



**WILDLAND URBAN INTERFACE (WUI)
STRUCTURE PROTECTION**

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INTRODUCTION

Over the past several decades there has been a growing trend of building homes and improvements in the Wildland Urban Interface (WUI) area. Wildland Urban Interface can be defined as a location where people and their development meet or are intermixed with wildland fuels. There are two different wildland urban conditions. They are:

- **Interface Condition** – a situation where structures abut wildland. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences.
- **Intermix Condition** – a condition where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area.

A wildland fire by itself can become a complex incident. Adding structures to the equation can create further complications. Nearly every wildland urban interface fire results in responses from a variety of wildland and structural fire agencies. If the incident involves evacuation and livestock issues, then Unified Command with law enforcement and animal care and control can be anticipated. Unless properly coordinated, the mix of forces that responds to this incident can be a risk to firefighter, responder and public safety.

With mutual and automatic aid agreements being used more frequently to augment initial attack resources, the need for clear text and common terminology among emergency responders becomes even more critical. This Wildland Urban Interface (WUI) Structure Protection Chapter is designed to provide that common language for the statewide responders. It also includes guidelines and checklists to complement and enhance responders differing levels of training and experience.

DEFINITIONS

Safety Zone – a preplanned area of sufficient size and suitable location that is expected to protect fire personnel from known hazards without using fire shelters.

Temporary Refuge Area (TRA) – an identified area that firefighters can immediately take refuge for temporary shelter and short-term relief in the event that emergency egress to an established Safety Zone is compromised. Examples: lee side of structure, inside of structure, large lawn or parking area, cab of apparatus.

FIRE BEHAVIOR PREDICTION

Firefighter and public safety is the first priority in every fire management activity. Using the Standard Firefighting Orders, firefighters are guided to make a fire behavior prediction that considers the fire potential at the time of contact with the structure. If at any time risk to firefighters is determined to be too great, an alternative action should be selected.

It is important to remember that fire conditions can change very quickly, so constant observation and reassessment is necessary; the tactic selected may need to change. Tactical maneuver or agility is essential to ensure firefighter safety since legitimate Safety Zones should always be identified in the WUI environment in conjunction with a viable escape route; however, they may not always be immediately available. Often a Temporary Refuge Area (TRA) is more accessible in the WUI environment. A TRA will provide temporary shelter and short-term relief from approaching fire without the use of a fire shelter.

FIRE BEHAVIOR/STRUCTURE PROTECTION SIZE-UP

Use standardized references to validate your fire behavior prediction:

- Incident Response Pocket Guide
- Lock up, Look Down, Look Around indicators
- Extreme Fire Behavior indicators (spotting, crowning, rate of spread)
- Campbell Prediction System (CPS)
 - Know what the fire is doing at all times in order to maintain an accurate fire behavior prediction.
 - Evaluate surrounding fuels for type, height, continuity, and conditions. Observe current burning activity in order to predict flame length and intensity.
 - Consider local factors and fire history.
 - Know current weather conditions and forecasts. Consider wind speed, direction, relative humidity, temperatures.
 - Evaluate for wind shifts, micro-climates, weather indicators and hazards.
 - Evaluate location of the structure and surrounding area. Is wind and slope in alignment with topography leading to the structure? Location of the structure on the slope; canyon bottom, mid-slope, or ridge top. Is the structure in or near a chute, chimney, saddle, or other topographic hazard?

STRUCTURE TRIAGE CATEGORIES

Not Threatened - Safety Zone and TRA's are present and construction features or defensible space make it unlikely that the structure will ignite during initial fire front contact.

Threatened Defensible - Safety Zone and TRA is present and construction features, lack of defensible space, or other challenges requires firefighters to implement structure protection tactics during fire front contact.

Threatened Non-Defensible - No Safety Zone and TRA are present. Structure has challenges that do not allow firefighters to commit to stay and protect the structure.

STRUCTURE TRIAGE GUIDELINES

Factors to consider during structure triage:

- Safety Zones should be established and made available based upon predicted fire behavior.
- Temporary Refuge Areas (TRA) should be identified in the event that emergency egress to an established Safety Zone is compromised.
- Adequate space to park your apparatus safely based upon predicted fire behavior
- Adequate lookout and communication capability
- Proximity of the fuels and predicted flame length to structure, no defensible space
- Position on slope relative to fire spread, avoid narrow canyon bottoms, mid-slopes with fire below, or narrow ridges near chimneys and saddles.

- Fire behavior and intensity (the greater the intensity, the wider the defensible space needed): Narrow roads, unknown bridge limits, and septic tank locations
- Ornamental plants and combustible debris next to the structure
- Open vents, eaves, decks, and other ember traps
- Power lines
- Limited water supply flow rates and gpm output
- Property owners that remain on site
- Flammability of roof and siding (wood roof and siding, vinyl siding, along with inadequate defensible space may make structure impossible to protect)
- Timing and available resources (not having time to position resources or lack of resources to protect structure)

STRUCTURE PROTECTION GUIDELINES

DO NOT enter a structure unless you are trained, equipped, and authorized. If safe, a structure can be used as a temporary refuge. Supervisors must keep in close communication with those they supervise and adjoining forces in the area.

Equipment Placement:

- Identify escape routes and Safety Zones and TRA's and make them known to all crew members
- STAY MOBILE and wear all of your PPE
- Back equipment in for quick escape
- Park in a cleared area (watch for overhead hazards)
- Protect your equipment (park behind structure, placing structure between equipment and fire front; be aware of spot fires occurring behind you)
- Watch for hazards (drop-offs, pot holes, above-ground fuel storage, chemicals, and septic tanks)
- Keep egress route clear
- Have an engine/crew protection line charged and readily available
- Avoid long hose lays
- Try to keep sight contact with all crew members

Water Use Guidelines:

- Keep at least 100 gallons of water reserve in your tank
- Top off tank at every opportunity, use garden hose(s)
- Draft from swimming pool, hot tub, lake, stream and fishpond
- Stay mobile. Be aware that hydrants may not always work if system is electric powered and power is lost in the area
- Conserve water, avoid wetting down an area well before the fire front arrival
- Apply water only if it controls fire spread or significantly reduces heating of structure being protected
- Keep fire out of the heavier fuels
- Extinguish fire at its lowest intensity, not when it is flaring up
- Knock down fire in the lighter fuels
- Have enough water to last duration of main heat wave and to protect crew

Class A Foam/Gel Use Guidelines:

- Direct Attack with Class A Foam – apply to base of flame
- Indirect Attack with Class A Foam – lay out wet line and burn out
- Apply Class A Foam to structure (roof and siding) 10-15 minutes before fire arrives, (reapply as necessary)
- Foam or gel the structure and the vegetation immediately surrounding the structure

Preparing Structure:

- Determine if residents are home. If residents remain on scene, advise them to use structure as refuge if it is safe to do.
- For roof access, place owner's ladder at a corner of structure on side with least fire threat and away from power line drop zone.
- Clear area around above-ground fuel tank and shut off tank
- Place combustible outside furniture inside the structure
- Close windows and doors, including garage, leaving them unlocked
- Remove combustibles immediately next to the structure and scatter fire wood
- Construct fire line around out-buildings, power poles and fuel tanks
- Remove vegetation from the immediate area of the structure
- Have garden hose(s) charged and place strategically around structure for immediate use
- AS A LAST RESORT, YOU MAY NEED TO USE THE STRUCTURE AS A TEMPORARY REFUGE

STRUCTURE PROTECTION STRATEGIES

The Incident Commander (IC) or Operations Section Chief (when assigned) is responsible for establishing the strategy. The strategy should reflect a "general" plan that is broad in scope and provides direction for accomplishing the incident objectives. For example, the strategy for protecting structures on the right flank of a wildland urban interface (WUI) fire is to keep the

fire away from the homes using a coordinated direct attack with aircraft, dozers and crews. At the same time, the strategy for controlling the left flank on the same fire is to develop an indirect attack, utilizing resources to burn out along a series of small dirt roads and create a line that will stop the fire from spreading. The strategy must reflect a realistic approach for meeting the objectives for all portions of the fire.

The strategy must take into consideration the numbers and types of resources necessary to accomplish the incident objectives and the reflex time it will take to have them in position. A strategy that requires a large number of resources to execute the plan will fail if the needed resources cannot arrive in a timely fashion.

The strategy is also subject to change due to changes in weather, fire behavior, resource availability and any change to the objectives. For example, firefighters planning to burn out from a road system a mile from the fire front may be forced to change to a direct suppression strategy if a forecast calling for cool weather with accompanying moisture is predicted to arrive before the burnout can be executed.

STRUCTURE PROTECTION TACTICS

Where the strategy gives firefighters a general plan, tactics are the specific actions firefighters will take to accomplish the incident objectives. The choice of which tactic to use can come in the form of direction from the IC or the Operations Section Chief or it may be a decision made by the Division/Group Supervisor or resource leader.

The chosen tactical action must be capable of stopping the advance of the fire or prevent the fire from damaging property and do so without incurring injuries to firefighting personnel. This means that when choosing a tactical action or making a tactical plan it is very important to know what the fire behavior will be at the time firefighters engage the fire.

Making accurate fire behavior predictions in advance of the fire's arrival is the wildland firefighter's greatest challenge. Accurate predictions are difficult to make with absolute certainty and at the same time is the crux for determining if a tactical measure will be effective and safe.

Recognizing that there is always the potential for error in our fire behavior prediction means that we must compensate for the uncertainties by having alternative actions built into the plan. The key point here is to never get locked into a single plan of action.

STRUCTURE PROTECTION TACTICAL ACTIONS

Check and Go

"Check and Go" is a rapid evaluation to check for occupants to remove or rescue at a structure and determine whether or not a structure is defensible. This tactic is most appropriate when there is no Safety Zone and TRA present and fire spread, intensity, and the projected impact time of the fire front prohibit resources from taking preparation action to protect the structure. Both strike teams and task forces may perform this function. Engine Strike Team Leaders and Task Force Leaders should familiarize themselves with the target area and should sketch a

map showing structure locations and addresses. Assign individual engines to specific structures and track their movement.

Advise engine company officers that this is a hasty evaluation due to expected fire behavior and impact time, and that the purpose of the assignment is life safety of home owners and a quick evaluation of the structure for follow-up action after the fire front passes. Engine company officers must maintain positive communication with their Strike Team/Task Force Leaders. Strike Team/Task Force Leaders must provide for accountability of all their resources. Check and go is not suitable for fire crews or dozers because of the need for mobility and rapid withdrawal from the structure site.

Prep and Go

“Prep and Go” is used when no Safety Zone and TRA are present and when fire spread and intensity are too dangerous to stay in the area when the fire front arrives, and adequate time exists to prepare a structure for defense ahead of the fire front. Prep and go implies that some preparation of the structure may be safely completed prior to resources leaving the area. As with check and go, prep and go is well suited for engine strike teams and task forces.

Strike Team/Task Force Leaders should familiarize themselves with the target area and sketch maps showing the location and address of structures. Cognizant of the advancing fire front, engine companies should cautiously enter the target area allowing for a hasty retreat if necessary. As with check and go, resources should contact any occupants at the structure and advise them to evacuate if it is still safe to do so. Engine company officers should advise the Strike Team/Task Force Leader of any residents who choose to stay at the structure. Resources should engage in rapid, prioritized defense preparations, if possible, prior to leaving the structure.

Prep and Go is a suitable tactic for fire crews as long as crew vehicles are driven to the structure site and positioned for rapid retreat. Crew personnel must understand that decision points must be established for a safe retreat and that the assignment is to hastily prepare the structure for fire front impact. Minimal use of hand tools should be encouraged.

Prep and Defend

“Prep and Defend” is a tactic used when a Safety Zone and TRA are present and/or adequate time exists to safely prepare a structure for defense prior to the arrival of the fire front.

Prep and defend is an ideal multiple resource tactic especially in common neighborhoods where efforts may be coordinated over a wide area. Fire line supervisors and Incident Commanders must monitor the efforts of suppression resources throughout the engagement period to ensure the objectives of the operation are safely accomplished.

Engine strike teams should be deployed using the following rules of thumb:

- One engine per structure in isolated neighborhoods
- One engine per two structures in common neighborhoods

- Two or three engines per multi-family dwelling

Based on defense preparation priorities, deploy resources based on the probable fire impact area and where they will provide the most benefit. Structures requiring extensive preparation should receive more attention than stand alone structures. Dozers and fire crews should engage in fire line construction around individual structures, or groups of structures, and other exposures. Fire crews may also assist in the preparation of individual structures requiring extensive work. Fire Line supervisors should monitor fire progression and be prepared to divert resources away from structure defense preparation to take perimeter control action, or abandon the area if need be.

Bump and Run

“Bump and Run” is a tactic where resources typically move ahead of the fire front in the spotting zone to extinguish spot fires and hot spots, and to defend as many structures as possible. Bump and run may be effective in the early stages of an incident when the resource commitment is light and structure defense is the priority. Bump and run may also be used on fast moving incidents when there are adequate resources available, but where an effort must be made to control or steer the head and shoulders of the fire to a desired end point. Perimeter control and structure defense preparation are secondary considerations with the bump and run tactic. Resources must remain mobile during bump and run and must constantly identify escape routes to Safety Zones and Temporary Refuge Areas as they move with the fire front.

Bump and run is a defensive tactic when fire front impact in the WUI is imminent and there are not enough resources to effectively take perimeter control action. It is an offensive tactic when resources are steering the head of the fire to a desirable end point. The tactic is useful when terrain and fuels are suitable for mobile attack. Fire line supervisors and Strike Team/Task Force Leaders must realize that bump and run places resources in front of the advancing fire front and that extreme caution should be exercised.

Control lines in front of the fire should be identified and prepared with dozers and fire crews enabling the bump and run resources to direct the fire to logical end point. This is a frontal attack strategy and a watch out situation. Control lines in front of the main fire must be reinforced with retardant drops, coordinated firing operations and engine support.

Bump and run is well suited for Type 3 Engine Strike Teams and Task Forces. Strike teams and task forces engaged in bump and run must understand the tactic and the mission. Suppression efforts should be limited to extinguishing spot fires, hot spots and fire perimeter around structures and then moving on to the next structure. Lengthy structure defense preparation is not an element of bump and run nor is the suppression of structures heavily involved in fire. This presents a quandary for suppression resources engaged in structure fire protection as abandonment of the structure to the fire may create more embers, thereby, jeopardizing other structures in the immediate vicinity.

Strike Team/Task Force Leaders must coordinate the movement of their resources throughout the engagement. A sketch of the area is helpful for tracking resources as they advance with the fire front. Close communication is essential to move bump and run resources in the

desired direction and to monitor incident progress. It is incumbent on individual resources to look up, look down, and look around to see where the fire is, where it is going, and where they need to be. Resources that finish an assignment should leapfrog around engaged units to keep the process moving. Engines should utilize WUI hose brackets for rapid deployment and re-deployment of hose. Establishing long hose lays is not part of the bump and run tactic.

When adequate resources are available, engine strike teams or task forces should be deployed behind bump and run resources to extinguish any spot fires and perimeter fire still threatening the structure. If a structure is minimally involved in fire, these backup resources may engage the structure fire in an effort to control ember production or radiant heat transmission. Dozer strike teams are effective during bump and run actions, however, they are limited to perimeter control, control of large spots, control line preparation or corralling areas of multiple spot fires. Fire crews, if they are able to remain mobile, are useful using bump and run, but as a general rule, they are ineffective due to their lack of mobility.

Anchor and Hold

When the “Anchor and Hold” tactic is used, resources utilize control lines and large water streams in conjunction with fixed water supplies in an attempt to stop fire spread. The goal is to extinguish structure fires, protect exposures, and reduce ember production.

Anchor and hold can be referred to as taking a stand to stop the progression of the fire. Anchor and hold tactics are more effective in urban neighborhoods where the fire is spreading from house to house.

Establishing an anchor and hold line requires considerable planning and effort. Stopping the spread of the fire and reducing ember production with large volumes of water is the goal of anchor and hold. Anchor and hold is an excellent tactic for strike teams and task forces except dozer strike teams. One engine from the strike team or task force must be committed to a dependable fixed water supply, either a hydrant or drafting source, and supply a hose lay or supply line that covers the target area. The fixed engine should be spotted in a safe area where it can safely withstand any fire situation.

Mobile engines from the strike team or task force engaged in individual structure defense actions or perimeter control are able to re-supply from this water source as well. Mobile engines should be prepared to re-deploy to other areas should the fire escape the anchor and hold line. Ground resources, such as engine crews and fire crews should staff hose lines and be prepared to extinguish hot spots, fire perimeter, and structures. Hand crew strike teams should be deployed to construct fire control lines wherever needed and conduct firing operations.

Fire Front Following

“Fire Front Following” is a follow-up tactic employed when check and go, prep and go, or bump and run tactics are initially used. Staged resources are deployed after the passage of the fire front to engage in perimeter control, spot fire and hot spot control, or engage in structure fire control on partially involved structures.

The use of a staffed staging area cannot be over emphasized during fire front following actions. Staged resources must be prepared to respond to areas of the fire deemed safe after the fire has passed through. As the fire front advances, resources should move into the burned area as soon as it is safe.

The goal of "Fire Front Following" is to extinguish spot fires around structures, control hot spots and reduce ember production. If prep and go or bump and run tactics are used, fire front following resources should find that many of the structures in the target area are not involved in fire but may still be threatened by spot fires or creeping fire. Engines should quickly size up the structure and deploy hose lines to mitigate the threats.

"Fire Front Following" is an ideal tactic for strike teams and task forces, especially less mobile Type 1 and 2 Engine Strike Teams. The task force concept is particularly useful when a water tender is added to the task force. A mixture of Type 3 and Type 1 or 2 Engines allows the Task Force Leader to deploy into tight spots as well as more open areas.

Fire crew strike teams should be deployed to cover and grid large portions of the burned area behind the fire front, controlling fire spread and extinguishing spot fire and hot spots around the structures. They may also engage in perimeter control as needed.

Tactical Patrol

"Tactical Patrol" should be initiated after the main fire front has passed and flames have subsided but when the threat to structures still remains.

This tactic should be used to extinguish hot spots or secondary structure ignitions, and address safety issues such as power lines, weakened trees, and other hazards. The key element of the patrol tactic is to remain mobile, actively seek threats, and continuously monitor the tactical area while taking appropriate actions to defend structures and secure perimeter lines.

Tactical Patrol is an essential part of controlling the fire and is very well suited for task forces and engine strike teams of all types; but especially Type 1 and 2 Strike Teams. Strike Team/Task Force Leaders should deploy their resources over a wide area and encourage crew personnel to quickly recon their assignment area on foot. Hot spots and creeping fires should be extinguished immediately and monitored throughout the operational period. Structures should be checked and monitored for extension; personnel should gain entry into any structure that may be involved in fire. Fire crew strike teams should be deployed to grid the burn area and extinguish any hot spots they find. Fire crews should work in tandem with engines but should be encouraged to use back pumps as well. Dozer strike teams are very limited during patrol operations but should be available for escape contingencies.

**APPENDIX A
WILDLAND FIRE MANAGEMENT GUIDING PRINCIPLES**

1. Firefighter and public safety is the first priority in every fire management activity.
2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
3. Fire Management Plans, programs and activities support land and resource management plans and their implementation.
4. Sound risk management is a foundation for all fire management activities.
5. Fire management programs and activities are economically viable, based upon values to be protected, cost and land and resource management.
6. Fire Management Plans and activities are based upon the best available science.
7. Fire Management Plans and activities incorporate public health and environmental quality considerations.
8. Federal State, tribal, local interagency and international coordination and cooperation are essential.
9. Standardization of policies and procedures among federal wildland fire management agencies is an ongoing objective.

**APPENDIX B
RISK MANAGEMENT PROCESS**

Step 1 Situation Awareness

Gather Information
Objective(s) Previous Fire Behavior
Communication
Weather Forecast
Who's in Charge?
Local Factors
Scout the Fire

Step 5 Evaluate

Personnel: Low experience level with local factors?
Distracted from primary tasks?
Fatigue or stress reaction?
Hazardous attitude?
The Situation: What is changing?
Are strategy and tactics working?

Step 2 Hazard Assessment

Estimate Potential Fire Behavior Hazards
Look Up/Down/Around Indicators
Identify Tactical Hazards
Watch Outs
What other safety hazards exist?
Consider severity vs. probability?

Step 3 Hazard Control

Firefighting Orders
LCES Checklist – MANDATORY
Anchor Point
Downhill Checklist (if applicable)
What other controls are necessary?

Step 4 Decision Point

Are controls in place for identified hazards?
NO – Reassess situation
YES – Next question

Are selected tactics based on expected fire behavior?
NO – Reassess situation
YES – Next question

Have instructions been given and understood?
NO – Reassess situation
YES – Initiate action

APPENDIX C LCES CHECKLIST

LCES must be established and known to ALL firefighters BEFORE it is needed.

LOOKOUT(S)

- Experienced/Competent/Trusted
- Enough lookouts at good vantage points
- Knowledge of crew locations
- Knowledge of escape and safety locations
- Knowledge of trigger/decision points
- Map, Weather Kit, Watch, IAP

COMMUNICATIONS(S)

- Radio frequencies confirmed
- Backup procedures and check-in times established
- Provide updates on any situation change
- Sound alarm early, not late

ESCAPE ROUTE(S)

- More than one escape route
- Avoid steep uphill escape routes
- Scouted: Loose Soils/Rocks/Vegetation
- Timed: Slowest Person, Fatigue and Temperature Factors
- Marked: Flagged for day or night
- Evaluate: Escape Time vs. Rate of Spread
- Vehicles parked for escape

SAFETY ZONE(S)

- Survivable without a fire shelter
- Back into clean burn
- Natural Features: Rock Areas/Water/Meadows
- Constructed Sites: Clear Cuts/Roads/Helispots
- Scouted for size and hazards
- Upslope?
- Downwind?
- Heavy Fuels?
- Escape time and Safety Zone size requirements
- Will change as fire behavior changes
- More heat impact = Larger Safety Zone

APPENDIX D STRUCTURE ASSESSMENT CHECKLIST

Address/Property Name

- Numerical street address, ranch name, etc.
- Number of residents on site

Road Access

- Road surface (paved, gravel, unimproved, dirt)
- Adequate width, vegetation clearance and Safety Zones along road
- Undercarriage problems (4x4 access only)
- Turnouts and turnarounds
- Bridges (load limits)
- Stream crossings (approach angle, crossing depth and surface)
- Terrain (road slope, location on slope-near chimneys, saddles, canyon bottom)
- Grade (greater than 15%)

Structure/Building

- Single residence or multi-complex, out building (barn, storage)
- Does building have unknown or hazardous materials?
- Exterior walls (stucco or other noncombustible, wood frame, vinyl, wood shake)
- Large unprotected windows facing heat source Proximity of any aboveground fuel tanks (LPG, propane, etc.)
- Roof material (wood shake, asphalt, noncombustible)
- Eaves (covered with little overhang, exposed with large overhang)
- Other features (wood deck, wood patio cover and furniture, wood fencing)

Clearances/Exposures/Defensible Space

- Structure location (narrow ridge, canyon, mid-slope, chimney)
- Adequate clearance around structure-minimum of 100 feet (steeper the slope, the more clearance required)
- Surrounding fuels (larger, denser the fuels, the more clearance required)
- Flammable fuels (trees, ladder fuel, shrubs) adjacent to structure (is there time for removing these fuels?)
- Other combustibles near structure (wood piles, furniture, fuel tanks)
- Is there adequate clearance around fuel tank?
- Power lines or transformers (DO NOT park under lines)

Hazardous Materials

- Chemicals (Look for DOT/NFPA/UN symbols)
- Pesticides and herbicides
- Petroleum products
- Paint products

Water Sources

- Hydrant/standpipe (When connecting with hydrant, be aware of flow rate and gpm output, size and venting capability of engine or water tender may not be able to handle hydrants with high flow and gpm rates.)
- Storage tank
- Swimming pool
- Hot tub
- Fish pond
- Irrigation ditch

Evacuation

- Is safe evacuation possible? (Identify safe refuge for those who cannot be evacuated.)
- Coordinate with on-scene law enforcement and emergency services personnel.

Estimated Resources for Protection

- Number(s) and type(s) of engines, water tenders, crews, dozers (General Guidelines: one engine per structure, one additional engine for every four structures to be used as “backup” and for patrol. For structures that are close together (50 feet or less), one engine may be adequate to protect two structures.)
- Type and number of aircraft available

APPENDIX E POWERLINE SAFETY

- Downed conductor on vehicle: stay in vehicle until the power company arrives.
- If the vehicle is on fire or fire is near, jump clear, keep feet together and don't hang on.
- Smoke, water, and retardant are all good conductors and can cause power line-to-ground arc.
- Don't operate heavy equipment under power lines
- Don't use right-of-way as a jump or cargo drop spot
- Don't drive with long antennas under power lines
- Don't fuel vehicles under power lines
- Don't stand near power lines during retardant drops
- Don't park under power lines
- Don't apply straight stream to power lines