



# AGENDA REPORT

**TO:** Edward D. Reiskin  
City Administrator

**FROM:** Reginald Freeman  
Fire Chief

**SUBJECT:** Wildfire Sensors Pilot Program

**DATE:** December 14, 2022

City Administrator Approval

Date: Jan 5, 2023

## **RECOMMENDATION**

**Staff Recommends That The City Council Adopt A Resolution Authorizing The City Administrator To Enter Into An Agreement With The U.S. Department Of Homeland Security To Allow The Oakland Fire Department to Participate In A Twenty-Four Month Pilot Program To Utilize Air Quality Sensor-Based Real-Time Wildfire Monitoring System Technology (“Wildfire Sensors”) In Oakland’s High Fire Hazard Severity Zone**

## **EXECUTIVE SUMMARY**

The threat of catastrophic wildfire is nothing new in the Oakland Hills and the impact of such an event would be felt in all corners of the city. The goal of this agreement with the Department of Homeland Security is identify where technology solutions can be brought in line with other commercially available products to advance Oakland’s citywide efforts to prevent wildfires.

## **BACKGROUND / LEGISLATIVE HISTORY**

In terms of acreage burned from wildfires, the last several years in California have been some of the worst in history. In 2020 alone, fires burned over 4 million acres, claiming thousands of homes and taking over 30 human lives. However, primarily due to the department’s pre-planning, aggressive operational engagement, and comprehensive vegetation management program, Oakland has been spared from these types of catastrophic events since the devastating Oakland-Berkeley hills fire in 1991.

Meanwhile, the Oakland Fire Department continues to seek out effective strategies to prevent the starting and spreading of wildfires within its’ jurisdiction. Entities are starting to implement technological solutions to reduce wildfire spread through the use of sensors that can detect and warn fire departments and communities of deadly blazes in the incipient phase. Early detection and suppression of fire is critical in the prevention of catastrophic wildfire.

In 2022, Oakland Fire Chief Freeman began conversations with the Department of Homeland Security regarding the possibility of having Oakland participate in a pilot program to test the use of real time smoke sensors, similar to those that are currently being placed in the Lake Tahoe region as well as San Bernardino County.

City Council  
January 17, 2023

## **ANALYSIS AND POLICY ALTERNATIVES**

Wildfires across the state continue to threaten lives, homes, and critical infrastructure. This proposed pilot agreement with the Department of Homeland Security would allow the City to utilize technology that would detect signs of wildfires that could devastate a city like Oakland and is in line with the citywide priority of providing holistic community safety.

Hamburg-based environmental analytics company Breeze Technologies has been selected as an industry partner for a new wildfire sensor workstream by the Department of Homeland Security (DHS) Science and Technology Directorate (S&T). The project is part of the Smart Cities Internet of Things Innovation (SCITI) Labs.

An aim of the program is for the Department of Homeland Security to identify a development roadmap that works together with a commercialization path that advances the science and engineering aspects of this technology, and the availability of these capabilities to assist emergency response – from the Federal Emergency Management Agency (FEMA) to state and local emergency management to civilians.

Capabilities evaluated in this pilot phase will focus on real-time and continuous identification of heat sources and smoke to detect ignition location, track fire perimeter, track fire characteristics, and allow for geographically targeted notifications and warnings. The Oakland Fire Department foresees short and long-term benefits from entering into this agreement and hopes it will assist in both rapid response and how resources are allocated. The Department is also optimistic the agreement will introduce another key innovation into the fire service that could be applied in neighboring jurisdictions that face similar fire risks.

The sensors monitor common air quality parameters only. There is no audio, visual, or other surveillance technologies in the sensors. The sensors are continuously monitored from a remote location to provide real time sensing and response to fires.

As part of the pilot program, Oakland Fire is responsible for identifying approximately 25 strategic locations where the sensors could be installed within the wildland urban interface(WUI) (**Attachment A: Oakland WUI Sensor Locations** ). All proposed locations are on public property.

In 2021, The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) successfully tested four prototype technologies for early detection of wildfires in California. The evaluation was conducted during a controlled, prescribed burn at the Dye Creek Preserve near Red Bluff, California, in partnership with the California Department of Forestry and Fire Protection (CAL FIRE) and The Nature Conservancy. Additional observers included partners from the California Governor’s Office of Emergency Services and the U.S. Fire Administration (USFA).

The test was the second phase of S&T’s Wildland Urban Interface (WUI) wildfire sensor technology program, part of the Smart Cities Internet of Things Innovation (SCITI) Labs initiative, which brings together government and private sector partners to identify

technologies that meet first responders' operational needs and ensure the nation's critical infrastructure remains secure and resilient.

During testing via prescribed burn, the prototype sensors were deployed at various distances from the ignition point and were monitored to establish time and distance for alert generation. The demonstration provided further evidence that the sensor technologies can provide a valuable resource for first responders and the public at large.

The proposed pilot project in Oakland is the next phase in testing and implementation of this new technology. The anticipated duration of the pilot is twenty-four (24) months. The pilot project would monitor air quality changes only, there is no audio, visual, or other surveillance capability with the technology being deployed. Adoption of this resolution is in alignment the citywide priority of Holistic Community Safety.

### **FISCAL IMPACT**

As a condition of this agreement, there is no cost to the City of Oakland.

There are no personnel costs associated with this grant.

### **PUBLIC OUTREACH / INTEREST**

No outreach was deemed necessary for the proposed policy action beyond the standard City Council agenda noticing procedures. OFD will be presenting this concept to various community organizations in the High Fire Hazard Severity Zone once the agreement is adopted.

### **COORDINATION**

The Office of the City Attorney was consulted in the preparation of this report.

### **SUSTAINABLE OPPORTUNITIES**

***Economic:*** The adoption of this agreement and the information the sensors provide has the potential to limit the short- and long-term financial impact caused by a wildfire event.

***Environmental:*** The adoption of this resolution has the potential to prevent major wildfires which can disrupt transportation, communications, power and gas services, and water supply. Wildfires also lead to a deterioration of the air quality, and loss of property, crops, resources, animals, and people.

***Race and Equity:*** Underprivileged communities have higher deaths due to disasters, higher property damages, and, in their wake, disasters often increase poverty. There is a significant benefit related to preventing such events through the use of this type of technology.

**ACTION REQUESTED OF THE CITY COUNCIL**

Staff Recommends That The City Council Adopt A Resolution Authorizing The City Administrator To Enter Into An Agreement With The U.S. Department Of Homeland Security To Allow The Oakland Fire Department to Participate In A Twenty-Four Month Pilot Program To Utilize Air Quality Sensor-Based Real-Time Wildfire Monitoring System Technology ("Wildfire Sensors") In Oakland's High Fire Hazard Severity Zone

For questions regarding this report, please contact Captain Jesse Kupers at 510.238.4080.

Respectfully submitted,



---

Reginald D. Freeman  
Fire Chief

Attachment (1)  
A: Oakland WUI Sensor Locations