Low risk category. However, based on the damage, it is likely that most of these homes fell victim to wind-driven embers that traveled from higher-risk areas outside of the property boundaries.

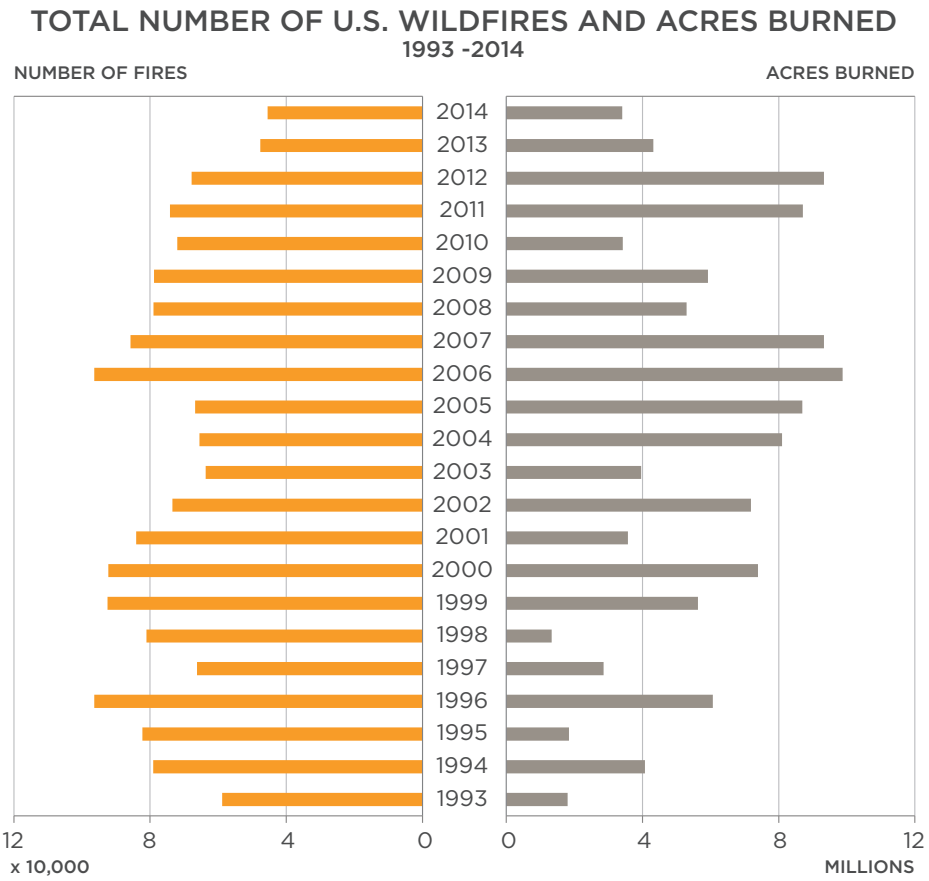
Wildfire Trends, Implications and Projections

2014: LOOKING BACK

The 2014 wildfire year was characterized by several inconsistencies. While it did continue the recent downward trend in both number of wildfires and acreage burned, it also was a year that experienced a large increase in the number of early wildfires in California[1]. Additionally, while there was an outbreak of more than a dozen wildfires in San Diego County over the course of several weeks, fortunately none grew into the type of large damaging wildfires often seen in southern California over the last 15 years. And finally, although the continued drought in the western U.S. in 2014 was considered a prelude to bigger and more damaging wildfires, few were realized.

The data provided in Figures 3 illustrates the cyclical and dynamic nature of wildfire activity. The number of fires that occurred in 2014 was an increase over the previous exceptionally low event year of 2013[1]. However, even though 2014 had 30 percent more fires than the previous year, it had nearly 20 percent fewer acres burned. The data comparison in these graphs reveals the true nature of wildfire activity, which shows that what occurs in one year often has little bearing on what will happen in the following year.

Figure 3: Total Number of U.S. Wildfires and Acres Burned (Annually).

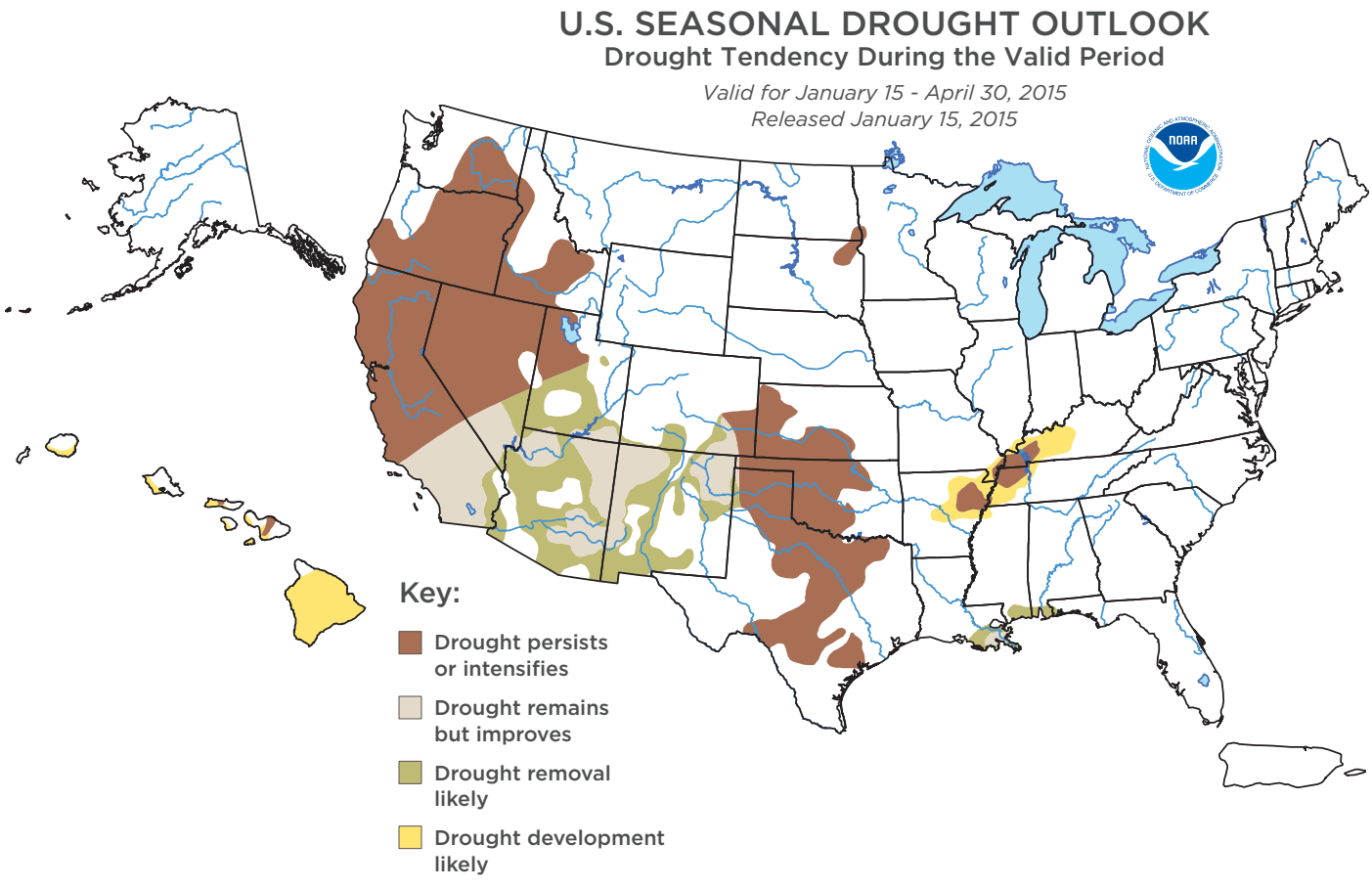


Source: CoreLogic graphical representation of data from National Interagency Fire Center (NIFC), 2014.

2015: LOOKING AHEAD

As in the past, wildfire risk in 2015 will be highly dependent upon both weather and human factors. Since this is one of only a few hazards that can be initiated directly by human influence, there is a certain amount of unpredictability associated with wildfire ignitions. Through either intentional or accidental ignitions, wildfires can occur in areas where they are not generally expected. On the other hand, lightning strikes provide a source of ignition that is more reliably predictable. However, it is precipitation and drought that are the most tangible influences on potential wildfire activity. Based on early year predictions by the National Oceanic and Atmospheric Administration (NOAA) Climate Prediction Center, the drought conditions that have plagued the western and central U.S. have been slightly reduced in scope for 2015[5]. The drought potential does remain elevated in some areas of the West, which may have an impact on wildfire risk in the coming year. Approximately two-thirds of California, along with much of the Pacific Northwest, is projected to continue to experience drought conditions during the first third of 2015 (Figure 4). In addition, a significant portion of Texas remains likely to sustain persistent drought conditions through the late winter and into the early spring. If the drought continues throughout the year, it is likely that wildfire risk will also rise in these areas.

Figure 4: 2012 Drought Outlook through April 30, 2015.



Source: NOAA National Weather Service Climate Prediction Center, U.S. Seasonal Drought Outlook, 2015.

Report Methodology

This report evaluates the potential exposure of residential properties to wildfire within a predefined geographic region of the U.S. The figures used as "values" in the tables and graphs throughout this report reflect the current reconstruction cost. To enhance both granularity and accuracy, this year's CoreLogic wildfire analysis has been expanded from prior years' analyses to encompass 10 additional categories of single-family residential structures including mobile homes, duplexes, manufactured homes and cabins, among other non-traditional home types. These new categories, which were not captured in previous reports, allow for an improved and more complete database. The values represent estimates of reconstruction costs, which are based on the cost of materials and labor and also factor in the pricing variations for both that occur due to different geographic locations in these wildfire states. The estimated values are based on 100 percent or total destruction of the residential structure. Depending on the size of the wildfire, there may be less than 100 percent damage to the residence, which would result in a lower realized reconstruction cost.

Wildfire risk is defined and presented in two forms in this report. In the first, an analysis of fuel and terrain characteristics results in a relative rank that defines wildfire risk categorically. Properties are identified by one of the following risk categories: "Low," "Moderate," "High" or "Very High." Two additional labels, "Urban" and "Agriculture," are also used as separate categorical descriptions for the purpose of accurately delineating these two important land use areas. The second type of wildfire risk analysis, the Wildfire Risk Score, is presented as a comprehensive numeric score that ranges from 1-100. The Wildfire Risk Score combines the risk category with a distance measurement from each property to the nearest high-risk area located outside that property boundary.

The risk analysis presented in the *2015 CoreLogic Wildfire Hazard Risk Report* was developed using the extensive CoreLogic ParcelPoint® database to pinpoint properties located in areas exposed to potential damage or destruction from a wildfire event. A parcel is an individual property associated with an address and is the most granular way to identify properties exposed to natural hazards. To date, CoreLogic has collected or converted (from a boundary on a paper map to a digital outline) data on more than 141 million properties in the U.S., representing more than 95 percent of the total properties in the country.

To determine residential exposure value, the company's parcel-level data is paired with the proprietary CoreLogic Wildfire Model to identify every property contained within each separate wildfire risk category. After matching each residential property to a structure valuation, the values are totaled by risk category within individual geographic areas. The final results illustrate the total number of residential properties at risk, as well as the total current reconstruction cost of those properties.

Conclusion

Even though we haven't seen the type of wildfire activity over the last few years that seemed to be thematic in the 2000s, there have been record setting wildfire events even during the recent periods of overall reduced wildfire numbers. It is important to remember, however, that the number of fires and the amount of land burned is not as relevant as location. One fire occurring in a densely populated area can do tremendous damage. With continuing residential growth in the West, the opportunity for fires to find homes and businesses is going to increase as well. This is why it has never been more important to know where wildfire risk is located and understand the likelihood of it occurring.

Awareness of wildfire hazard and geospatial knowledge of the risk as it relates to homes and businesses is vitally important for the insurance and mortgage industries, as well as for municipalities and ultimately those most directly impacted, homeowners.

As indicated in this analysis, it is crucial to evaluate the immediate threat of wildfire based on both the risk factors located within the boundary of an individual property and the proximity of adjacent undeveloped areas.

If recent wildfire trends have shown us anything, it is that wildfire risk is a real and immediate threat to many homes in the western U.S. As property development continues to expand outward from urban areas and into the Wildland-Urban Interface, the number of homes exposed to the risk and the amount of damage realized each year could continue to increase. Preparing for and mitigating the hazard begins with understanding all of the essential, relevant conditions that contribute to residential wildfire risk exposure.

ABOUT CORELOGIC

CoreLogic (NYSE: CLGX) is a leading global property information, analytics and data-enabled services provider. The company's combined data from public, contributory and proprietary sources includes over 3.5 billion records spanning more than 40 years, providing detailed coverage of property, mortgages and other encumbrances, consumer credit, tenancy, location, hazard risk and related performance information. The markets CoreLogic serves include real estate and mortgage finance, insurance, capital markets, and the public sector. CoreLogic delivers value to clients through unique data, analytics, workflow technology, advisory and managed services. Clients rely on CoreLogic to help identify and manage growth opportunities, improve performance and mitigate risk. Headquartered in Irvine, Calif., CoreLogic operates in North America, Western Europe and Asia Pacific.

SOURCES:

[1] National Interagency Fire Center Statistics, 2014.

[2] InciWeb, Incident Information Center, 2014.

[3] Firefighting crews hunker down for long haul. The Seattle Times, July 21, 2014.

[4] California Exhausts Initial Firefighting Budget Before Entering Wildfire Season, CBS SF Bay Area, 2014.

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[6] CBSA definition, U.S. Office of Management and Budget, 2013.

[7] The Oakland-Berkeley Hills Fire: An Overview. Captain Donald R. Parker, 1992.

[8] U.S. Census Bureau, 2014.

[9] International Code Council, The Blue Ribbon Panel Report on Wildland Urban Interface Fire, 2008.

[10] Lessons Learned From Waldo Canyon Fire, Adapted Communities Mitigation Assessment Team Findings, Insurance Institute for Business & Home Safety, 2013.

DISCLAIMERS:

The data in this report represents CoreLogic analysis and interpretation of wildfire risk in the United States. It is based on publically available information combined with other CoreLogic internal research and application of CoreLogic proprietary tools and information. It is not meant as a probabilistic evaluation of the potential for wildfire to occur or to address the risk determination of any particular property. CoreLogic recommends that specific analysis be performed at the property level to adequately determine the likelihood of risks for an individual parcel of land. All maps represented in the report were created by CoreLogic using CoreLogic data, current as of 2015.

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