



# Construction Insights

North America Construction | Risk Engineering

## Sounding the alarm: Wildfire exposure and prevention in construction

We know certain types of construction carry inherent fire risks – wood frame construction is one such type. Building materials stored onsite can pose a fire risk. But what happens when the risk of fire and its resultant damage spreads beyond the jobsite? What happens when a single spark from a grinder, or a faulty generator, can destroy not only your project, but also businesses and homes located many miles away? That is exactly what contractors face when building in areas with elevated risk of wildfire.

By **Brian Lordson**  
Construction Risk Engineer

### Cause and Effect

According to Cal Fire, in 2019 so far, California has experienced some 6,190 wild fire incidents, burning 198,392 Acres or nearly 310 square miles.

Wildfires in the western United States, particularly in California, have become a significant concern recently, and rightfully so. The number of destructive fires has been increasing over the last decade, resulting in catastrophic life and property loss. Fuel Management, or lack thereof (at a state or federal level), can increase the amount of potential fuel for a wildfire. Before the advancement in wildland firefighting tactics and allocation of state and federal resources, fires would naturally burn off fuels as they made their way through open territories. With improvements in fire prevention and wildland firefighting tactics, some areas can go decades without seeing any wildfire activity. The result is a dramatically larger fuel source. The Urban Interface, or the transition zone between densely developed areas and open rural areas, has also become more populated in recent decades thus increasing the amount of life and structures at risk of wildfires. Further aggravating a dangerous situation include warmer weather that creates drier conditions. Right now, in late 2019, strong Santa Ana winds are helping fire burn faster and spread farther.

The goal of this article is to assess and evaluate wildfire variables so that as an industry we can reduce our exposure and reduce potentially catastrophic loss.

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**Table 1**

| Human-caused Wildfires by Acres (by State and Geographic Area) |         |            |           |           |
|--|---------|------------|-----------|-----------|
| Year   | Alaska  | California | Southwest | RockyMtns |
| 2018   | 28,946  | 1,728,565  | 309,546   | 504,416   |
| 2017   | 6,890   | 875,835    | 207,818   | 645,162   |
| 2016   | 10,069  | 558,417    | 219,103   | 530,831   |
| 2015   | 26,652  | 405,752    | 19,596    | 163,871   |
| 2014   | 222,909 | 256,047    | 74,219    | 71,823    |

Source: [National Interagency Fire Center](#)

According to the [US National Park Service](#) nearly 85% of all wildfires in the US are caused by humans or a human factor. “Human Factor” causes, as explained by the National Parks Service, are fires resulted by campfires left unattended, the burning of debris, equipment uses and malfunctions, negligently discarded cigarettes, and intentional acts of arson. This human factor is what construction companies should consider when assessing their wildfire risk. (See Table 1)

To put this devastation in perspective, the total acreage of human caused wildfires in 2018 alone is nearly the size of Connecticut. With the potential for such large-scale destruction, it is essential that contractors of all sizes understand and take steps to mitigate the risk of adding to the devastation.

## Understanding the Risks

A fire needs three things to enable it to burn: oxygen, fuel, and an ignition source; jobsites are full of all three. With wildfire risk, however, the location of the project is an important factor in understanding the extent of the risk and how much potential for damage there is once a spark becomes a flame. Even a relatively straightforward project can trigger a catastrophic wildfire when the following conditions are present:

- Hot temperatures
- Low humidity
- High winds
- Dry, ignitable vegetation
- Hills or mountainous topography that allow wildfires to strengthen

Rural areas, in particular, with large swaths of ground vegetation, brush, and dry grass can be prime locations for a wildfire to originate, especially when the above conditions are met. And contractors have no shortage of projects in rural areas, either, including:

- Power distribution
- Utility placements
- Civil bridges, roads and levies

Compared with wood frame construction, a project like a road might seem an unlikely culprit for sparking a wildfire. But standard construction practices like welding and any other types of hot work, grinding as mentioned above, or even a running motor such as a generator or vehicle also introduce a potential ignition source. For example, an errant spark from a grinder on rebar could easily touch off dried vegetation. Therefore, it is essential to take the construction environment into account, irrespective of the type of project. You especially need to be conscious of areas historically affected by wildfire, which may have a large supply of fuel nearby, and weather conditions that support large fires.

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## Fighting Fire with a Plan

Your best bet for managing this risk is to have a Wildfire Prevention Plan in place before taking on – or better still before even bidding on – any projects located in an area of even moderate wildfire risk. When putting together a plan, here’s what construction companies should consider:

### Training

- Train supervisors and employees on both the causes and control measures for wildfires, including trade-specific ignition sources (like welding sparks) and project-specific fire control plans

### Pre-Job Planning

- Understand wildfire exposure during the job bid and project estimating phase. Use the following wildfire assessment tools and resources to help identify heightened wildfire areas:
  - [Wildfire Assessment System](#); WFAS is supported and maintained at the National Interagency Fire Center (NIFC), Boise, ID. USDA Forest Service, Fire and Aviation Management, National Information Systems Team
  - [California Public Utilities Commission Heightened Wildfire Zoning Map](#)
- Understand the job location’s weather patterns and weather forecasts, including “[Red Flag Warnings](#)”. A Red Flag Warning is issued when warm temperatures, very low humidity, and stronger winds are expected to combine to produce an increased risk of fire danger. Obtain local weather and warnings through the [National Weather Service](#)
- Understand local or regional impact – how close is the jobsite to residential neighborhoods, business, utilities, and similar.
- Know what fire suppression equipment is needed for onsite crews, have the equipment ready when the work is started and ensure all crews are trained in the proper use of the equipment

### Pre-Task and Jobsite Specific Controls

- Create a daily pre-task wildfire assessment tool including the following:
  - Work Location
  - Escape routes and muster points
  - Short-term and long-term weather predictions for humidity levels, temperature, wind speed and direction
  - Vegetation types and their current condition (i.e. dry) and terrain
  - Proximity to closest staffed fire station

- Clear brush and other combustible materials from immediate work area and pre-wet areas where there are known potential ignition sources
- Ensure quick access to appropriate fire suppression hand tools and fire suppression equipment, including fire extinguishers, water trucks, and water tank trailers
- Perform equipment checks to reduce potential for a malfunction that could create an ignition source. Lock out faulty equipment for repair prior to use onsite.
- Reduce run time of common ignition sources such as trucks, heavy equipment, generators and welders, using them only as much as needed to complete the job
- Keep construction equipment and materials onsite as little as possible in fire prone areas. This will reduce loss if the construction storage area is affected by nearby fire. This includes removing equipment during weekends or off work hours

#### Communication

- Communicate concerns and expectations to your work crews who are performing work in areas of heightened wildfire risk
- Notify local fire authorities that you are performing potential high-risk work in their jurisdiction
- Develop and use “Stop Work” guidelines, that include weather monitoring, work type, and work locations. These should be easily communicated to work crews, clients, and owners’ groups

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#### Conclusion

Talk to your construction risk engineer to get ahead of the wildfire season. By understanding where your greatest exposures are today, we’ll help identify the critical actions to take so your jobsites are protected and your people are safe, no matter what the extended wildfire season may bring.

#### To learn more, contact your AXA XL Construction Risk Engineer.

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