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Director of Technology: Southern California Tribal Chairmen's Association [sctca.net]
Tribal Digital Village Network [sctdv.net]

Partnering & Business Development: Arcadian Infracom, [arcadianinfra.com]

Current Affiliations:

- National Congress of American Indians:

Co-Chair Technology and Telecom Subcommittee & Technology Task Force

California **Tribal Advisory Group** to: Broadband Council

Arizona State University, American Indian Policy Institute: **Board Member**



Previous Affiliations:

[2 Term] Native Public Media: **Chairman**, Board of Directors, **Vice-Chair**, **Treasurer**

[2 Term] FCC: Native Nations Broadband Task Force: **Member** (appointed by: Genachowski / Wheeler)

1 Term FCC-CSRIC-IV: Communications, Security, Reliability,
& Interoperability Council IV: **Member**

This statement presented at NANOG77:

Solving the Complications of Infrastructure in Indian Country

It is important to understand some of the underlying issues inherent in the development of networks on the sovereign nations of the American Indian reservations in the United States. Every situation is different and the concept of a cookie-cutter network solution does not apply.

From cultural preservation, to the geography of 573 Federally recognized nations, to the missing 8000 middle miles providing access to the rest of the world, and the limited access to affordable spectrum to the community, dictates the design strategies to bring this 21st century resource to North America's first people.



Secretary of the Interior, Deb Haaland

COVID 19

How has it affected Tribes?

Digital Sovereignty

What does it mean to Tribes?

Native Americans in California (as an example)

109 Federally
recognized tribes
in CA

574 Federally
Recognized Tribes
in the US

TDVNetwork



What are the Biggest Challenges
facing Internet access today, for Tribes?

Access to the middle-mile is the hardest



ARCADIAN INFRACOM breaks ground this summer

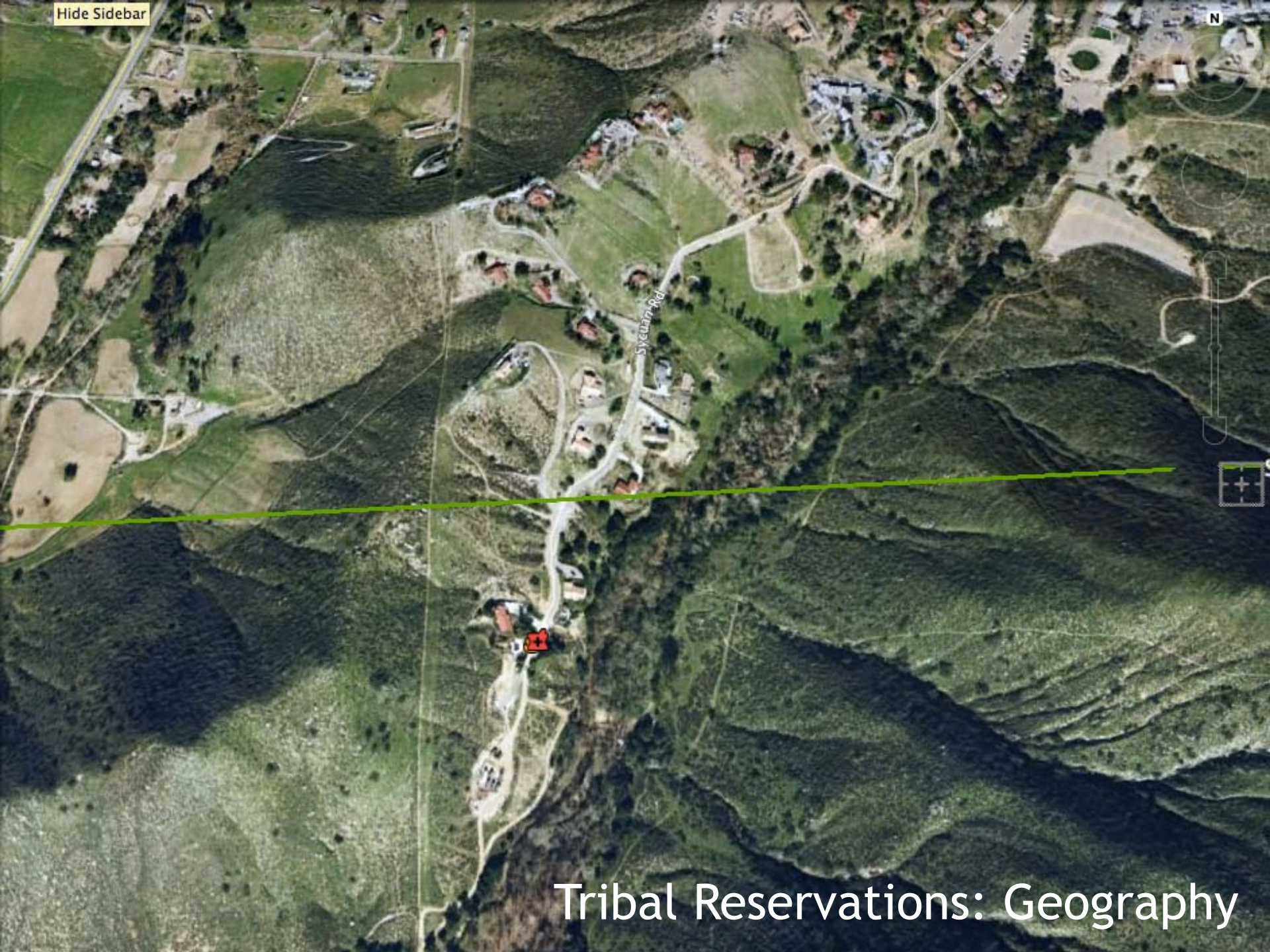






Tribal Reservations: Southwest Geography

Hide Sidebar



Tribal Reservations: Geography



Tribal Reservations: Wireless Solutions





Tribal Reservations: [Weather] Wireless Solutions

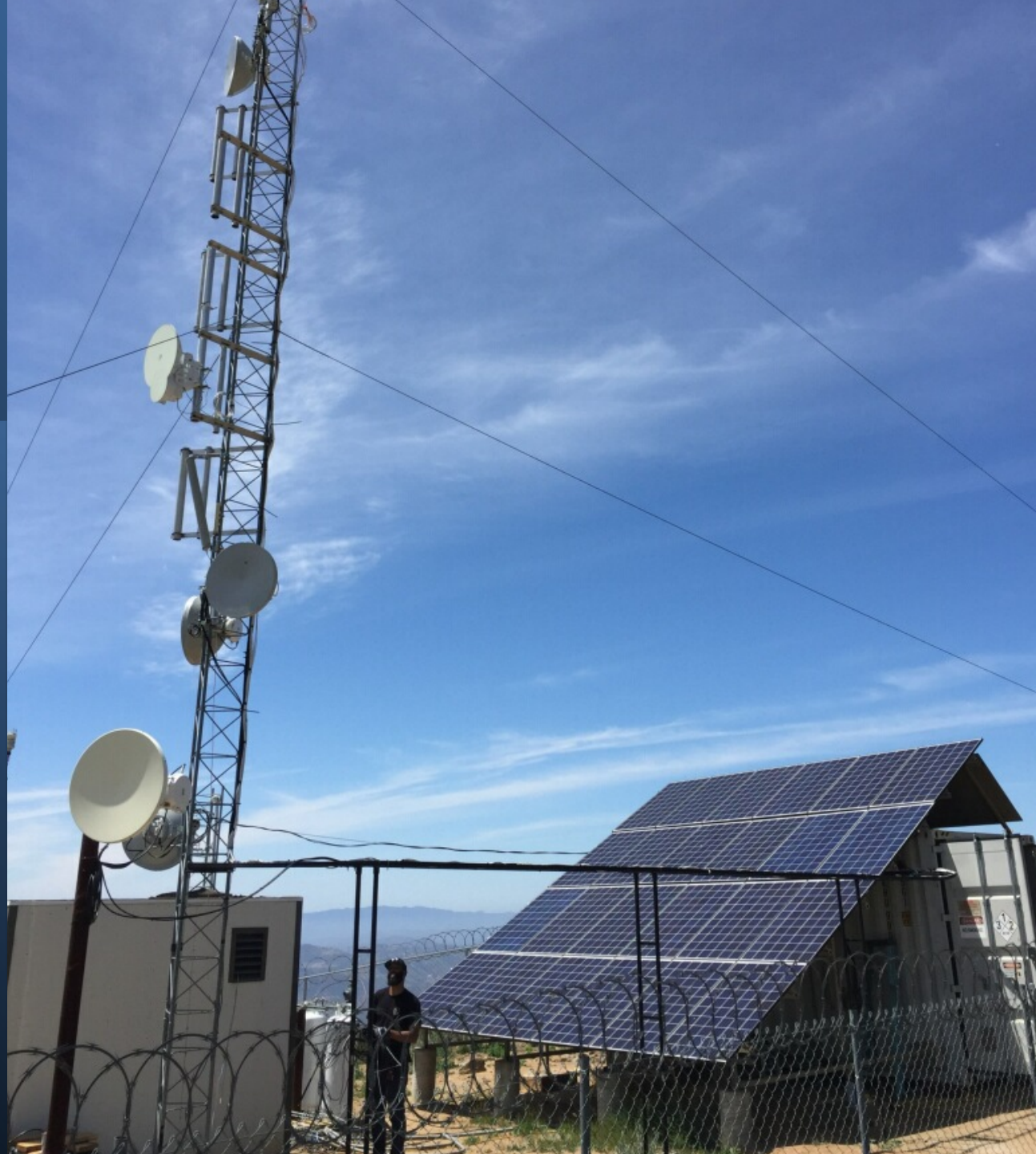


Tribal Reservations: Remote Living



Tribal Reservations: Wireless Solutions

The evolution of
Power off-grid
to support Tribal
communications



Tribal Reservations: Power Solutions, Wireless Solutions



Tribal Reservations: Spectrum types for Tribal use



Are there Fed and State policies that could be implemented to help Tribes in the process of broadband connectivity?

Affordable Spectrum Available to Tribes

Suitable unlicensed spectrum for deploying broadband is limited. Tribes are forced to operate in the "unlicensed" spectrum bands;

- The usable "cellular bands" sub 1 GHz are auctioned off by the FCC for Multiple hundreds of millions of dollars to billions of dollars. [Tribes can't afford to compete, and have no "bankable assets", due to the Sovereign nature of their land, in order to collateralize a loan]
- Unlicensed spectrum is free to use, and is typically not saturated in the remote locations that the tribes live in.

The Spectrum options are **900MHz**, **2.4GHz**, **2.5GHz**, **3550MHz** -**3700MHz** [aka CBRS, Citizens Broadband Radio Service], **3650MHz**, **5GHz** (5.2-5.8GHz range), **24GHz**, and **TVWS**, which is lower on the dial at **470MHz** -**790MHz** [Between Channels in the UHF and VHF bands]

TDVNET OVERVIEW (For Example)

- **650 + Miles of 'point-to-point' & 'point-to-multi-point' links**
- **23 Backbone & Relay Sites**
[20 solar powered, 3 grid powered]
- **105+/- Tribal Municipalities Connected**
- **600+ Home Connection Installations to date, 400+ active**
- **1500+ Computers & IoT connected to TDVNet**
- **12% adoption, 50% access coverage for 3050 homes on reservation**
- **Hybrid Fiber to point-to-point fixed microwave wireless distribution**
- **10GigE Fiber Circuit: @Data Center, 10GigE Circuit in East County on the La Posta reservation**

Tower Building and Where the Opportunities Exist





2004

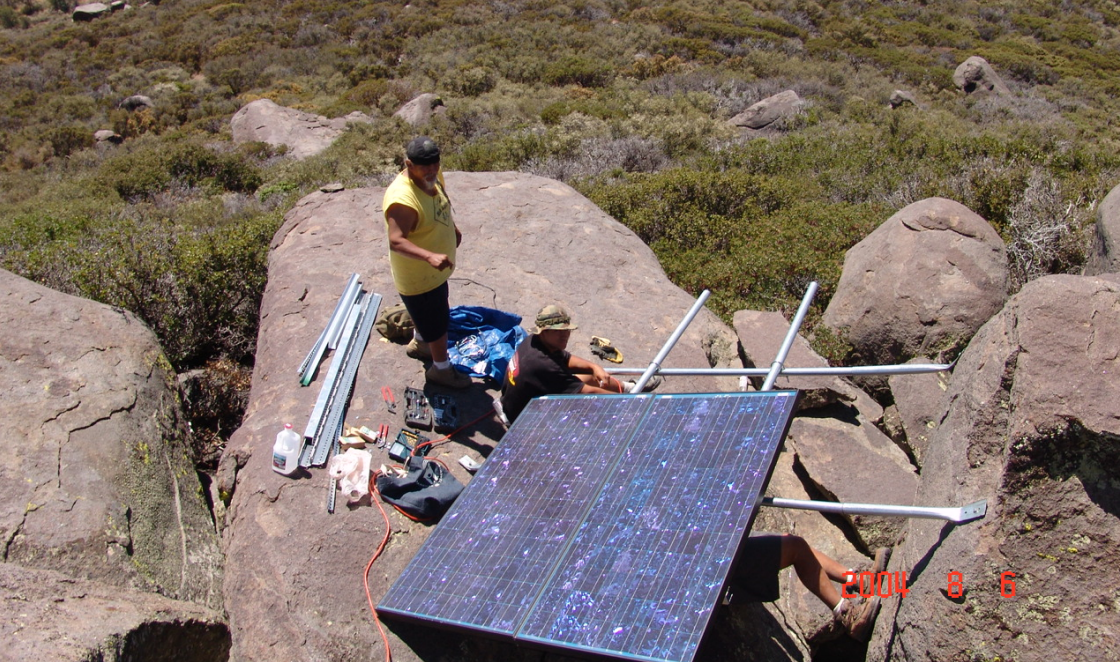
Tribal Reservations: Transportation Issues

Tribal Reservations: Transportation Issues





Tribal Reservations: Remote Management



Tribal Reservations: Unique Solutions

Tribal Reservations: Natural Disasters



Tribal Reservations: Natural Disasters



Tribal Reservations: Natural Disasters





Acts of Vandalism of
Critical Infrastructure on
Tribal Reservations:
Human Interaction
Education/Communication
Community Engagement



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