

## ACAM II Map Legend

- Green** = FCC locations MORE than SWC location count
- Yellow** = FCC locations equal to SWC location count
- Red** = FCC locations less than SWC location count

FCC Total Census Block Locations = 1,412  
Incorrect Census Block Location Counts = 1,185  
Correct Census Block Location Counts = 227  
# of FCC Location Counts < than SWC Location Counts = 779  
# of FCC Location Counts > than SWC Location Counts = 406  
FCC Supported ACAM II Location Counts = 7,236  
SWC Actual Location Counts = 11,968  
Total Difference in Location Counts = 4,732

### **NORTH**

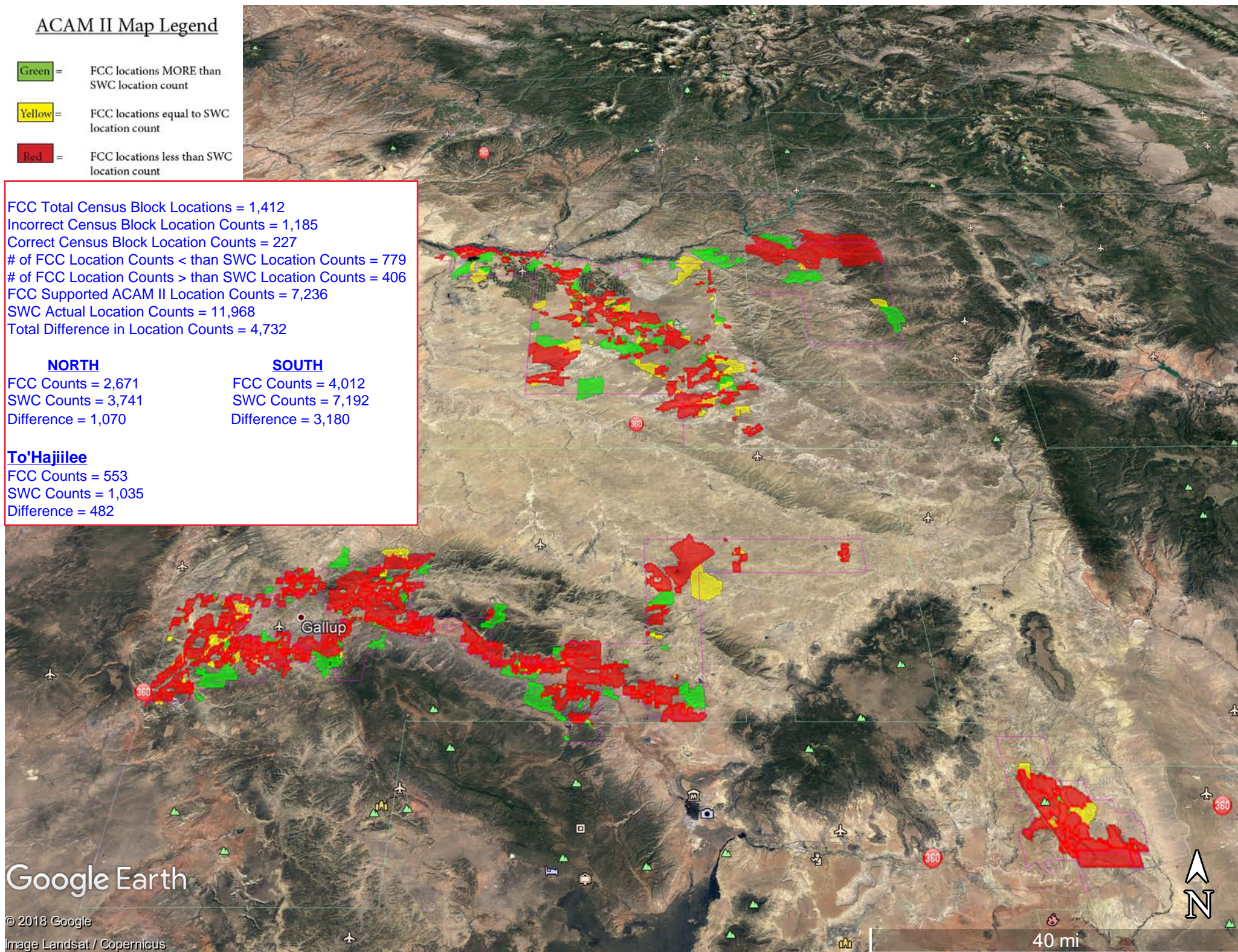
FCC Counts = 2,671  
SWC Counts = 3,741  
Difference = 1,070

### **SOUTH**

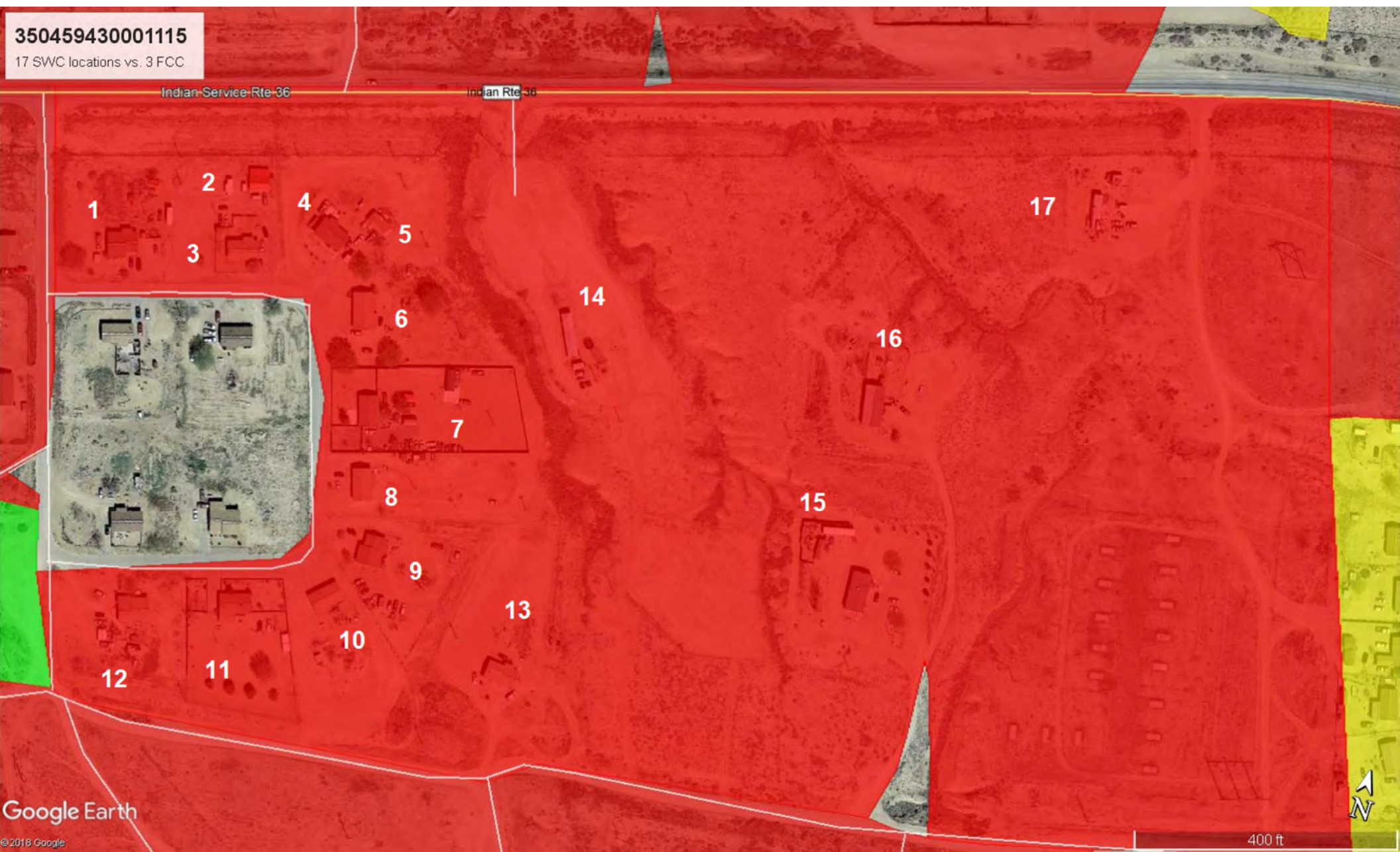
FCC Counts = 4,012  
SWC Counts = 7,192  
Difference = 3,180

### **To'Hajiilee**

FCC Counts = 553  
SWC Counts = 1,035  
Difference = 482









# A Clearer View of the Number of Houses Located in the Census Block Shown on the Opposite Page.



1997

© 2018 Google

Google Earth

Imagery Date: 4/6/2019 36°43'12.16" N 108°17'10.56" W elev 0 ft eye alt 2042 ft





## **BASIC BROADBAND FOR “HOMES” ON TRIBAL LANDS**

**One Rural Telco's Uphill Battle to Provide Basic Broadband Services to Tribal Communities in Need**

John Badal, CEO, Sacred Wind Communications

*“The sprawling reservation, which touches parts of rural Arizona, New Mexico and Utah, is by any measure one of the poorest places in America. Studies have found more than 30,000 families need new homes to live by modern standards.”*

Sacred Wind Communications was founded on the premise of “serving the unserved,” given the technological void that envelopes so many tribal communities in New Mexico. While the company continues to expand its broadband deployment initiatives among tribal communities in New Mexico, it still faces an uphill battle when trying to balance high infrastructure buildout costs with high consumer demand, particularly in remote Navajo communities. The following points specifically elucidate how difficult it is for a small, rural telco whose mission is to serve tribal communities that want and need broadband services, but still do not have basic access:

1. Operating costs and infrastructure deployment costs are much higher on remote tribal lands than those in other rural and urban areas.
2. The FCC, using U.S. Census Bureau data and FCC Form 477 data, designating a carrier's *served* households, misses many unserved tribal homes in its calculation of broadband support needed by the carrier.
3. A major part of the undercounting of tribal homes is the failure to recognize certain structures as domiciles, inhabitable by Western standards.

As part of the FCC's recent A-CAM support order, Sacred Wind Communications took the opportunity to identify all locations – structures that might be served by broadband and voice telecommunications services – within its study areas' census blocks declared by the FCC eligible for A-CAM support, and found that the FCC undercounted the locations in those census blocks by over 4,000 locations. Those undercounted homes represented a loss of nearly \$4 million annually in funding needed to provide broadband to those locations. The exclusion of those locations from the A-CAM support program has rendered them invisible to the Commission for purposes of bridging the digital divide in rural and Tribal areas. Had Sacred Wind accepted the FCC's A-CAM offer of support, the company could have met its obligations of providing broadband at 25 Mbps download to 100% of the locations in the FCC's database, without ever having to deploy to a single one of these excluded locations, ignoring nearly 40% of its households.

### **OPEX and CAPEX Costs are Higher on Rural Tribal Lands**

Operating in a study area 1½ times the size of Delaware where three-fourths of the population live remotely or in small clusters of homes, separated in many areas by miles of desert or mountainous terrain, Sacred Wind's per household outside plant costs exceed the norm. The company's number of vehicles, vehicle miles travelled, and outside plant technicians are higher than those for more concentrated study areas. The cost of construction of communications towers and equipment shelters and installation of broadband carrier cabinets on remote sites, and the cost of rights of way for every project, whether landline or microwave, elevate Sacred Wind's per customer operating costs.

### **The Federal Government Undercounts Many Homes on Rural Tribal Lands**

Like other carriers serving Tribal Lands, Sacred Wind serves many low-income customers who reside in extremely rural, remote areas. The average annual individual income in Navajo, NM is \$6,176, which is 75 percent below the statewide average (\$25,257) and 80 percent below the



national average (\$31,177).<sup>1</sup> Over 42.9 percent of Navajos live under the national poverty level, the highest poverty rate in the country, even among American Indians.<sup>2</sup> Sacred Wind calculates that, among the yet-unserved households in the more remote areas of its territory, even higher poverty levels exist. Almost 75% of Sacred Wind's customers participate in the FCC's Tribal Lifeline program.

The Navajo People reside in basically three classifications of tribally occupied federal lands: Homesites under a lease with the Tribe; Allotment Lands assigned and managed by the Bureau of Indian Affairs (BIA); and in HUD or Navajo Housing Authority (NHA) housing.

A Navajo Homesite Lease, a parcel of land assigned by the Navajo Nation to a family or individual of up to one acre, is acquired by a member of the Tribe who then would build a house or move a trailer home on the parcel. The Homesite Lease allows up to three residential locations occupied by relatives of the applicant.

A BIA Allotment, a U.S. Department of Interior BIA-managed parcel, can be from 2.5 acres to 160 acres and is allotted to a Tribal family wherein multiple locations occupied by members of the same family can reside, as authorized by the majority of all family members.

According to the NHA, over 30,000 Navajo families are on a waiting list for NHA homes. Reference to that statistic can be found in a news article in the link provided below and cited here: "The sprawling reservation, which touches parts of rural Arizona, New Mexico and Utah, is by any measure one of the poorest places in America. Studies have found more than 30,000 families need new homes to live by modern standards."<sup>3</sup>

With multiple households occupying a family's Homesite Lease or BIA Allotment, some legitimately and others as "squatters", it is apparent that many households have been omitted by census takers.

### **Many Navajo Homes Are Not Recognized as Domiciles**

Those 30,000 families on the NHA waiting list are not the primary occupants of a homesite lease nor of an allotment. Those primary homes have been built by the primary owners/occupants and are mortgage/lease-free. They are family members of homesite leases and allotment occupants who live in substandard dwellings on those homesite and allotment parcels that are probably not recognized by the US Census and the FCC as living quarters. Sacred Wind has delivered voice and broadband services to a number of these locations using its Fixed Wireless technology and, in some cases where electric service is unavailable in the area, the company has installed small solar power units to power up its customer's communication equipment.



*A Navajo home comprised of a converted tool shed with Sacred Wind's solar panels and wireless broadband connection visible.*

<sup>1</sup> U.S. Census Bureau, American Fact Finder, Selected Economic Characteristics for Navajo CDP, New Mexico.

<sup>2</sup> The Navajo Nation, An Overview of the Navajo Nation – Demographics.

<sup>3</sup> <http://www.navajobusiness.com/fastFacts/demographics.htm>

<sup>3</sup> <https://www.azcentral.com/story/news/local/arizona-investigations/2017/01/19/new-hud-reports-find-housing-conditions-worse-among-native-americans/96783368/>



*An actual tool shed, unconverted, that is used to house 2 adults and 2 children. The inside of this tool shed has a solar-powered phone and broadband service, 2 full-sized beds, an unvented kerosene heater, and a stick lamp that is attached to our solar converter. The kitchen and bathroom are outdoors. There is no electricity, no water, and no space to sit down except on the beds.*

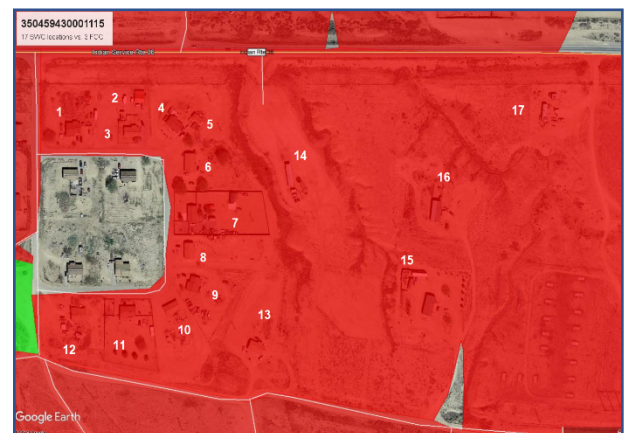


*A traditional Navajo Hogan with Sacred Wind's broadband connection. Since the Hogan is sometimes used for ceremonial purposes, the antenna was not attached to the structure in observance of Navajo*

Many of these residences are accessible by dirt roads and truck pathways and therefore lack street addresses. Others may be unrecognizable as an inhabitable structure to those outside of the Tribe.

Here is a detailed example and close-up of a census block (350319436002056) with location discrepancies. Commission data listed three eligible locations for this area, whereas Sacred Wind counted seventeen eligible locations.

The total location discrepancy for Sacred Wind is staggering and may stem from flawed U.S. Census housing unit data. As recently reported by the L.A. Times, a U.S. Census Bureau audit found that in the 2010 Census, nearly 1 in 7 Native Americans living on a reservation was missed, amounting to 82,000 people overlooked and uncounted — “equal to skipping the entire city of Santa Fe, New Mexico’s capital.”<sup>4</sup>



\*\*\*\*

<sup>4</sup> “The 2020 census is coming. Will Native Americans be counted?” Kurtis Lee & Ben Welsh, Los Angeles Times (June 13, 2019), available at <https://www.latimes.com/projects/la-na-census-native-americans-navajo-nation/>



**United States Senate**  
WASHINGTON, DC 20510

August 2, 2018

The Honorable Ajit Pai  
Chairman  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Dear Chairman Pai:

We are writing to express our support for Petitions for Reconsideration filed by Mescalero Apache Telecom Inc. (MATI)<sup>1</sup> and Sacred Wind Communications, Inc. (Sacred Wind)<sup>2</sup> now under consideration at the Commission. As you know, the *Tribal Operational Expense Report and Order* added an eligibility condition that possess significant obstacles for carriers serving some of the hardest to serve territory in the country.<sup>3</sup>

In the *Tribal Operational Expense Report and Order*, the Commission increased the amount of operating expenses that carriers predominantly serving Tribal areas can recover from the Universal Service Fund. The *Tribal Operational Expense Report and Order* also limited the relief to carriers who have not deployed broadband service of 10 Mbps download/1 Mbps upload to 90 percent or more of the housing units on the Tribal land's study area. This limitation will actually harm these carriers' ability to deploy broadband further in their territory. Operational expenses are not reduced when a carrier builds out a broadband network— instead growth could actually lead to increased costs. It is our hope that you will direct the appropriate staff to work with the impacted companies on a path forward.

We appreciate the Commission's support of the *Tribal Operational Expense Report and Order*. However, we believe that MATI and Sacred Wind should not be excluded from this relief and the Commission should issue the relief requested in the Petitions.

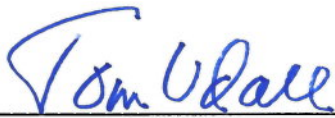
Sincerely,

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<sup>1</sup> *Connect America Fund*, Petition for Reconsideration of Mescalero Apache Telecom, Inc., WC Docket No. 10-90 (May 30, 2018).

<sup>2</sup> *Connect America Fund*, Petition for Reconsideration of Sacred Wind Communications, Inc., WC Docket No. 10-90 (May 31, 2018).

<sup>3</sup> *Connect America Fund*, Report and Order, WC Docket No. 10-90, FCC 18-37 (rel. Apr. 5, 2018) (*Tribal Operational Expense Report and Order*).



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Tom Udall  
United States Senator



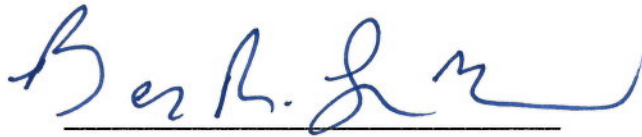
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Steve Pearce  
United States Representative



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Martin Heinrich  
United States Senator



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Ben Ray Luján  
United States Representative



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Michelle Lujan Grisham  
United States Representative



Our fiber project into To’hajiilee involved crossing through 11 BIA allotments which resulted in a Right of Way cost to Sacred Wind of over \$300,000 for only a small portion of the entire fiber route. The proposed route of approximately 60 miles shown here has 65 total BIA allotments, which could end up being cost-prohibitive for a small rural telco. This does not include other costs such as archaeological and environmental assessments, easement surveys, and the ultimate construction costs.

Sacred Wind Communications, Inc.			
Proposed New Route N-9 - Pueblo Pintado - Smith Lake Area			
Township:	Range:	Section/Fraction:	Land Status:
			Navajo Fee
			Navajo Trust
			Private
			Navajo Trust
			Navajo Trust
			Navajo Trust
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	PLO-USA
	Allotment
	Allotment
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	Allotment
	Allotment
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	Allotment
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	BLM
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	NM State
	NHA
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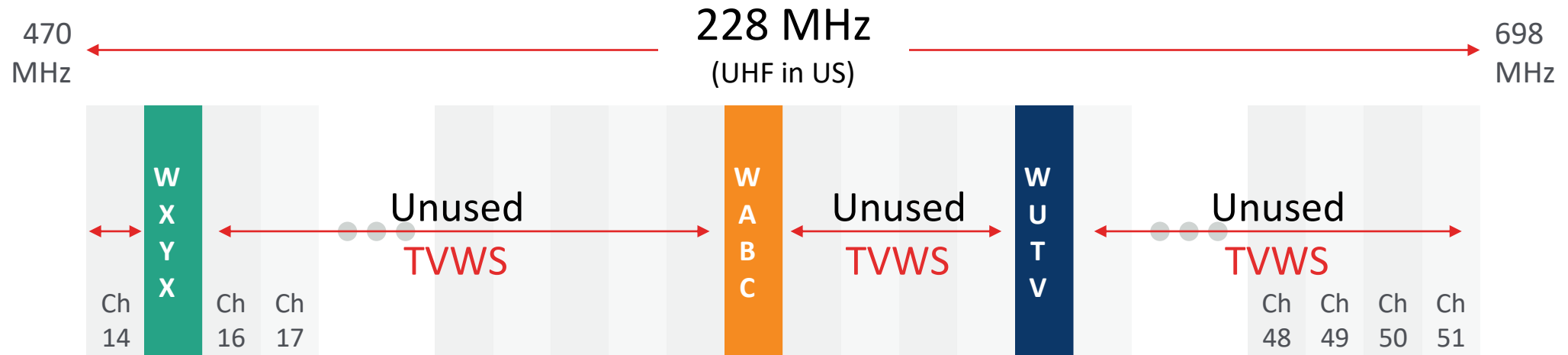
	Private
	Navajo Fee
	Allotment
	Allotment
	Navajo Fee
	Navajo Fee
	Allotment
	Navajo Fee
	NM State
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	Navajo Trust
	Navajo Trust
	Navajo Trust
	Navajo Trust
	Navajo Fee
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	Navajo Fee
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	Navajo Fee
	BIA-USA
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# What is TV White Space Spectrum?

Unused TV-band channels



**"Beachfront Spectrum"**

Abundant

Sub-GHz

Unlicensed

**for wireless broadband**

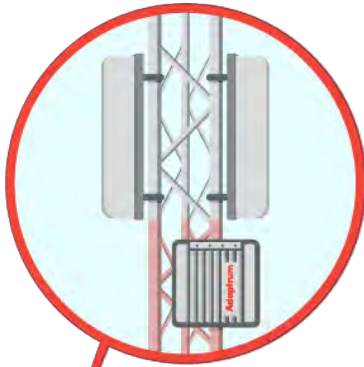


# Sub-GHz Spectrum Ideal for Wireless Broadband

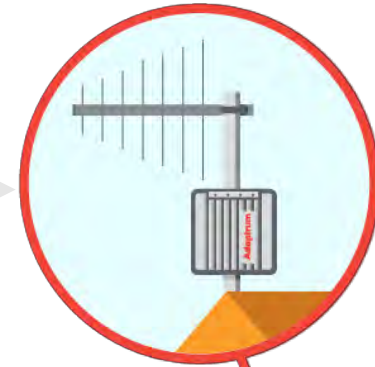
Long-Range

Non-Line-of-Sight  
Great Penetration  
trees, building, etc.

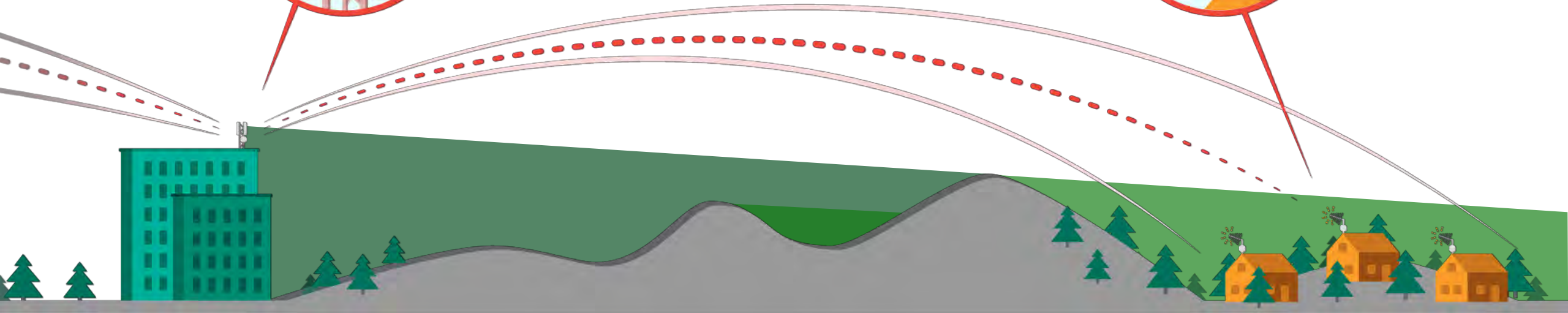
TVWS  
Base



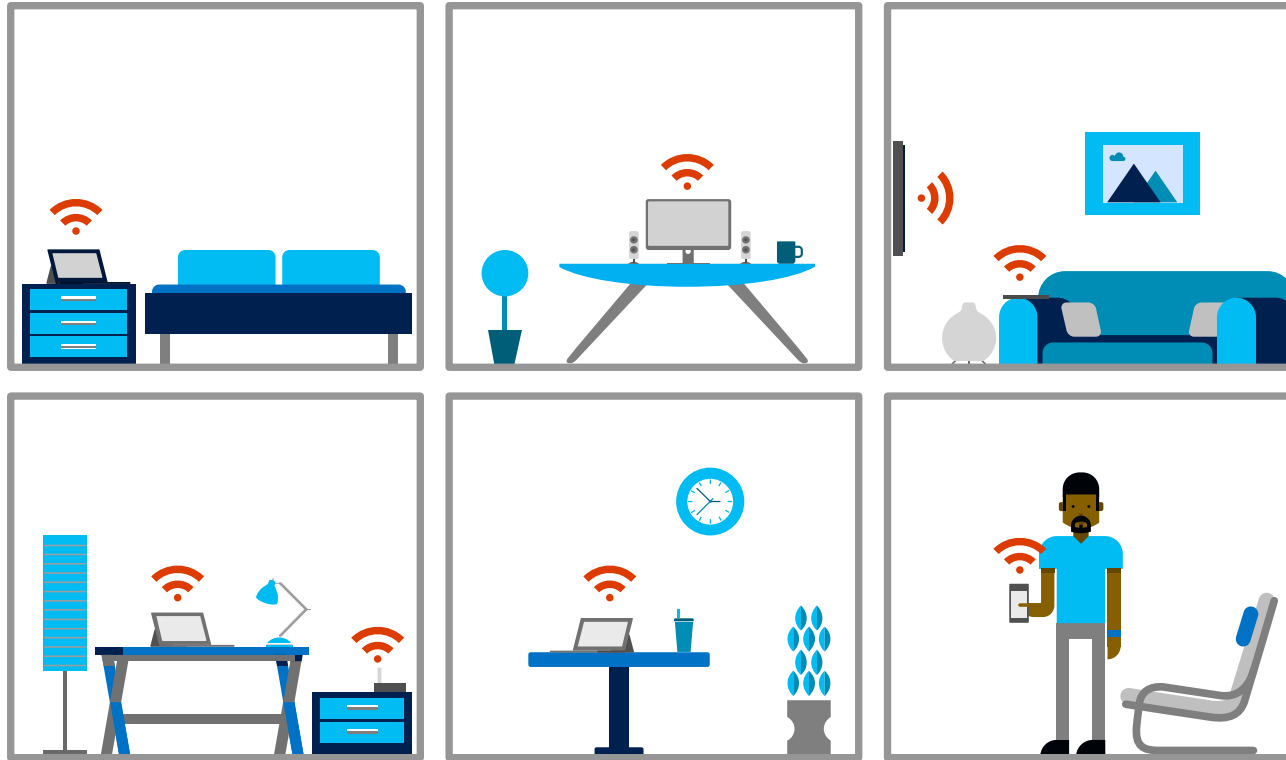
TVWS  
Client(s)



7 mi / 11 km



# Why use TV white space technology

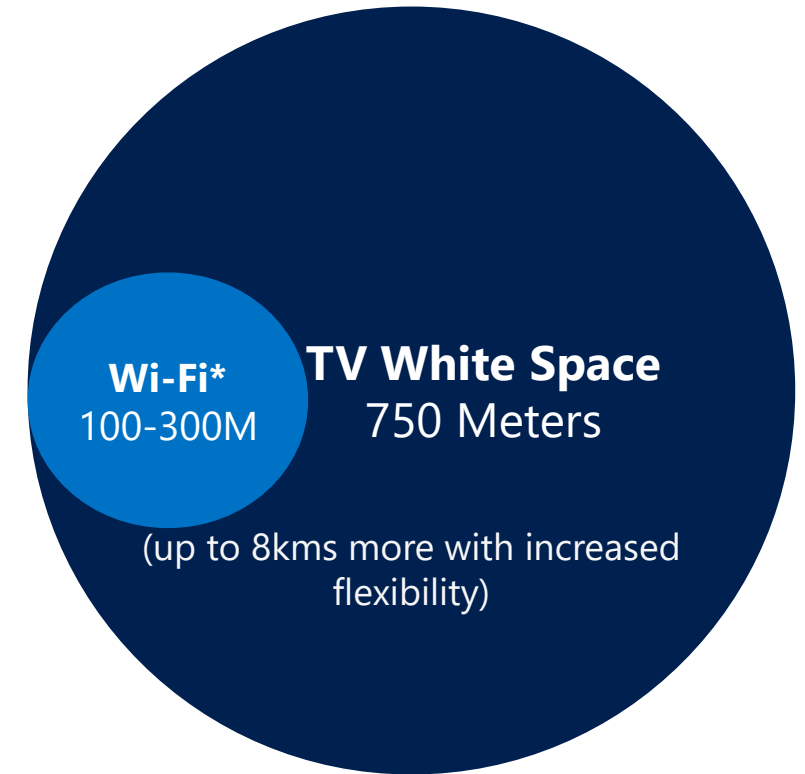


In a typical home, a Wi-Fi signal can penetrate **up to 2 walls**.

A **TV white spaces signal** can penetrate through more walls and obstacles, enabling whole home media distribution.

This will **simplify and enrich** in-home/in-building networking opportunities

Range in meters:



**4X the distance, 16X the area covered.**  
Same power comparing 2.4GHz to 600 MHz. The result is **more coverage, lower network costs, and lower power consumption**



# Last Mile Solution



CPE at Home

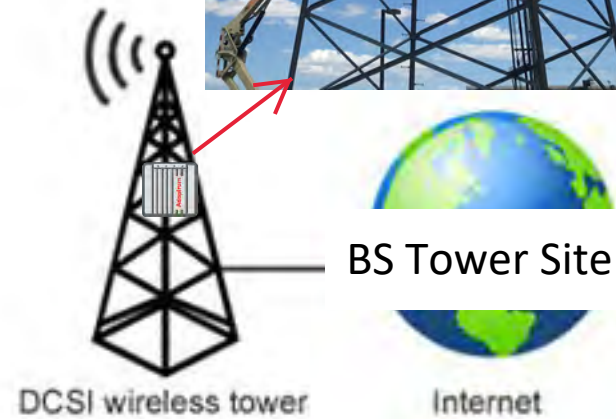


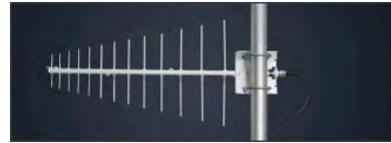
Photo displaying the 2 TVWS access points/base stations that Sacred Wind recently installed on our tower in Yatahey, New Mexico, for our multi-year Microsoft Airband project.



Each access point is a little over 3 ft. long and can weigh up to 100 pounds with mounting hardware included.

# CPE Setup

Directional CPE antenna on the building wall/rooftop

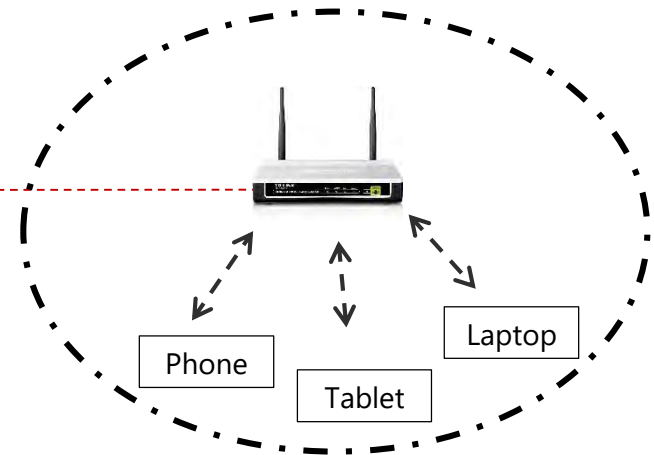


5-ft. jumper cable:  
0.5 inch coax with  
N-connector



Each CPE operates on one UHF (TVWS) channel or a pair of bonded contiguous channels, as assigned from the channel list provided by the TVWS DB

Cat5/6 Ethernet cable



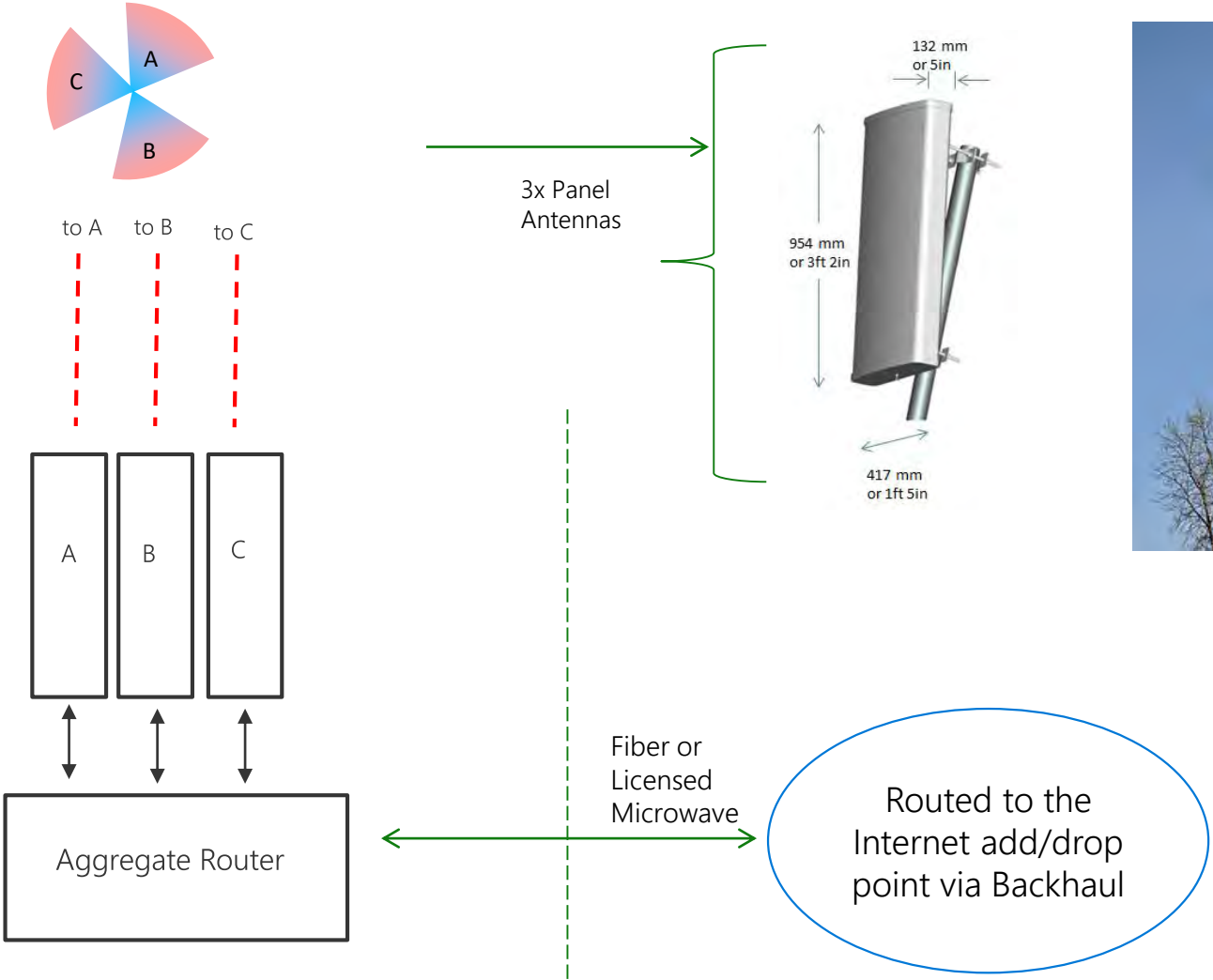


# Base Station Setup – Default Configuration

Antenna azimuth and count will be customized per specific site requirements

Each Base Station radio operates on a separate UHF (TVWS) Channel

Based on need, 1 to 6 (or 8 in some cases) Base Station Radios can be used for one base station site.



# CPE Installation







SACRED WIND

SERVING THE UNSERVED



Bridging the Digital Divide  
for Rural and Tribal  
Communities in New Mexico.



OFFICIAL PARTNER



Voted "Most Inspiring Small Business in America" - 2009, American Express/NBC Universal *Shine A Light* Contest.

New Mexico Excellence Award - 2012.

Best of Albuquerque Award - 2014.

# A Young Company Moving at Light Speed

Sacred Wind Communications (Sacred Wind) was established in 2006 and is the only privately owned company in the U.S. focused solely on bridging the digital divide for rural tribal communities in New Mexico. We quickly paved the way in 2008 by successfully completing a trial of fixed wireless equipment for the USDA. Since then, we have implemented innovative methods to bring broadband service to homes in our rugged and remote territory.

Sacred Wind is the only rural telco in New Mexico to be awarded CAF II funding by the FCC to expand broadband service to about 400 square miles of mostly Navajo lands. We are also the only company in New Mexico to be selected by Microsoft to serve as a partner in the deployment of fixed wireless and TV White Space technology to unserved rural tribal communities.








Our unique array of microwave antenna enables us to deliver 100 Mbps to homes in Grants, Milan and Bluewater Village.

## A Mix of Technologies is Key



Our fiber-fed, solar-powered broadband loop carrier allows us to deliver high-speed internet to customers in remote areas.

In the last 2 years, we've quintupled our broadband speeds & expanded coverage to 85% of Navajo homes.

Our ongoing investment in a cutting-edge mix of technologies such as copper, fiber, microwave, infrared microwave, TV White Space and towers helps us to expand the range of broadband connectivity for our largely unserved and underserved rural populations in New Mexico.



# Leveling the Playing Field

Sacred Wind Communications is committed to expanding our broadband initiatives to serve rural and tribal communities in New Mexico, even though infrastructure costs per rural household are extremely high. We continue to reach small clusters of homes on Navajo lands that are separated by miles of desert and mountainous terrain. We see the importance of serving our low-income customers who are isolated from progress as they reside in extremely rural and remote areas. Many of our low-income customers reside in homes that may not be recognized as habitable structures, and lack access to basic amenities such as water, plumbing, heat and electricity. Sacred Wind has delivered voice and broadband services to a number of these homes by installing small solar-powered units to power up our communication devices.

**Our services help to level the playing field for marginalized communities and can have broad impact on enhancing a community's ability to thrive.**



# Serving the Unserved



A Navajo home comprised of a converted tool shed with Sacred Wind's solar panels and wireless broadband connection visible.



An actual tool shed, unconverted, that is used to house 2 adults and 2 children. The inside of this tool shed has a solar-powered phone and broadband service, 2 full-sized beds, an unvented kerosene heater, and a stick lamp that is attached to our solar converter. The kitchen and bathroom are outdoors. There is no water, no electricity, and no space to sit down except on the beds.



# Investing in Communities



Sacred Wind is committed to investing in rural and tribal communities not only through infrastructure, but also through our hiring practices. Half of our workforce is represented by members of the Navajo community, some of whom speak Navajo and all of whom are dedicated to enhancing the welfare of Navajo families in New Mexico.



# A Company That Cares

Sacred Wind believes in giving back to the communities we serve. Whether we're funding a culturally-oriented public art project, partnering with other non-profits to bring books to local schools, creating a community computer lab, donating thousands of pounds of food to families in need, or supporting students through our Native Scholarship Programs, we truly believe that hands-on outreach and grassroots support for our local communities is essential if we wish to help our rural tribal communities thrive. We are here for the people we serve.



A large percentage of households on the Navajo Nation burn wood and coal in indoor stoves during harsh winter conditions. When Sacred Wind heard that multiple Navajo households had run out of wood and coal and were not able to afford any more fuel, we purchased 10 cords of high quality firewood that we then donated to multiple Navajo Chapters.

We do this for the elders, for the children, for our customers.



## A Local Company with Local Focus

John Badal, CEO  
JBadal@sacred-wind.com  
(505) 908-2670

Neo Nicolaou, General Manager  
NNicolaou@sacred-wind.com  
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<https://sacredwindcommunications.com>