



Wildland Fire Scenario Timeline

Assumptions and Challenges for Leveraging LTE in Wildland Fire

Incident Occurrence:

T = 0 Minutes

Initial report of a growing fire on land shared by private, State, Bureau of Land Management (BLM), and Native American reservation jurisdictions comes into a local U.S. Forest Service district station via landline.



- Fire suppression and volunteer crews dispatched to suppress the fire and monitor for additional hazards.
- Limited access to GIS databases requires Air Tactical Group Supervisor (ATGS) to fly a mission to identify possible access routes to the fire.
- U.S. Forest Service district station track the fire and send initial attack incident commanders to the scene.
- Incident commanders anticipated the fire spread and request additional resource in preparation for a large fire.
- Public awareness of the fire causes major increases in cell phone usage in the neighboring communities.

What's possible with FirstNet?

- CSFDC uses BLM GIS databases to analyze surrounding areas and identify best entry and escape routes, safe zones, and water resources.
- Anticipating that the fire will spread, State requests a SatCOLT from AT&T to boost coverage in affected areas.
- Chatgroups are established for each responding agency and across agencies for quick, efficient information sharing.

Response/Operations:

T = +12 Hours

Fire suppression maneuvers begin as fire expands to 1,000 acres.

- Two Single Engine Air Tankers (SEAT) drop fire retardant on North and South boundaries of fire to aid in containment, and BLM helicopters transport eight firefighters to begin suppression efforts.
- Limited local cell service is further impacted by heavy public use, which prevents firefighters from being able to monitor changing weather conditions.
- Helicopters relay information on growing fire size to dispatch center, which then relays to Incident Command via landline.
- Department of Corrections (DOC) volunteer firefighter crews hike up to fire with LMR radios and satellite phones as the only direct links to Incident Command.

What's possible with FirstNet?

- FirstNet deployable arrives on-scene and is used to boost coverage and capacity in the affected area.
- Priority and preemption provides FirstNet users uninterrupted access to all of AT&T's commercial bands, including Band 14.
- DOC volunteer firefighter crews use their (BYOD and government-issued) devices to access real-time video of the spreading wildfire. New affected area maps are disseminated via a public safety application.
- Incident Command receives real-time images and video of North and South boundaries from SEATs and distributes this information to BLM firefighters.
- All fire personnel perform Personnel Accountability Reports using an application, which reduces radio traffic.

Response/Operations:

T = + 24 Hours

Responders and fire crews from multiple agencies arrive on fire scene as wildland fire expands to 10,000 acres and continues growing.

- BLM helicopters conduct early morning size-up and reports to the geographical area coordination center (GACC) and IC via radio that fire burned into Northeast.
- All responders communicate using LMR radios with standard mutual aid channels and GPS capabilities.
- The GACC requests and moves a type 2 team to the fire staging area. Additional resources ordered from local, state, and federal jurisdictions significantly increase the number of talk group participants. Radio systems may require work-around.
- Cellphone usage continues to be spotty.

What's possible with FirstNet?

- Wearables, cameras, and other integrated devices provide firefighters with real-time situational awareness as information becomes available.
- Real-time videos, images, and maps allow Incident Command to efficiently provide local media with updated and targeted evacuation plans for nearby locales.
- Hotshot crews' physiological monitoring sensors transmit vital signs and environmental information back to Incident Command.
- Using personnel tracker applications, Incident Command can redirect the closest teams to a shifting fire line and provides a backup for LMR communications and GPS capabilities.
- Chatgroups allow for streamlined and immediate redistribution of information, which reduces the misinformation that naturally occurs when relaying information verbally whether on the radio, over the phone, or in-person.

Response/Operations:

T = +36 Hours

Hotshot teams work to contain fire as it shifts directions. Temperatures and wind speeds increase.



- Alpha Hotshot Crew experiences spotty radio and satellite phone contact with Command Post and heads into danger zone with unpredictable winds blowing the fire.
- Linked repeaters are dispatched to the field to provide radio communications.
- Overall radio communications become overloaded as different agencies attempt to use the same direct channels, causing interference in overlap areas.
- Fire overtakes local town where evacuation orders had been in place.
- Cell networks are jammed and completely non-functional.

What's possible with FirstNet?

- Alpha Hotshot Crew is able to maintain interoperable communications with other fire agencies, police, and EMS in an integrated communications network, as well as access critical weather data.
- Priority and preemption allows all first responders (e.g., federal, state, local) across disciplines to maintain communications and facilitate an orderly evacuation despite heavy local cell phone use (e.g., posting videos to social media). Special needs/private ambulance transport services' communications are elevated from extended primary users to primary users given their role in evacuations.

Containment:

T = +48 Hours

Fire begins to die out due to continued changes in weather conditions. Clean-up begins as resources are released. Search and Rescue teams are dispatched to local town to haul away debris, look for trapped people, and assess the damage.



- Teams searching for survivors find the street signs and house numbers burnt and illegible.

What's possible with FirstNet?

- Search and Rescue (SAR) teams remotely access Google Earth and other GIS mapping databases to identify the missing street names and specific address locations.
- SAR teams quickly cross-reference hospital intake records and local shelters to find all survivors and help reunite them with family.
- Social media reports are vetted for critical information that can lead to rescue.