

## Introduction

- **30%** of people in Roane County do not have access to internet
- **\$75 - \$100** is the current monthly average cost for internet

## Project Background

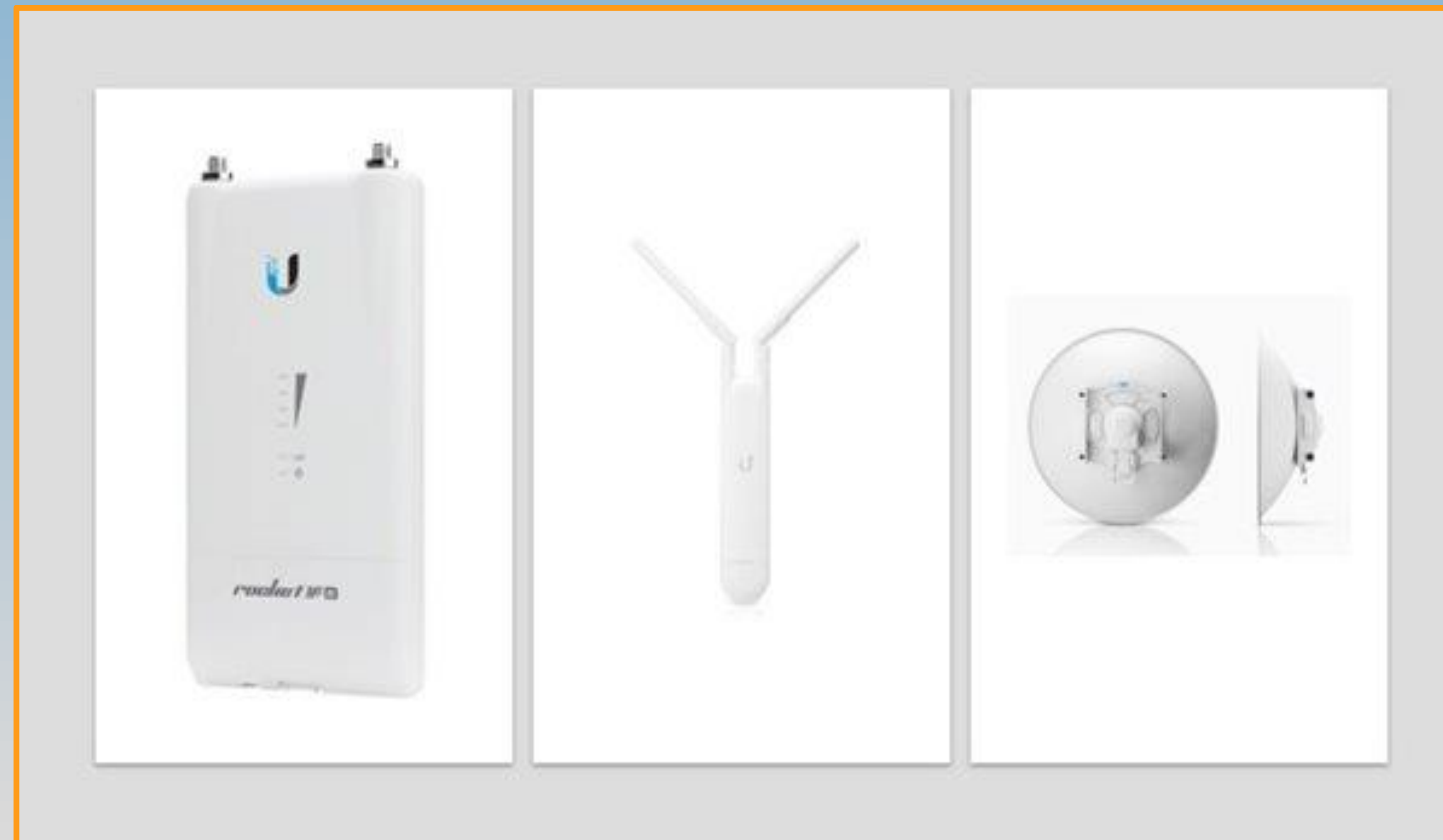
- Overarching Goal: Affordable internet access for the underserved residents of Roane County using mesh network technology
- Results:
  - Monthly Cost Reduction
  - Increased Data Cap



Mathew and Hans from the ISD team setting up a light tower to collect data from nodes and devices.

## Proposed Business Plan

Written for future implementation, the business plan outlines how to increase accessibility and lower the cost of broadband internet. Additionally, there would be an increased data cap making the plan competitive to current internet providers. The mesh network design overcomes the barrier set forth by the mountainous region and difficult topology. The cost model is designed per device, rather than per home; this allows for more guaranteed connection speed.



## Mesh Network Equipment

## Proof of Concept Test

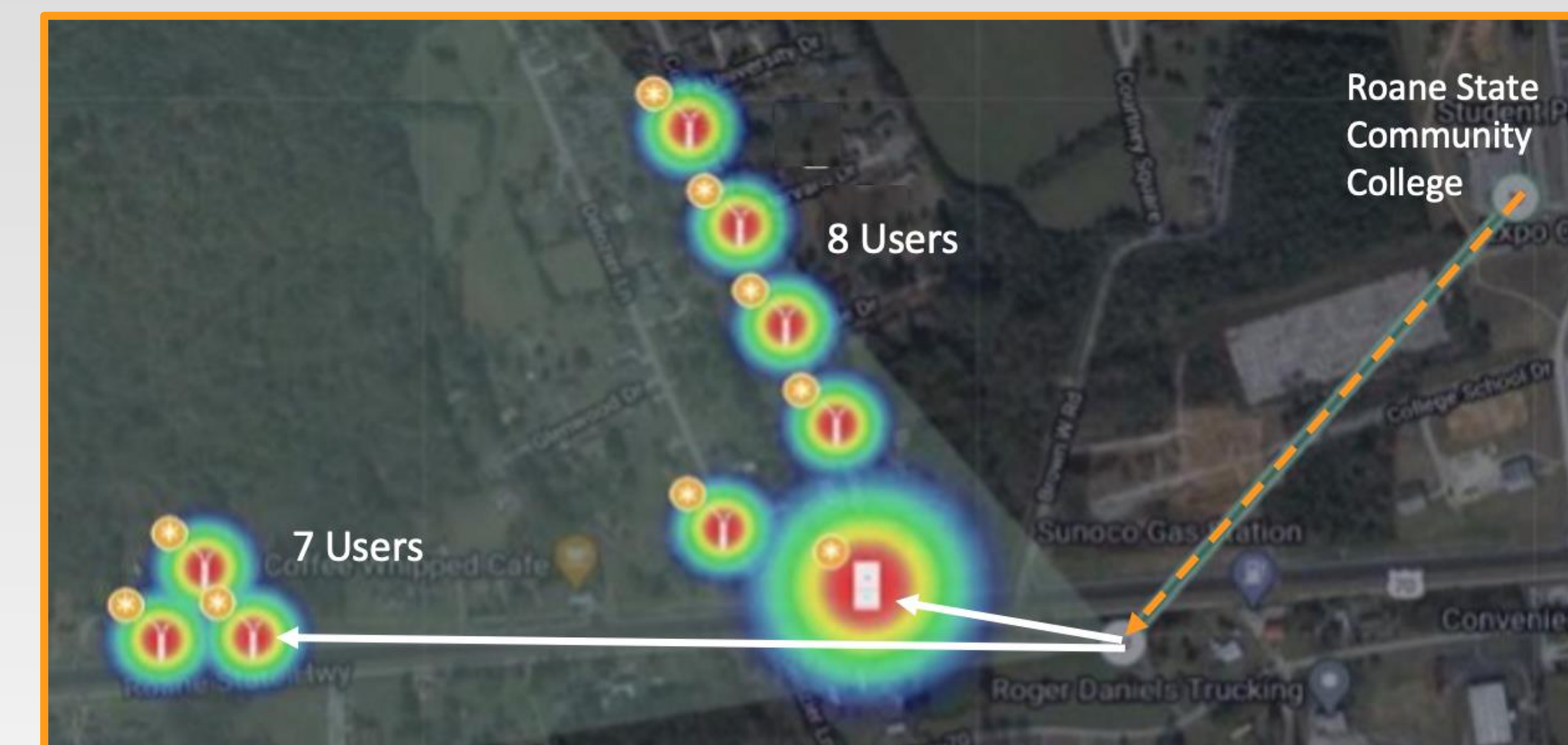
The proof-of-concept testing for the mesh network took place in Roane County. This consisted of two separate networks designated by a light tower with a multi-hop back haul connection from RSCC to a radio tower. These light towers transmitted data to the nodes throughout the neighborhood. We were able to accommodate up to eight streaming devices at 10 Mbps upload and 27 Mbps download speed within each pod/neighborhood.



Katherine and Kevin successfully join a Zoom call while connected to the large mesh network.

## Future Test at Scale

We have identified Maple Lane as location for testing the business plan. This neighborhood is made up of about 11 houses; the HOA would be responsible for sustaining the maintenance for the neighborhood. This neighborhood meets several criteria that can make it the basis for implementation, including resident buy-in and operation of the mesh network system for other neighborhoods in Roane County. This test will help prove the business plan to be operational and sustainable.



Map of multi-hop backhaul connection and 2 mesh networks.