

U.S. Spectrum Policy

A Duel Challenge

Wireless Has Arrived in America



U.S. Wireless Services

- ❖ 62% cell phone penetration
- ❖ 60% of all telecom investment is in wireless
 - ❖ \$1.3 billion (7% of total) VC investment in 2005s
- ❖ 8 million consumers have cut the cord

Spectrum – The Land Rush

“...radio spectrum may be the most critical infrastructure element of 21st century economies.”

-- Technology CEO Council (2/06)

Industry Recommendations: “Government – Give it Up”

- ❖ NTIA and FCC should conduct band-by-band analysis...and identify any bands that are not being used efficiently.
- ❖ NTIA should report on the amount, value, and opportunity costs of spectrum being used by the federal government.

Industry Recommendations

- ❖ For any government band that is not being used efficiently, NTIA should:
 - ❖ develop mechanisms to encourage greater efficiency;
 - ❖ consider transferring to commercial use; or
 - ❖ consider sharing that spectrum with commercial users.
- ❖ Commercial inefficiency should be addressed through market-based mechanisms such as:
 - ❖ 2-sided auctions or
 - ❖ auction vouchers.

Industry Recommendations

- ❖ FCC should make more unlicensed spectrum available.
- ❖ FCC and NTIA should each donate 10 MHz for spectrum sharing experiments.

2002 GAO Study on Spectrum

- ❖ NTIA and FCC need to develop a clearly defined national spectrum plan
- ❖ Better WRC preparation needed
- ❖ More human resources needed at NTIA – which processes between 7,000-10,000 allocations per month

Gov-Commercial Reallocations

- ❖ OBRA 1993
 - ❖ Established Auction Authority
 - ❖ NTIA required to reallocate 200 MHz of spectrum
- ❖ Balanced Budget Act of 1997
 - ❖ Established DTV Transition
 - ❖ Designated 24 MHz of Spectrum for Public Safety in 700 MHz band
 - ❖ NTIA required to reallocate 20 MHz (below 3GHz) of spectrum
- ❖ 2006 Reconciliation Bill
 - ❖ DTV Revisited
 - ❖ Forward Spending of Auction Proceeds (interoperability & set-top boxes)

NTIA Actions

- ❖ Federal Long-Term Spectrum Plan (2000)
 - ❖ Sets national objectives for “effective, efficient, and prudent use” of spectrum
- ❖ Defense Reauthorization (1999)
 - ❖ Set mandatory reimbursement rules
 - ❖ Reallocated 8 MHz back to DOD
- ❖ World Radio Conference (2000)
 - ❖ U.S. wins adoption of 3G flexibility plan
- ❖ Clinton Executive Order on 3G services (2000)
 - ❖ Targeted auction date of September 2002

US Broadband Spectrum (Licensed)

- ❖ 700 MHz (Reclaimed TV channels)
- ❖ 824-849/869-894 MHz (Cellular Radio)
- ❖ 1.5/1.6 GHz, 1.6/2.4 GHz, 2 GHz (MSS/ATC)
- ❖ 1710-1755/2110-2155 MHz (AWS)
- ❖ 2020-2025/2175-2180 MHz (AWS)
- ❖ 2155-2175 (AWS)
- ❖ 1850-1990 MHz (PCS)
- ❖ 2305-2320/2345-2360 MHz (WCS)
- ❖ 2496-2500 MHz (BRS/EBS, formerly MDS/ITFS)
- ❖ 3650-3700 MHz
- ❖ 12.2-12.7 GHz (MVDDS)
- ❖ 24 GHz
- ❖ 27-29 and 31 GHz (LMDS)
- ❖ 39 GHz
- ❖ 70/80/90 GHz

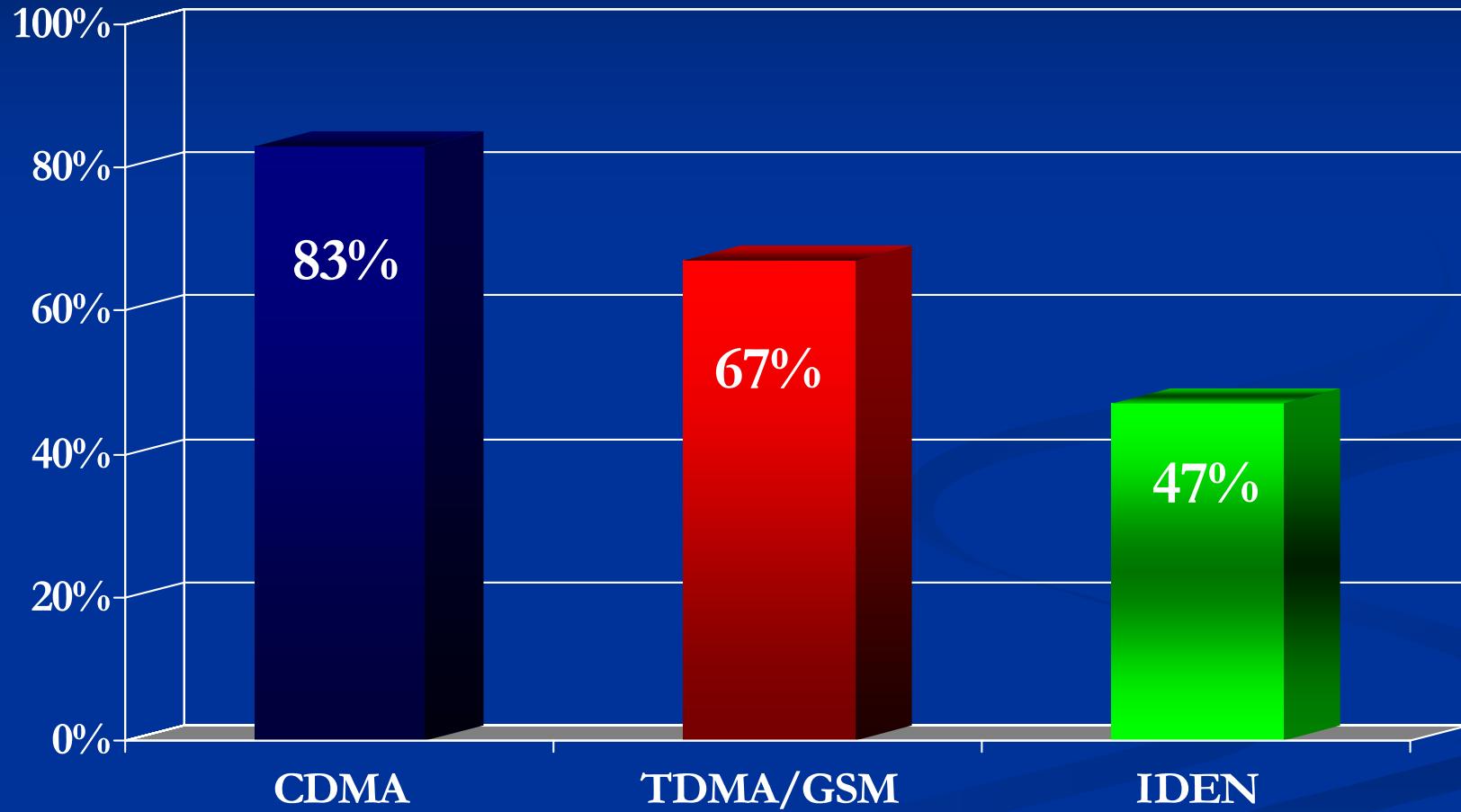
US Broadband Spectrum (Unlicensed)

- ❖ 902-928 MHz
- ❖ 2.4 GHz
- ❖ 5 GHz

Dead Zones are Deadly Areas

- ❖ Rural America – Still a wireless frontier
- ❖ Coverage – a public safety issue
- ❖ 30-40 million Americans live in under-served areas

Mobile Telephone Digital Coverage*



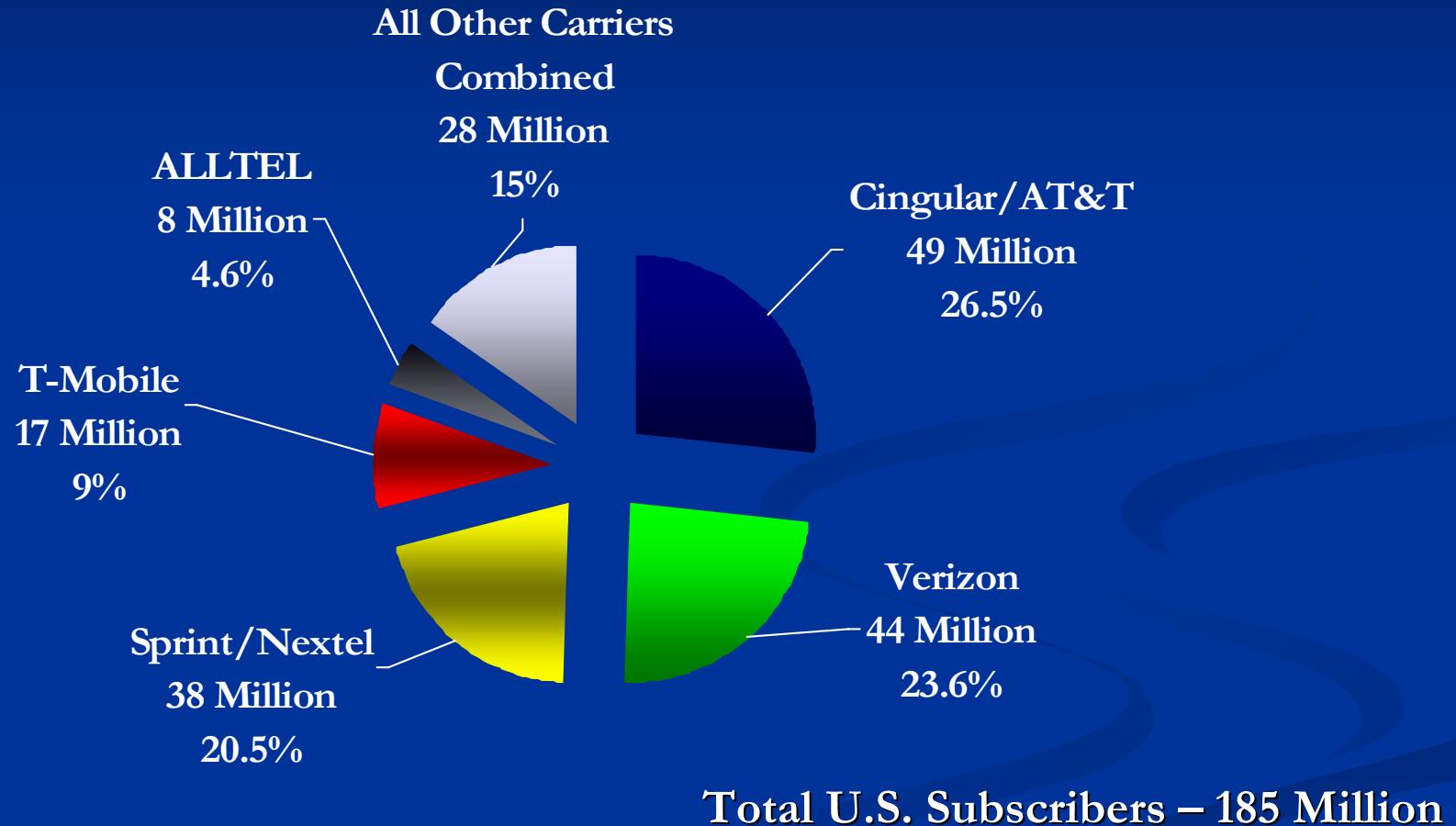
*Based on September 30, 2005 data from the FCC 10th Annual CMRS Report

The “Wireless” Digital Divide

“It is not fair to Rural Americans for companies to buy large swaths of spectrum that cover their homes only to ignore them and build out exclusively in urban areas. If they do not plan to use the spectrum they acquired in rural areas, they should let someone else use it to serve rural customers.”

-- **FCC Commissioner Jonathan Adelstein**, FCC Report and Order, July, 2004

Top Mobile Operators by Subscriber*



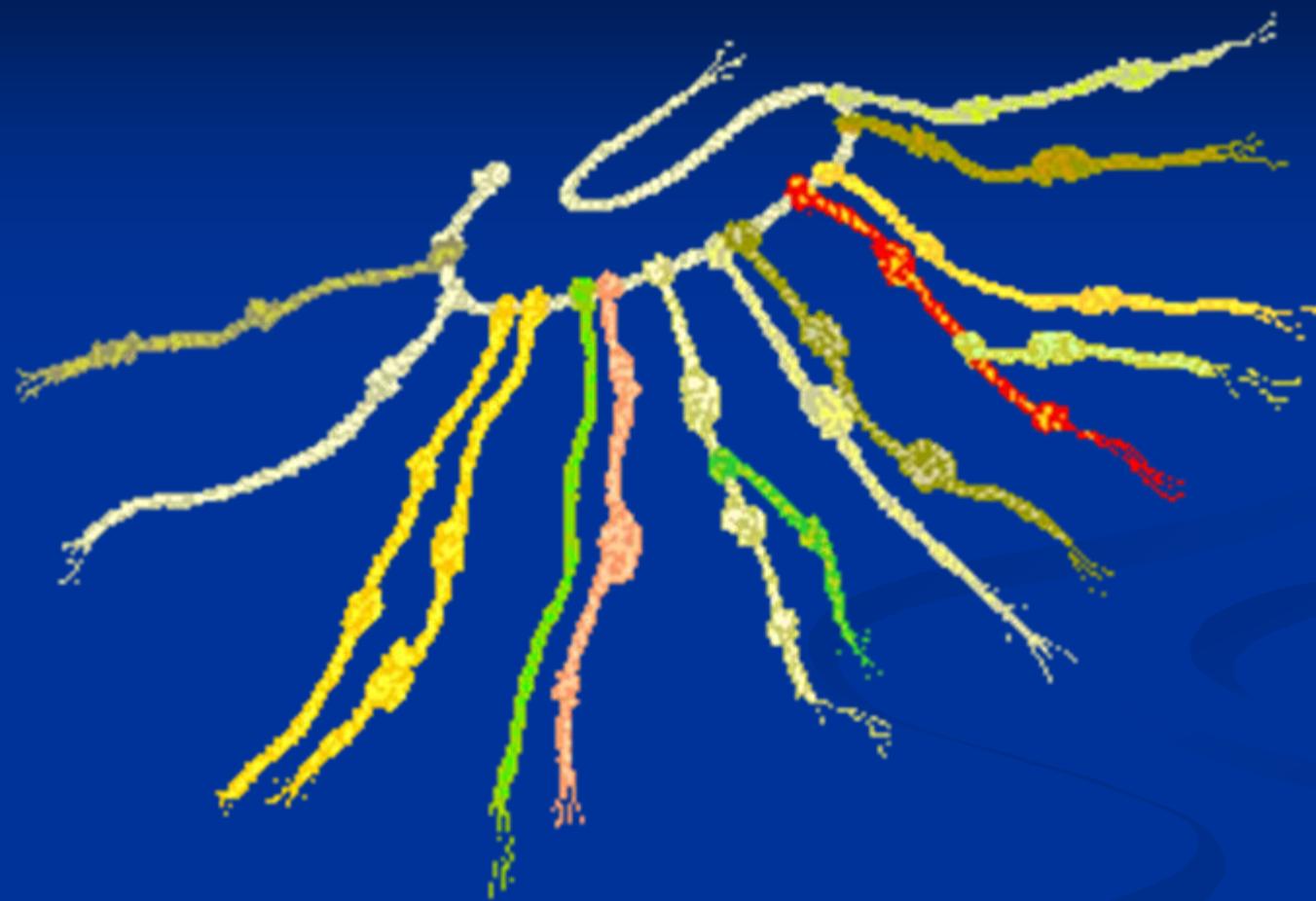
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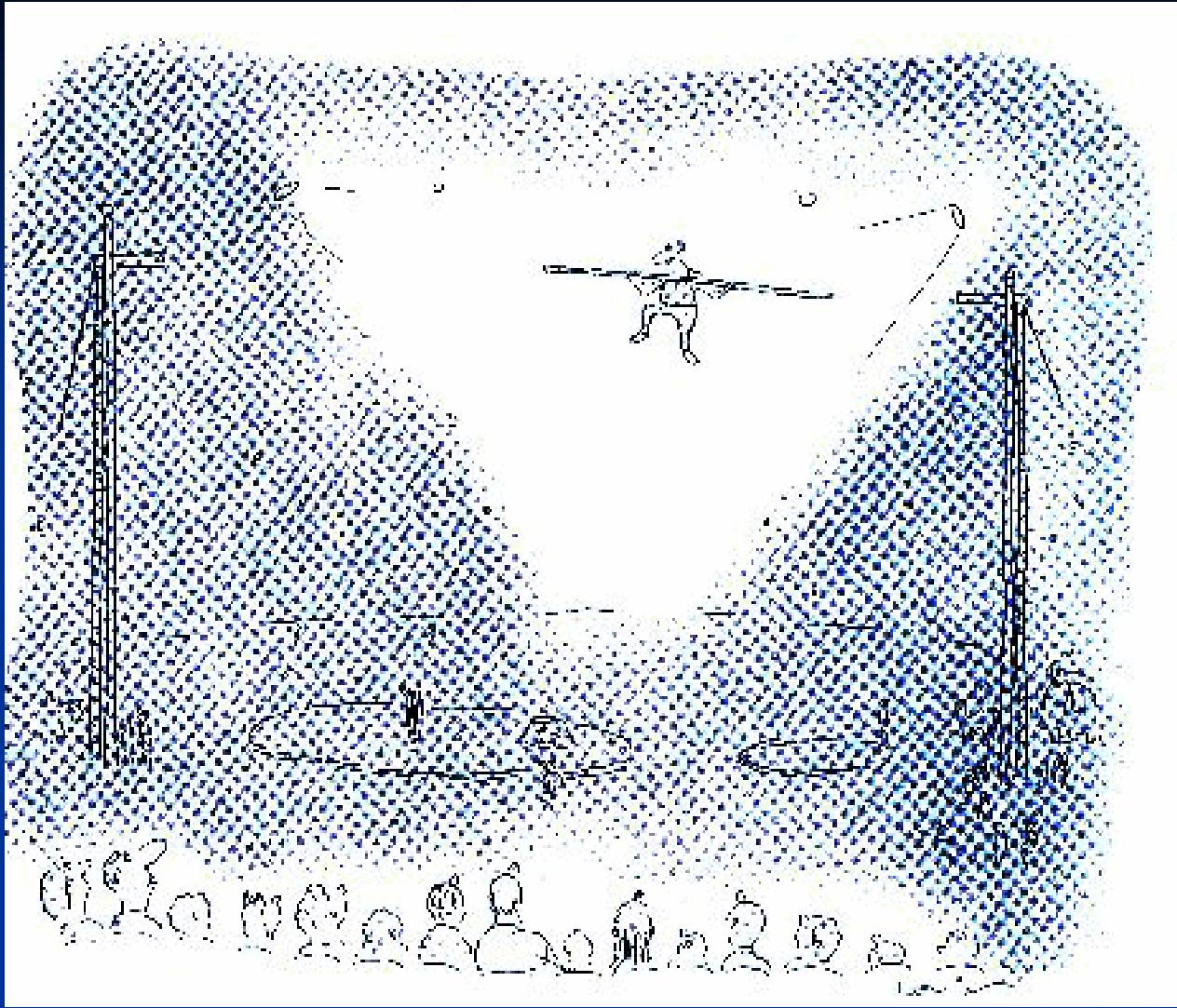
Commercial Spectrum Issues

- ❖ 3 G – AWS
 - ❖ 1.7/2.1 GHz
 - ❖ 2.5 GHz
- ❖ 700 MHz
- ❖ Ownership Concentration/Designated Entities
- ❖ Spectrum Warehousing

Issues Going Forward

- ❖ More Gov-Commercial Reallocations?
 - ❖ Currently, 90% of all spectrum use is below 3 GHz
 - ❖ Government Inefficiency v. Commercial warehousing
- ❖ Public safety needs
 - ❖ 400 & 800 MHz band
 - ❖ 700 MHz band (24 MHz +?)
 - ❖ 4.9 GHz band
- ❖ Policies for adoption of spectrum efficient technologies
 - ❖ NTIA
 - ❖ FCC
- ❖ Spectrum sharing
- ❖ Budget Deficits





“It appears to be some sort of wireless technology”