911-Connected Smoke and CO Alarms: *Assuring Universal Access to 911*

There is no doubt that since their inception, conventional smoke and CO alarms have saved numerous lives and property from the dangers of fire and carbon monoxide. But many conventional alarms today still employ technology from the 1970s and 1980s. Advancements in wireless communications and computer networking technologies are continually being integrated into devices and systems in almost every industry, creating the *Internet of* Things. These advancements are also being employed in public safety and emergency services communications systems and devices.

911-connected wireless smart alarm innovations address the limitations of existing conventional single-station residential smoke or CO alarms, including the latest WiFi enabled smoke/CO alarms. The main limitations include being unable to directly notify a 911 center of the fire/CO emergency when persons are incapacitated, away from home, disabled, or are otherwise unable to make a 911 call.

In most fire or CO emergencies, the building occupants are in a state of anxiety and may have difficulties using a land-line or mobile phone to call 911. Often these phones are located inside the building where these individuals are attempting to evacuate. Taking time to locate a phone, dial 911, and articulate the emergency is a known challenge for most people during an emergency who are in a heightened state of fear—even more for children, the elderly, or disabled persons. Even if the alerted occupants evacuate to safety, the actual call to 911 is typically delayed.

The latest WiFi-only enabled wireless smoke/CO alarms are not self-contained units and require a separate on-site WiFi router and personal computer equipment to send a emergency notification. Such separate unprotected equipment can be vulnerable to fire or heat damage even before the WiFi alarm senses smoke or fire, or can relay an emergency signal.

Further, other features of existing WiFi alarms that include “call forwarding” to specified off-premises mobile phones are also limited because users need the mobile phone device in close proximity, and then must confirm the emergency notification when they are away from the premises. If they receive an alert while driving, the heightened anxiety and distractions can cause additional traffic safety issues.

Meanwhile, before the authorities are contacted, critical time is elapsing, and the fire emergency is growing, causing potential loss of life, increased fire damage to the property, and elevated danger to first responders.

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