

System Indicators

Fire Threat



Fire in the Wildland- Urban Interface (2012)

September 2013

Number of Acres by Fire Threat Class and Number of Acres that Burn Annually Within the Wildland-Urban Interface (WUI)

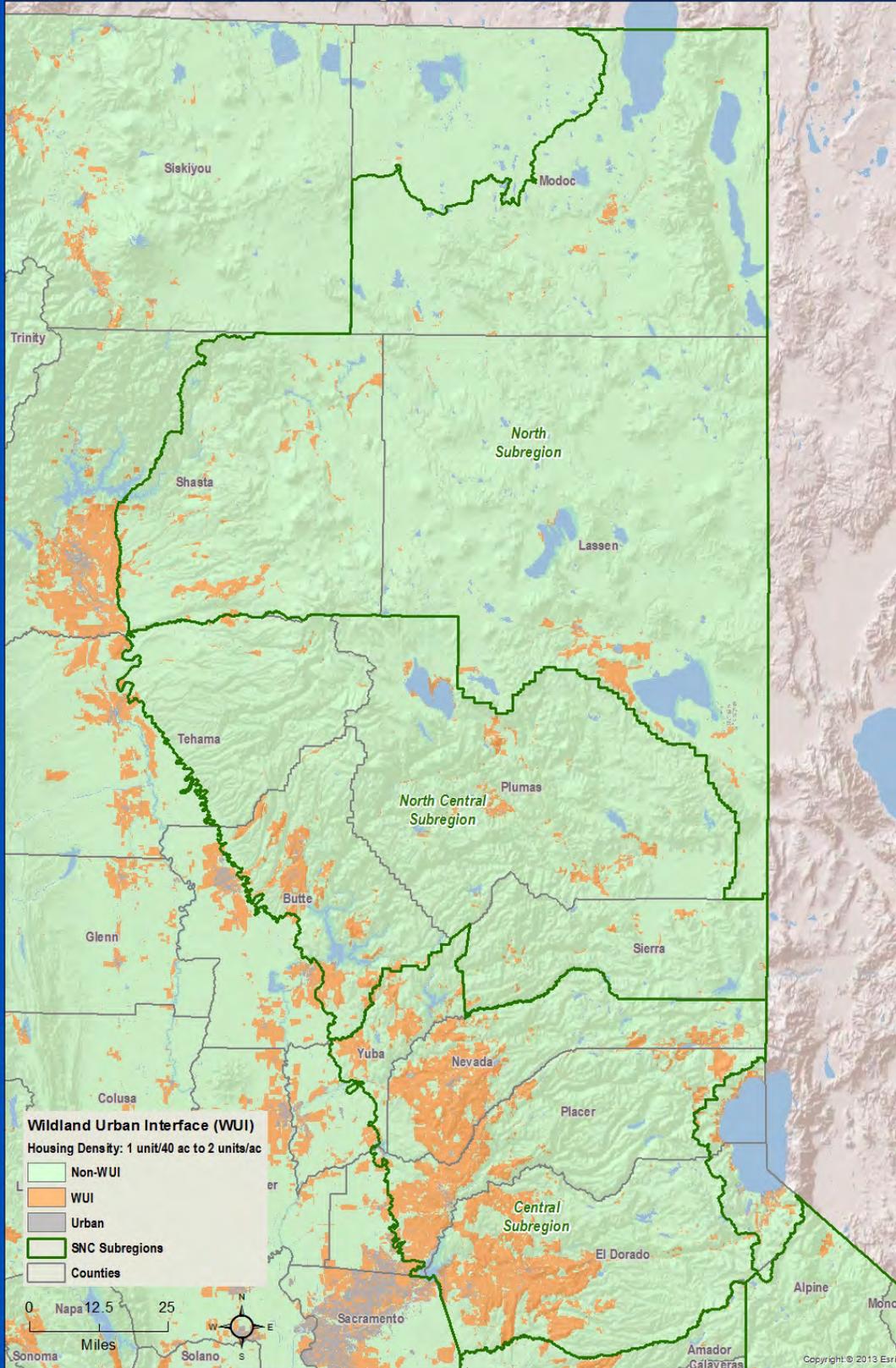
The majority of human occupation and development within the SNC Region is classified as Wildland-Urban Interface (WUI). For this report the definition of WUI comes from FRAP. WUI is based on housing density where there are no more than 2 homes (units) per acre and no less than 1 house per 40-acres. There is very little urban land in the Sierra, which is defined as more than 2 homes per acre. WUI is characterized by much more vegetation and fire risk than urban land, being more integrated into the wild landscape. The WUI is a particular complication to fire management in the Sierra. As people have moved into what were traditionally more wildland environments, fire suppression tactics have been focused first on protecting life and property, and then on the wildland fire suppression activities.

In any fire suppression action, the initial attack period - generally the first 1-2 hours of the fire - is critical in suppressing the fire while it is still small, therefore minimizing its impact or damage. Control structures associated with the WUI such as roads and fuel breaks, greatly aid the quick attack on a fire. Most areas that contain WUI have additional firefighting resources through local paid or volunteer fire protection districts paid for by local residents. However there may not be enough resources in the early stages of a significant fire to aggressively attack both the structure assets and the wildland portions of a fire at the same time. Where there is wildland involved in the incident and firefighting resources are limited in number initially, the wildland fire portion of these events have tended to grow larger as suppression and protection is targeted first at life and property. As suppression activities move from those life and property assets to the wildland, the fire may have grown to a size and intensity that makes it more difficult to contain or even manage, therefore adding to acres burned and potentially negative impacts to the environment. Along with the physical difficulty in suppressing larger fires, the increase in costs of fire suppression, and post fire restoration and mitigation costs puts an additional strain on federal, state, and local budgets.

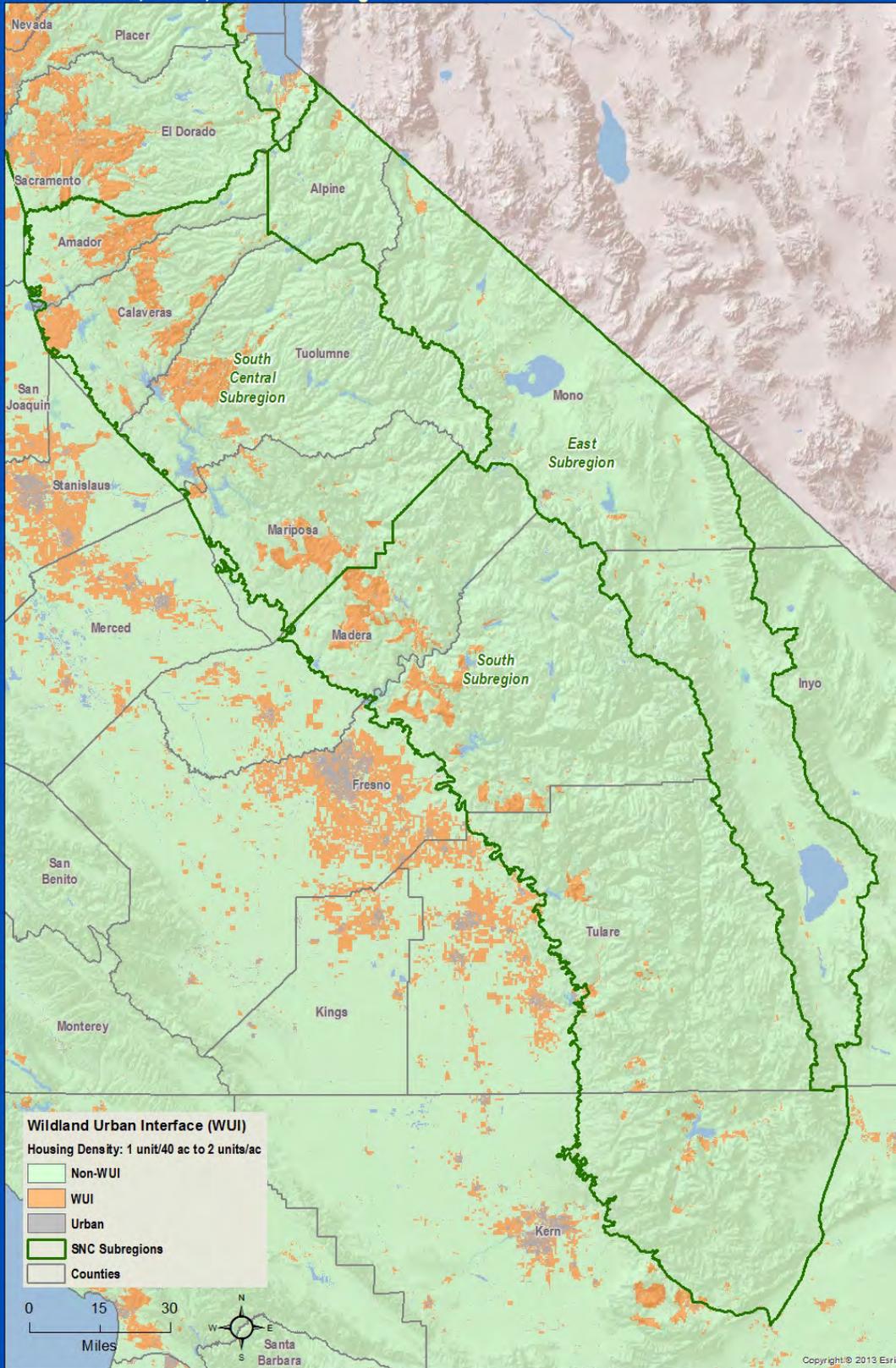
Development of historically wildland or agricultural lands is expected to continue as population pressures grow, which will increase the amount of WUI and continue to influence priorities in firefighting. Some recent changes in regulations such wider road widths and turn-around to provide greater access and egress, as well as water source requirements and building codes changes to “harden” the structures being constructed may help mitigate those impacts.

Six and one-half percent of the SNC Region land area is classified as WUI. The maps on the following two pages show the distribution of the 1.65 million acres of WUI within the Region. WUI land is represented by the orange areas.

Wildland Urban Interface (WUI)
North, North Central, and Central Subregions



Wildland Urban Interface (WUI) South Central, South, and East Subregions



Acres in WUI by Threat Class and Percent of Subregion in WUI					
Subregion	WUI in No/Moderate	WUI in High and Above	Total WUI	Total Acres in Subregion	WUI as Percent of Subregion
North	45,887	87,137	133,025	6,336,993	2.1%
North Central	34,151	136,917	171,069	3,630,250	4.7%
Central	98,570	541,503	640,073	2,575,247	24.9%
South Central	41,919	363,687	405,606	3,342,419	12.1%
South	16,352	244,654	261,006	5,857,203	4.5%
East	20,335	19,881	40,215	3,819,322	1.1%
Total Region	257,214	1,393,779	1,650,994	25,561,434	6.5%

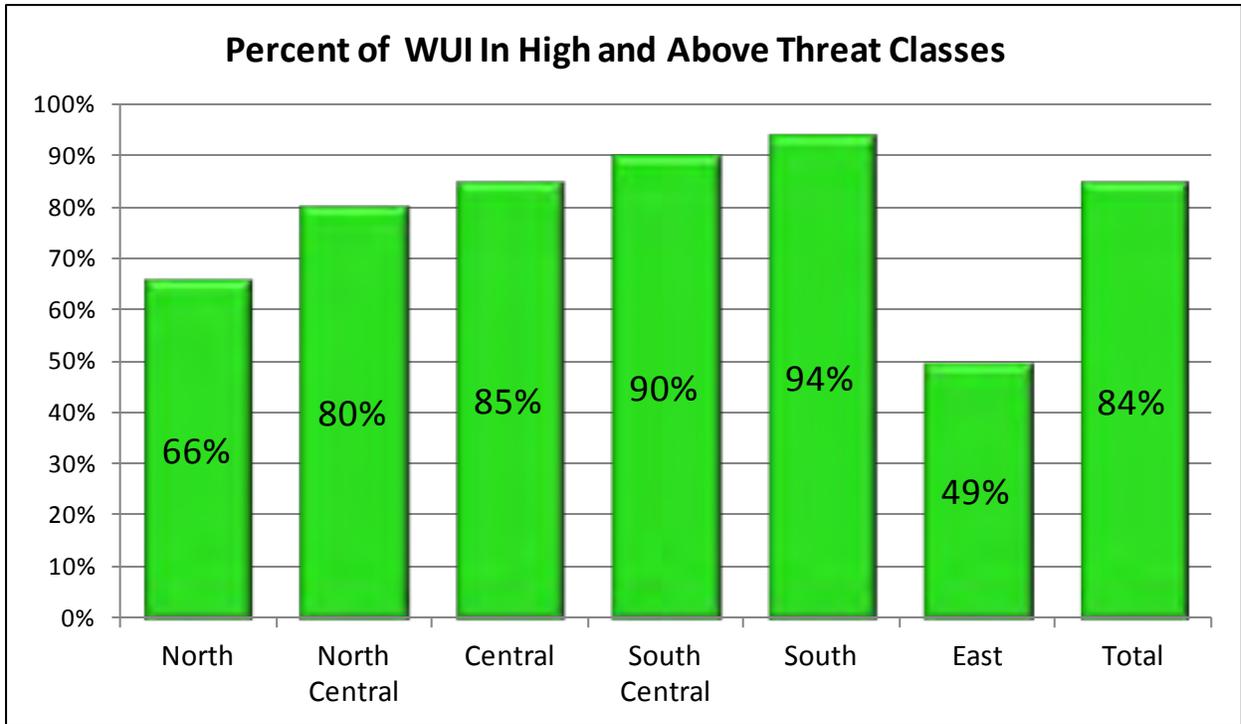
The Central Subregion contains the greatest area of WUI with over 640,000-acres, followed by the South Central with over 405,000-acres. Between them, the two Subregions account for over 63 percent of the WUI lands in the SNC Region.

The counties in the Central Subregion – particularly Placer and El Dorado – have the highest population, major transportation corridors of highways 80 and 50 that transect the Sierra, and are also within commuting distance of Sacramento. Nevada County also has a particularly large amount of WUI land.

Not only does the Central Subregion alone account for almost 39 percent of all the WUI in the Region, but WUI lands constitute nearly 25 percent of the land area of the Central Subregion. About 12 percent of the South Central Subregion is WUI. In contrast, all of the other Subregions are less than 5 percent WUI by land area, and only 1.1 percent of the East Subregion is WUI.

Acres in the WUI by Threat Class

Eighty-four percent of WUI land area is in the High and Above threat classes. As shown in the following chart, there is an interesting trend from north to south with an increasing percentage of WUI in the high threat categories. Only 66 percent of the North Subregion WUI is classified as High and Above fire threat, while 94 percent of the South Subregion WUI is within the higher fire threat classes. The Central and South Central Subregions, comprising the lion’s share of WUI land area, is over 85 percent in the High and Above threat classes. The East Subregion, with very different topography, climate and vegetation than the other Subregions has only 49 percent of its WUI in the High and Above threat classes.



Number of Acres that Burn Annually In the WUI

The portion of Sierra wildfire that occurs each year that is in the WUI is generally fairly small. As indicated in the table on the following page, in a typical year since 1998, one to three percent of total land burned in the Sierra is in the WUI. The one major exception in the past 15 years was 2004, when nearly ten percent of the burned acreage was in WUI, though this was overall a modest fire year.

In terms of threat class, generally well over 90 percent of the WUI acreage burned is on land classified as High and Above. Only in three of the past 15 years was it less than 90 percent, and most years 95 – 99 percent of WUI fire was on land classified as High and Above fire threat. (Note: Because of the small amount of WUI acreage that is classified below High threat, the Little or No and Moderate threat classes have been combined for simplification.)

Acres Burned in WUI Annually by Threat Class (1998-2012)							
Year	No & Moderate		High & Above		Total WUI Acres Burned	Total Acres Burned in Region	Percent of Total Land Burned that was in the WUI
	Acres	Percent of total WUI fire area	Acres	Percent of total WUI fire area			
1998	2	1%	254	99%	256	16,508	1.55
1999	315	5%	6,207	95%	6,522	258,735	2.52
2000	61	5%	1,285	95%	1,346	160,953	0.84
2001	78	2%	3,908	98%	3,986	148,927	2.68
2002	526	24%	1,643	76%	2,169	214,493	1.01
2003	60	5%	1,222	95%	1,282	80,453	1.59
2004	506	6%	7,520	94%	8,026	80,817	9.93
2005	51	5%	981	95%	1,032	34,199	3.02
2006	73	11%	577	89%	650	61,353	1.06
2007	177	7%	2,325	93%	2,502	160,467	1.56
2008	522	7%	6,753	93%	7,275	332,213	2.19
2009	112	10%	1,030	90%	1,142	70,663	1.62
2010	20	3%	762	97%	782	60,202	1.30
2011	112	22%	399	78%	511	80,652	0.63
2012	396	37%	679	63%	1,075	474,482	0.23

As shown in the table on the following page, the year-to-year distribution of wildfire in the WUI across Subregions has varied drastically over the past 15 years, likely driven by the happenstance of one or more larger fires in a particular Subregion. However, a cumulative total of the 15 year history for each Subregion indicates that they each “get their share’ of WUI fires over time.

As described previously, the Central Subregion has much more land in WUI than the other Subregions (and also a larger population), yet the table shows that the cumulative amount of WUI burned over the past 15 years has actually been less than some of the other Subregions, and certainly a much smaller percentage of the WUI than any other Subregion.

Acres Burned in WUI Annually by Subregion (1998-2012)							
	North	North Central	Central	South Central	South	East	Year Total
1998	0	56	0	14	186	0	256
1999	3,211	708	2,015	359	230	0	6,522
2000	6	734	15	233	306	51	1,345
2001	62	1,105	284	2,084	450	0	3,985
2002	0	259	838	44	386	642	2,169
2003	381	91	97	221	437	56	1,283
2004	2,701	197	902	3,897	156	174	8,026
2005	403	368	59	115	88	0	1,032
2006	73	57	418	90	13	0	651
2007	582	540	145	207	174	853	2,501
2008	211	4,218	903	1,942	1	0	7,275
2009	2		1,044	31	66	0	1,143
2010	11	1	71	0	700	0	783
2011	1	0	17	290	172	31	511
2012	202	465	104	248	55	0	1,074
1998-2012	7,846	8,799	6,912	9,775	3,420	1,807	

The type of vegetation involved in wildfire in the WUI provides additional insight into where WUI fire occurs. Although conifer forest is still a significant component of WUI fires, hardwood forest has been the dominant vegetation class involved in recent years when a large amount of WUI lands is burned. This is mostly west side oak woodland where there is a lot of relatively low elevation development. There is, however, a vulnerable component of conifer forest within the WUI at a little higher elevation amid the wildland forest. Herbaceous rangeland, as well as shrub and brush, are also a significant components of these high WUI fire years. This is all presented in the following chart (data provided in [Table 8](#) of the Appendix.).

