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 4/30/08)
  - Auctioned over 31,000 licenses
  - Qualified over 4,000 bidders to participate

# FCC Auctions

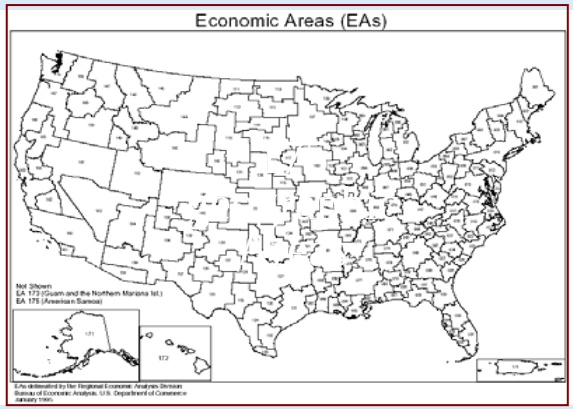
- Pre-Auction
  - Service rules established in rulemaking
    - Service area
    - Block size
    - Technical rules
    - Build out requirements
  - Public Notices released
  - Auction seminar and mock auction
- Post-Auction
  - Down payment and long form application
  - Final payment and license grant

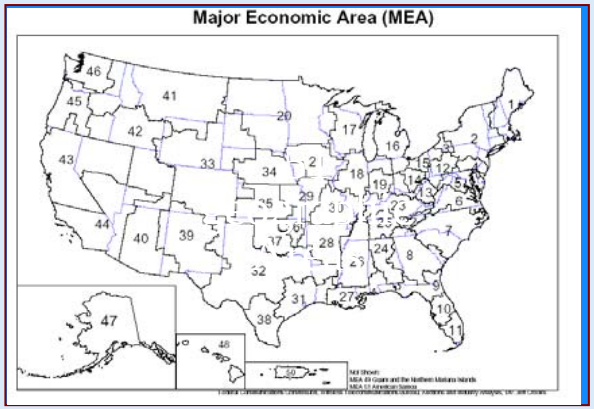
# FCC Auctions

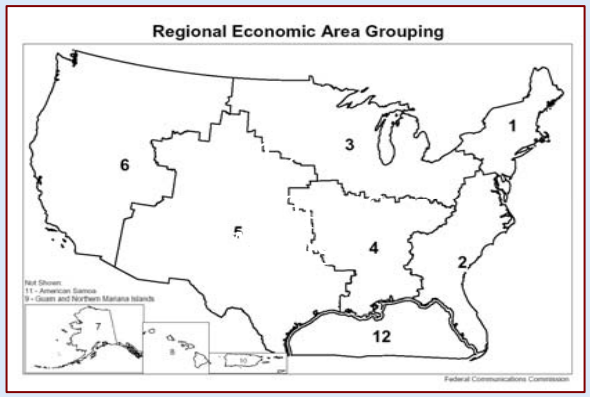
- Opportunities for the public to be heard
  - Commission seeks comment on policy issues that relate to auction designs in allocation & service rulemakings.
    - Band plan decisions (e.g., frequency block size, geographic areas, spectrum pairing)
  - Commission seeks comment on specific auction design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

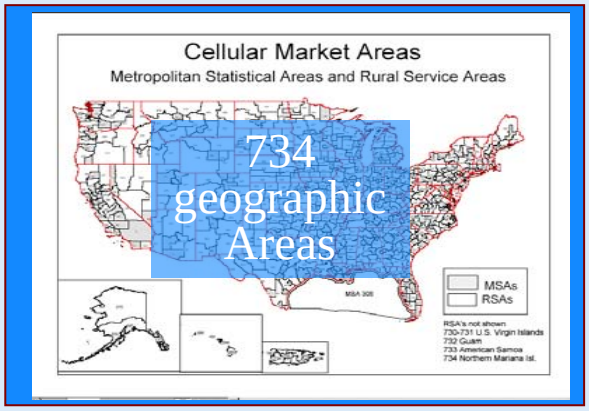
# FCC Auctions

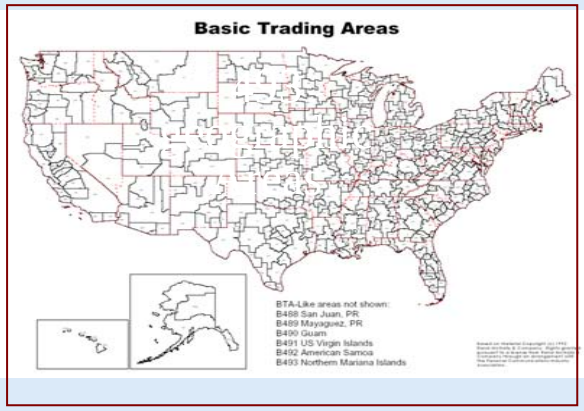
## Different Geographic Areas for Different Services and Blocks

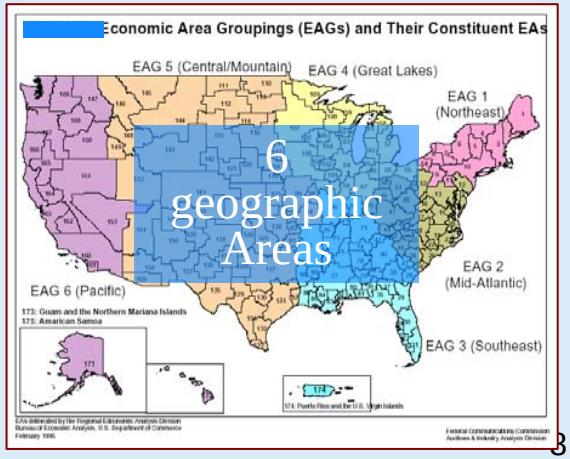


# Small Business Bidding Credits

- Small business size standards considered on service-specific basis
- Size based on average gross revenues over past three years (≤$3 million, ≤$15 million, ≤$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

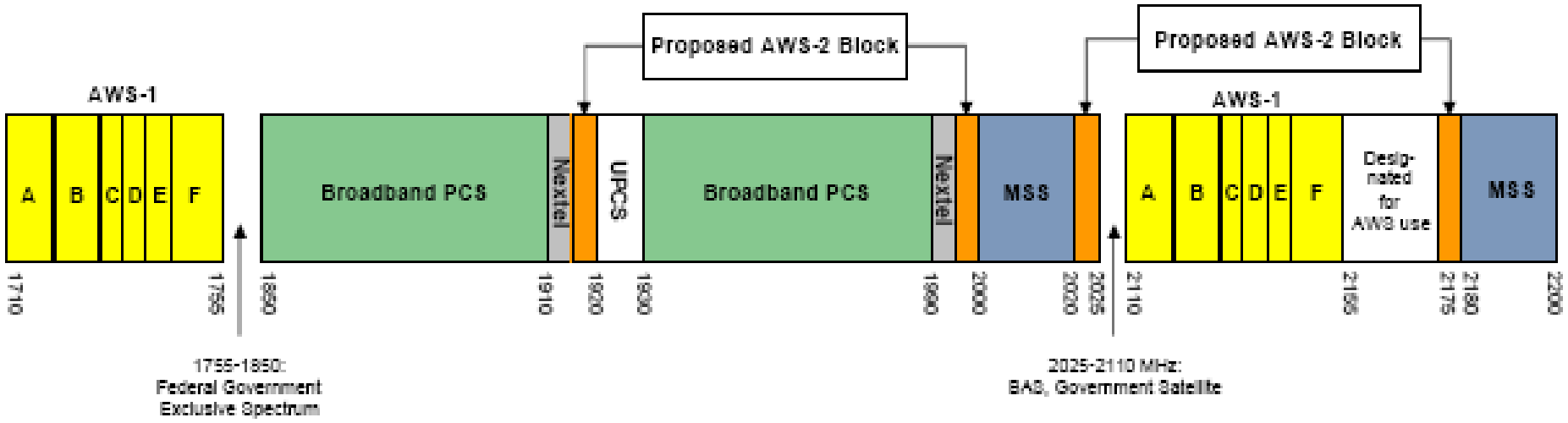
- One of the key roles of the FCC in facilitating the deployment of broadband and cutting-edge wireless technologies is to make additional spectrum available for these services.

- 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

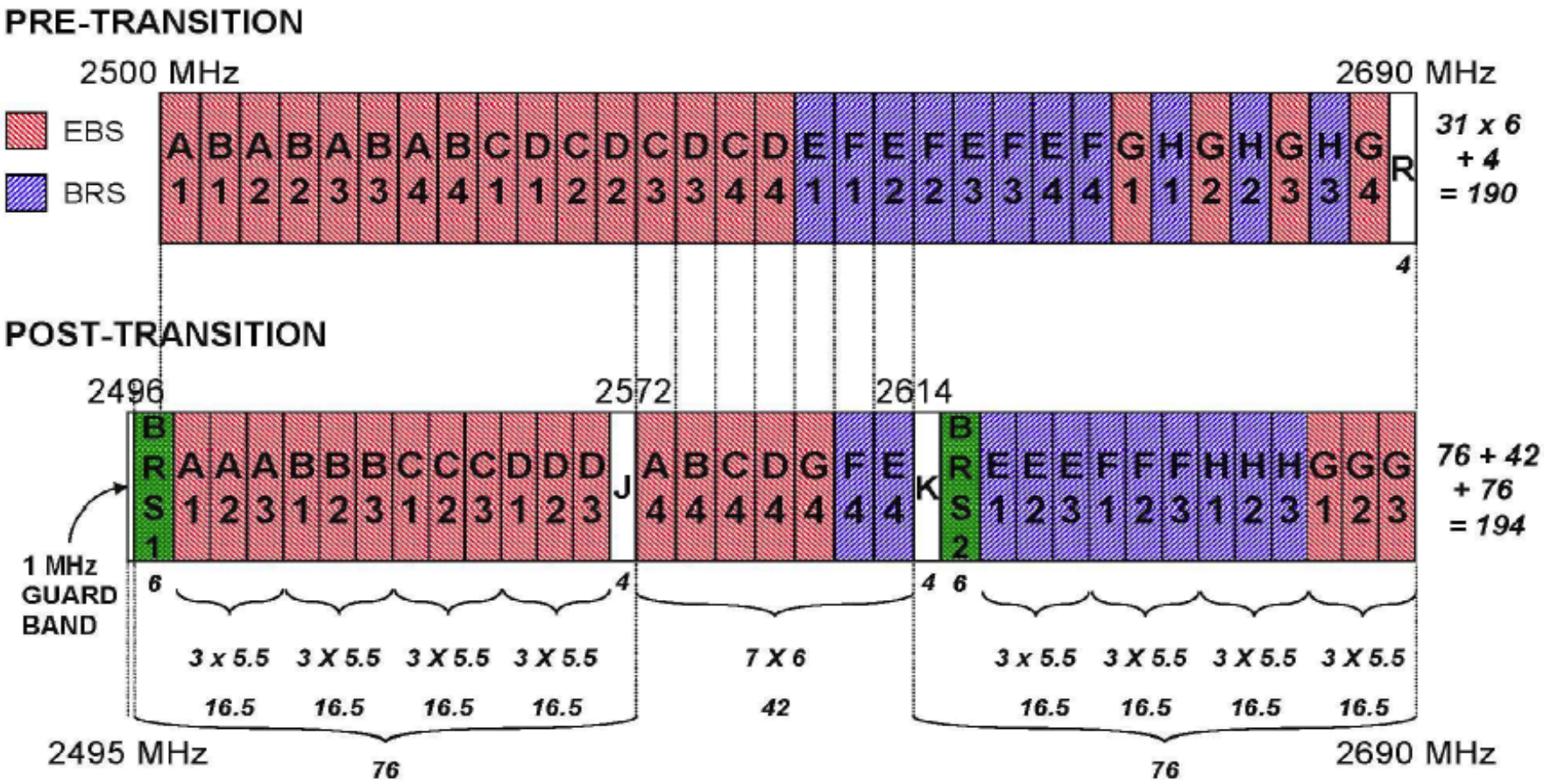
# Advanced Wireless Services (AWS) Spectrum



# Advanced Wireless Services (AWS) 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

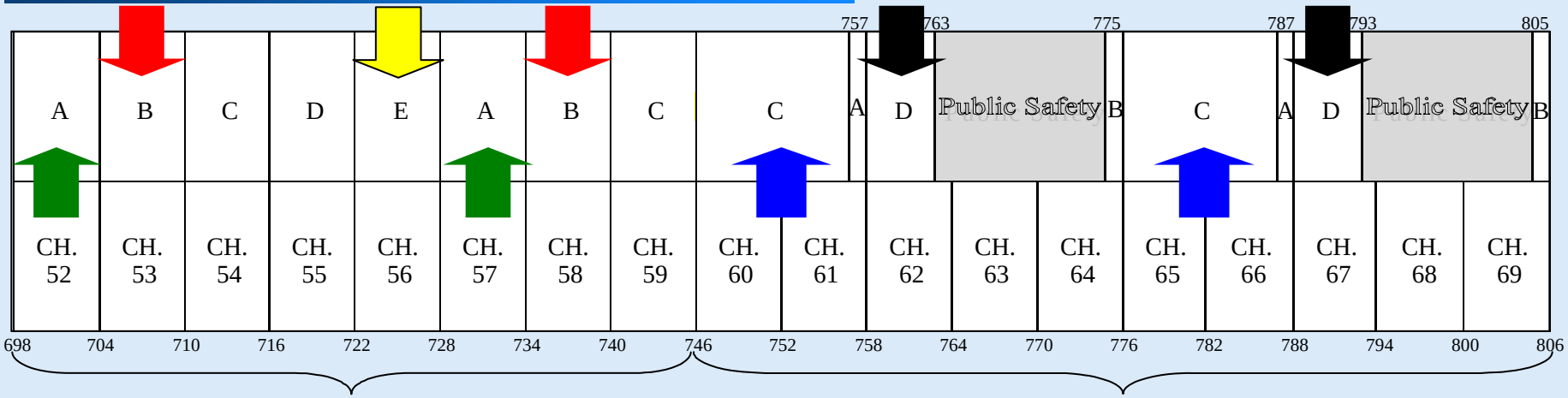
# BRS/EBS Spectrum



# 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.