



FCC/USDA Rural Broadband Educational Workshop
April 30, 2008

Access to Licensed Spectrum for Wireless Broadband

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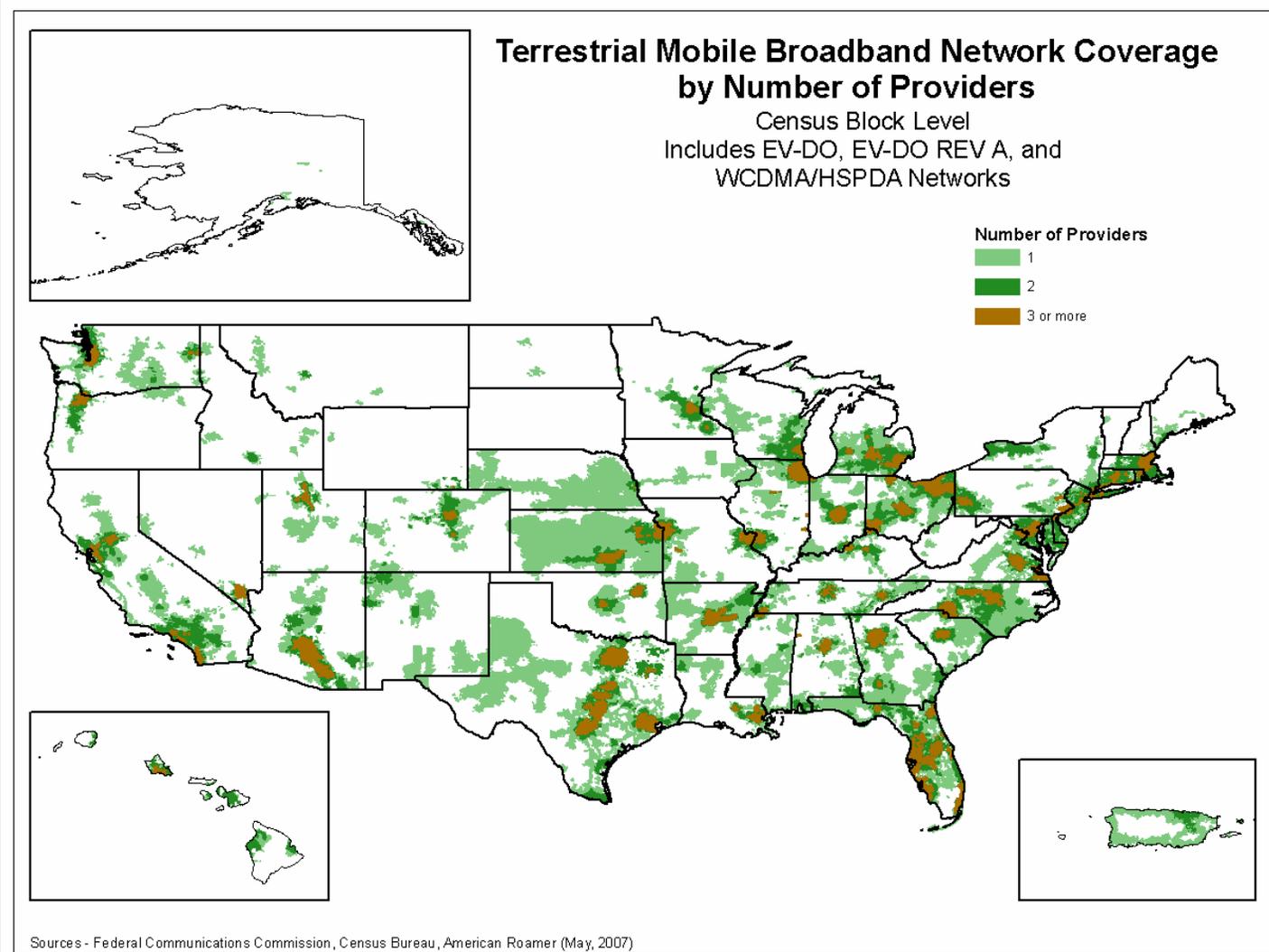
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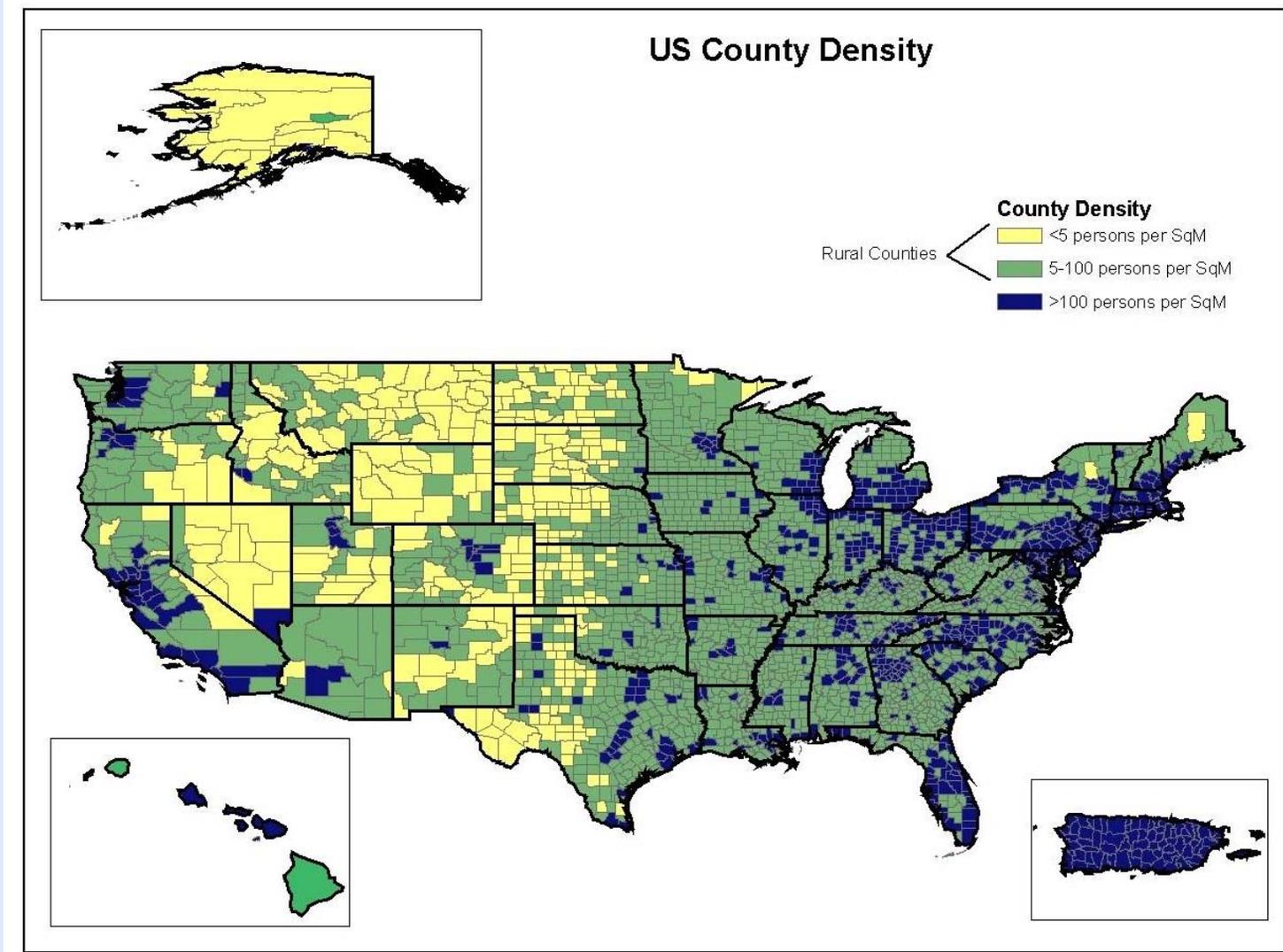
Access to Licensed Spectrum for Wireless Broadband

- ★ **Mobile broadband technologies enable subscribers to access the Internet while traveling at high speeds**
 - ★ Mobile handset
 - ★ Smartphone
 - ★ Wireless modem card connected to a laptop computer or PDA
- ★ **Mobile broadband technologies used by carriers in the United States, are capable of transmitting data at speeds of over 400 kbps**

Access to Licensed Spectrum for Wireless Broadband



Access to Licensed Spectrum for Rural Broadband



Access to Licensed Spectrum for Rural Broadband

- ★ **The FCC has taken a number of other actions to enhance opportunities for broadband service to rural areas**
 - ★ Security interests
 - ★ Infrastructure sharing
 - ★ Power levels

Access to Spectrum for Rural Broadband

- ★ **There are several mechanisms that the FCC uses to make spectrum available for wireless services, including licensed and licensed-exempt spectrum.**
- ★ **Licensed spectrum generally allows for exclusive use of particular frequencies or channels in particular locations.**

Licensed-Exempt Spectrum

- ★ **Spectrum that is designated as "unlicensed" or "licensed-exempt"**
 - ★ Users can operate without an FCC license
 - ★ Must use certified radio equipment
 - ★ Must comply with the FCC's Part 15 technical requirements, including power limits.
- ★ **Users of the license-exempt bands do not have exclusive use of the spectrum and are subject to interference.**

Licensed Spectrum

- ★ **The rules for licensed spectrum are flexible.**
 - ★ A licensee has flexibility in deciding what services to offer and what technologies to deploy on licensed spectrum.
- ★ **Equipment must meet basic technical requirements.**
- ★ **Equipment authorization is required.**

Licensed Spectrum

- ★ **Licensed spectrum licensed on a site-by-site basis or geographic service area, or both.**
- ★ **Primary attributes of licensed spectrum (as opposed to license exempt spectrum) – you generally must pay to access it.**

Licensed Spectrum for Rural Broadband

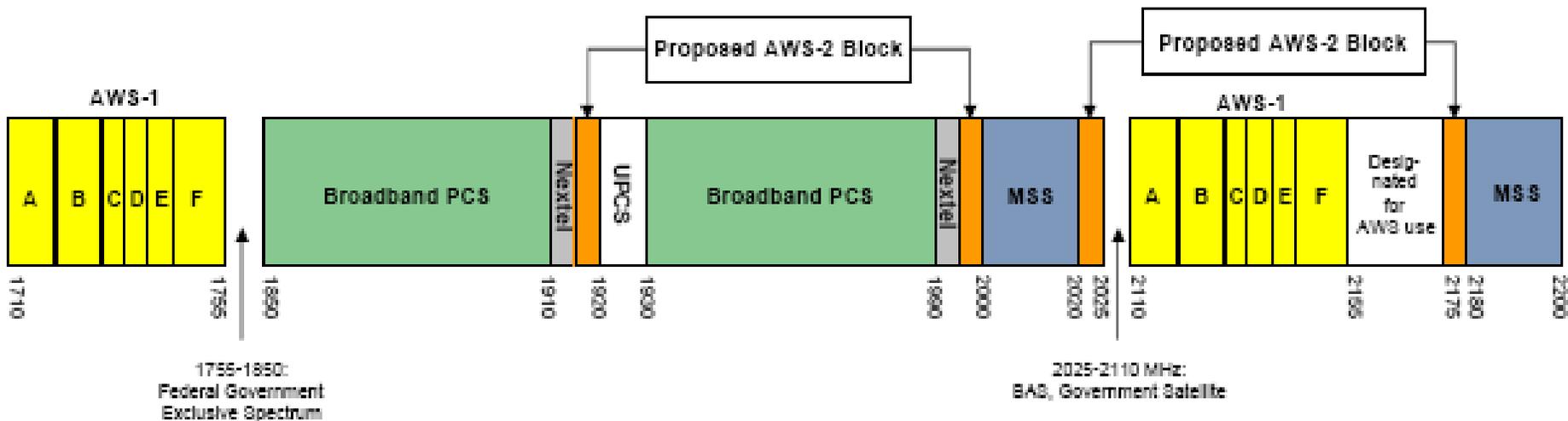
- ★ One of the key roles of the FCC in facilitating the deployment of broadband and cutting-edge wireless technologies is to make additional spectrum available for these services.
- ★ The FCC has been actively working in recent years to make more spectrum available and to promote the deployment of broadband services in spectrum that has already been licensed.

Access to Licensed Spectrum for Wireless Broadband

- ★ **Multiple spectrum bands for wireless broadband technologies**
 - ★ AWS Spectrum
 - ★ 2.5 GHz BRS/EBS Band
 - ★ 3650-3700 MHz Band
 - ★ 700 MHz Band

Advanced Wireless Services (AWS) Spectrum

Advanced Wireless Services (AWS) Band Plan

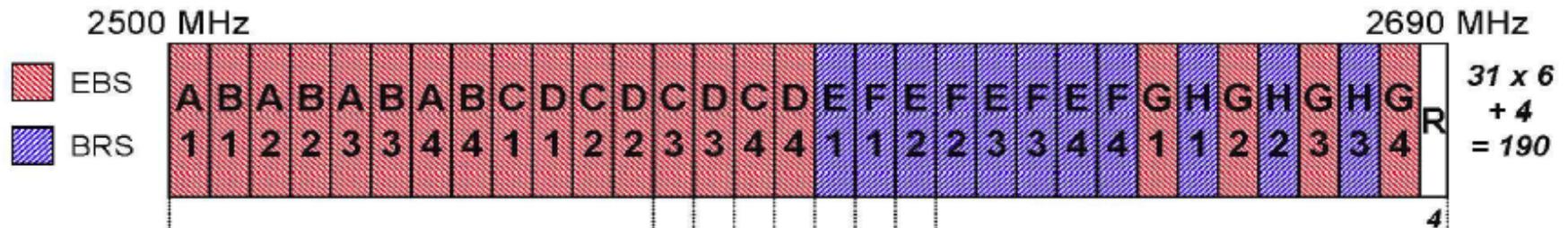


Advanced Wireless Services (AWS) Spectrum

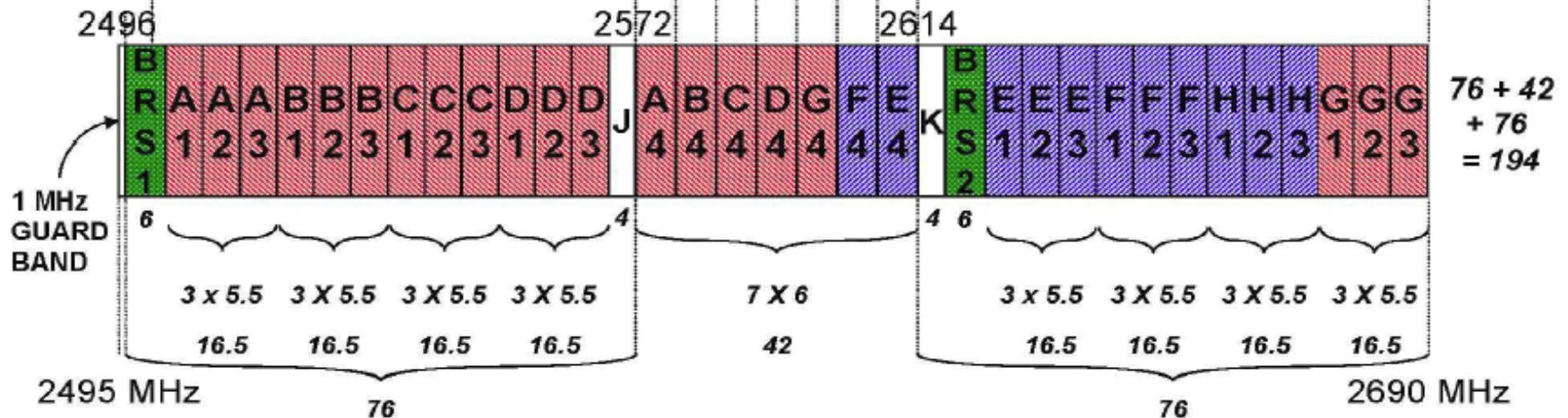
- ★ **Auction completed September 18, 2006**
- ★ **Largest amount of spectrum suitable for wireless broadband ever made available in a single auction**
- ★ **Total gross winning bids = \$13.9 billion**
- ★ **104 bidders won 1,087 licenses**
- ★ **Licensees can use to provide a wide range of new, wireless broadband services**

BRS/EBS Spectrum

PRE-TRANSITION



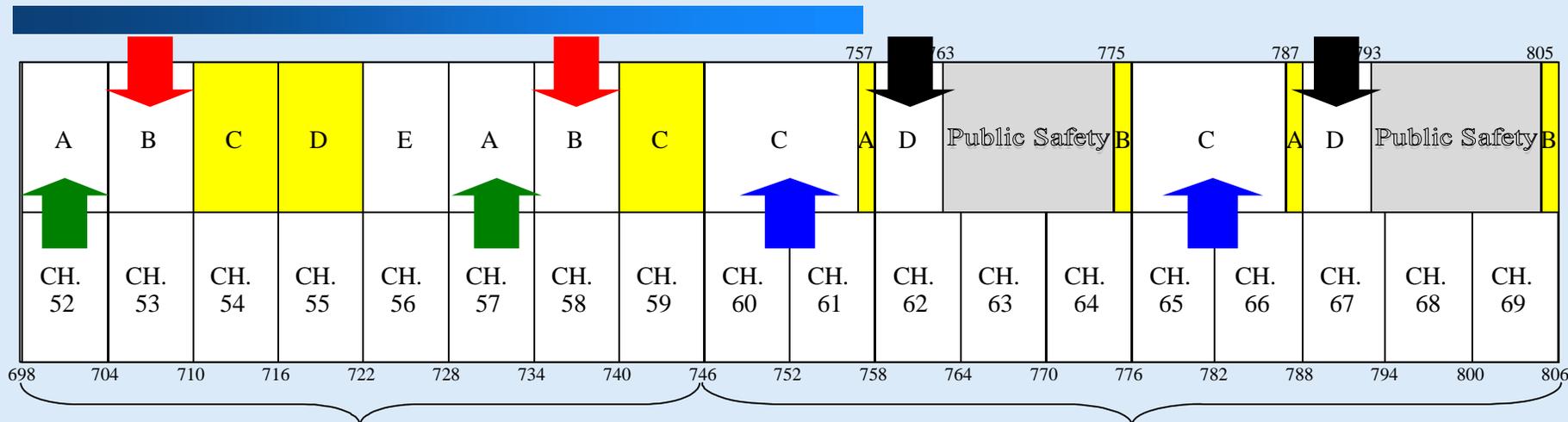
POST-TRANSITION



3650 MHz Band Spectrum

- ★ **50 MHz of spectrum transferred from federal to non-federal use.**
- ★ **FCC adopted non-exclusive, “hybrid” licensing approach in 2005.**
 - ★ Combined benefits of both licensed and unlicensed regimes.
- ★ **Equipment must use contention-based protocol to minimize interference.**
- ★ **FCC affirmed rules with minor modifications in June 2007.**

Revised 700 MHz Band Plan



LOWER 700 MHz BAND (CH. 52-59)

UPPER 700 MHz BAND (CH. 60-69)

Block	Frequencies	Bandwidth	Pairing	Area Type	Licenses
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	CMA	734*
D	716-722	6 MHz	unpaired	EAG	6*
E	722-728	6 MHz	unpaired	EA	176
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
D	758-763, 788-793	10 MHz	2 x 5 MHz	Nationwide	1***
A	757-758, 787-788	2 MHz	2 x 1 MHz	MEA	52**
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52**

* These Blocks have been auctioned.

** These Guard Band Blocks have been auctioned, but are being relocated.

*** This Block is associated with the 700 MHz Public/Private Partnership.

700 MHz Auction Milestones

- ★ Largest auction in FCC history, raising a record \$19.6 billion in bids
- ★ Advancing new open platform policies
- ★ Affirming aggressive build-out obligations
- ★ Creating what will be a new wireless broadband provider to compete with the incumbent telephone and cable companies in nearly every home in the U.S.; and
- ★ Providing small businesses, new entrants, rural providers and existing nationwide wireless providers with access to additional spectrum needed to deploy the next generation of wireless networks.

700 MHz Open Platform

- ★ **Upper C Block licensee will be required to provide a platform more open to devices and applications.**
- ★ **Will allow consumers, device manufacturers, third-party application developers, and others to use any device or application of their choice on the network in this band**
 - ★ Subject to certain reasonable network management conditions that allow the licensee to protect the network from harm.
- ★ **Will facilitate innovation, investment, and next generation wireless broadband services in urban and rural areas.**

700 MHz Performance Requirements

- ★ **All wireless licensees are subject to some type of performance requirement to demonstrate to the Commission that they are putting their spectrum to use.**
- ★ **As part of the 700 MHz Order adopted in July, the FCC adopted new, more stringent performance requirements for commercial 700 MHz licenses that have not yet been auctioned. These requirements will promote better access to spectrum and the provision of service, especially in rural areas.**
- ★ **If end-of-term requirement not met, unserved areas terminate automatically.**
 - ★ Spectrum returned to FCC for reassignment
 - ★ “Keep what you use” policy

Access to Licensed Spectrum for Wireless Broadband

- ★ **Gaining access to licensed spectrum once licenses are issued**
- ★ **Finding current license holders**

Secondary Markets for Spectrum

- ★ **Options for gaining access to licensed spectrum after licenses are issued (secondary markets)**
 1. Acquire license from current licensee (license assignment)
 2. Lease spectrum from current licensee (spectrum lease)
 3. Sublease spectrum from current lessee (spectrum sublease)

Secondary Markets for Spectrum

★ License Assignment

- ★ Involves the complete transfer of a license from one party to another party. See 47 C.F.R. 1.948.

★ Spectrum Lease/Sublease

1. Spectrum Manager Lease

- ★ Licensee is primarily responsible for a lessee's/sublessee's compliance with the Communication's Act and FCC policies and rules. See 47 C.F.R. 1.9020.

2. *De Facto* Transfer Lease

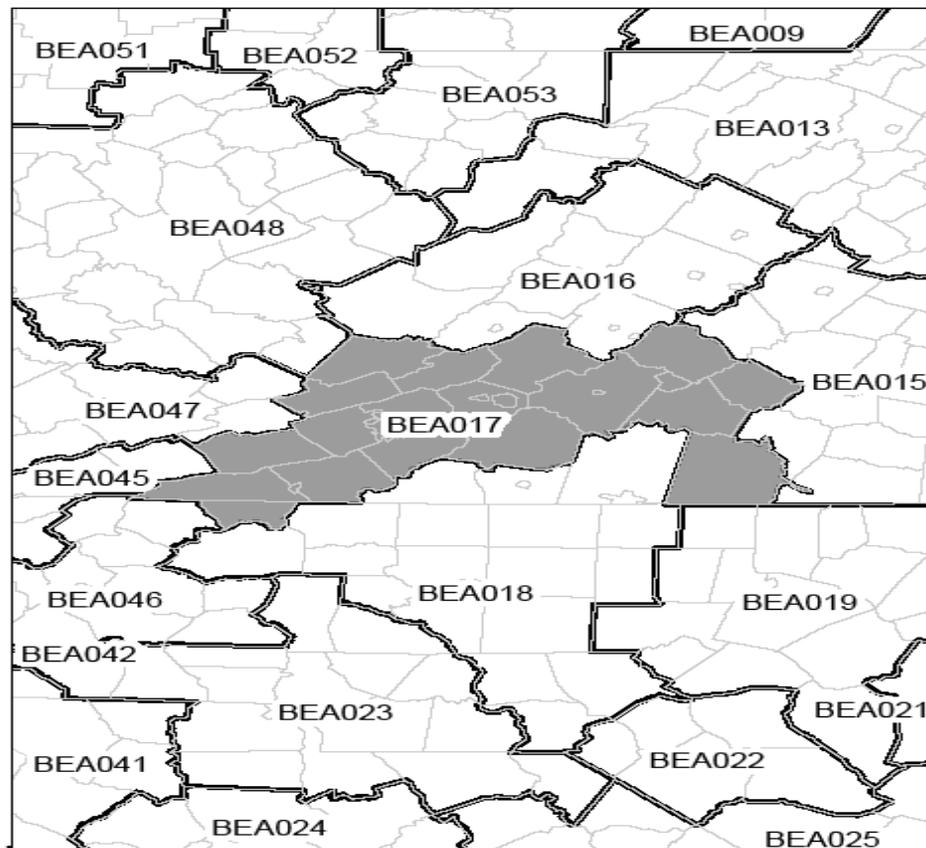
- ★ Lessee/Sublessee is primarily responsible for compliance with the Communication's Act and FCC policies and rules. See 47 C.F.R. 1.9030, 1.9035.

Secondary Markets for Spectrum

- ★ **Options for the amount of spectrum and geography that can be obtained in the secondary market for a specific license**
 1. All of the spectrum and geography
 2. A portion of the spectrum and/or geography

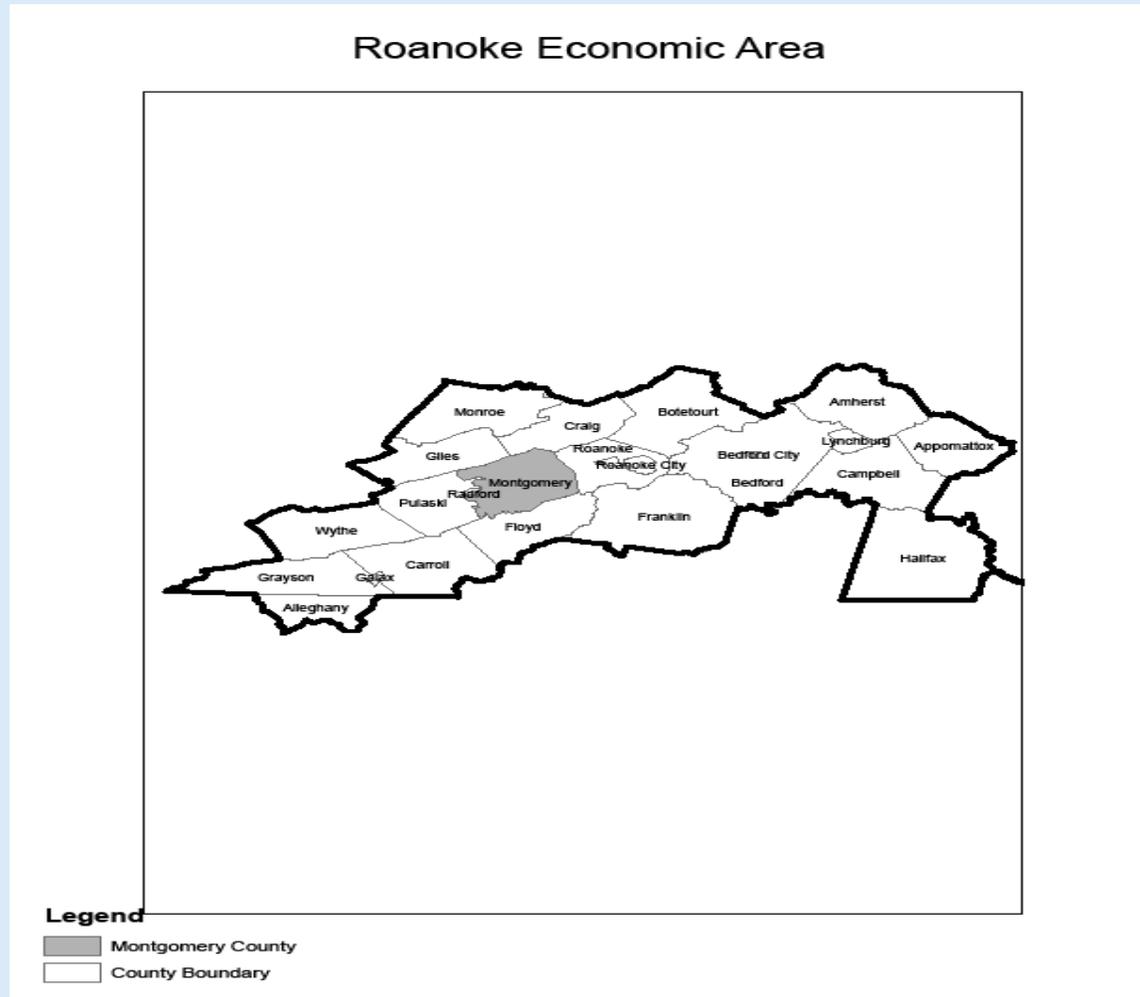
Secondary Markets for Spectrum

Roanoke Economic Area and Adjacent Economic Areas



Legend
County Boundary
BEA Boundary

Secondary Markets for Spectrum



Secondary Markets for Spectrum

- ★ **Submitting applications to the FCC to obtain spectrum in the secondary market**
 - ★ <http://wireless.fcc.gov/uls>
 - 1. License Assignment
 - ★ File FCC Form 603
 - 2. Spectrum Lease/Sublease
 - ★ File FCC Form 608

Secondary Markets for Spectrum

- ★ **All applications can be submitted electronically**
 - ★ Applications in most spectrum bands must be filed electronically
- ★ **Certain spectrum bands require application fees**
 - ★ Governmental entities and non-profit entities are exempt from application fees
- ★ **Certain applications are approved overnight**
- ★ **Applications not approved overnight are generally processed within 21 days**
- ★ **FCC hotline can walk parties through the filing process**
 - ★ (877) 480-3201 (M – F 8:00 am – 6:00 pm ET)

Searching ULS

- ★ **Finding current license holders in ULS**
- ★ **Web-based searches include:**
 - ★ Geographic area (county and state or coordinates)
 - ★ Market area (MTA, EA, REA)
 - ★ Spectrum band
 - ★ Licensee name
- ★ **Entire database can be downloaded**

Finding current license holders in ULS

FCC: Wireless Telecommunications Bureau: WTB Home - Microsoft Internet Explorer

Address: <http://wireless.fcc.gov/>

FCC Home | Search | Updates | E-Filing | Initiatives | For Consumers | Find People

Wireless Telecommunications Bureau

FCC > WTB Home [FCC Site Map](#)

Search:
[Help - Advanced](#)

WTB Home
[About the WTB](#)
[Accessibility](#)
[Databases](#)
[Releases](#)
[Rules and Regulations](#)
[Licensee & Consumer Information](#)
[Forms & Fees](#)
[Wireless Services](#)
[WTB Site Map](#)

Related Sites
[3G](#)
Third Generation Wireless
[911 Services](#)
Basic and Enhanced
[CALEA](#)
Communications Assistance for Law Enforcement Act
[CMRS Competition](#)

New bank mailing address for manual payments.
[Click here for details.](#)

The Wireless Telecommunications Bureau (WTB) handles nearly all FCC domestic wireless telecommunications programs, policies, and outreach initiatives.
[All Services](#) | [About the WTB](#)

Wireless Headlines

4/14/2008
ERRATUM
Erratum - Amendment of Parts 1, 21, 73, 74, and 101 of the Commission Rules et al
[pdf - Word](#)
[See Order FCC 08-83](#)

4/11/2008
MEMORANDUM OPINION AND ORDER (DA 08-867)
Applications Filed by Licensees in the Local Multipoint Distribution Service
[pdf - Word](#)
Appendix: [pdf](#) - [xls](#)

4/10/2008
PUBLIC NOTICE (DA 08-851)
AT&T, Inc. and Verizon Wireless Seek FCC Consent to Assign and Transfer Control of Licenses, Spectrum Leasing Arrangements, and Related Authorizations
[pdf - Word](#)

4/7/2008

- Auctions**
 - [Auctions Home](#)
 - [About Auctions](#)
 - [Schedule](#)
 - [Releases](#)
 - [Data](#)
- Licensing**
 - [Universal Licensing System](#)
 - [FRN Registration](#)
 - [Online Filing](#)
 - [License Search](#)
 - [Application Search](#)
 - [License Audits](#)
 - [Const/Coverage Requirements](#)
 - [Secondary Markets Initiative](#)
 - [Spectrum Leasing](#)
 - [Weekly Status Public Notices](#)
- Antenna Structure Registration**
 - [ASR Home](#)
 - [TOWAIR](#)
 - [FRN Registration](#)
 - [Online Filing](#)
 - [Registration Search](#)
 - [Application Search](#)
- Wireless Services**
 - [Amateur](#)

Internet

Finding current license holders in ULS

License Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp> Go

FCC Home | Search | Updates | E-Filing | Initiatives | For Consumers | Find People

FCC Federal Communications Commission

Universal Licensing System

FCC > [WTF](#) > [ULS](#) > [Online Systems](#) > License Search [FCC Site Map](#)

License Search [HELP](#)

The ULS License Search enables you to search for a wide range of licenses in the Universal Licensing System. The License Search here provides access to the most basic attributes of a license. You can also specify more attributes combinations with the [Advanced Search](#) and search within services like [Amateur](#) using service-specific criteria. Please be aware that some combinations of search criteria may result in a longer wait.

License Search

By Call Sign =

exact matches only

[Advanced License Search](#)

Advanced Search

Want to search for licenses of any radio service code based on combinations of general license attributes?

[Advanced License Search](#)

Advanced License Search includes:

- ▶ Licensee State, ZIP, and Name
- ▶ Dates (Grant, Last Action, etc)
- ▶ License Status
- ▶ Radio Service Code
- ▶ And more.

Service Specific Search

Want to search for licenses within a service using criteria relevant to that specific service?

- ▶ [Aircraft](#)
- ▶ [Amateur](#)
Vanity Call Signs, Operator Class, and more.
- ▶ [Commercial/Restricted Permits](#)
Operator Class, COLEM, and more.
- ▶ [GMRS](#)
- ▶ [Ship](#)
MMSI#, Ship Name, and more.

Specialized Search

Want to use customized criteria to search for a license within all relevant services?

- ▶ [Market Based](#)
Search by auction number, markets, channel block and more.
- ▶ [Site Based](#)
Search by station class, frequency, Antenna Structure Registration (ASR) number, and more.
- ▶ [Facility ID](#)
Search by Facility Identification Number for Broadcast Auxiliary Licenses.
- ▶ [Geographic](#)

Done Internet

Finding current license holders in ULS

The screenshot shows a Microsoft Internet Explorer browser window displaying the FCC's Universal Licensing System (ULS) Advanced License Search page. The browser's address bar shows the URL: http://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp;JSESSIONID_ULSSEARCH=GKFGLGjYd1L1rCjHd0t7htx7Rx8nHrgYvyv1hKGJgfp7psJ993jI-912519920!1839684125. The page header includes the FCC logo and navigation links: [FCC Home](#), [Search](#), [Updates](#), [E-Filing](#), [Initiatives](#), [For Consumers](#), and [Find People](#). The main heading is "Universal Licensing System" with a breadcrumb trail: [FCC](#) > [WTB](#) > [ULS](#) > [Online Systems](#) > License Search. A "HELP" link is visible in the top right corner.

The search form contains the following elements:

- RESET** button
- Exact Matches Only
- Exclude Leases
- Call Sign & Radio Services** section:
 - Call Sign**:
 - Service Group**:
 - Match all radio services within this group
 - Match only the following radio service(s):
 -
 -
 -
 -
 -
- Licensee** section:
 - Name**:

Buttons for **GEOSEARCH** and **SEARCH** are located at the top right of the form. A note states: "*Please be aware that some combinations of search criteria may result in a longer wait." The browser's status bar at the bottom shows "Done" and "Internet".

Finding current license holders in ULS

License Search - Advanced License Search - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail Stop

Address http://wtbwww06.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp;JSESSIONID_ULSSEARCH=v8bgLFwdjqNH6GKGRbhbK2p8yn14Hmc1RQc2pwwc14MPmR12nbl!5963031281-1687024 Go

License Detail

Status All Active Expired
 Canceled Terminated Termination Pending

Authorization Type All Regular STA
 Developmental Demonstration

Date Information

Date Type Select a date type

Date Select a fixed date range
From to
(Date Format: MM/DD/YYYY)

Frequencies

Frequency All Frequencies
 Exact MHz
 Range MHz to MHz

Customize Your Results

Results Display 10 matches per page sorted by in order
 Exact Matches Only
 Exclude Leases

RESET **GEOSEARCH** SEARCH

*Please be aware that some combinations of search criteria may result in a longer wait.

ULS Help [ULS Glossary](#) - [FAQ](#) - [Online Help](#) - [Technical Support](#)

Local intranet

Finding current license holders in ULS

The screenshot shows a Microsoft Internet Explorer browser window displaying the 'License Search - Geographic Search' page. The address bar shows the URL: <http://wtbwww06.fcc.gov/UlsApp/UlsSearch/searchGeographic.jsp>. The page title is 'License Search Geographic Search'. A 'HELP' link is visible in the top right corner.

The main content area contains a search form with the following sections:

- RESET** button on the left and **SEARCH** button on the right (highlighted with a red arrow).
- Specified Search** section: "The following search criteria will be applied in addition to any information specified below."
 - Authorization Type**: Regular
 - Status**: Active
 - Frequency Upper Band**: 710
 - Frequency Assigned**: 716A red star is placed to the left of the 'Frequency Upper Band' and 'Frequency Assigned' fields. A [Modify Search Criteria](#) link is located below these fields.
- Geographic Search Criteria** section:
 - Include Nationwide Area of Operations
 - Include Continental Area of Operations
 - Include Licenses with a Mobile Area of Operations
 - Exclude Leases
- State/County** section: "You may search on state, county, or both. Use the state list to filter the list of counties. Please be aware that searching on multiple states or counties may result in slower search results."
 - State(s)**: A dropdown menu with 'Virginia' selected. A red star is placed to the left of the label.
 - County(s)**: A dropdown menu with 'VA-MONTGOMERY' selected.
- Address** section: An empty input field.

The browser's status bar at the bottom shows 'Done' on the left and 'Local intranet' on the right.

Finding current license holders in ULS

License Search
Search Results

[New Search](#) [Refine Search](#) [Printable Page](#) [Query Download](#) [Map License](#)

Specified Search
State = **Virginia**
County = **MONTGOMERY**
Authorization Type = **Regular**
Status = **Active**
Frequency Upper Band >= **710**
Frequency Assigned <= **716**

Matches **1- 1** (of **1**)

Page 1

Call Sign/Lease ID	Name	FRN	Radio Service	Status	Expiration Date
1 WPWU970	Citizens Telephone Cooperative	0004381422	WZ	Active	02/17/2019

Page 1

ULS Help [ULS Glossary](#) - [FAQ](#) - [Online Help](#) - [Technical Support](#)
ULS Online Systems [CORES](#) - [ULS Filing](#) - [License Search](#) - [Application Search](#) - [Archive License Search](#)
About ULS [Privacy Statement](#) - [About ULS](#) - [ULS Home](#)

Basic Search By Call Sign =

FCC | [Wireless](#) | [ULS](#) | [CORES](#) [Help](#) | [Tech Support](#)

Finding current license holders in ULS

ULS License - 700 MHz Lower Band (Blocks C, D) License - WPWU970 - Citizens Telephone Cooperati - Microsoft Internet Explorer

Address: http://wtbwww06.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2479909

FCC Federal Communications Commission FOR FCC INTERNAL USE ONLY

Internal License Search

ULS License
700 MHz Lower Band (Blocks C, D) License - WPWU970 - Citizens Telephone Cooperative HELP

[New Search](#)
[Refine Search](#)
[Return to Results](#)
[Printable Page](#)
[Reference Copy](#)
[Map License](#)

MAIN	ADMIN	MARKET	INTERNAL ADMIN
Call Sign	WPWU970	Radio Service	WZ - 700 MHz Lower Band (Blocks C, D)
Status	Active	Auth Type	Regular
Bidding Credit, Closed Bidding and Installment Payment			
Bidding Credit	Yes	Bidding Credit Percentage	
Closed Bidding	No	Installment Payment	No
Market			
Market	CMA683 - Virginia 3 - Giles	Channel Block	C
Submarket	0	Associated Frequencies (MHz)	000710.00000000-000716.00000000 000740.00000000-000746.00000000
Dates			
Grant	01/24/2003	Expiration	02/17/2019
Effective	06/29/2005	Cancellation	
Buildout Deadlines			
1st	02/17/2019	2nd	
Notification Dates			
1st		2nd	
Licensee			

Done Local intranet

Finding current license holders in ULS

ULS License - 700 MHz Lower Band (Blocks C, D) License - WPWU970 - Citizens Telephone Cooperati - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: <http://wtbwww06.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=2479909> Go

Licensee			
FRN	0004381422 (View Ownership Filing)	Type	Corporation
Licensee			
Citizens Telephone Cooperative 220 Webbs Mill Rd Floyd, VA 24091 ATTN Gerald Gallimore			P:(540)745-2111 F:(540)745-3791 E:GeraldGallimore@citizens.coop
Contact			
Bennet & Bennet, PLLC Howard S Shapiro 10 G Street, N.E. - 7th Floor Washington, DC 20002			P:(202)371-1500 F:(202)371-1558 E:hshapiro@bennetlaw.com
Ownership and Qualifications			
Radio Service Type	Fixed, Mobile		
Regulatory Status	Common Carrier, Non-Common Carrier	Interconnected	Yes
Alien Ownership			
The Applicant answered "No" to each of the Alien Ownership questions.			
Basic Qualifications			
The Applicant answered "No" to each of the Basic Qualification questions.			
Tribal Land Bidding Credits			
This license did not have tribal land bidding credits.			
Demographics			
Race			
Ethnicity		Gender	

Local intranet

Access to Licensed Spectrum for Wireless Broadband

- ★ **Gaining access to licensed spectrum once licenses are issued**
- ★ **Finding current license holders**