

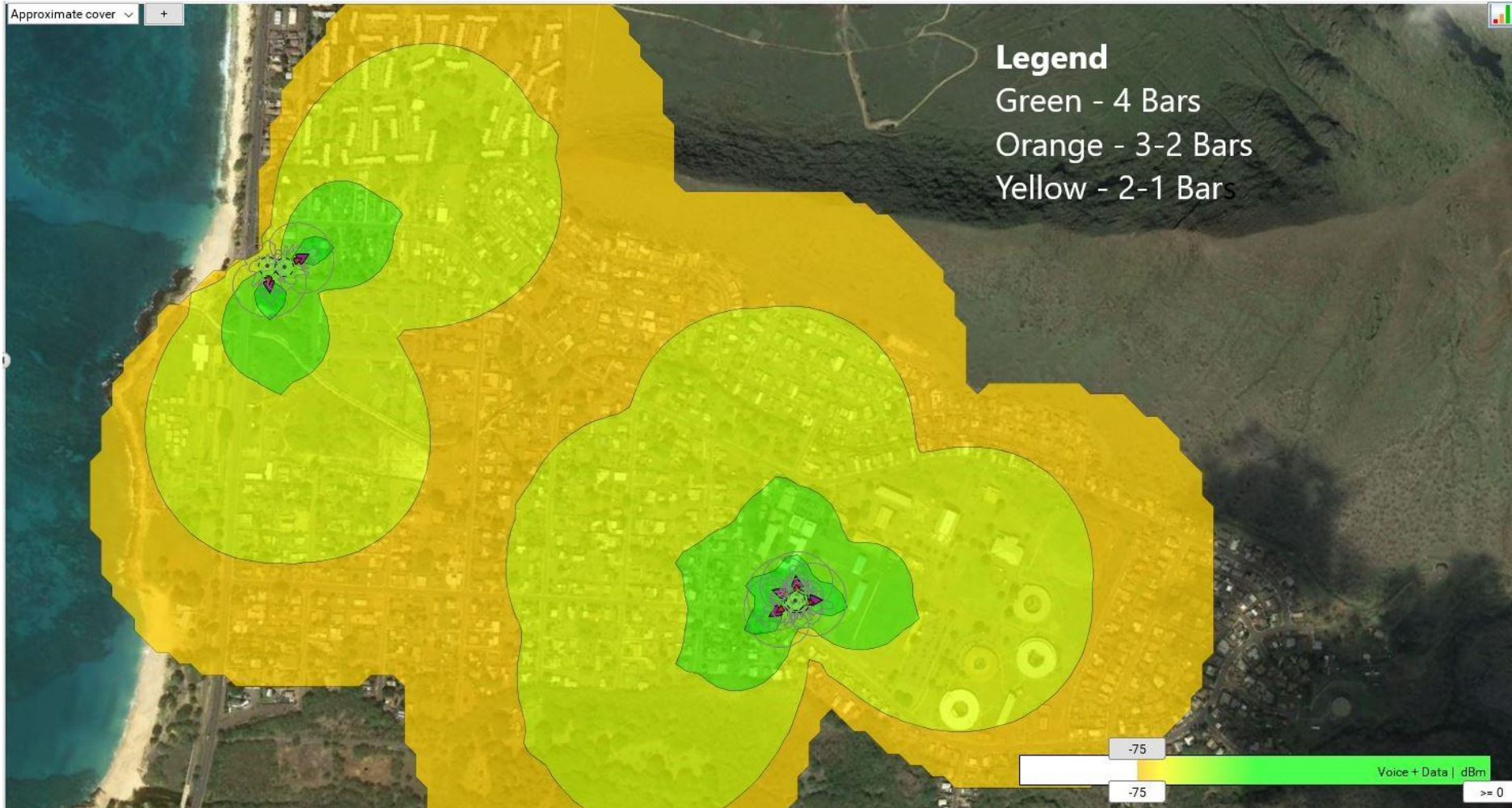
# **Wireless Technologies as Accelerants of Digital Equity**

By Daniel C. Smith and Edward B. T. Sun

# Community Wi-Fi

- Extend the Internet quickly
- Shared resources
- Cost competitive
- Alternative and/or supplement to many of 17,000 education cell hotspots
- Get the benefits now rather than waiting for the “perfect”
- Great need in Hawaii
- Small projects exist and more are in work

# A Proposed Example



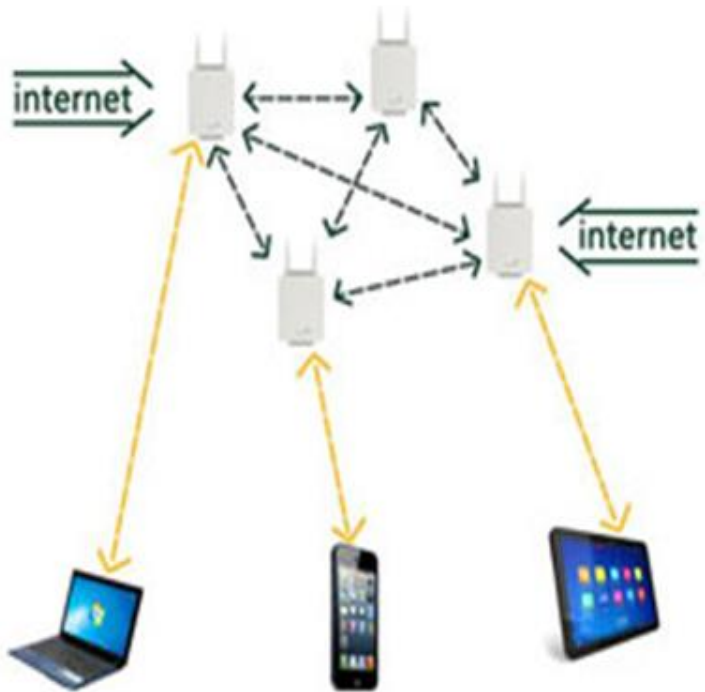
# A good use of Federal Broadband Funds

## **Broadband – at least \$160 million for Hawai‘i**

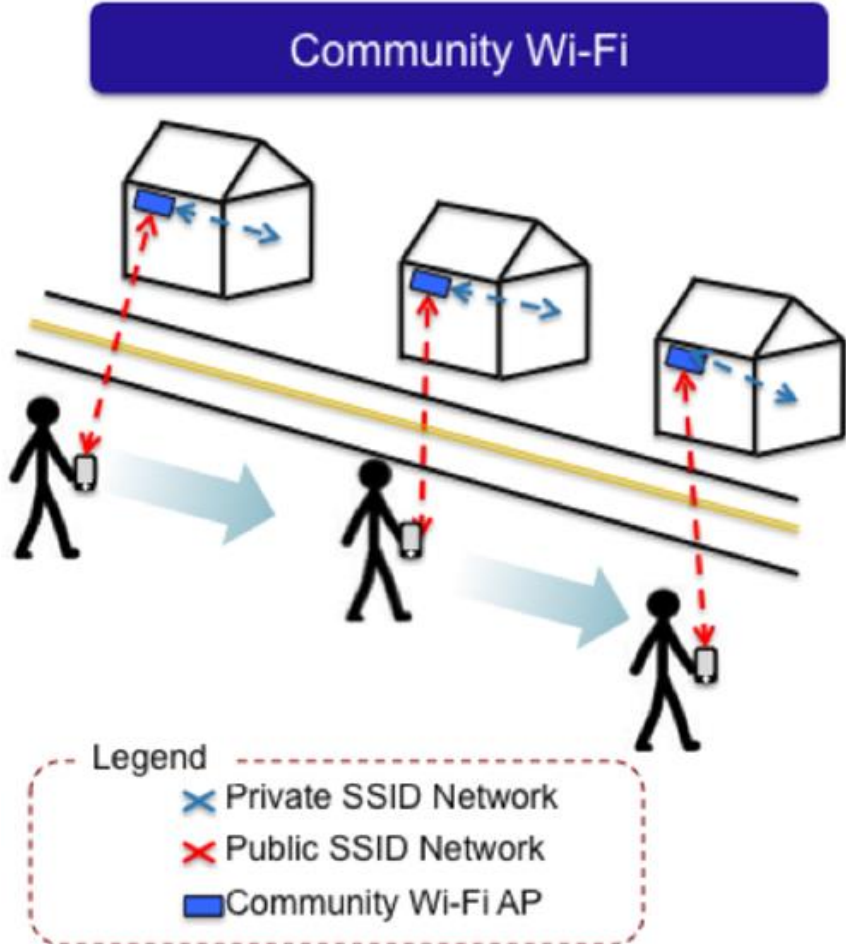
- At least \$100 million in funding will be used to help the state deploy and expand broadband access to more Hawai‘i families
- The Department of Hawaiian Homelands is set to receive at least \$60 million to provide high-speed internet access to more Native Hawaiian families
- At least 280,000 Hawai‘i residents will be eligible for a new benefit [ACP] aimed at helping low-income families afford high-speed internet access
- Funding will also support the construction of new broadband infrastructure, including undersea cables (Schatz, 2021)

# Resources can be shared

## Mesh



## Linear



Sources: [www.vtrural.org](http://www.vtrural.org)

and

<https://www.cablelabs.com/community-wi-fi-a-primer>  
Smith & Sun, PTC'22

# Projected Hardware Costs Per Site -- \$20,000: \$10 million for 500 sites

- Access points, Wi-Fi, remotely manageable,
  - enterprise grade 2 x \$5,500 = \$11,000
  - Antenna, directional 2 x \$500 = \$1,000
  - Mast/tower 30-foot, hurricane resistant \$1,500
  - Cabling and installation \$3,000
  - Contingency \$2,000
- The total is \$18,500 but use \$20,000 as a prudent site cost.

# Operational Costs

- 1 each per site 1 Gb/ 1 Gb fiber or cable connections \$180/month.
- $500 \times \$180 = \$90,000$  per month or \$1,080,000 per year.
- Take annual power, management, and maintenance to be \$1,000,000
- Community Wi-Fi systems would band together
- Estimated monthly operating cost: \$10.20/household  
-- Speed depends on loading

# Community Wi-Fi Support Organization Highly Beneficial – Share expertise and costs

## Primary roles

Administration, Planning,  
Liaison and Funding

Community Organizing  
and Teaching

**Operations** –  
monitoring of in-  
service systems  
and coordinating  
repairs.

Billing and  
administering  
access to the USAC  
Verifier to qualify  
new subscribers

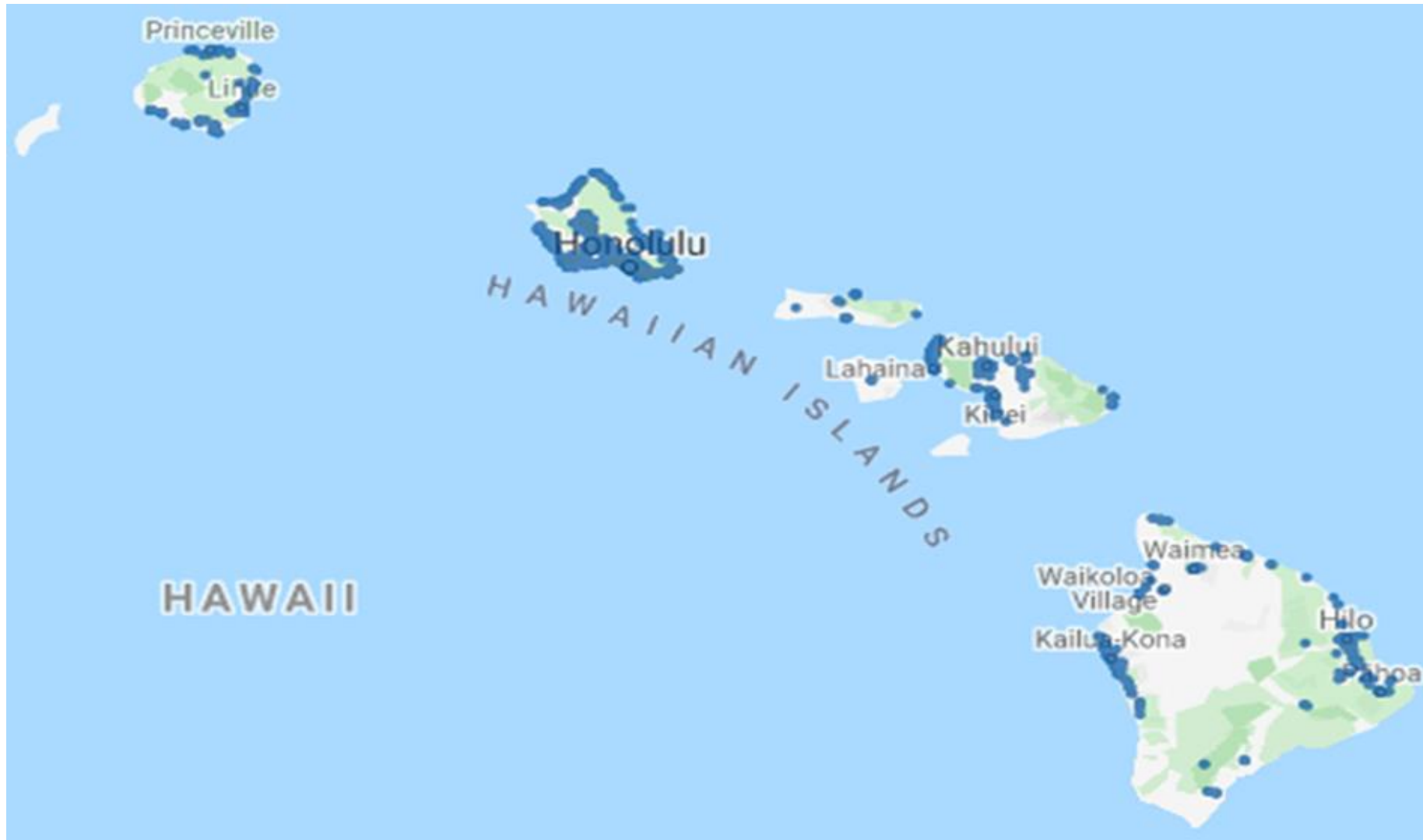
Construction of new  
sites and Maintenance  
of existing. Strong role  
in helping communities  
invest sweat equity.



# Sources of Funding

- Potentially, and hopefully, the Affordable Connectivity Program (ACP)
- Existing path is by already approved carriers that make bulk sales
- Donations of resources by organizations in the community
- Household payments \$30/month is reasonable
- If \$20 of the \$30 goes to capital costs, they would be recovered in three years
- Other government grants

# A form of Community Wi-Fi Exists



# Conclusion

- Underserved communities have a credible case to get Federal and/or State funding for community Wi-Fi systems. (Proposed as a comment on the ACP)
- Complement to the existing providers
- Plenty of work to be done: Big majority of census blocks in Hawaii are eligible for NTIA grant projects because of being unserved or underserved.
- Get social benefits quickly, not wait years
- Community activism with elected and administrative officials and local organizations are the keys to success