

# What Is Happening At The FCC

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# FCC's Mission

Ensure that the American people have available – at reasonable cost and without discrimination – rapid, efficient, nation and world-wide communication services; whether by radio, television, wire, satellite, or cable.

# US Spectrum Management Policies

National Security  
Public Safety



US Economy



# Federal and Non-Federal Sharing

We do it now;  
we should do more!!!

# Federal Non-Federal Spectrum Sharing Today

- 5 GHz - DFS
- SAVI (433 MHz)
- Garage door openers (380 MHz)
- 70/80/90 GHz
- Land mobile joint systems
  - ◆ Alaska
  - ◆ Wisconsin
  - ◆ 700 MHz public safety bands

# Spectrum Sharing Test-Bed

- ◆ 20 MHz of Gov/NG shared spectrum
  - Test-bed below 3 GHz
  - FCC considering 2155-2165 MHz
  - Government considering near 1700 MHz
- ◆ FCC requirements (TBD)
- ◆ Gov requirements (TBD)

# “Unlicensed” Part 15 Devices

- ◆ Equipment authorization in lieu of license.
- ◆ Operating Conditions: May not cause harmful interference and must accept any interference received
- ◆ Spectrum is free (no auctions)
- ◆ Broad rules provide framework for private sector to develop detailed standards – *e.g.*, Bluetooth, Wi-Fi (IEEE 802.11b)
- ◆ Examples: cordless phones, baby monitors, garage door openers, PDAs, wireless LANs, UWB

# Unlicensed Wireless

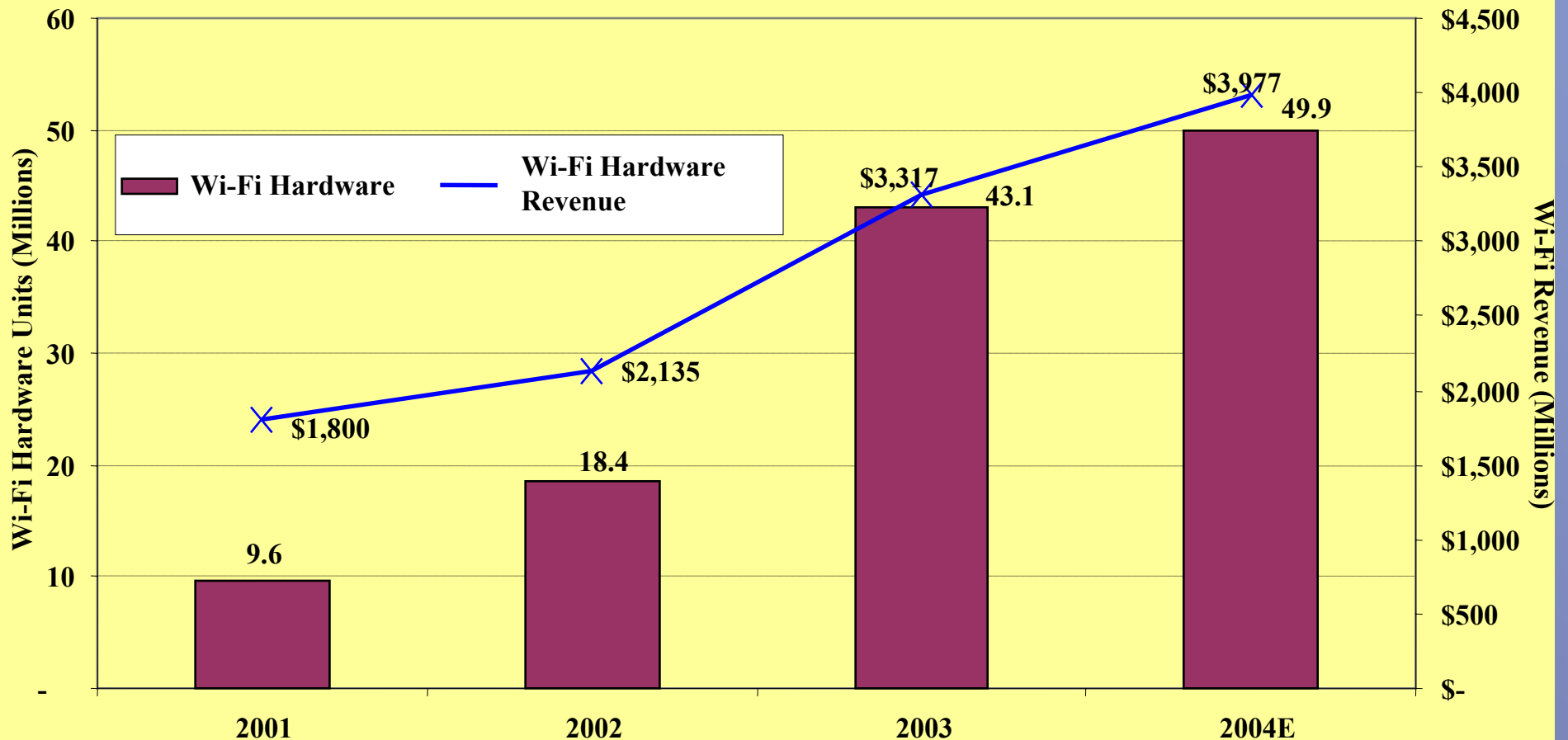
## Unlicensed wireless devices and networks

- Unlicensed devices and networks being used to provide broadband solutions
- Unlicensed device explosion
  - 400 million devices operating the U.S.
  - Wi-Fi - 30 Million units shipped in 2004
  - Bluetooth - 33 million units shipped in 2004
- Sales of unlicensed wireless local area networking equipment expected to increase from \$1.1B in 2001 to \$5.2B in 2005



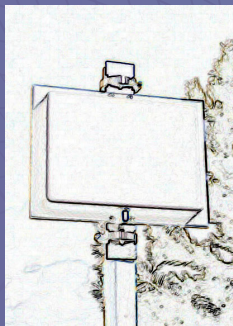
# Unlicensed Policies Facilitate Economic Growth

## Worldwide Wi-Fi Revenue and Sales

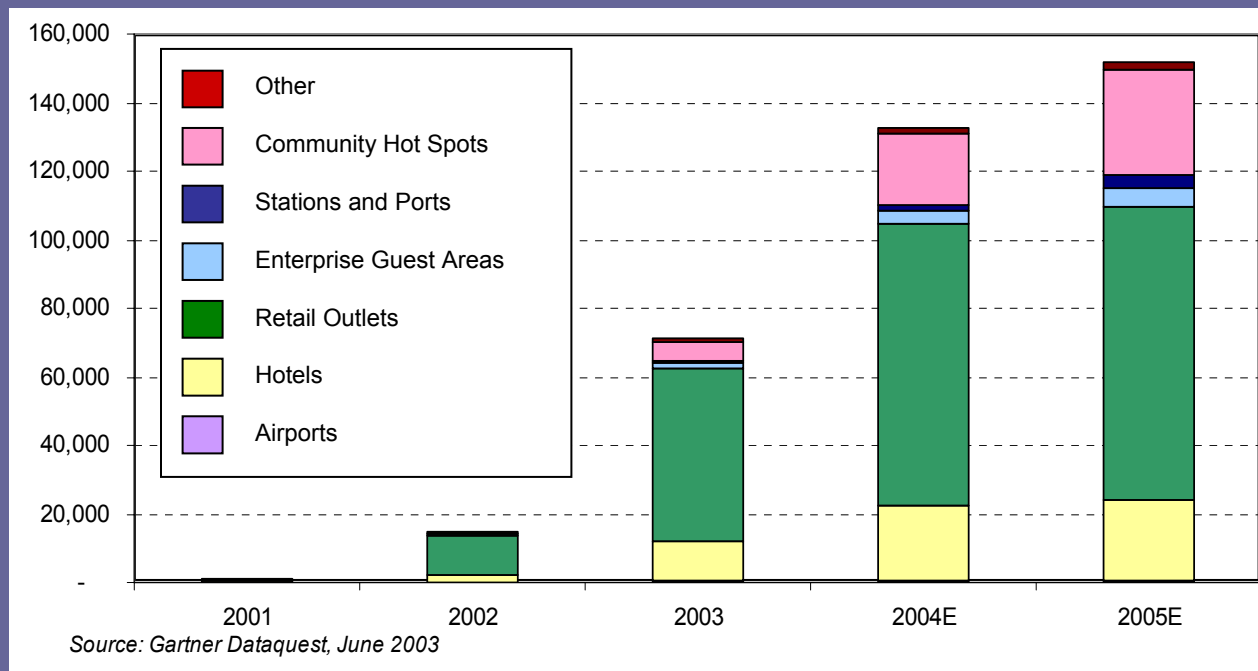


Sources: In-Stat/MDR & OSP, December 2004

# Growth in Wi-Fi



Wi-Fi Hot Spots Worldwide by Type of Location  
(2001-2005)



# Making Spectrum Available – Unlicensed Devices

- ◆ Spread spectrum bands
  - 902-928 MHz
  - 2400-2483.5 MHz
  - 5725-5850 MHz
- ◆ U-NII bands
  - 5150-5250 MHz
  - 5250-5350 MHz
  - 5470-5725 MHz – New 255 MHz
  - 5725-5825 MHz
- ◆ Upper bands
- ◆ Possible new bands

# Unlicensed Technologies

- ◆ U-NII (5 GHz WiFi)
  - 255 MHz new unlicensed spectrum
- ◆ White Spaces
  - Unused TV Channels
- ◆ Lightly licensed Spectrum
  - 3650-3700 MHz (High power)
- ◆ Smart Antennas
- ◆ Above 90 GHz

# Broadband Over Power Line

- ◆ Provides broadband services to consumers over existing power lines
- ◆ Third “pipe” into the home providing competition to DSL and cable modems
- ◆ “In House” BPL allows for networking of electronic devices over existing house wiring

# Two Types of BPL

## In-House BPL

- ◆ In-Home Computer Networking, Or Link Between Access BPL & Home
- ◆ "Low Voltage" (120/240 VAC)



**Access BPL connects to computers in the home by in-house BPL or by WiFi (wireless)**

## Access BPL

- ◆ Broadband Internet Service



# Cognitive Radio

- ◆ Dynamic new technology
- ◆ Senses RF environment and modifies frequency, power or modulation
- ◆ Allows for real time spectrum management
- ◆ Significantly increases spectrum efficiency

# Unlicensed Issues

- ◆ Garage door openers
  - Military introducing land mobile system at 380MHz To 400 MHz
  - 50 million garage door openers in operation @ 390MHz
  - Interference Problem



# Unlicensed Issues (cont.)

## ◆ DFS at 5 GHz

- Frequencies 5150 MHz to 5350 MHz and 5470 MHz to 5825 MHz
  - ◆ DFS required 5250MHz to 5350 MHz and 5470MHz to 5725 MHz
- Industry-government agreement
- WRC agreement
- FCC adopts rules
- Radar vs. threshold detector

# Advanced Wireless Services (3G)

- ◆ New voice, data, and broadband services
- ◆ Competitive services with other CMRS
- ◆ 1710-1755 MHz/2110-2155 MHz
  - 45 MHz reallocated from federal government
  - Difficult and technical challenging negotiations
- ◆ Additional spectrum from 2 GHz MSS and other services
  - 1910-1920 MHz, 1990-2000 MHz,
  - 2020-2025 MHz, 2165-2180 MHz

# Radio Frequency Identification (RFID)

- ◆ Recent FCC actions increased authorized signal levels in 13.56 MHz and 433 MHz bands
- ◆ Very active programs in DoD, FDA, and commercial sector; e.g. Wal-Mart
- ◆ FCC currently reviewing Part 15 Rules in conjunction with EPCglobal standards
- ◆ Intra-governmental group working issues that include privacy, recycling, and security

# OET Homeland Security Initiatives

- ◆ NRIC
  - Commission's post 9/11 initiative
  - Network reliability concerns
  - Best practices
- ◆ 800 MHz public safety interference
  - Interference analysis
- ◆ CALEA
  - Coordinate agency CALEA activities
- ◆ UWB
  - Ground penetrating radar
  - Through wall imaging

# Information On-Line

OET Info on line (Orders, Public Notices,  
etc.)

<http://www.fcc.gov/oet/info/>

<http://www.fcc.gov/oet/info/documents/>

FCC Rules and Regulations

<http://www.fcc.gov/oet/info/rules/>

General FCC Information

<http://www.fcc.gov>



Questions?