

# Freeing the Airwaves

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TV “White Spaces”  
&  
Rural Broadband



*Jim Carlson, Carlson Wireless Technologies*

# The Good News

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- New frequency spectrum for public use
- “Wi-Fi on steroids”
  - At least 3 times the coverage
  - Penetrates buildings and foliage
  - Capacity to meet today’s bandwidth demands
  - Freely available for unlicensed use
- Incredible potential for rural broadband

# What are “White Spaces”?

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- Unused spaces between TV channels
- 2009 migration of TV channels from analog to digital created gaps in the UHF and lower VHF bands.
- FCC ruled Sept 23 that unused channels now available for unlicensed public use.
- Rural areas have the most amount of unused channels.
  - *It makes sense to use these channels to bring broadband to rural communities*

# WiFi vs. White Space

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- WiFi uses microwave radio signal (2+ GHz)
  - Requires line of sight – easily obstructed
  - Requires expensive infrastructure (towers)
  - Offers limited coverage
- TV-WS uses VHF-UHF frequencies (50-700MHz)
  - Can penetrate foliage, buildings, basements, etc.
  - Uses existing infrastructure
  - Can provide 3 to 10 times the coverage of WiFi
- Both have the same bandwidth capacity

What does this mean  
for rural broadband?

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# Rugged Terrain

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- Forests and mountains are not obstructions to TV-WS
  - TV-WS signal
    - penetrates foliage
    - “bends” around obstacles
  - WiFi signal
    - requires line of sight

# Sparse Population

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- Fewer users to attract large service providers
  - TV-WS
    - covers wider areas
      - One access point can meet the needs of a whole community
    - can be deployed by smaller service providers
  - WiFi
    - requires more access points to reach a widespread population

# Economic Challenges

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- Rural areas typically do not have a strong economic base
  - TV-WS
    - is affordable to deploy
    - does require expensive infrastructure (towers)
    - can use existing infrastructure

# American Ingenuity Unleashed

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- FCC Chairman Julius Genachowski comments:
  - “A powerful platform for innovation”
  - “When we unleash American ingenuity, great things happen.”
- FCC rules: No expensive spectrum-sensing technology required
  - Now we can make affordable products
  - Rural communities can benefit today!

# How can communities make use of these new airwaves?

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- Small WISPs are often the first movers into unserved communities
- Community-based organizations can band together to raise funds
  - Yurok Tribe proposes to do this, using our newly developed product to meet the broadband needs of a sparsely populated, thickly forested, mountainous area.

# Homegrown Solution

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- US government has identified broadband as a national priority and an economic indicator.
- Nearly 40% of the American population lives in unserved or underserved areas.
- Humboldt County is home to a company that's ready with the solution.