

Spectrum Bridge TV White Space



Business Model, Opportunities, and Roadblocks

Spectrum Bridge in TV White Spaces

- **Spectrum Bridge is leading in TV White Space Market Development.**
 - Working with Radio manufacturers and System Integrators in bringing solutions to market.
 - Deploying Networks with partners for later expansion.
 - Spectrum Bridge Database provides radios and networks the access to TV White Space channels.
 - Licensing Software solutions in radios and infrastructure to enable TV White Space use.
 - Delivering Software Applications for end user devices and within the core network to optimize bandwidth and access.
 - Performing FCC certification of radios.

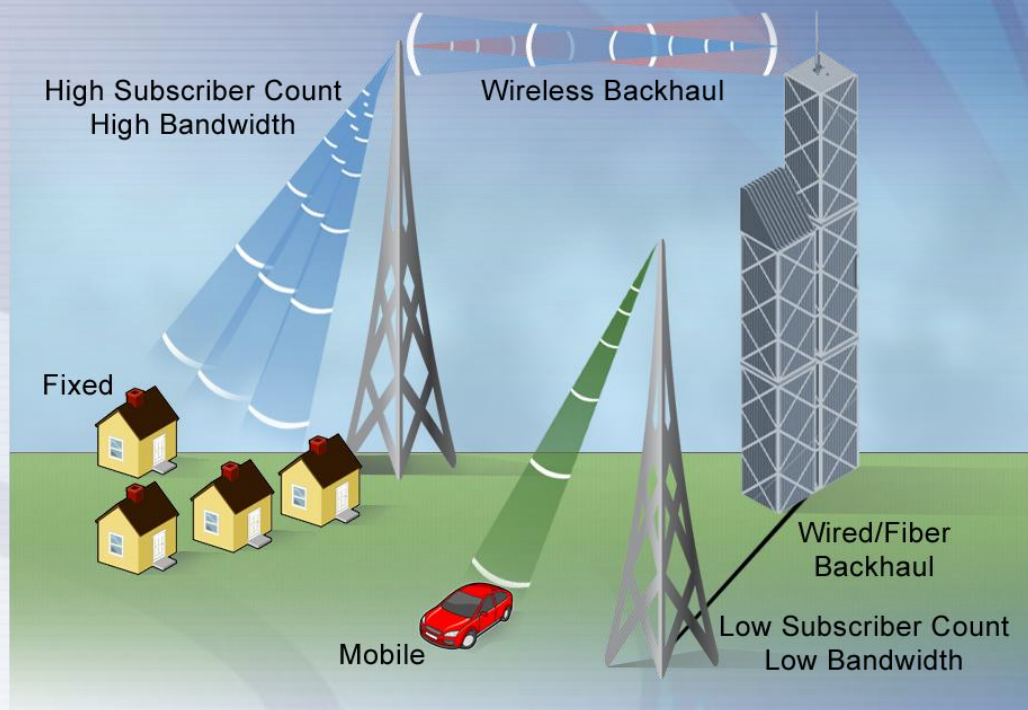
Creating New Opportunities in TV White Spaces



TV White Space

Ideal for a Wide Range of Fixed and Mobile Applications

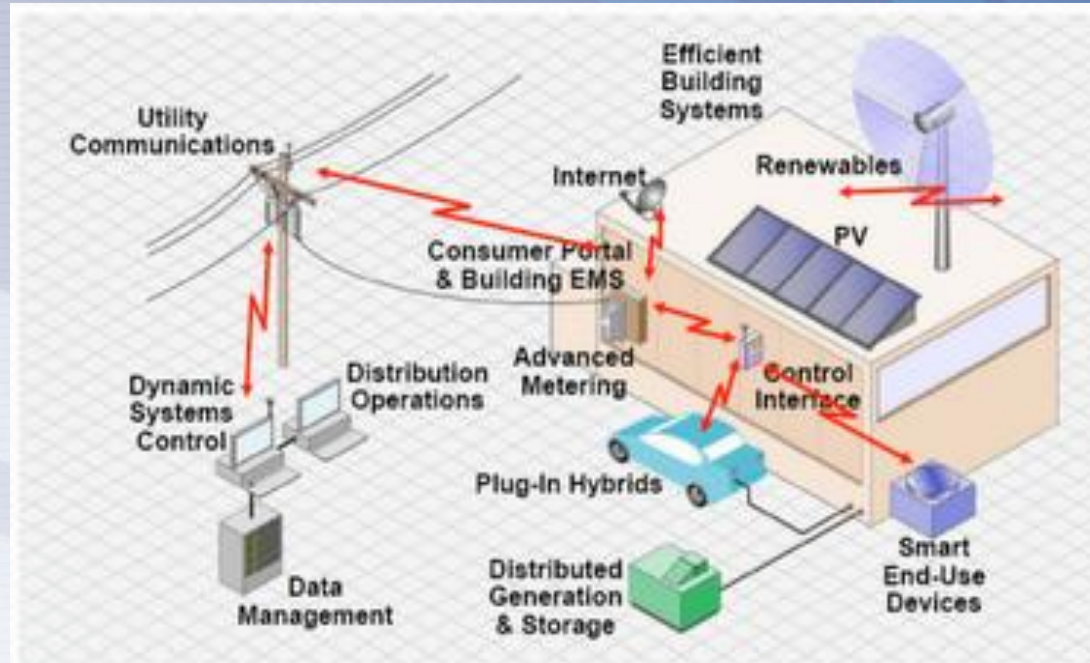
- Fixed Broadband Access
 - Rural Broadband
- Middle Mile
 - link WiFi Hotspots
- Enhanced Wi-Fi
- In Home/ Office Networks
- Wireless Backhaul
- Smart City Networks
- M2M Communications
- Offload traffic
- Utilize for events
- Campus-area Networks
- Network which combines licensed and unlicensed spectrum
- Prepaid service



TV White Space

Ideal for a Wide Range of Utility and Smart Grid Applications

- AMR/ AMI
- SCADA
- Intelligent control of generation and distribution infrastructure
- Substation monitoring
- Communications link backup (dispatch and point2point)
- Broadband telemetry
- Remote security, video and control
- Mobile broadband communications to field units
- Disaster recovery
- Smart appliance networking



From EPRI

Access to TV White Spaces Limiting Factor?

Major Metropolitan Areas

- White space is available but may not provide a good user experience.
- Few Contiguous channels prevent high bandwidth applications.

Outside the Top 20

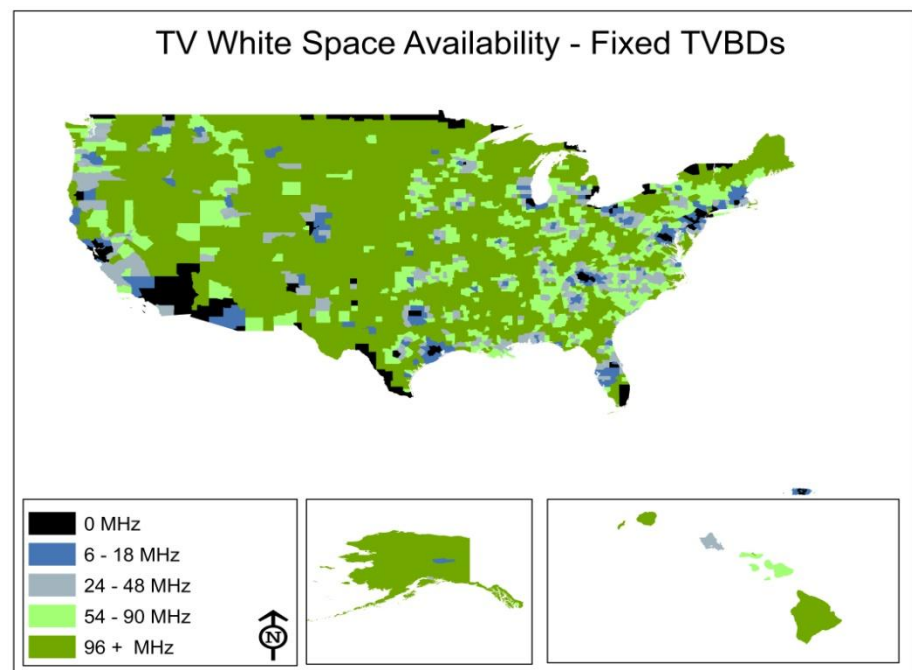
- Good opportunities exist for white space usage and high bandwidth applications.
- WAN systems are possible given the amount of contiguous channels

Tier 3 Markets – 50 to 300

- Very good opportunities for WAN from the bandwidth

Find TV White Space Availability
At
www.showmywhitespace.com
Or
On Your iPhone

TV White Space Availability - Fixed TVBDs



TV White Space Business Model

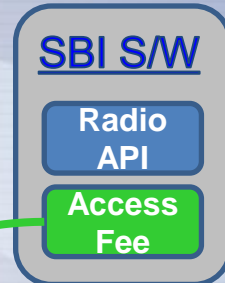
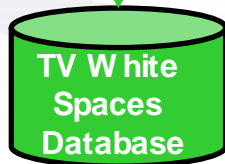
Network Management

Infrastructure Equipment

Subscriber Access

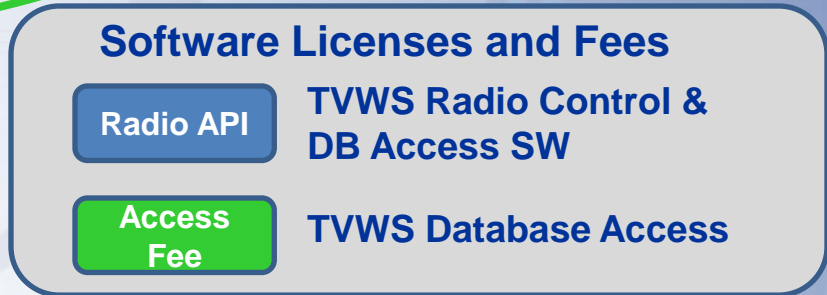
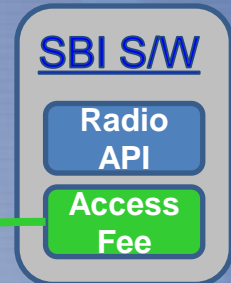


Database Query



Database Query

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TV White Spaces Summary

- **Benefits of White Spaces**
 - Building penetration
 - Propagation
- **Drawbacks**
 - Bandwidth limitations may limit applications
 - Incumbents can limit flexibility
 - Low allowable EIRP limits range
- **Similar Adoption Path to 802.11.**
 - Started SO/ HO and Personal Area Networks
 - Migrated to include Enterprise
- **New Technologies**
 - Re-banded 802.11 and WiMax.
 - Database driven cognitive networks.
 - Multi-frequency radios to leverage licensed and unlicensed spectrum

Spectrum Bridge

Thank You

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