

Fighting a WUI fire is much different than fighting a structure fire; however, as the number and size of WUI fires continue to grow, many structural departments are being called to respond to large WUI conflagrations. This means that structural engine crews must be ready to perform engine ops for an entirely different environment than the one they're used to.



# Outward Bound

**TACTICS & STRATEGIES EVERY STRUCTURAL ENGINE CREW SHOULD KNOW WHEN FIGHTING A WUI FIRE**

**BY TOM AURNHAMMER**

**W**hen an engine company responds to an incident in the wildland/urban interface (WUI), they must protect life and property, just as in structural firefighting, but they must also be prepared to mitigate many WUI-related challenges, such as access to a sufficient water supply and extremely limited ingress and egress points. Therefore it's imperative that they train for the many issues that have the potential to severely hamper or delay their operations. This is particularly true for structural firefighters whose job traditionally has not involved responding to WUI events.

As WUI fires continue to grow in size, many structural departments are being called to respond to large WUI conflagrations, which means they must be ready to perform structure protection as well as determine escape routes, maintain communication, establish safety zones and factor in weather, fuel types and topography. In short, fighting a WUI fire is much different than fighting a structure fire; therefore, structural engine crews must be ready to perform engine ops for an entirely different environment than the one they're used to.

#### **A NOTE ABOUT PREPLANNING**

Before any engine crew sets foot in the WUI, and no matter what their task is once they're there (initial

attack or structure protection), preplanning your WUI areas is a must if you want to stay ahead of the game if and when an event occurs. When preplanning, remember to assess the area's potential for losing homes and identify any major issues and potential challenges. For example, determine if the area has hydrants or static water sources. If there are no hydrants, determine how many static water sources are available and whether they could be easily accessed by an engine crew. You should also determine things like bridge load limits, steep grades on any roads/driveways and how to maneuver apparatus into a WUI area if roads are narrow or unpaved, or when the occupants are trying to use the same road to evacuate.

*Remember:* Preplanning water supply locations—and what to do if/when those locations don't work or aren't accessible—is a must for departments with and without hydrants in their area. If a failure of the water system occurs, tenders may be the only water supply option. Departments should train on nursing off a tender, drafting to feed a supply line, setting up portable tanks, and performing water shuttle operations.

**WILDLAND  
URBAN  
INTERFACE**

#### **WILDLAND FIRE-SPECIFIC HOSE & STRETCHES**

There are some considerable differences between wildland and structural fire hose and deployment tactics.

PHOTOS CRAIG DURLING

Wildland fire hose is generally constructed of cotton, linen or synthetic fiber and does not have a rubber interior lining. The advantage to this is it decreases the weight of the hose and it increases the hose's self-protecting (weeping) characteristics.

Wildland hose sizes range from  $\frac{3}{8}$  of an inch to 2½ inches, and much like a booster line, the smaller sizes can be deployed off of reels. In a progressive hoselay, backpacks can be used, which allow firefighters to create long lays in a short period of time. *Note:* The couplings on wildland hose may or may not be compatible with the threads on some structural engines.

One of the most significant and time-tested ways to knock down a wildland fire is to use a progressive hoselay.

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Understanding how to perform this type of lay in a safe and timely manner on a WUI fire is crucial to structural engine crews because it can not only protect property, it's also a quick and effective way to ensure firefighter safety.

The progressive hoselay is specifically used on the flanks of a wildland fire and may follow a handline made by hand crews, or it can also be used to create a "wet line" along the fire's edge. This lay generally includes a 1½" hose as the feeder line, with 1" hose branched off of it, usually every 100 to 150 feet. This tactic may be utilized in the WUI if your initial actions include attacking the fire and you have a sufficient water supply.

### INITIAL ATTACK VS. STRUCTURE PROTECTION

The objective of an initial attack is to stop the fire spread so that crews can extinguish the fire in a safe manner. In an initial-attack response, a well-trained and equipped engine crew may carry out a planned assignment for the incident at hand, given the fire's potential behavior in a WUI area. *Note:* Given the size of many WUI fires these days, consideration must be given to the abilities of first-arriving resources. If the fire is too large to attack safely and/or contain, initial-attack strategies will have to be revised and additional resources requested.

Structure protection in the WUI is *not* the same thing as the initial attack. Rather, it involves the basic protection of homes or other buildings from a wildland fire. Specifically, engine crews evaluate the location of the threatened structure and their ability to defend it given the surrounding area (fuels and topography), weather and fire behavior. If they determine that the structure can be saved and they have the resources to defend it, they will do so.

*Important:* Prior to performing structure protection, a risk/benefit analysis must be conducted to ensure firefighter safety. For detailed information on how to complete a risk/benefit analysis for a WUI incident, refer to the WUI section of the NWCG's Incident Response Pocket Guide (IRPG). Protecting *all* structures from a WUI fire won't always be possible due to risks to personnel, fire behavior and the availability of additional resources; therefore, you may have to use structural triage protocols.

### WHEN FIRE THREATENS A SUBDIVISION

When a WUI fire approaches a neighborhood, residential area or subdivision, engine crews should employ the following tactics and strategies:

1. Size up the situation to determine tactics and resources: Engine crews will need to quickly implement the proper tactics to defend structures from the flamefront. If, during size up, they determine that the fire is spreading more rapidly than initially reported and/or threatening multiple homes, they will need to call for additional resources.
2. Identify escape routes, safety zones and temporary refuge areas (TRAs): The use of lookouts, communications, escape routes and safety zones (LCES) is critical to the safety and survival of any firefighter



When fighting a WUI fire in a subdivision, remember to do a thorough size up to determine what actions to take, such as which houses to save and which tactics to implement.

working a WUI fire. There may be times when good safety zones or viable escape routes are identified; however, they may not be immediately accessible should extreme fire behavior occur. A TRA may be more easily developed in the WUI environment.

3. Wear all of your personal protective equipment (PPE): Although some structure protection tactics can be performed while wearing standard wildland PPE, if a building becomes involved in fire and a decision is made to attack the fire, changing into structural PPE, including SCBA, will be necessary.
4. Park in a cleared area and watch for hazards: Watch out for combustible vegetation, overhead power lines, propane tanks or any other hazards that would prevent you from making a hasty retreat.
5. Keep a charged hoseline available: Consider keeping a 50' section of hose charged and ready at the apparatus to provide additional protection to personnel and apparatus. Also, try not to let your tank water level drop below one-quarter full.
6. Try to maintain visual and radio accountability with your crew: Accountability at a WUI or structure fire can be accomplished in many different ways. For detailed information on maintaining accountability in the WUI, check out *Firescope California's Field Operations Guide* or *Firefighter Incident Safety and Accountability Guidelines—ICS 910*.
7. Top off your water tank at every opportunity: Be aware that hydrants may not always work if the water system is electrically powered and power is lost in the area, so fill up at any working hydrant, drafting station or tender that you're able to.

### STAYING MOBILE

Apparatus mobility in the WUI is extremely important given the terrain that may be encountered, as well as the fact that at any time, wind can change direction, sending embers and fire in a completely different direction and possibly threatening your apparatus and crew. To ensure firefighter and apparatus safety, crews must continuously assess fire behavior, weather, fuel types, etc., and keep the following items in mind:

- Back equipment in for a quick escape: Your apparatus and crew must be prepared to cut and run should conditions deteriorate. This means you must be prepared to disconnect hoselines at the pump panel and leave them. Also, be careful not to park the rig under trees or next to other combustible vegetation.
- Keep escape routes clear: A realistic escape route must not only be identified, it also may need to be cleared in order for crews to reach a safety zone or a TRA. If a driveway or road is being utilized, try to remove any hazards that would impede your fleeing the area. And remember: Designating one escape route is good; designating two is better.
- Avoid long hoselays: Consider using hoselays that are no longer than 200 feet. For structure protection, deploy a 1½" or 1¾" line. Also, consider using fire

hydrants to fill your tank if they're available. If you have to fill from a static water supply, you may want to use a portable pump to avoid drafting via the apparatus. The intent is to remain mobile: Come in, fill your tank and move out.

### CONCLUSION

In both structural and wildland firefighting, protecting life and property are the top priorities. But the WUI is very different from fighting a structure fire, as it has no walls to contain it. Structural engine crews that respond to WUI fires must develop a firm understanding of the growing WUI environment, WUI-specific tactics, wildland fire behavior and the risk management process if they want to successfully extinguish a WUI fire. There are many challenges in the WUI environment, but with proper training, understanding and resources, structural engine crews can become just as proficient in WUI firefighting as they are in structural firefighting. And with the growing WUI environment, the option to do so is quickly becoming a necessity. 🌀

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## What's the Difference Between Structural & Wildland Engines?

Several differences exist between what we consider typical structure fire apparatus and apparatus found in the wildland fire environment. For example, off-road capabilities, smaller pumping capacity and the ability to "pump and roll" are more the norm for wildland engines.

The National Wildfire Coordinating Group (NWCG) assigns "types" to fire engines used for wildland responses. Types 1 and 2 are generally structural fire apparatus, while types 3–7 are wildland engines (brush trucks); however, there are a few that can be considered a little of both. Type 1/Type 3 or "interface engines" generally have the staffing and pumping capacity of a structure engine and the off-road and pump-and-roll capacity of a wildland engine. See the table for the specific requirements of each type.

Requirements	Engine Type						
	Structure		Wildland				
	1	2	3	4	5	6	7
Minimum tank capacity (gal)	300	300	500	750	400	150	50
Minimum pump flow (gpm)	1,000	500	150	50	50	50	10
At rated pressure (psi)	150	150	250	100	100	100	100
Hose 2½"	1,200	1,000	-	-	-	-	-
1½"	500	500	1,000	300	300	300	-
1"	-	-	500	300	300	300	200
Ladders per NFPA 1901	Yes	Yes	-	-	-	-	-
Master stream (500 gpm)	Yes	-	-	-	-	-	-
Pump-and-roll capability	-	-	Yes	Yes	Yes	Yes	Yes
Maximum GVWR (lbs.)	-	-	-	-	26,000	19,500	14,000
Minimum personnel	4	3	3	2	2	2	2

# Text Overage