IAFC
International Association of Fire Chiefs



Wildfire Data Innovation Lab

March 26, 2024

Welcome

Chief Jeff Dulin, IAFC

:10 / 8:00am – 8:10am

Fire Data Analysis Working Group (FireDAWG)

Dedicated to advancing the practice and adoption of fire and all-hazards data analysis.

Aug 2022
- Inaugural Mtg
- Over 200 people
- Defined this group

Aug 2023 — FRI: **Defining Success in Fire Data Analytic Products**

2023 Analysis-Driven Decision-Making Workshop Series

Dec 2023 — TSI: **Innovation and R&D in Fire Data Analysis**

2024 Igniting the Future Workshop Series

March 2024 — **BETA** ½ Day Innovation Lab — WUI: **Wildfire Innovation Lab**

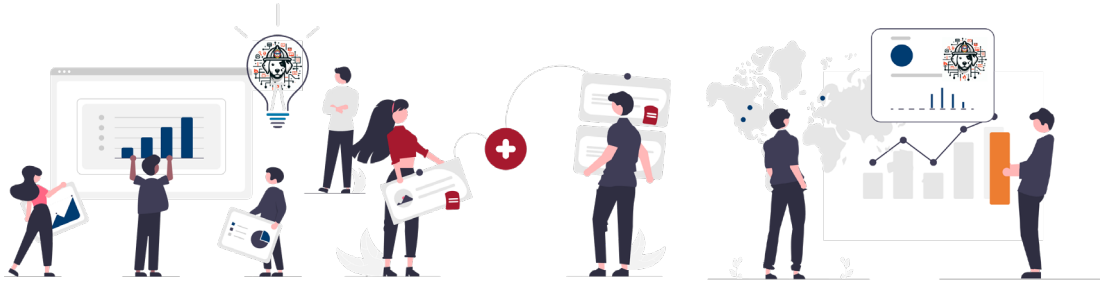
June 2024 — **New** Partnered webinars! — Joint webinar with NAPSG

Full Day Innovation Forums!

Aug 2024 — FRI: **Fueling the Future with Data**

Dec 2024 — TSI: **Fire Data Revolution**

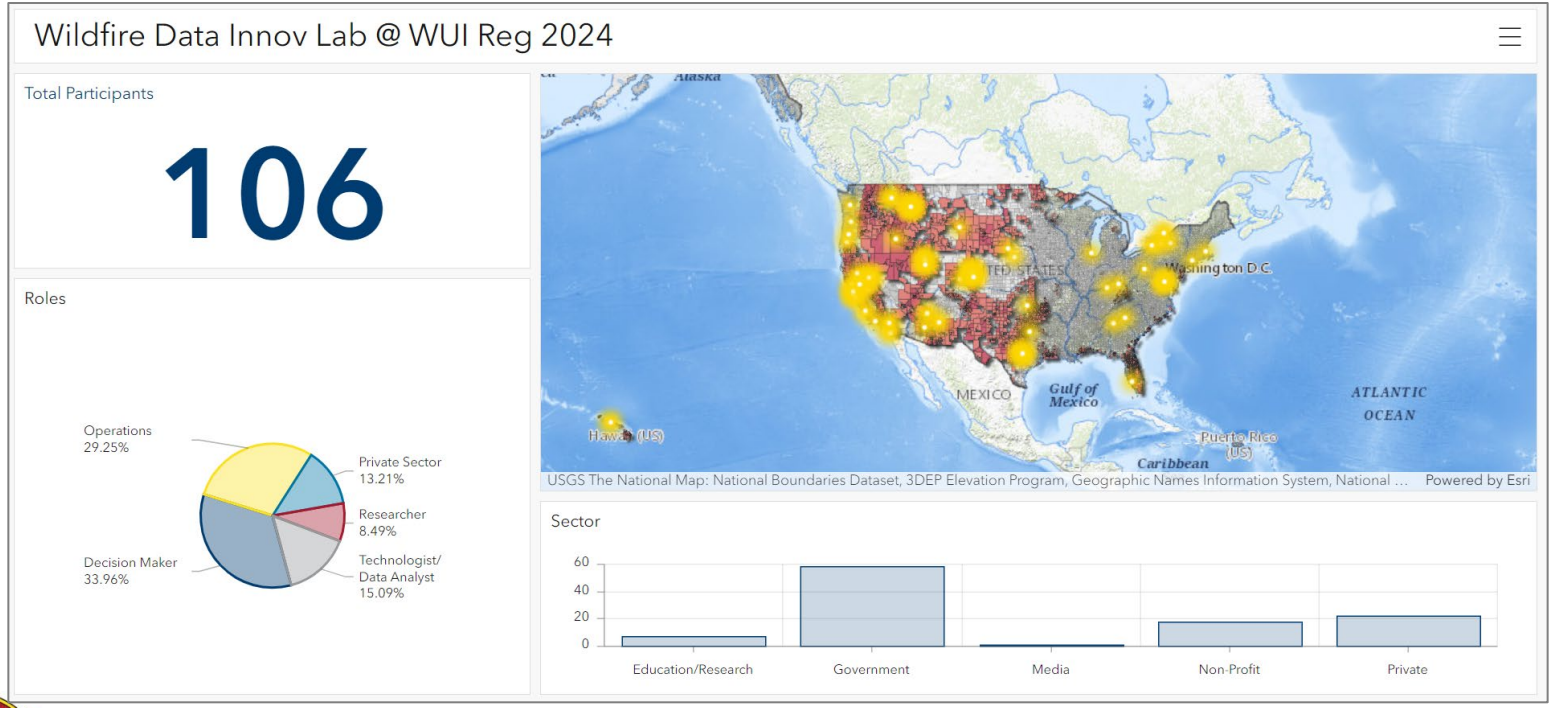
2025+ — Continued success



Wildfire Data Innovation Lab – March 26, 2024

www.iafc.org

Who is Here?



https://iafc.maps.arcgis.com/apps/dashboards/5bcbe9d6de3e40a4b3a9da380b01a8f1

Agenda

Time	Title	Speaker
8:00 am - 8:10 am	**Welcome!**	Chief Jeff Dulin, IAFC
8:10 am - 8:40 am	**Situational Awareness and Wildfire Detection with AI**	Rachael Brady, ALERTWest
8:40 am - 9:00 am	**Building Tomorrow's Fire Suppression with FireSat**	Kate Dargan, FireSAT
9:00 am - 9:20 am	**Data-Driven Wildfire Preparedness**	Braniff A. Davis, Geospatial Analyst Senior, Austin Fire Department, Wildfire Division
9:20 am - 9:35 am	**Break**	
9:35 am - 9:55 am	**Achieving Nationwide Awareness on WUI Exposure Using GIS Technology**	Brian Metzgar, Fire Protection Engineer, National Fire & EMS Division, USFA
9:55 am - 10:15 am	**Sparking Innovation: Using Data & StoryMaps to Design Wildfire Tabletop Exercises**	Craig Daughtery, IAFC Wildfire Policy Committee (WFPC)
10:15 am - 10:45 am	**Bridging the Gap: From Data Insights to Actionable Solutions**	Panel Discussion
10:45 am - 11:25 am	**The Wildfire Wild West: Untaming Data**	Breakout Group Discussions
11:25 am - 11:30 am	**Closing**	Chief Jeff Dulin, IAFC
11:30 am - 12:30 am	**Hosted Lunch**	Open mic jam session!

Situational Awareness and Wildfire Detection with AI

Rachael Brady, ALERTWest

:30 / 8:10am – 8:40am



ALERT West

SITUATIONAL AWARENESS AND WILDFIRE DETECTION WITH AI

> The success of this project are the fires you never hear about.
>
> - Phillip SeLegue, CAL FIRE Staff Chief of Fire Intelligence - LA Times

Rachael Brady

Director of Strategic Growth

"The camera network helped me the day fire came to my neighborhood and provided me with the situational awareness I needed to make decisions."

I spent 13 years with CAL FIRE, before loosing my childhood home to a utility caused wildfire in 2020. I joined ALERTWest in 2024 to help expand the network from predominately California to throughout the United States.



THE **ALERT** ECOSYSTEM

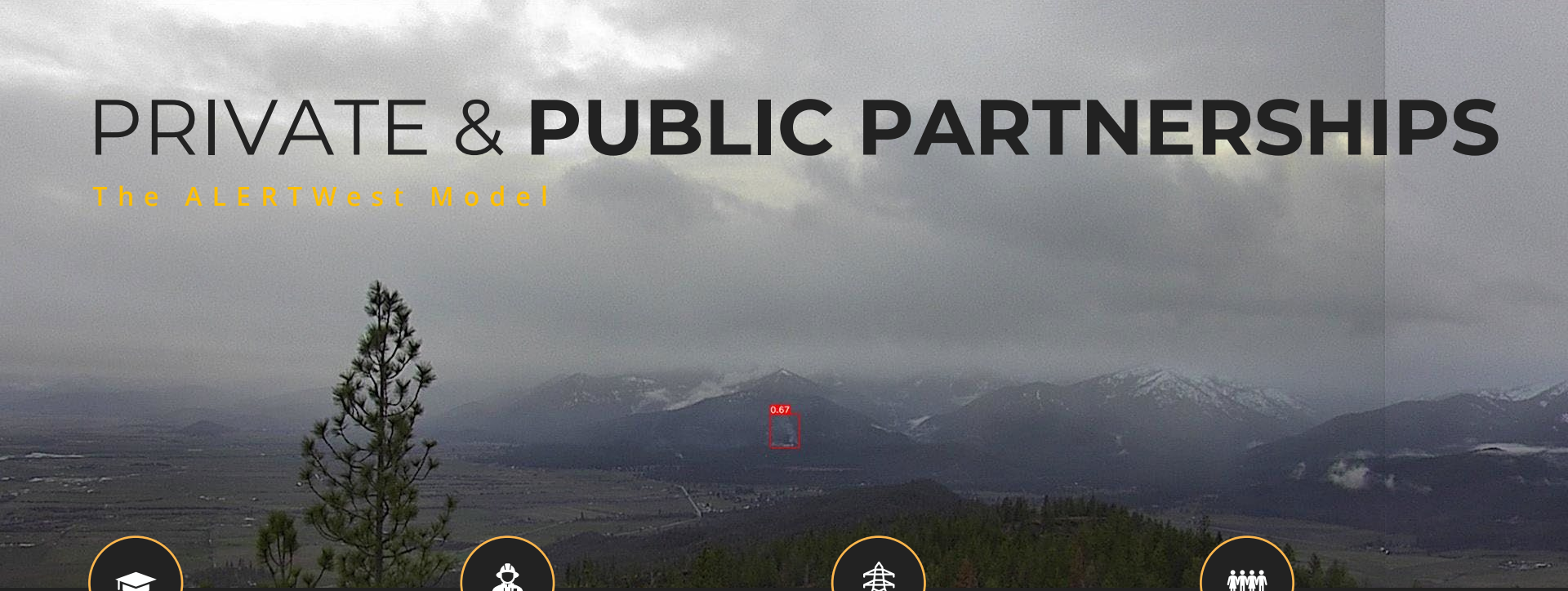
The Model of Public and Private Partnerships



ALERTWest was born out of the private and public partnership between Digital Path (our parent company) and the University of California San Diego, that built the ALERTCalifornia platform. ALERTWest was then created to bring the same private and public partnership model of collaboration throughout the United States and the world.

PRIVATE & **PUBLIC PARTNERSHIPS**

The ALERTWest Model



UNIVERSITIES

The ALERTWest Situational Awareness Platform assists universities in their research projects, providing a treasure trove of data.

FIRST RESPONDERS

The ALERTWest Situational Awareness Platform was built with the first responder in mind. Simple and easy to use, even when big things are happening.

INFRASTRUCTURE

The ALERTWest Situational Awareness Platform provides all infrastructure organizations and agencies real-time awareness of their network.

PUBLIC

The ALERTWest Situational Awareness Platform allows the public to view what is happening. Public Awareness around disasters helps prevents panic situations.

UNIVERSITY **PARTNERSHIPS**

The ALERTWest Model



CUTTING EDGE RESEARCH

University partnerships enable cutting-edge research on wildfires and other disasters. This allows us to bring research to the frontline.

LOCAL ENGAGEMENT

University partnerships help foster local engagement and program support.

LEVERAGE FUNDING

University partnerships allow the program to leverage funding from multiple sources. Bring multiple funding sources together for the greatest public benefit.

MUTI-JURISDICTIONAL COLLABORATIONS

University partnerships are the backbone of multi-jurisdictional and cross-cutting collaborations.

UNIVERSITY **PARTNERS**

BECOME OUR NEXT UNIVERSITY PARTNER



ALERTCalifornia

The ALERTCalifornia initiative has been led by the University of California San Diego.



OHAZ

The OHAZ Initiative has been led by the University of Oregon.



ALERTNevada

The ALERTNevada initiative has been led by University of Nevada Reno's Seismological Lab.



SITUATIONAL AWARENESS FOR

DISASTERS

Situational Awareness Platform

ALERTWest has the gold standard for a situational awareness platform.

AI Wildfire Detection

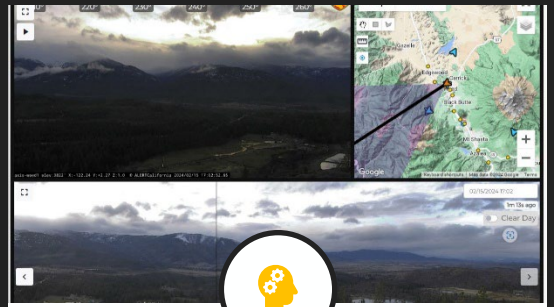
The leader in day and night AI wildfire detection.

Support

We are here every step of the way from camera install to AI detection.

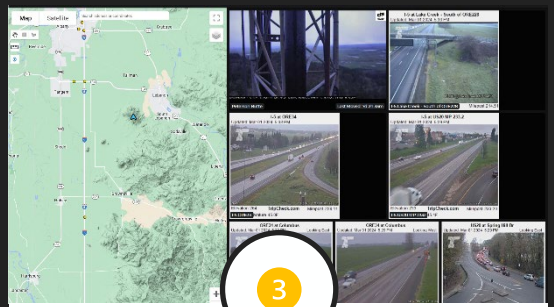
SITUATIONAL AWARENESS **PLATFORM**

THE GOLD STANDARD OF SITUATIONAL AWARENESS



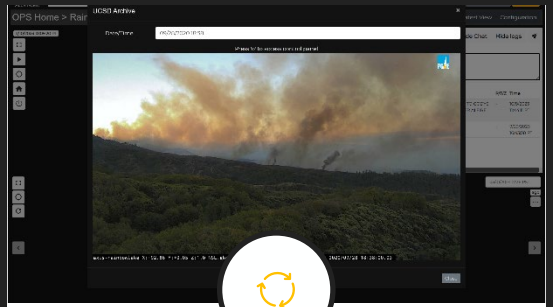
INTUITIVE AND EASY TO USE

Users can simply click on images to move and/or zoom cameras. Users have ability to control multiple cameras from a single webpage.



3RD PARTY CAMERA INTEGRATION

We can integrate existing camera networks. We are already integrating FAA and DOT cameras. If you already have a camera system, bring into our interface.

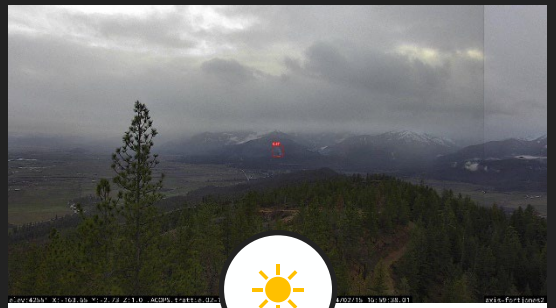


HISTORICAL ARCHIVE FOOTAGE

We create a historical archive of footage that serves as a valuable resource. The repository of historical imagery plays a crucial role in fire investigations, research, and training.

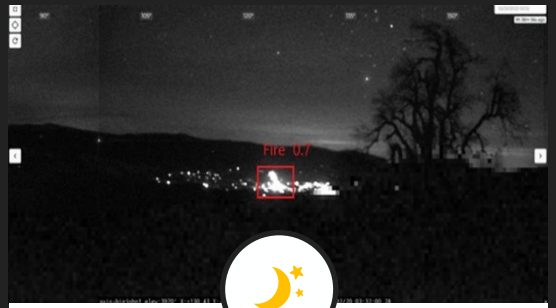
AI WILDFIRE DETECTION

DETECTION WITHIN THE PLATFORM



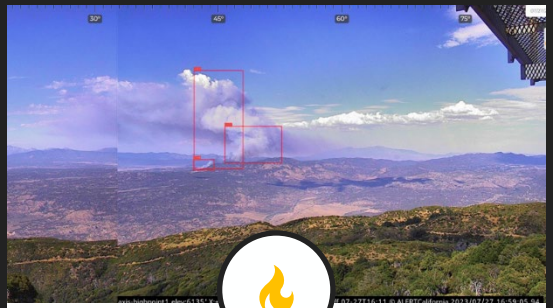
DAYTIME AI

Our daytime AI Wildfire Detection model routinely beats 911 call reporting over 30% of the time, according to feedback from CAL FIRE as part of the partnership with ALERTCalifornia.



NIGHTTIME AI

Our nighttime AI Wildfire Detection model has proven extremely effective, with one camera even detecting a structure fire over 50 miles away.

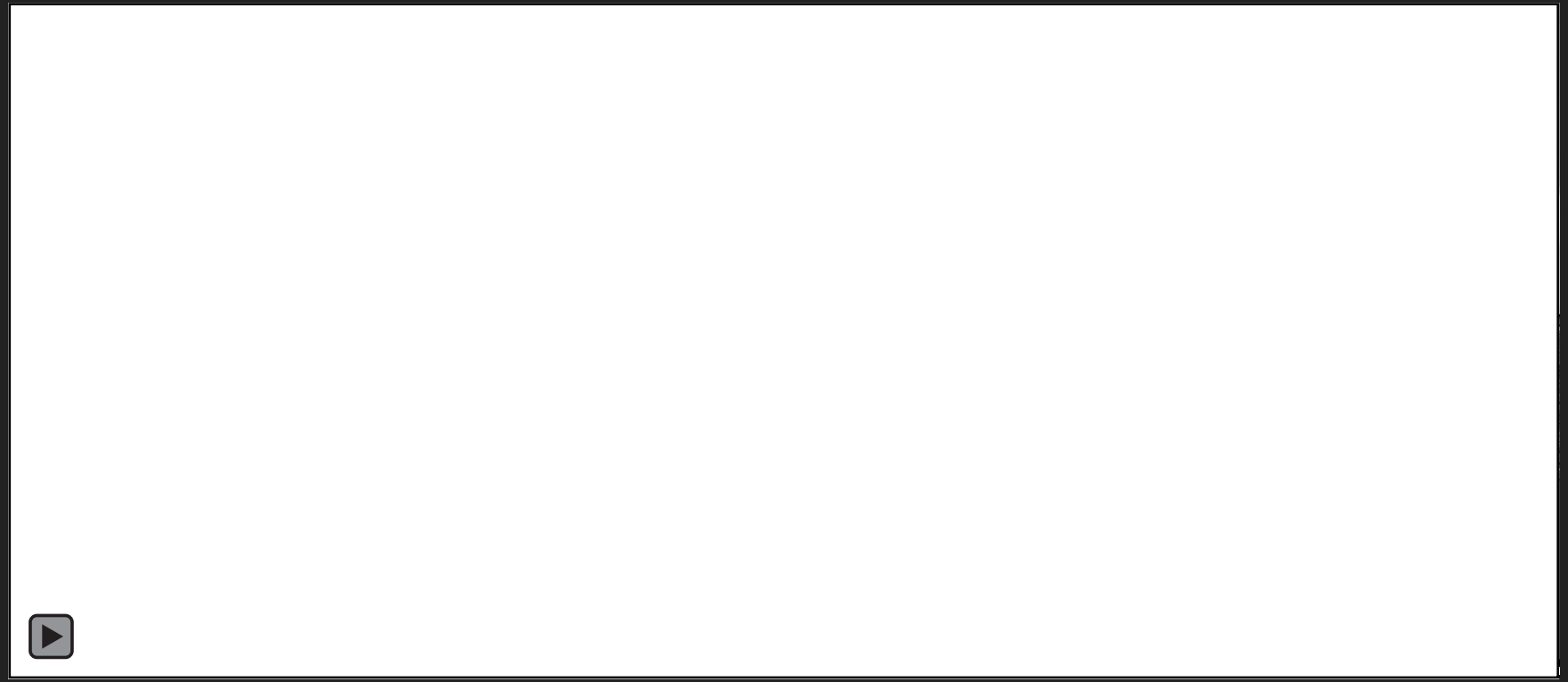


1 FIRE = 1 ALERT

Our platform boasts a remarkable accuracy rate by utilizing our advanced proprietary detection filtering system plus human in the loop to ensure 1 fire = 1 alert

DAYTIME AI: **OWEN FIRE**

LOS ANGELES COUNTY



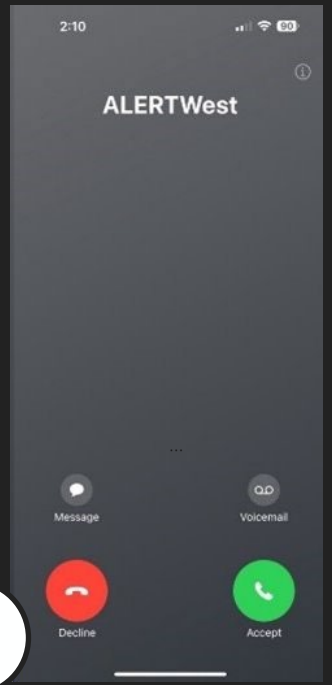
NIGHTTIME AI: **VALLEY FIRE**

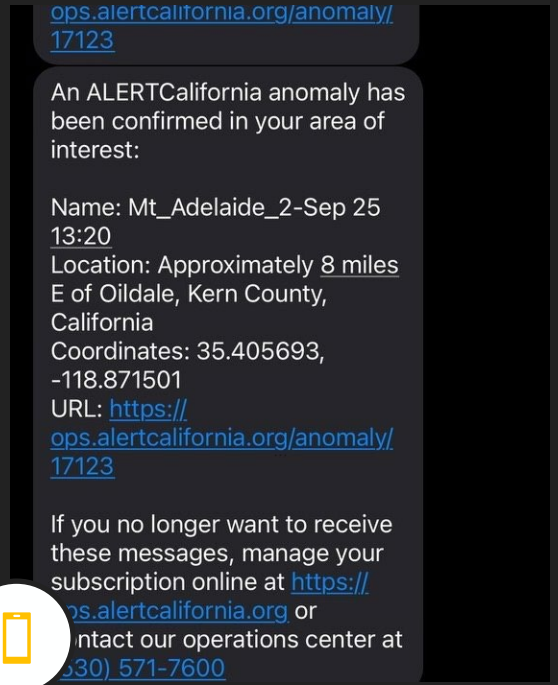
PLACER COUNTY

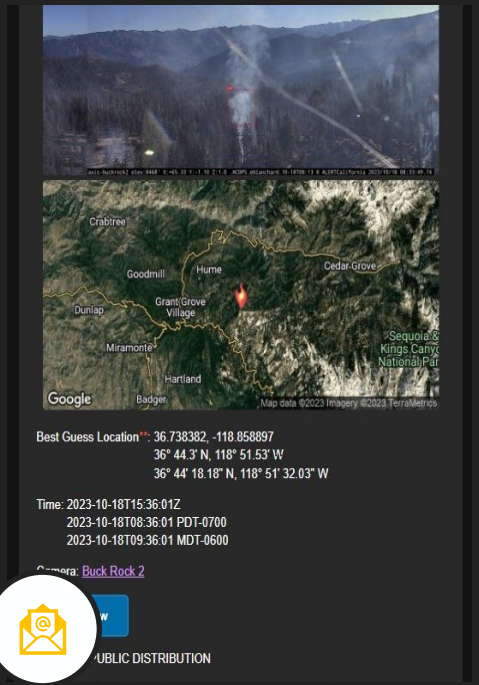


FIRE **NOTIFICATIONS**

WHEN AND HOW YOU WANT THEM

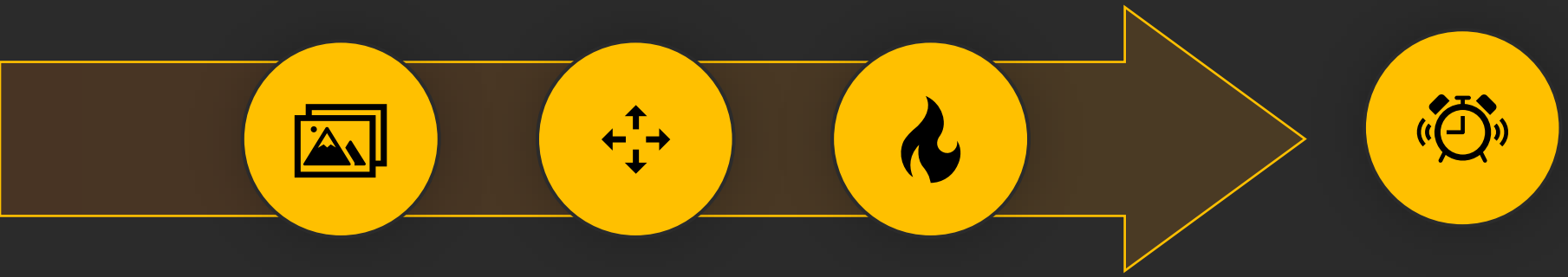






MAKING A 1000+ SENSORS ACTIONABLE

AI is Easy – Making the Big Data Actionable is Hard



240M IMAGES PROCESSED

70K MOVES

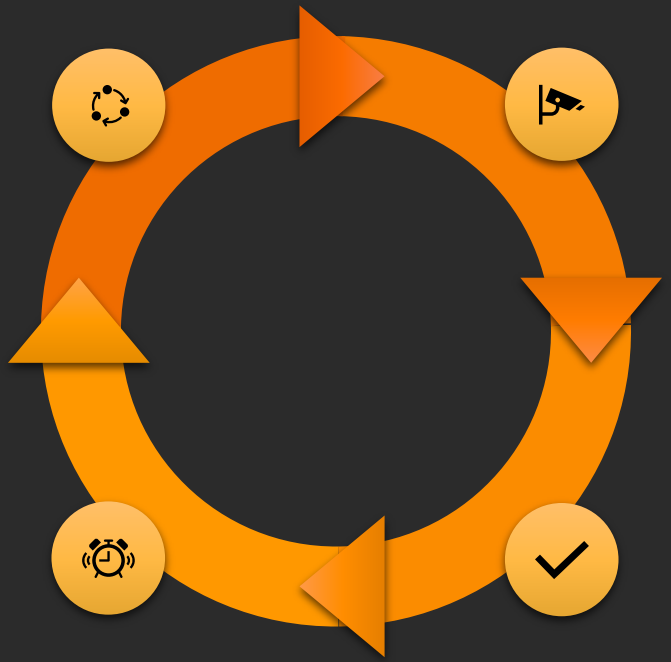
1 FIRE = 1 ALERT

0.00125% IMAGES BECOME ALERTS

HOW THE AI WORKS

AI IS ONLY PART OF THE SOLUTION

AI RETRAINED
AI is continuously retrained in the operating environment.



CAMERAS ROTATE 360º
AI checks for smoke as the camera rotates 360º every 2 minutes.

ALERTS SENT
Alerts are sent to dispatchers and identified personnel.

OPERATION CENTER CHECKS
Ops team verifies AI detections and confirms location.



SUPPORT

HELPING BUILD YOUR NETWORK

SITE INSTALLATION

ALERTWest is dedicated to providing comprehensive services every step of the way to install, maintain, and keep cameras online.

VIEWSHED ANALYSIS

ALERTWest is dedicated to installing cameras in high-fire threat areas, and our team of professionals conducts thorough viewshed analysis.

MOBILE UNITS

The ALERTWest portable camera trailer offers real-time situational awareness during wildland fires and prescribed fires.

DEPLOYMENTS

ANYWHERE

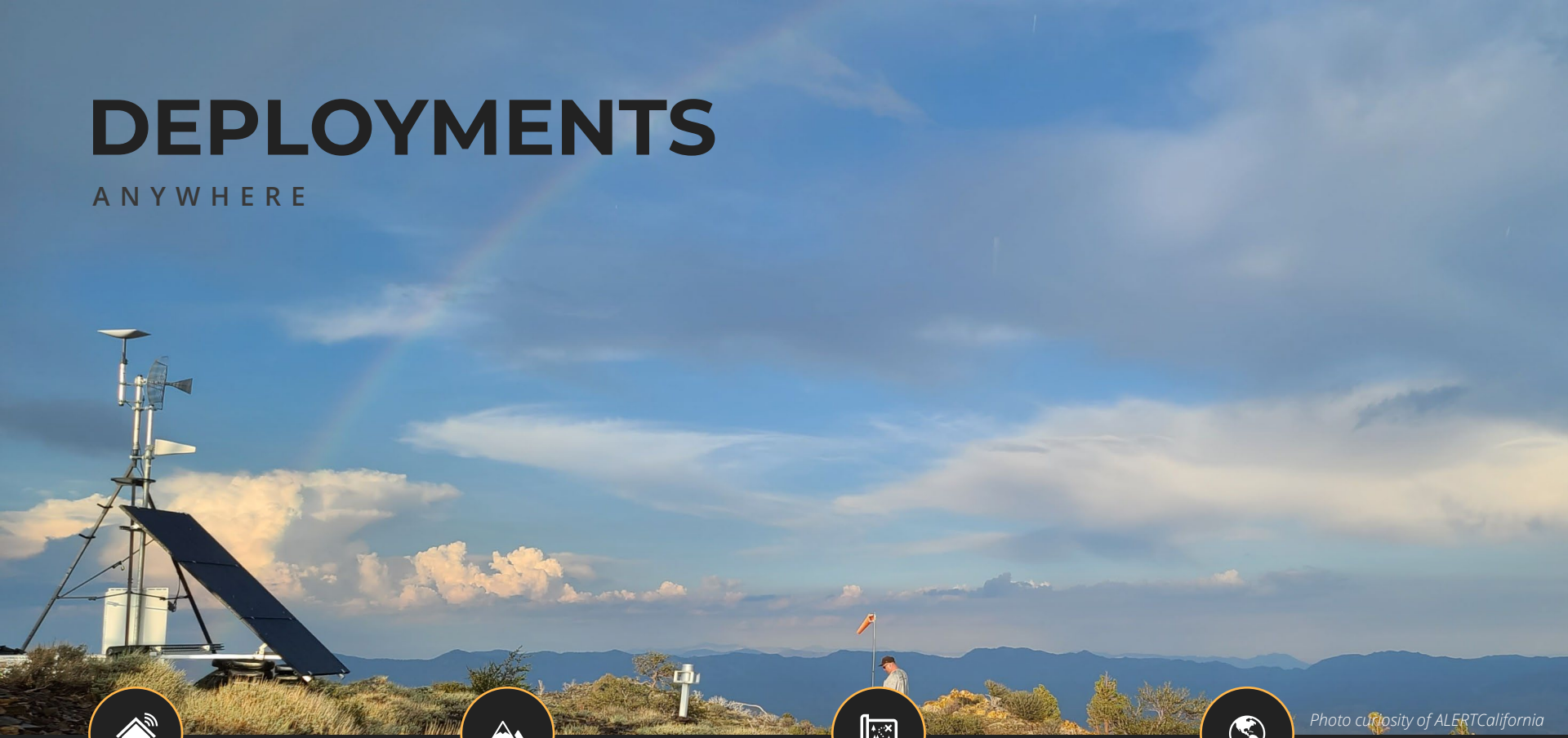


Photo curtosity of ALERTCalifornia

IN YOUR BACKYARD

ON THE MOUNTAIN TOP

REMOTE LOCATIONS

ANYWHERE

2023 FIRE SEASON **IMPACTS**

CALIFORNIA



DETECTED 900+ FIRES



DOZENS DETECTED BEFORE 911 INITIATED



DOZENS FIRES WITH NO 911 INITIATED



CHANGING FIRE RESPONSE



TIME MAGIZINE
BEST INVENTION OF 2023











THE SUCCESS OF THIS PROJECT ARE THE FIRES YOU NEVER HEAR ABOUT.











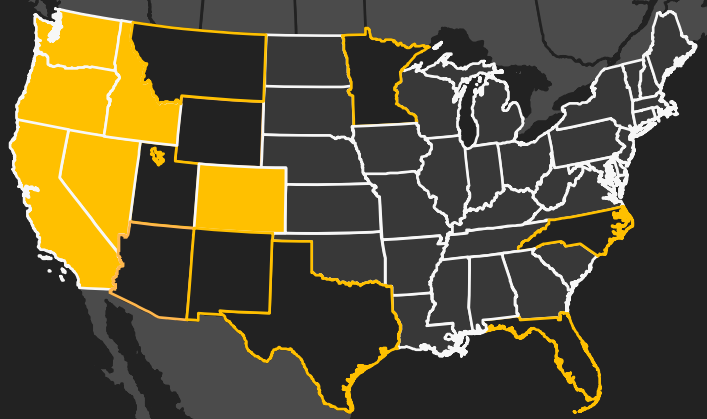
2024 CENIC INNOVATIONS IN NETWORKING AWARD FOR INNOVATIONS IN PUBLIC SAFETY



ALERTWest

PARTNERING TO BRING THE NETWORK TO YOU

- **6** States
- **8,000** Cameras in Network
- **1,300** PTZ Cameras in Network
- **3** University Partners
- **3000+** Users





THANK YOU

Chico, California

+1 (530) 571-7601

inquiries@ALERTWest.org

fb.com/alertwest

@alertwest_ai

@ALERTWestCams

Building Tomorrow's Fire Suppression with FireSat

Kate Dargan, Gordon and Betty Moore Foundation

:20 / 8:40am – 9:00am

Data Driven Wildfire Preparedness

Braniff A. Davis, Geospatial Analyst Senior, Austin Fire Department, Wildfire Division

:20 / 9:00am – 9:20am

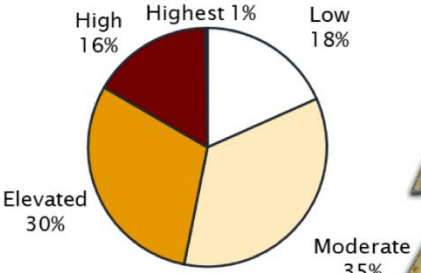


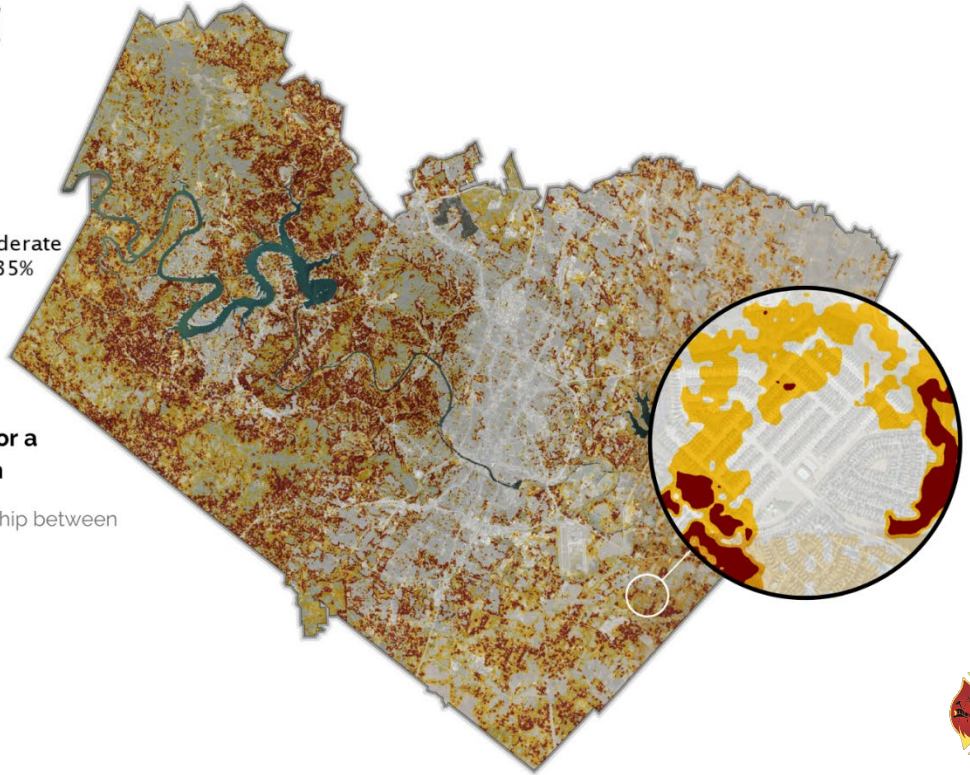
Data Driven Wildfire Preparedness in Austin, Texas

Justice Jones, *Wildfire Mitigation Officer*
Braniff Davis, *Senior GIS Analyst*
Christian Rowe, *GIS Analyst*
Austin Fire Department | Wildfire Division

:20 / 9:00am – 9:20am

Wildfire Risk Assessment

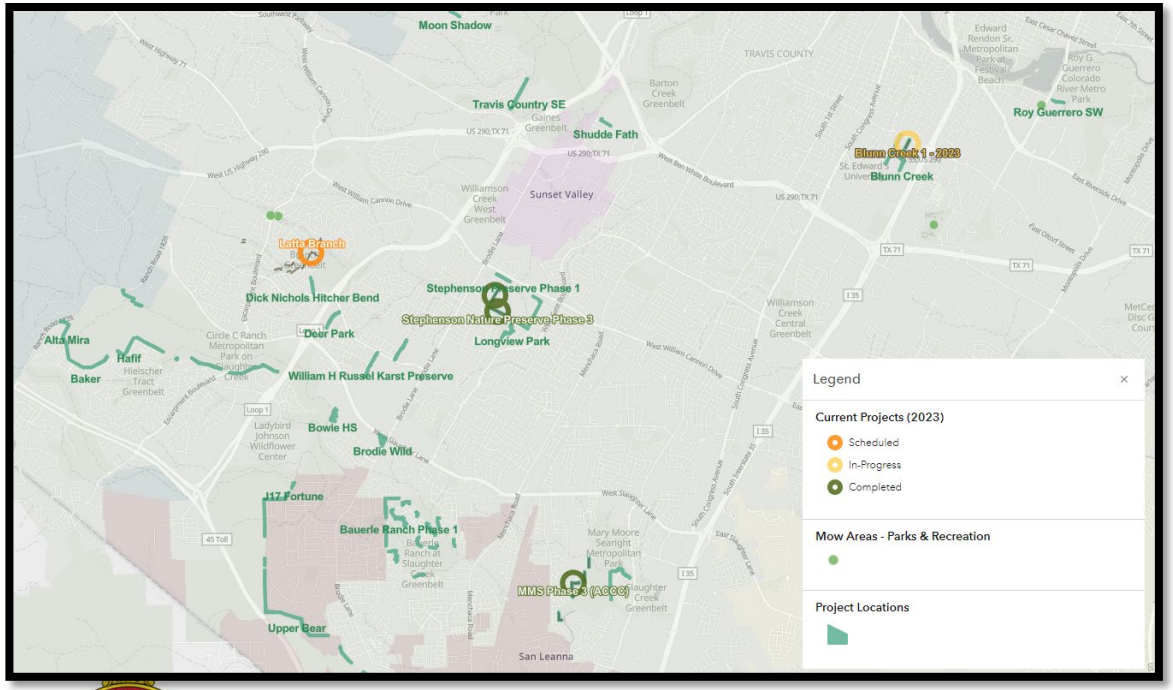




We leverage rich local data for a Community Centric Approach

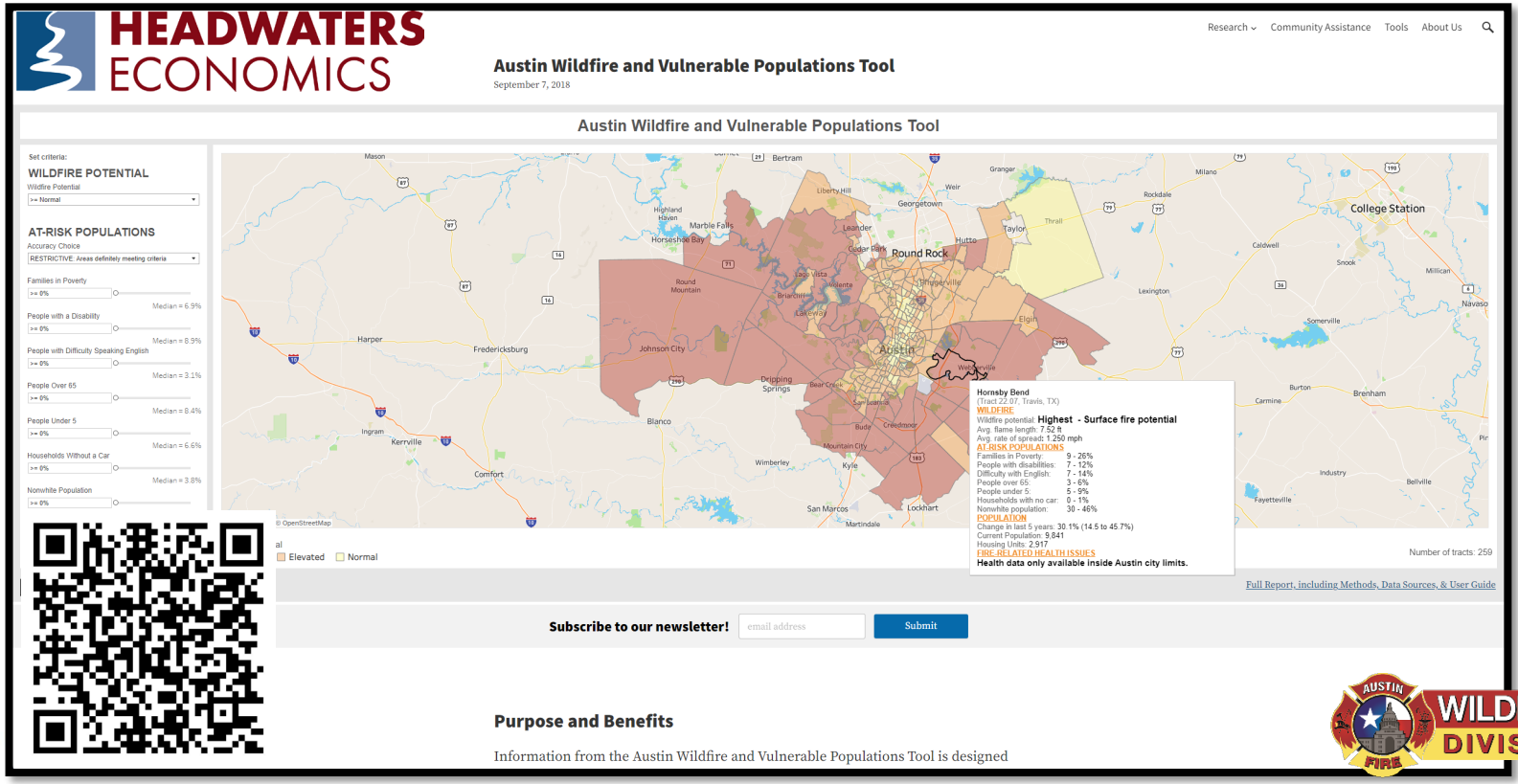
- Considers the Spatial Relationship between Fuels and Structures (HMM)
- Fire Spread Pathways (HMM)
- Higher Spatial Resolution
- Higher Temporal Resolution
- Better Accuracy & Precision

Informing Partner Planning



- Infrastructure Resiliency Plan
  - Austin Energy, Austin Water, etc.
- Land Management Planning for fuels mitigation
- Climate infrastructure resiliency
- Many other areas where our data enhances other planning/ops efforts

Wildfire Vulnerability Analyzer



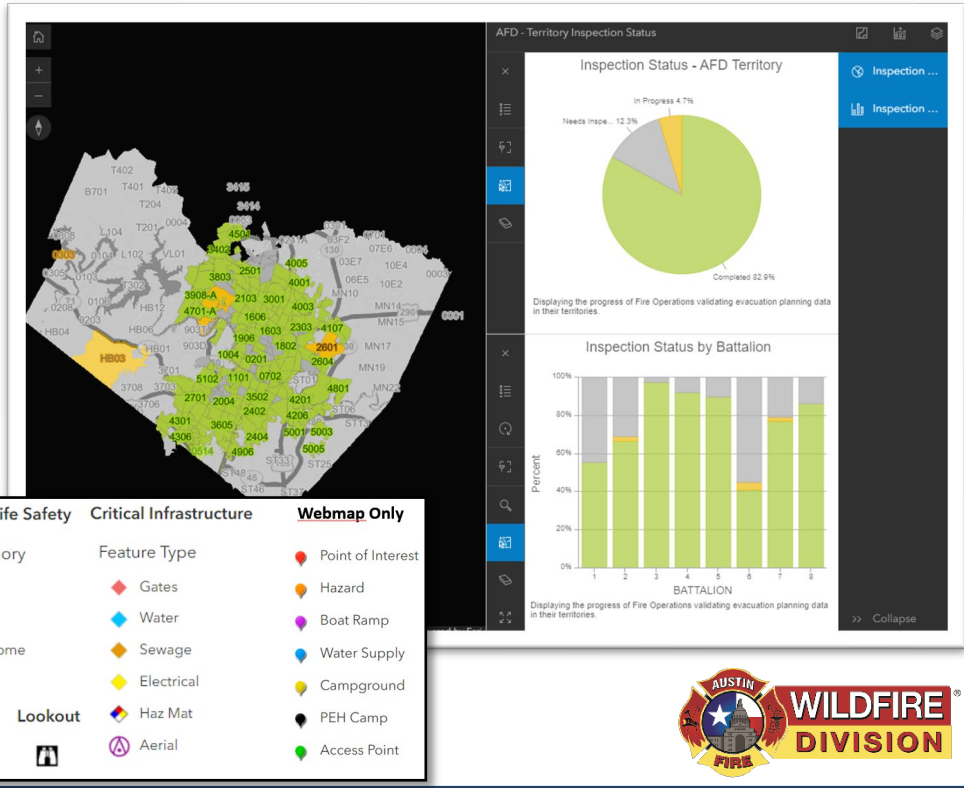
WUI Code



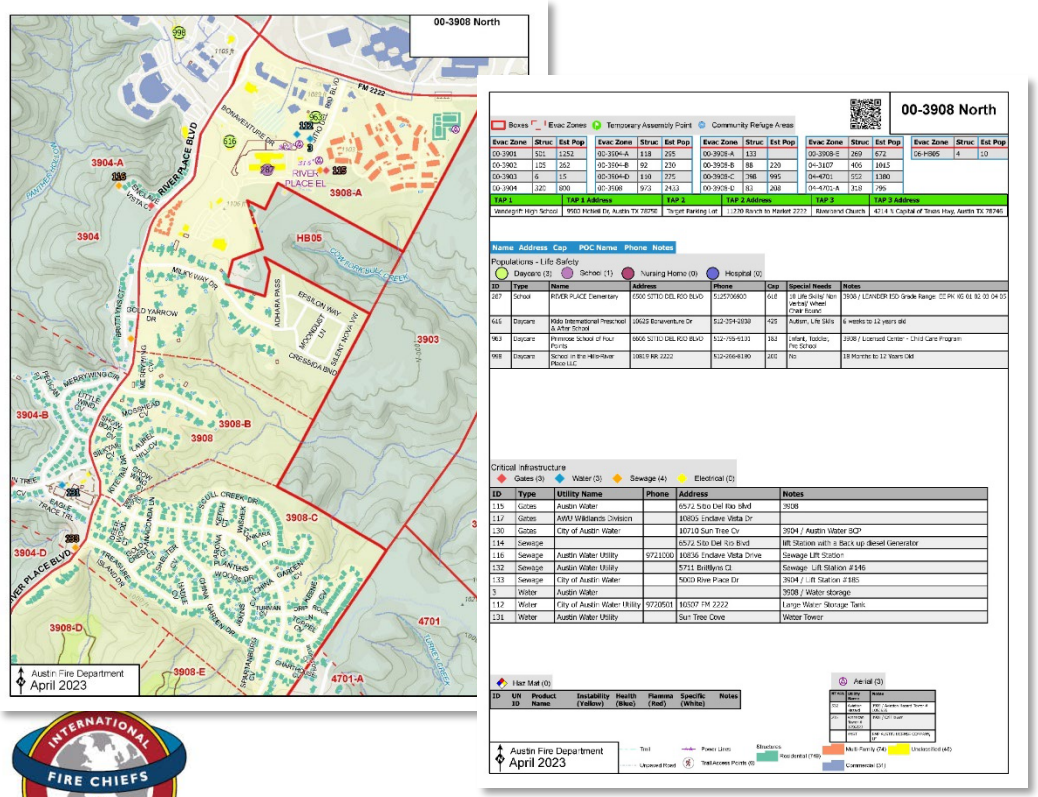
- In 2020, Austin became the first major city in Texas to adopt a WUI Code.
- AFD Prevention conducts thousands of WUI code inspections yearly, based on this layer.
- Currently being adapted to 2024 code.

Evacuation Pre-Planning

- Use of existing box maps and Field Maps hydrant inspection knowledge.
- Employed entire department to collect and QC thousands of data points relevant to evacuation and incident planning.



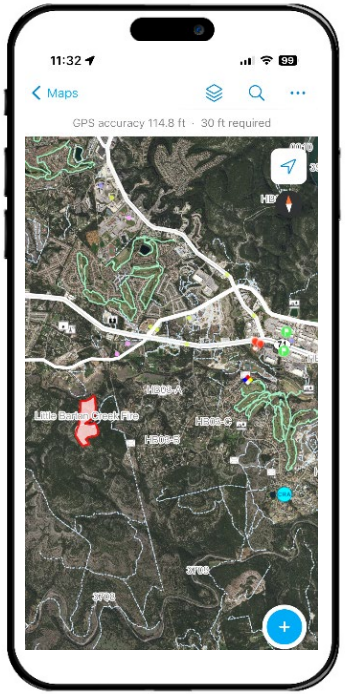
Evacuation Pre-Planning

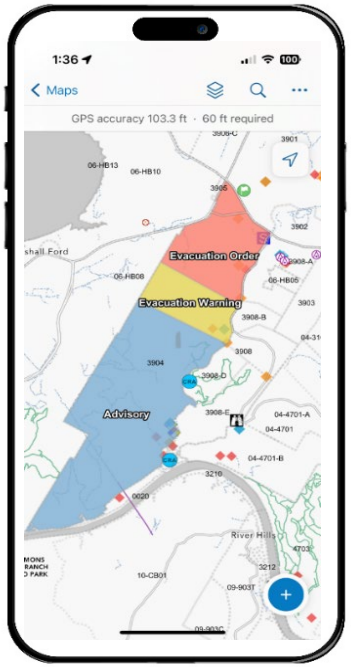


- Thanks to department-wide data collection/QC efforts, AFD Wildfire was able to create wildfire/evacuation specific box maps.
- Printed versions planned for each apparatus as a redundancy.

Incident Mapping & Management

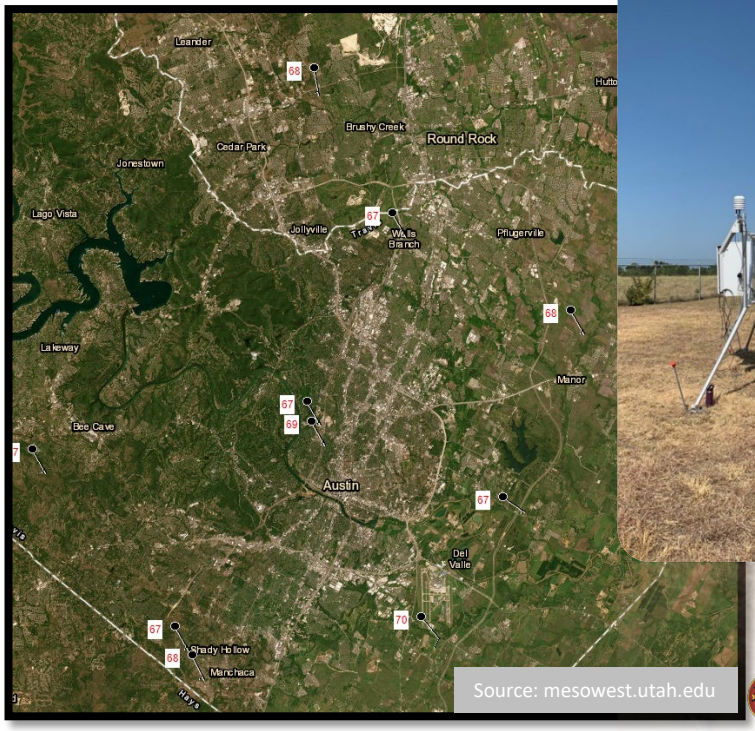
- Designed to help collect and share data on incidents.
- We also use Field Maps to designate evacuation areas, evac routes, TAPs, etc.
- City is working toward a comprehensive situational awareness solution, with AFD as the leading agency.





RAWS Stations

- AFD has acquired three permanent and two portable RAWS stations.
- Station data will be used for countywide fire. weather awareness, and creation of a regional NFDRS.





University of Texas Smoke Tool

- AFD project in conjunction with Univ. of Texas at Austin.
- Site incorporates information from building footprints & geometry, air sensors, weather updates, and census data.
- Community, emergency services, & other stakeholders know exactly how they may be impacted.



Wildfire Division ArcGIS HUB



- Designed to be a 'one stop shop' for wildfire information in Austin/Travis County.
- Along with information on our wildfire mitigation efforts, it also allows us to share data amongst partner agencies.

Wildfire Division ArcGIS HUB



www.atxwildfirehub.com

Thank you!

Scan QR code for our contact information



9:20 am – 9:35 am

NETWORKING BREAK

Achieving Nationwide Awareness on WUI Exposure Using GIS Technology

Brian Metzgar, Fire Protection Engineer, National Fire & EMS Division, USFA

:20 / 9:35am – 9:55am

Wildfire Data Innovation Lab @ WUI – Data-Driven Solutions for Wildfire Prediction, Response and Resilience

Achieving Nationwide Awareness on WUI Exposure Using GIS Technology

FEMA | U.S. Fire Administration

The mission

We **support** and **strengthen** the fire and emergency medical services (EMS) and stakeholders… to prepare for, prevent, mitigate and respond to ALL hazards…

- ★ Fire and EMS training
- ★ Research
- ★ National Fire Data Center
- ★ Community risk reduction

CRR = Process to identify and prioritize local risks, integrated/strategic investment of resources to reduce risk occurrence and impact.



FEMA | U.S. Fire Administration

Federal Fire Prevention and Control Act of 1974

PURPOSES

SEC. 3. It is declared to be the purpose of Congress in this Act to—

(1) reduce the Nation's losses caused by fire through better fire prevention and control;

(2) supplement existing programs of research, training, and education, and to encourage new and improved programs and activities by State and local governments;

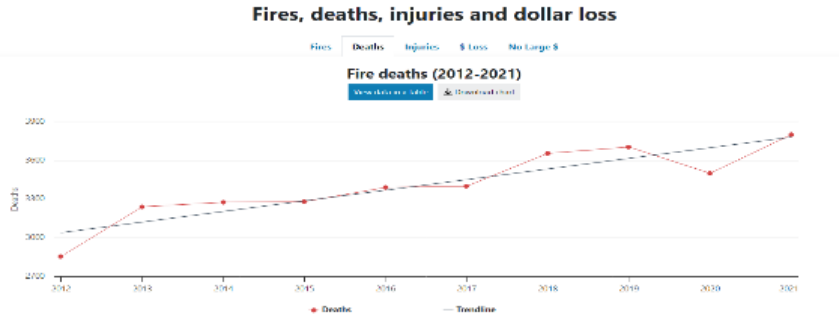
(3) establish the United States Fire Administration and the Fire Research Center within the Department of Commerce; and

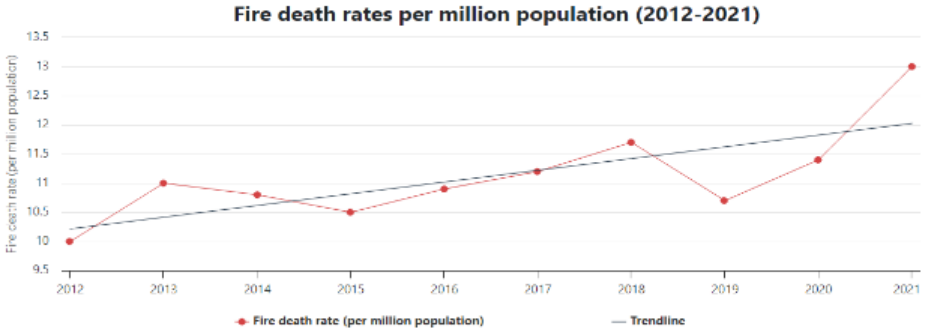
(4) establish an intensified program of research into the treatment of burn and smoke injuries and the rehabilitation of victims of fires within the National Institutes of Health.

[15 U.S.C. 2202]

FEMA | U.S. Fire Administration

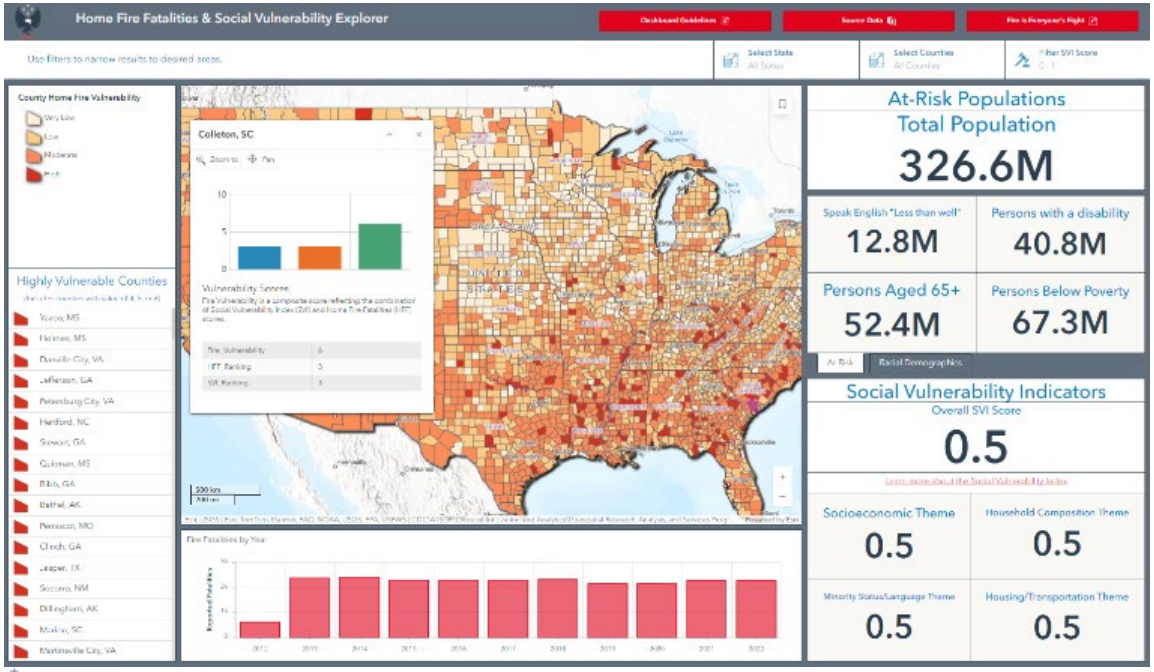
The fire problem





FEMA | U.S. Fire Administration

Home Fire Fatalities and SVI Explorer

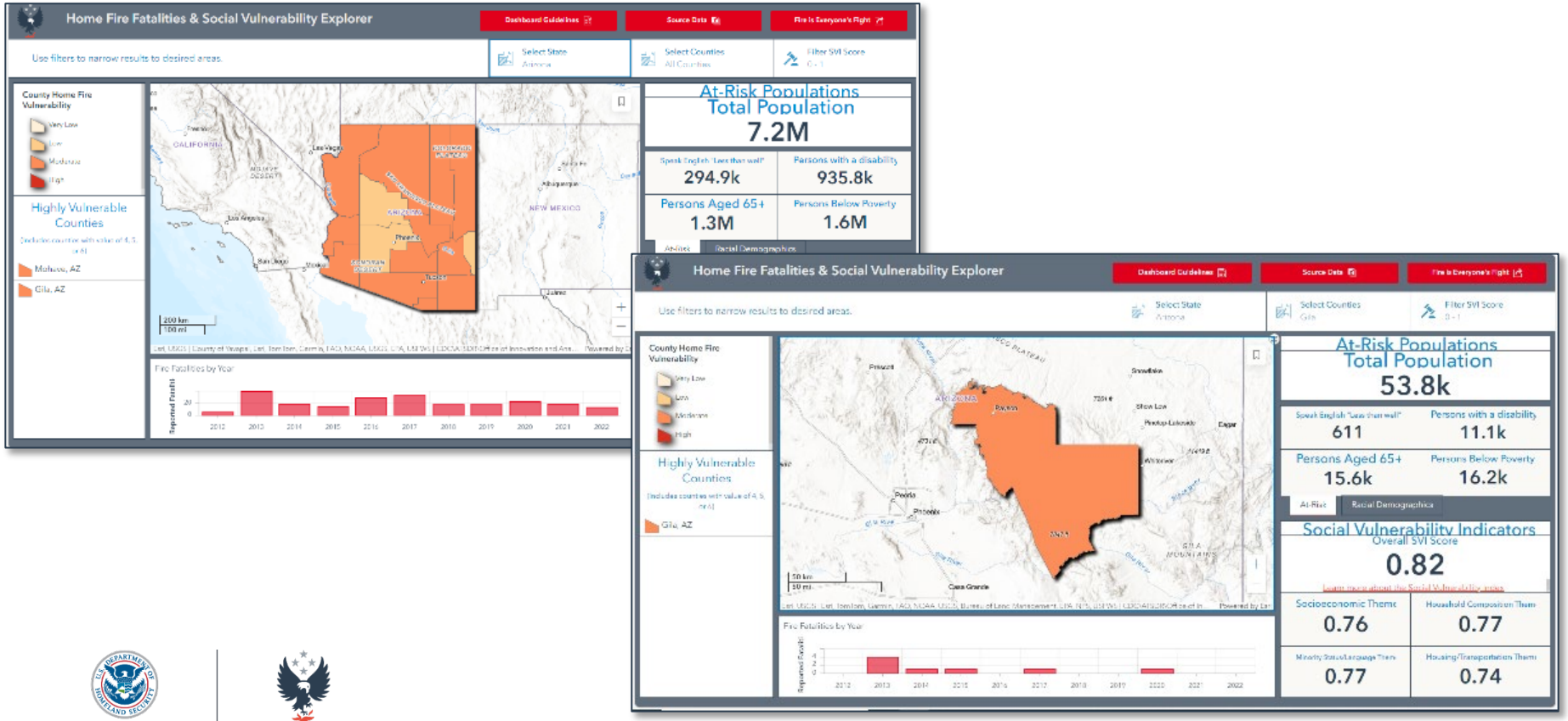


Home Fire Fatalities and SVI Explorer

- **Visualizes relationship between socioeconomic factors and residential fire fatalities**
- **Uses a 10-year data set collected from daily media news scrape**
- **What about:**
  - **Code adoption and enforcement?**
  - **Structure type?**
  - **Ignition source?**

FEMA | U.S. Fire Administration

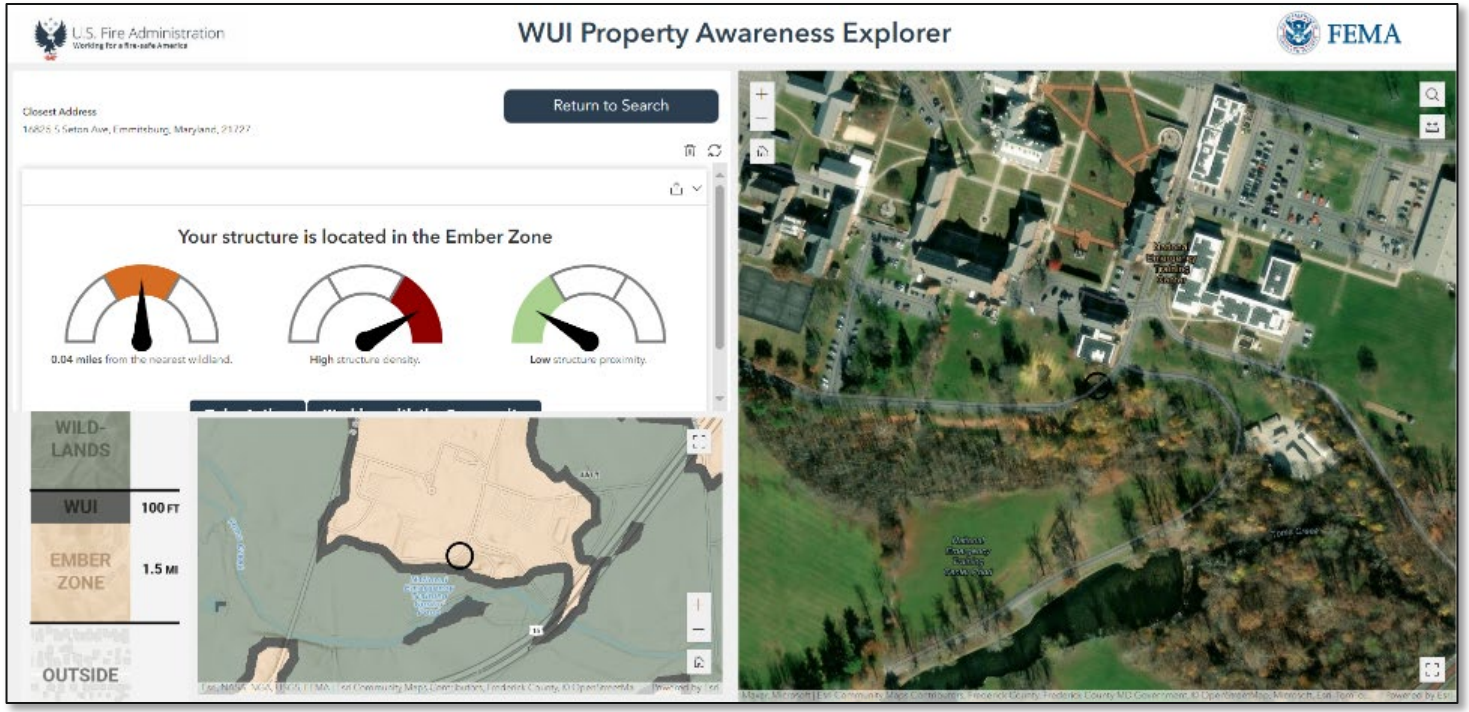
Navigate to a State > County of Interest



FEMA

U.S. Fire Administration

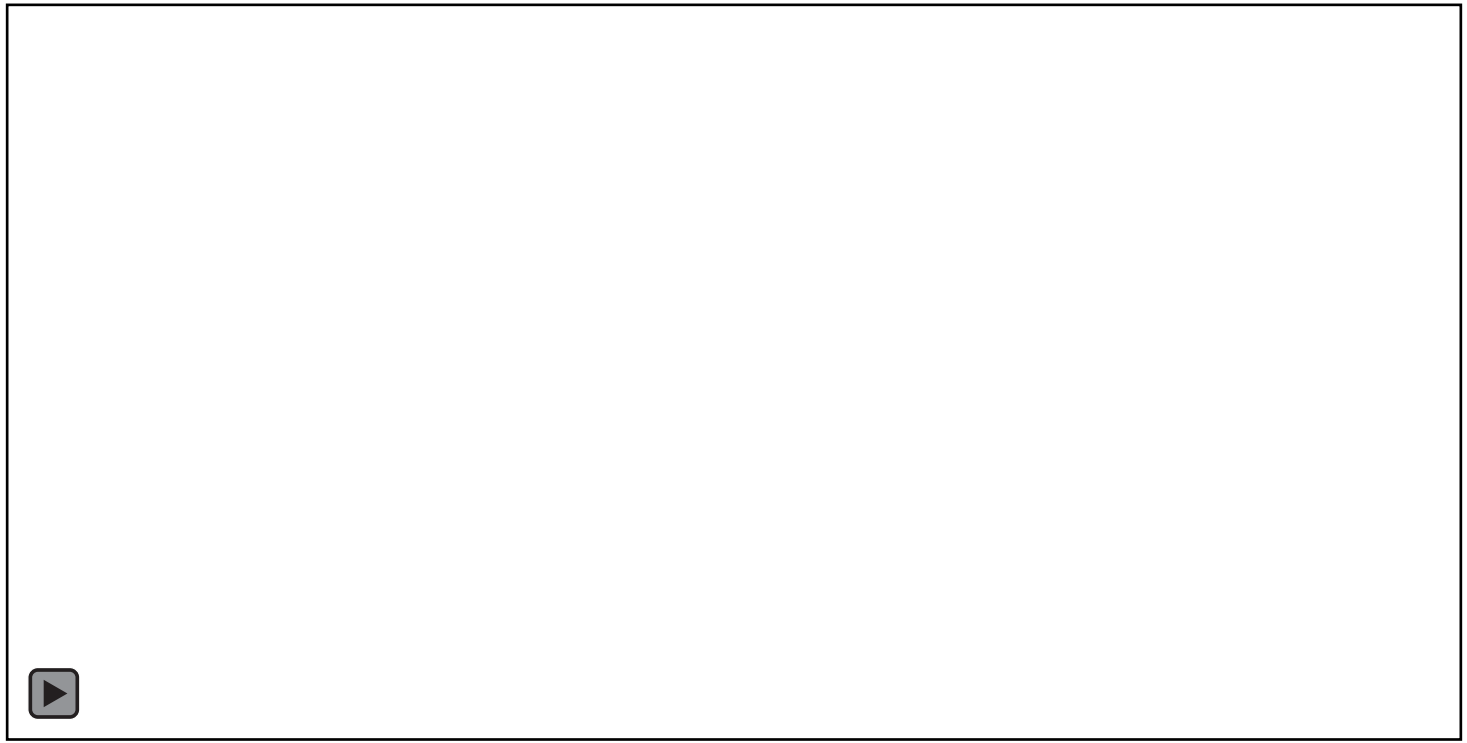
WUI Property Awareness Explorer



FEMA

U.S. Fire Administration

WUI Property Awareness Explorer



FEMA

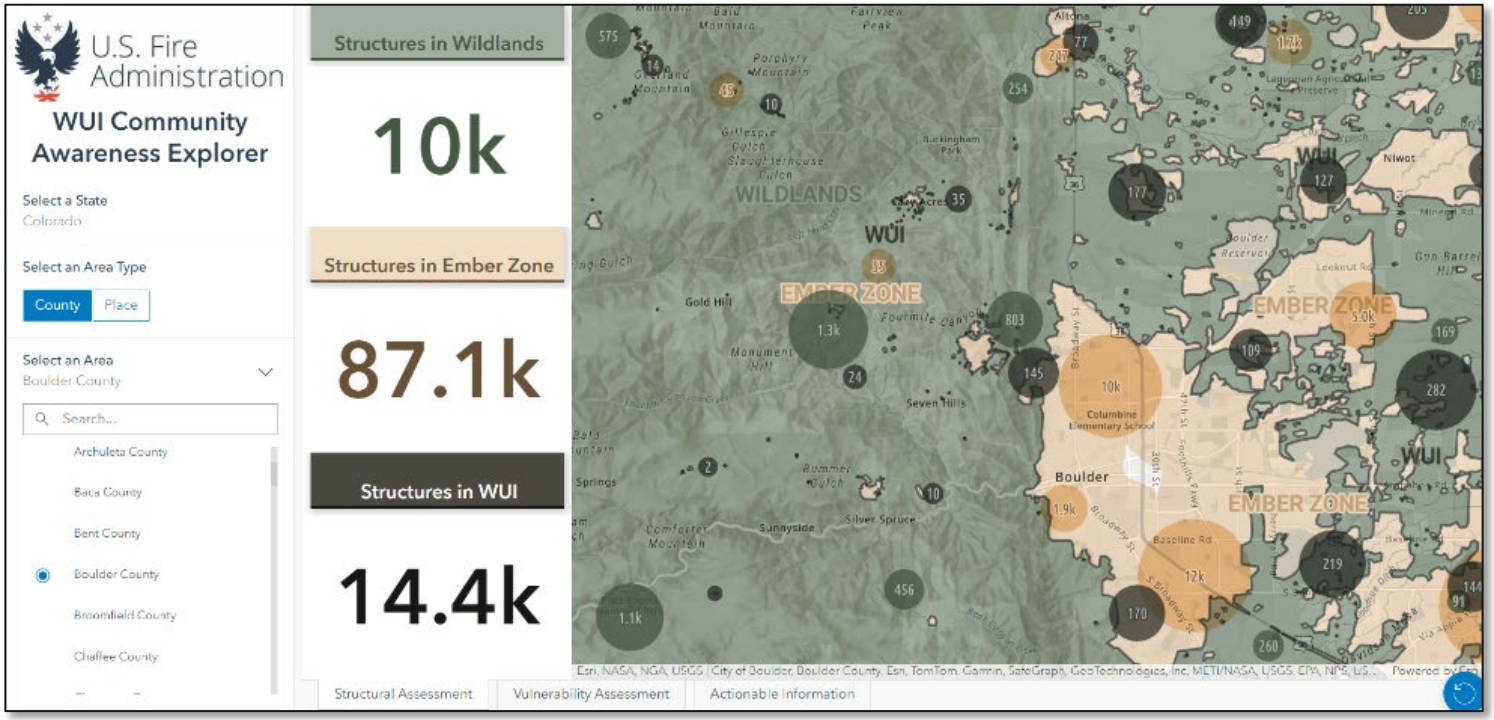
U.S. Fire Administration

WUI Property Awareness Explorer - Functionality

- **Target Users:** Local Officials and Fire Service Leaders
- Raise awareness about where the wildland-urban interface is, and potential hazard exposure areas.
- Does not measure or visualize RISK.
- Initiates a conversation about how to prepare for and mitigate wildfires.
- Directs users to risk reduction resources.

FEMA | U.S. Fire Administration

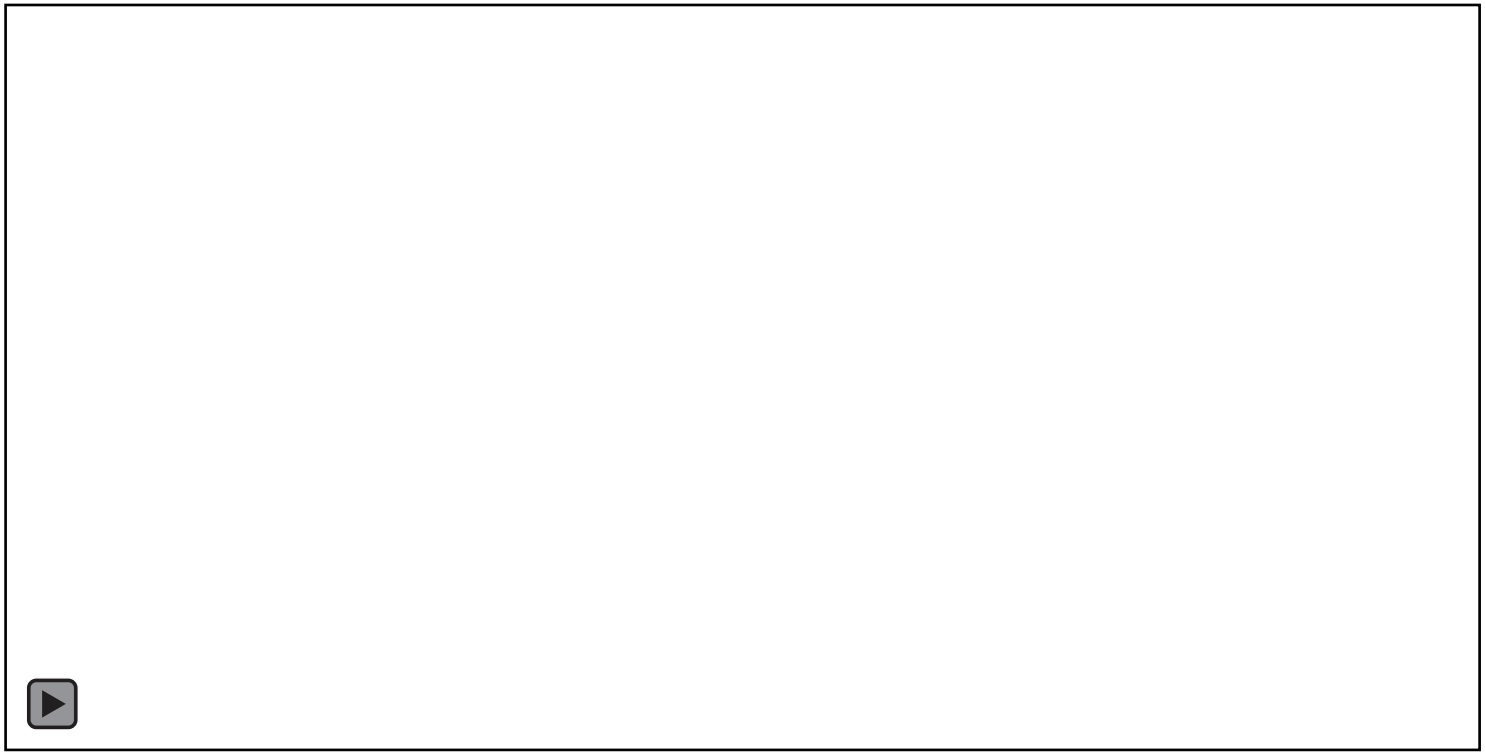
WUI Community Awareness Explorer



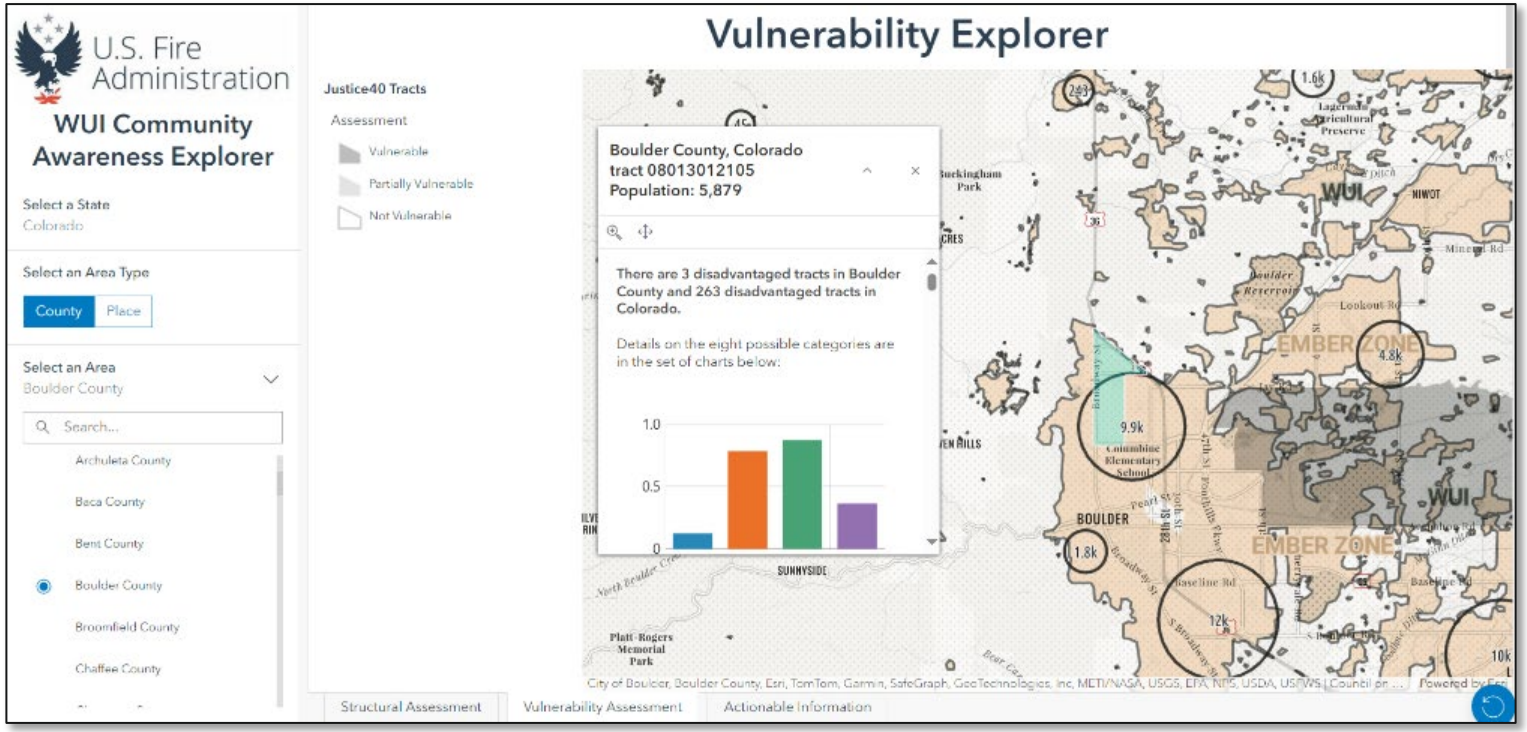
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WUI Community Awareness Explorer



WUI Community Awareness Explorer (cont.)



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WUI Community Awareness Explorer - Functionality

- **Target Users:** Community Leaders, Local Officials, and Fire Service Leaders
- Incorporates structural density and separation as well as social vulnerability
- Provides a tool for targeted messaging, community risk reduction and mitigation efforts

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Other USFA efforts

- National Fire Risk Index
  - Exploring available tools and methodologies for assessing fire risk throughout the U.S. for wildfire and structure fire.
  - Possible integration into fire incident reporting and existing resources such as FEMA's National Risk Index framework
- National Emergency Response Information System (NERIS)
  - Developing the replacement of the legacy National Fire Incident Reporting System (NFIRS) to include the incorporation of wildfire information
- Building Codes Save Fire Hazards Pilot Study
  - Conducting a pilot study to serve as a supplement to FEMA's Building Codes Save study to account for losses avoided by the adoption and enforcement of model codes relative to wildfire and structure fire hazard types

Open Discussion

- What feedback do you have on the WUI Awareness Explorers?
- Do you think these tools will raise awareness about wildfire hazards in your communities?
- Will this help you with initiating conversations about wildfire and the WUI?
- What do you think is missing?

Thank you!



Contact Information:
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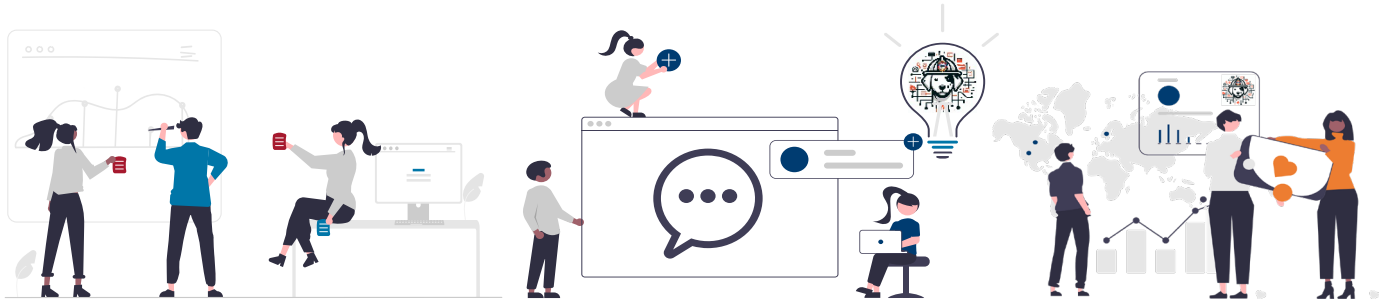
Sparking Innovation: Using Data & StoryMaps to Design Wildfire Tabletop Exercises

Craig Daughtery, IAFC Wildfire Policy Committee (WFPC)

:20 / 9:55am – 10:15am

Panel Discussion

- What are the **biggest challenges** in **translating data insights into actionable solutions** for wildfire prediction, response, and resilience?
- How can we **effectively communicate complex wildfire data to diverse audiences**, including policymakers, communities, and firefighters?
- What are **the key partnerships and collaborations** needed to bridge the gap between data science and wildfire management?
- What are the **biggest opportunities for using data** to advance wildfire preparedness, mitigation, and response in the future?



The Wildfire Wild West: Untaming Data

- **Facilitated Small Group Discussions**
- Time: 10:45pm – 11:25pm (40 min)
- How to Play:
  - Fill out the Survey123 (5 min)
  - Discuss the questions and answers within your group (15 min)
  - Whole room facilitated discussion (20 min)



https://iafc.maps.arcgis.com/apps/dashboards/2c3b4d1e6418456a8230107b7aa537e7

Closing

Chief Jeff Dulin, IAFC

:5 / 11:25am – 11:30am

Join FireDAWG!



11:30 am – 12:30 pm

NETWORKING LUNCH

JAM SESSION OPEN MIC!