



## Colorado Science and Engineering Fair

## 2024 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Monitoring Utilities for Wildfire Containment and Prevention

Finalist's Name: Will Livingood

School and City: Green Mountain High School, Lakewood

Sponsor's Name: Jennifer Flores

Category: Engineering (ENGR)

Division: Senior (9th - 12th grades)

Abstract (250 words or less):

My project emerged out of the crisis that has wreaked havoc worldwide, most recently scorching the Eastern states of the United States. Wildfires take over the news headlines every other week, most recently the fire taking place in Texas which has burned over a million acres and Xcel Energy is currently being sued for the damages. The Dixie fire, which burned 300,000 acres in 2022, originally grabbed my attention as it nearly burned down one of my close family member's houses. To find a solution, I looked to a common cause of fires to find a way to prevent them. Upon my research of the before-mentioned fires, I found utility companies were the common culprit.

I set my goal to create a device that could detect fires and assess environmental conditions to contact emergency services and utility companies when necessary. Through connecting a large array of sensors through a Raspberry Pi, while gathering data through each with Python. I was able to create a warning system. Once connected I tested each sensor to verify that each sensor was dependable. Due to the precision of the instruments I used, with less than 5% error, I have created a device that can reliably detect fires and warn companies of dangerous conditions. With a little more development of the alert system and expansion of capabilities, it will shift to the hands of utility companies to use this resource to help protect our environment.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.