

# CIVIC INNOVATION CHALLENGE



## Low-Cost Efficient Wireless Intelligent Sensors (LEWIS) for Greater Preparedness and Resilience to Post-Wildfire Flooding in Native American Communities

### Ohkay Owingeh Pueblo in New Mexico

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#### Research Partners

University of New Mexico  
Bohannon Huston  
Stantec

#### Civic Partners

Ohkay Owingeh Pueblo  
Highwatermark, LLC  
New Mexico Department  
of Transportation



Bohannon Huston



#### Project Challenge

The challenge this project is trying to address is the severe impacts from wildfires and post-wildfire flooding in the Pueblo Tribal Communities of New Mexico.

#### Impact

The Stage 2 activities will position Ohkay Owingeh to monitor hazards and environmental factors to support data-driven decisions for land management, evacuation, and more with a network of over 140 LEWIS sensors.

**\$10,000**

Cost of a single traditional long-term sensor

**\$250**

Cost of LEWIS sensor to be designed and deployed with Ohkay Owingeh Pueblo

#### Research + Practice Questions

- How can Pueblo members and university researchers engage in co-generating place-based landscape resilience indicators that will better equip Pueblos to reduce risks from wildfires?
- How can distributed LEWIS networks be co-designed to generate knowledge that informs landscape management approaches (interventions) to build community resilience?
- How can information from real-time data collection be integrated into decision platforms that enhance the resilience of communities to wildfires and post-wildfire floods?
- How can Pueblo members and their partners collaborate in a way that incorporates and honors indigenous knowledge while also protecting data sovereignty?

#### Stage 1 Accomplishments

- Built strong connections between partners and formed a diverse project team
- Taught a low-cost sensor class to Ohkay Owingeh's students and educational leaders; collected their input
- Co-designing, testing, and evaluating long-term LEWIS systems for rain, vibrations, water level, and video
- Gained valuable input from civic partners and leaders for Stage 2

#### Stage 2 Priorities

In Stage 2, we will work directly with Ohkay Owingeh Pueblo and many supporting partners to co-build, develop, and deploy over 100 LEWIS sensors. The data will be made available to the community through a secure online portal, and LEWIS training modules will be incorporated into existing educational curriculum.

Co-design, develop, and deploy **140+** **LEWIS sensors** with civic partners. This will lead to **significantly improved data availability** and quality in this region.

Engage **Tribal youth** in building and monitoring the sensor network to support pathways to **STEM careers**

#### Flooding Model

Establish flooding models to develop indices for flooding resilience informed by both traditional knowledge and data

Create a **Data and Decision Support Portal** that will provide **real-time** access to **cyber-secured** data co-designed with leaders at Ohkay Owingeh