



**FCC/USDA Rural Broadband Educational Workshop  
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# **Access to Licensed Spectrum for Wireless Broadband**

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# 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 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.**

# FCC Auctions

- ★ **Since the first spectrum auction was held in July 1994, the FCC has**
  - ★ **Completed 70 auctions (as of 8/31/08)**
  - ★ **Auctioned over 31,000 licenses**
  - ★ **Qualified over 4,000 bidders to participate**

# FCC Auctions

## ★ Pre-Auction

### ★ Service rules established in rulemaking

- ★ Service area

- ★ Block size

- ★ Technical rules

- ★ Build out requirements

### ★ Public Notices released

### ★ Auction seminar and mock auction

## ★ Post-Auction

### ★ Down payment and long form application

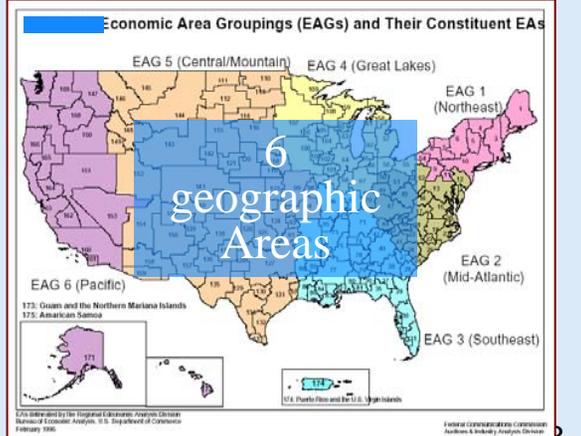
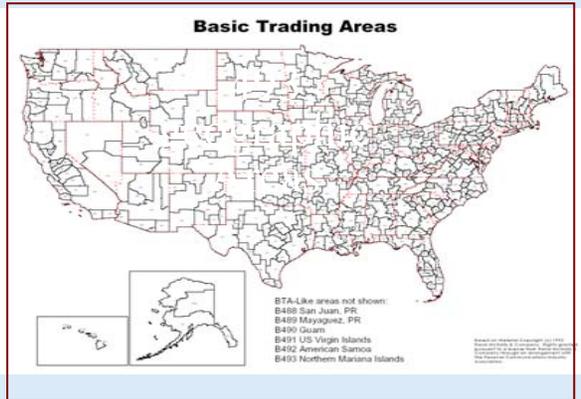
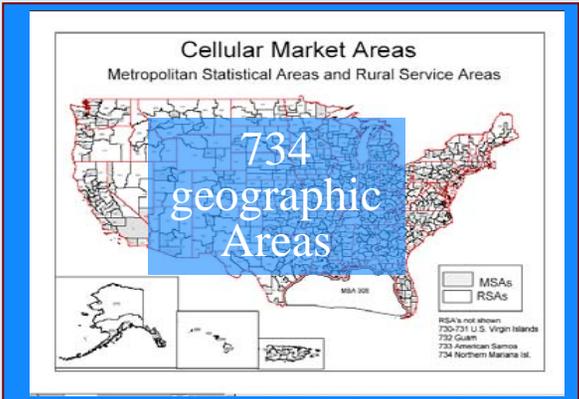
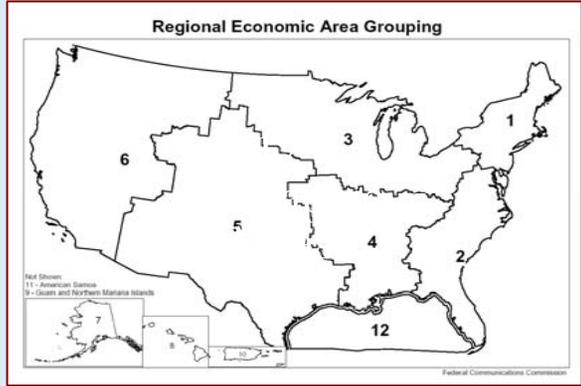
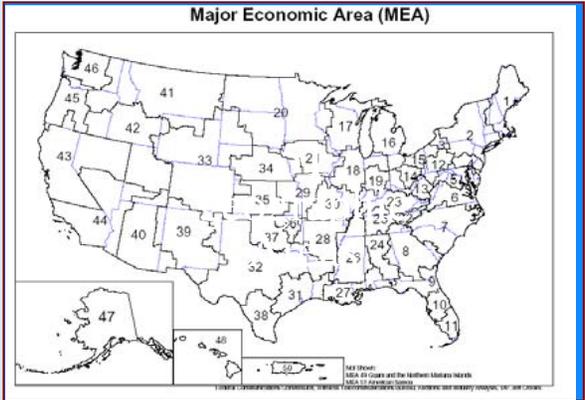
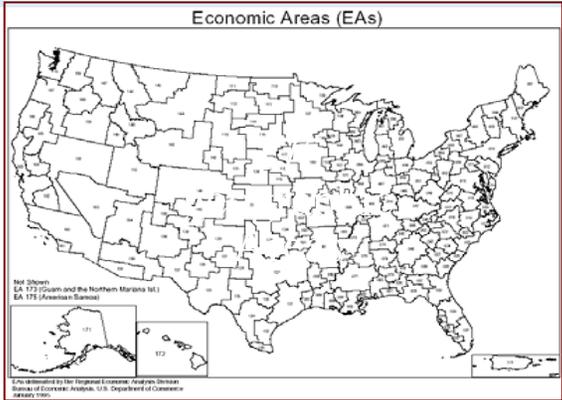
### ★ Final payment and license grant

# FCC Auctions

- ★ **Opportunities for the public to be heard**
  - ★ **Commission seeks comment on policy issues that relate to auction designs in allocation & service rulemakings.**
    - ★ **Band plan decisions (e.g., frequency block size, geographic areas, spectrum pairing)**
  - ★ **Commission seeks comment on specific auction design proposals when each auction is announced.**
    - ★ **Auction design: package bidding, information disclosure procedures**
    - ★ **Minimum bids / reserve price**

# FCC Auctions

## Different Geographic Areas for Different Services and Blocks



# Small Business Bidding Credits

- ★ **Small business size standards considered on service-specific basis**
- ★ **Size based on average gross revenues over past three years ( $\leq$ \$3 million,  $\leq$ \$15 million,  $\leq$ \$40 million)**
- ★ **Bidding credits generally of 35%, 25%, 15%**
- ★ **Subject to unjust enrichment**
- ★ **Special attribution rule for rural telephone cooperatives**

# Tribal Land Bidding Credits

- ★ **Post-auction credits given to winning bidders that deploy facilities on and provide services to qualifying tribal lands.**
- ★ **A qualifying tribal land is any federally recognized tribal area that has a wireline telephone penetration rate equal to or less than 85 percent.**
- ★ **More information on auctions:  
<http://wireless.fcc.gov/auctions>**

# Licensed Spectrum for Rural Broadband

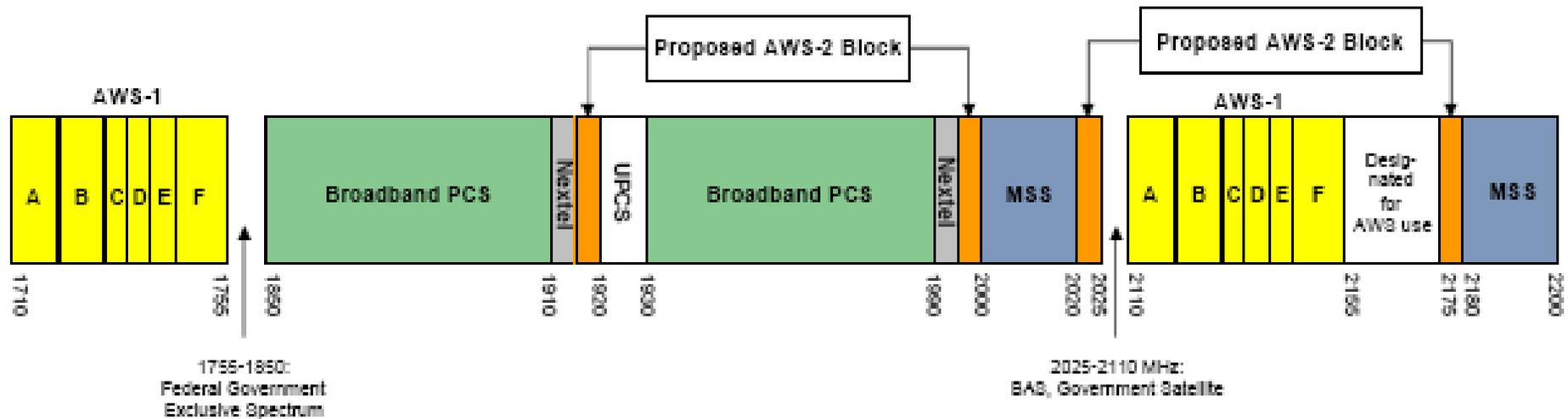
- ★ One of the key roles of the FCC in facilitating the deployment of broadband and cutting-edge wireless technologies is to make additional spectrum available for these services.
- ★ The FCC has been actively working in recent years to make more spectrum available and to promote the deployment of broadband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

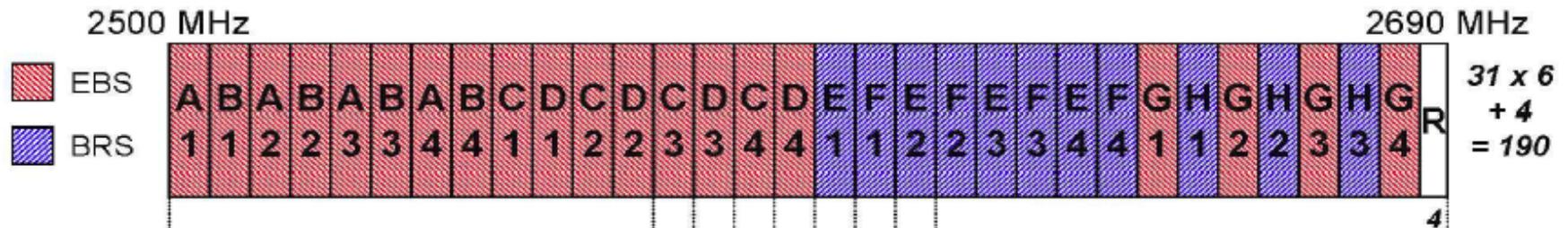


# **Advanced Wireless Services (AWS) Spectrum**

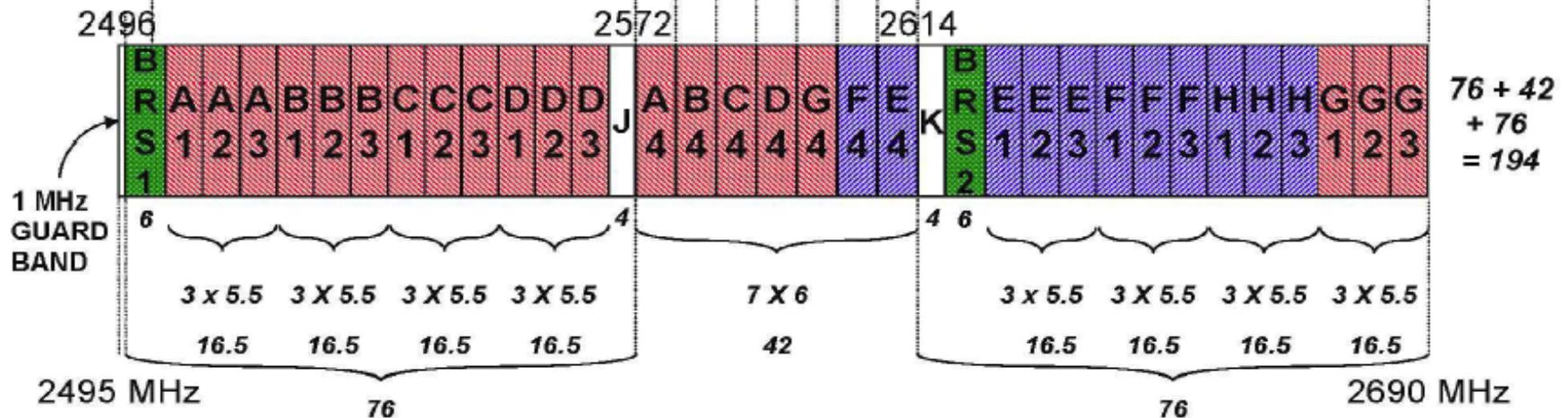
- ★ **Auction completed September 18, 2006**
- ★ **Largest amount of spectrum suitable for wireless broadband ever made available in a single auction**
- ★ **104 bidders won 1,087 licenses**
- ★ **Licensees can use to provide a wide range of new, wireless broadband services**

# BRS/EBS Spectrum

## PRE-TRANSITION



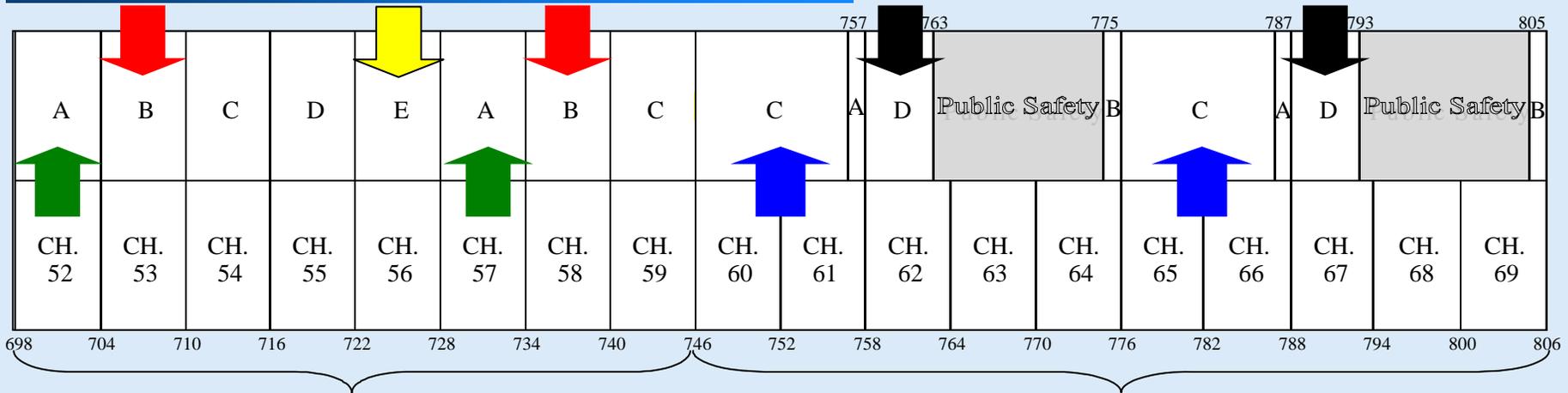
## POST-TRANSITION



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