
Rural Broadband: Challenges & Issues

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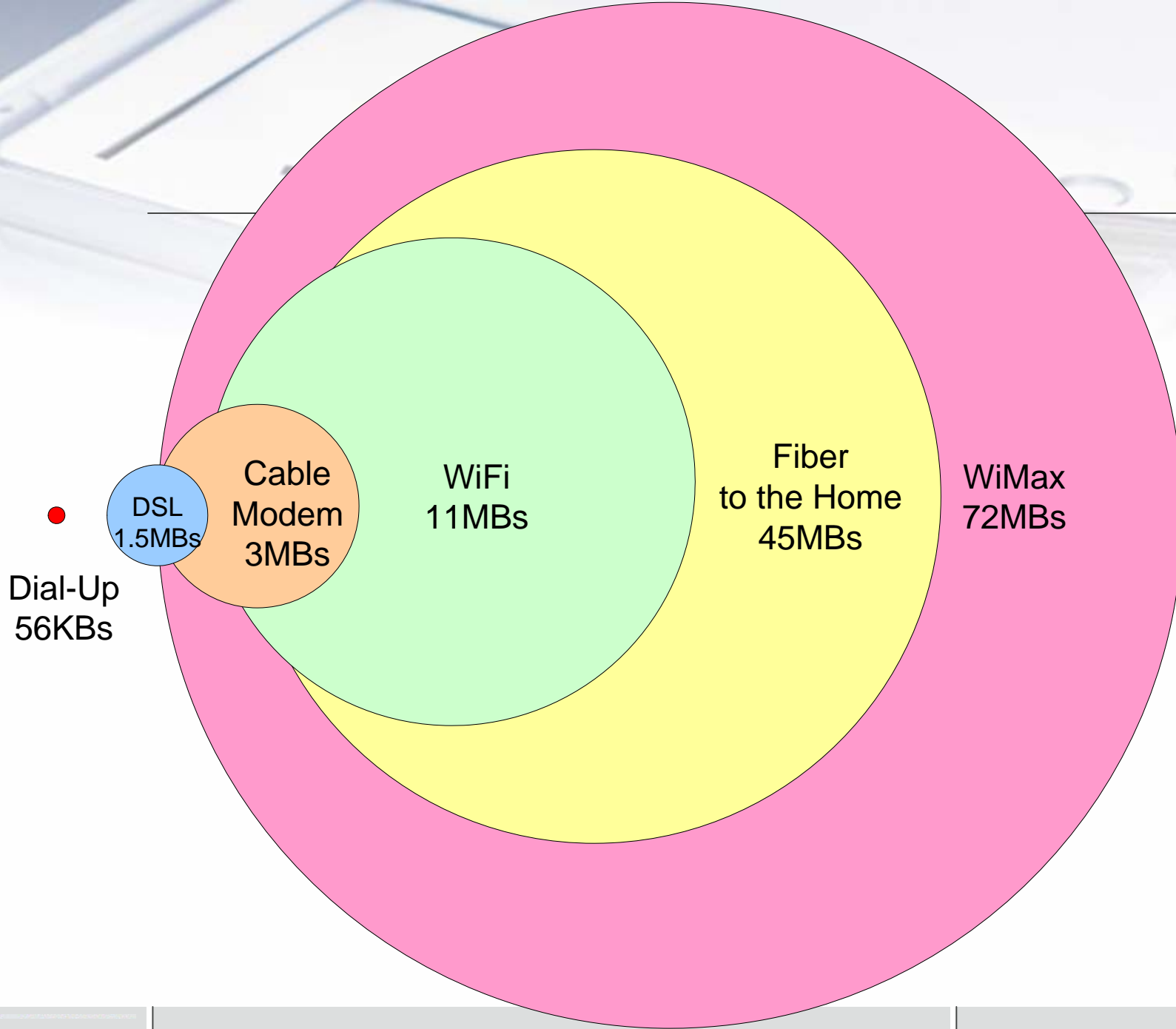
Data from PEW Internet and American Life Project

Confusing Broadband Terminology

- Dialup = 56K at best
- **Broadband = 200K + & always on**
- WiFi – Wireless networking
11MBs up to 300 feet
- **WiMAX - Wireless Networking**
72MBs up to 30 miles
- FTTP – Fiber to the Premise
- **FTTH – Fiber to the Home**
- MAN – metropolitan area network
- Muni-WiFi – Public WiFi network
- INet – Institutional Network
- **Bandwidth – the data volume**
- **Pipe – a digital telecommunications circuit**
- DSL – Digital Subscriber Line
300KB to 5MB service
- **Internet II – Internet at Gigabit + bandwidth**
- Cable modem – Internet service from a cable TV provider 3MB to 10MB+
- **CalREN - California Research & Education Network - CENIC – Corporation for Education Network Initiatives in California**
- ISP – Internet Service Provider
- **WiSP – Wireless Internet Service Provider**
- BPL –Broadband over Power Lines

Confusing Broadband Issues

- Adoption Rates vs. Availability
- Home Availability vs. Business Availability
- Availability Impacts on Education and Healthcare
- Bridging the Digital Divide
- Economic Development and Community Vitality
- Public vs. Private investment
 - Chicken and the egg dilemma –
 - No local demand = no local investment
 - No local investment = no services = no demand
- Local Right of Way Management and Control
 - Local regulations, permitting, franchising, etc

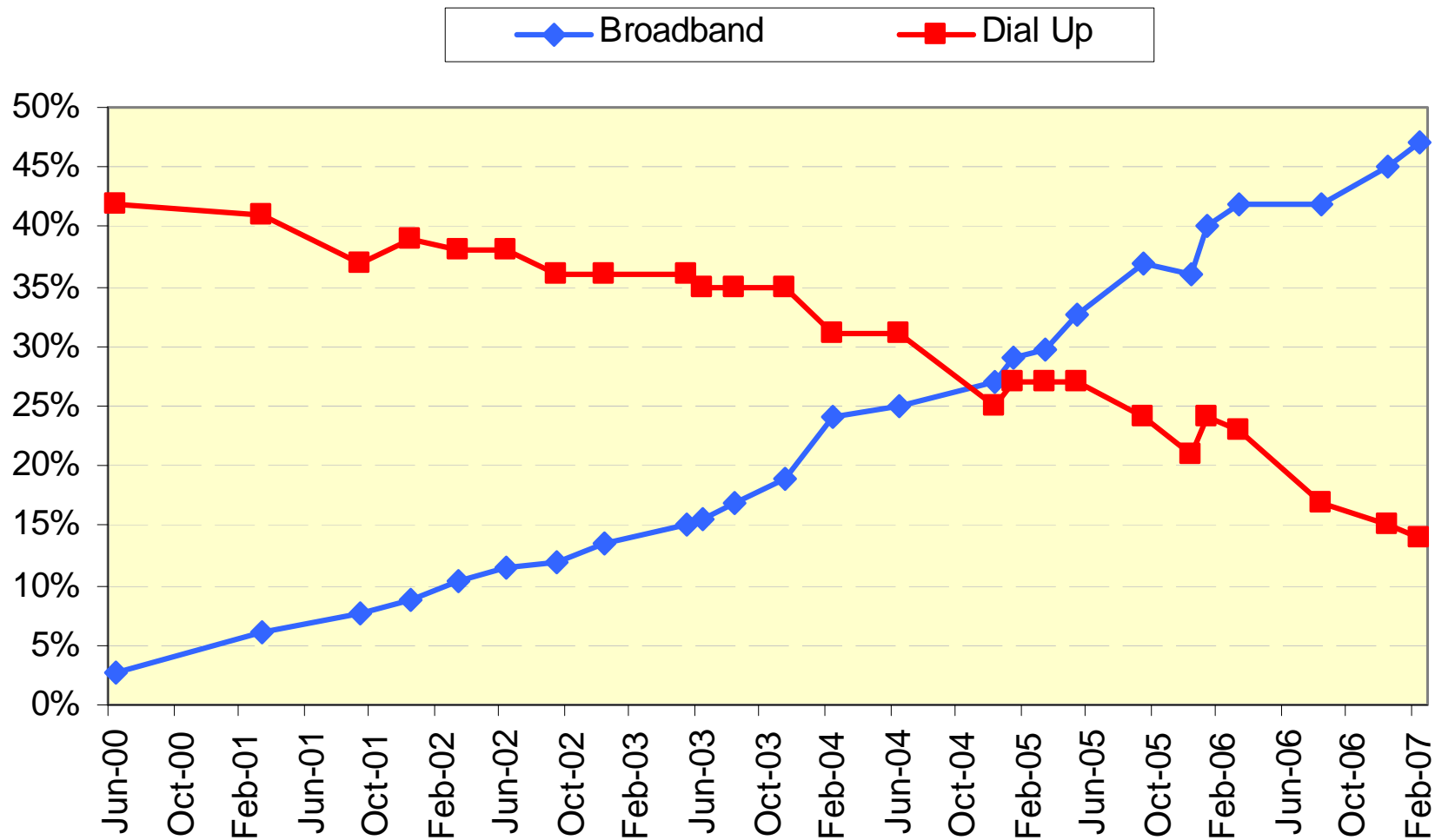


Basic facts about communication technology adoption

- 71% of American adults are internet users (Feb. '07)
 - 67% of adults have online access from home
- 93% of teens (ages 12 through 17) are online users (Nov. 2006)
- 70% of Americans who go online from home connect via high-speed (mostly cable modem or DSL)
 - That translates into 47% of all Americans with high-speed at home
- 34% of online users have used a wireless network to go online (as of December 2006)
- 74% of adults have cell phones
- 63% of teens (ages 12-17) have cell phones

Broadband penetration in the U.S., 2000-2007

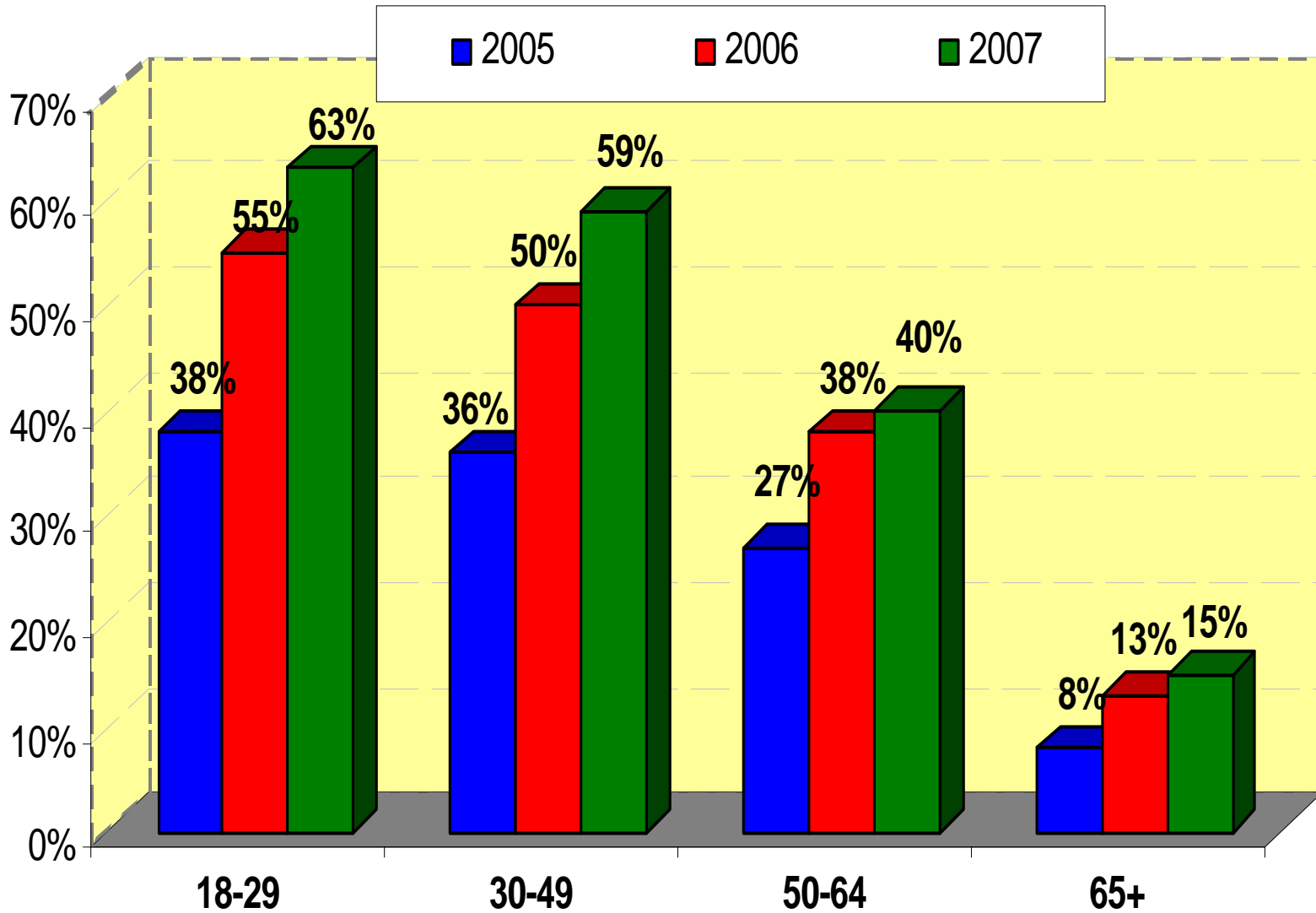
Home Broadband & Dial-Up Penetration (% of adult Americans)



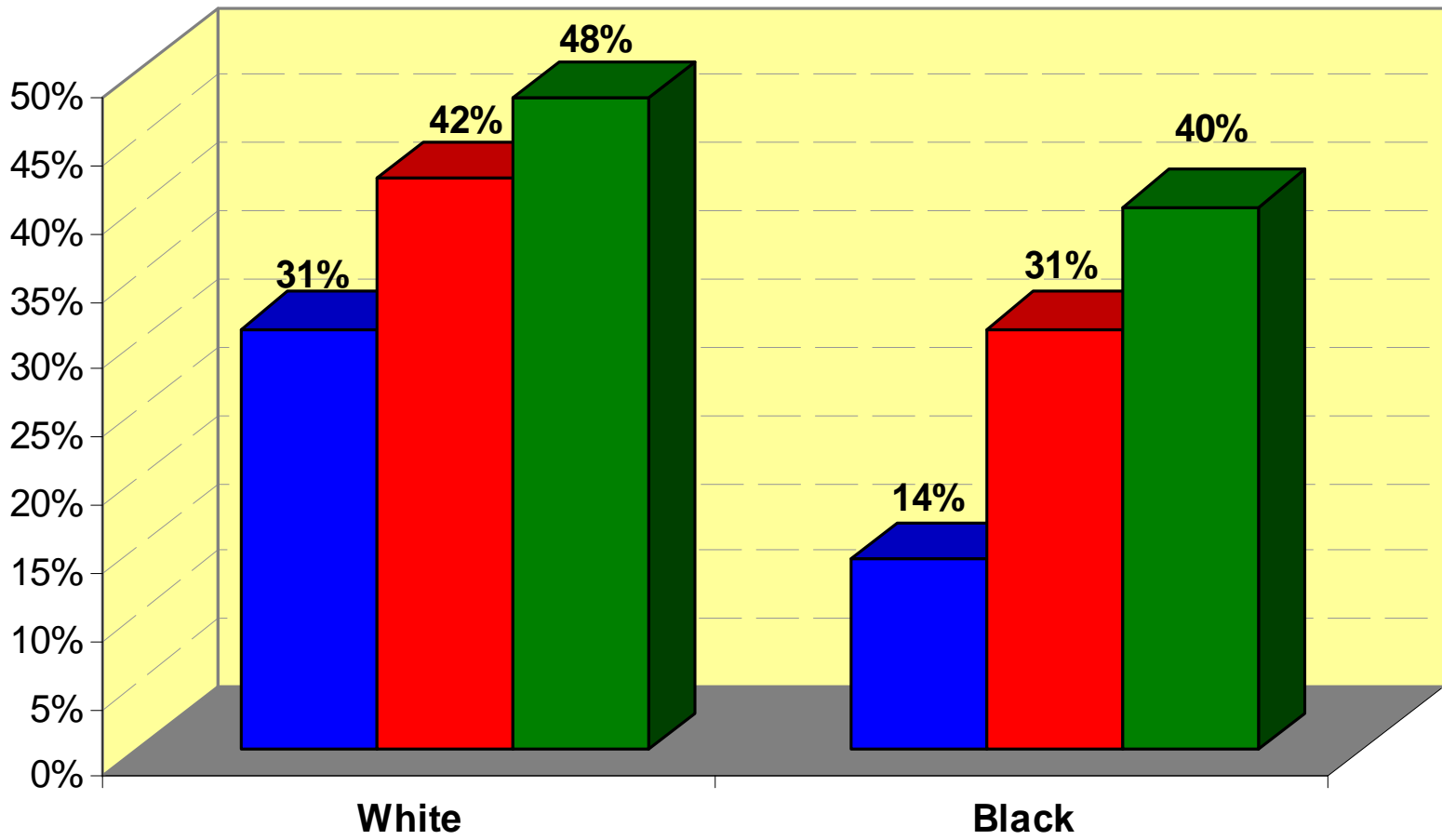
How does broadband adoption rate stack up?

- To reach 50% to consumer adoption it took:
 - 18 years for color TV
 - 15 years for the cell phone
 - 14 years for the VCR
 - 10 ½ years for the CD player
- Broadband should hit 50% by 9-10 year mark.

Home Broadband Adoption by Age, 2005-2007

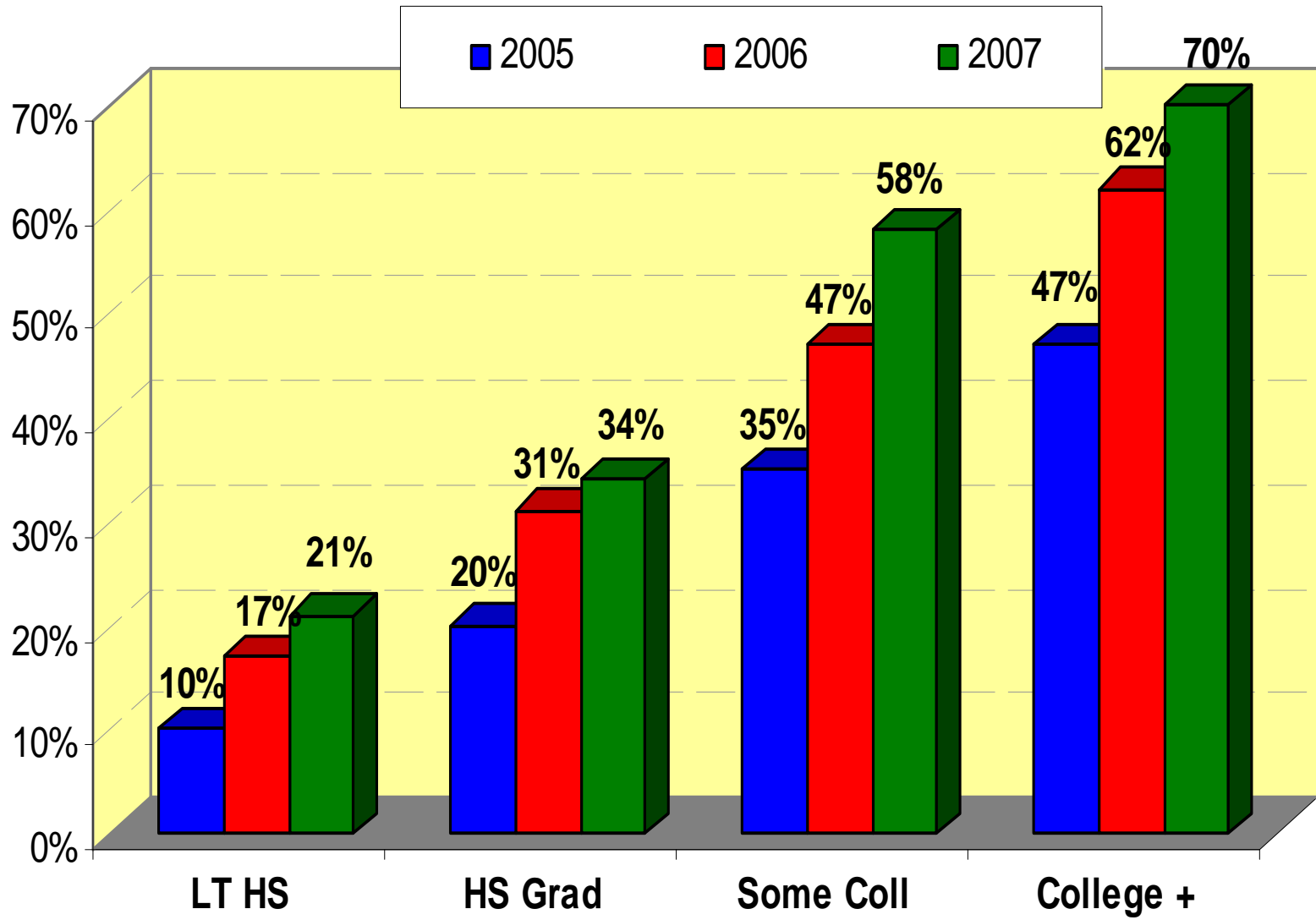


Home Broadband Adoption by Race, 2005-2007

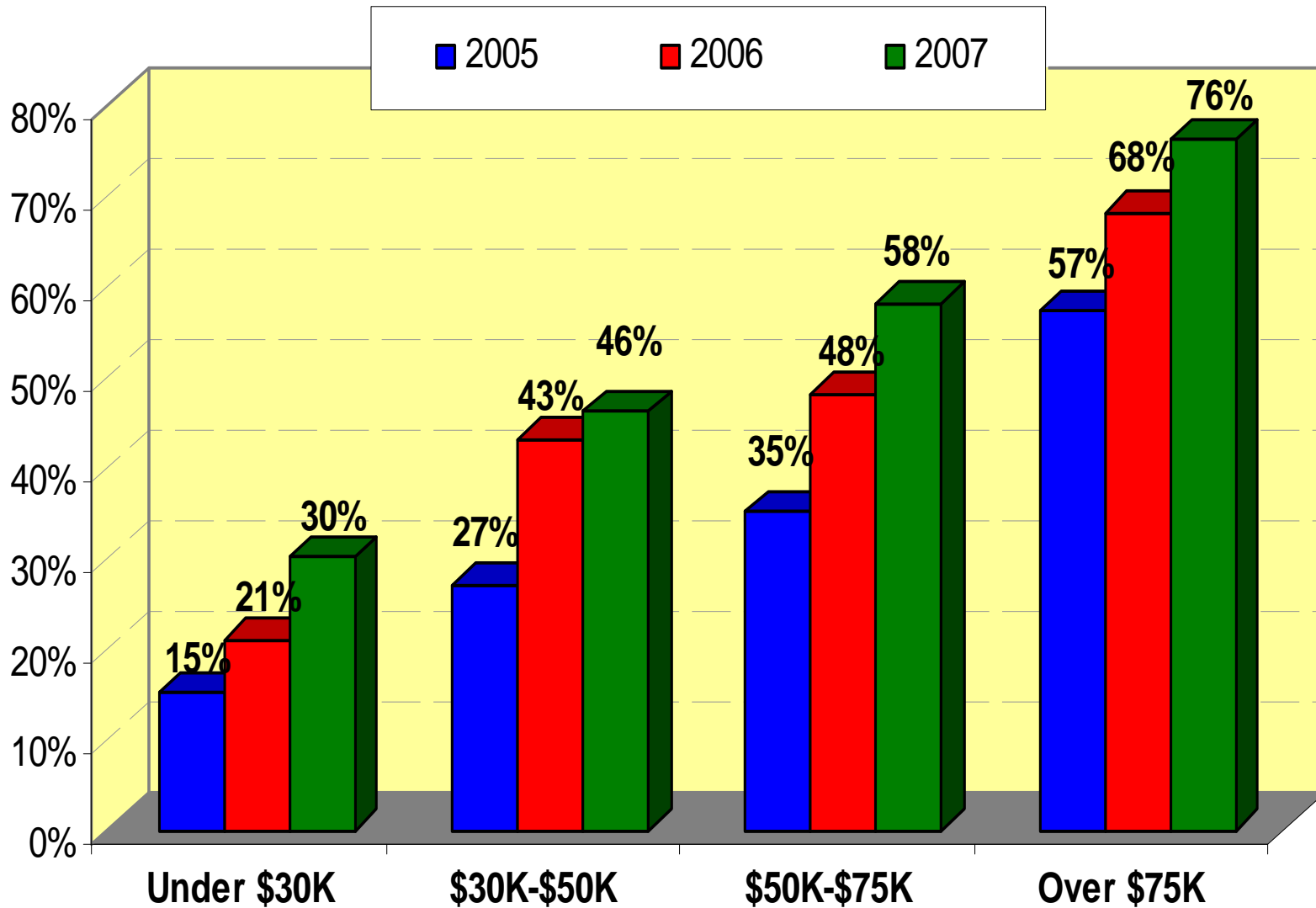


➤ 29% of U.S. Hispanic population has broadband at home, 2006

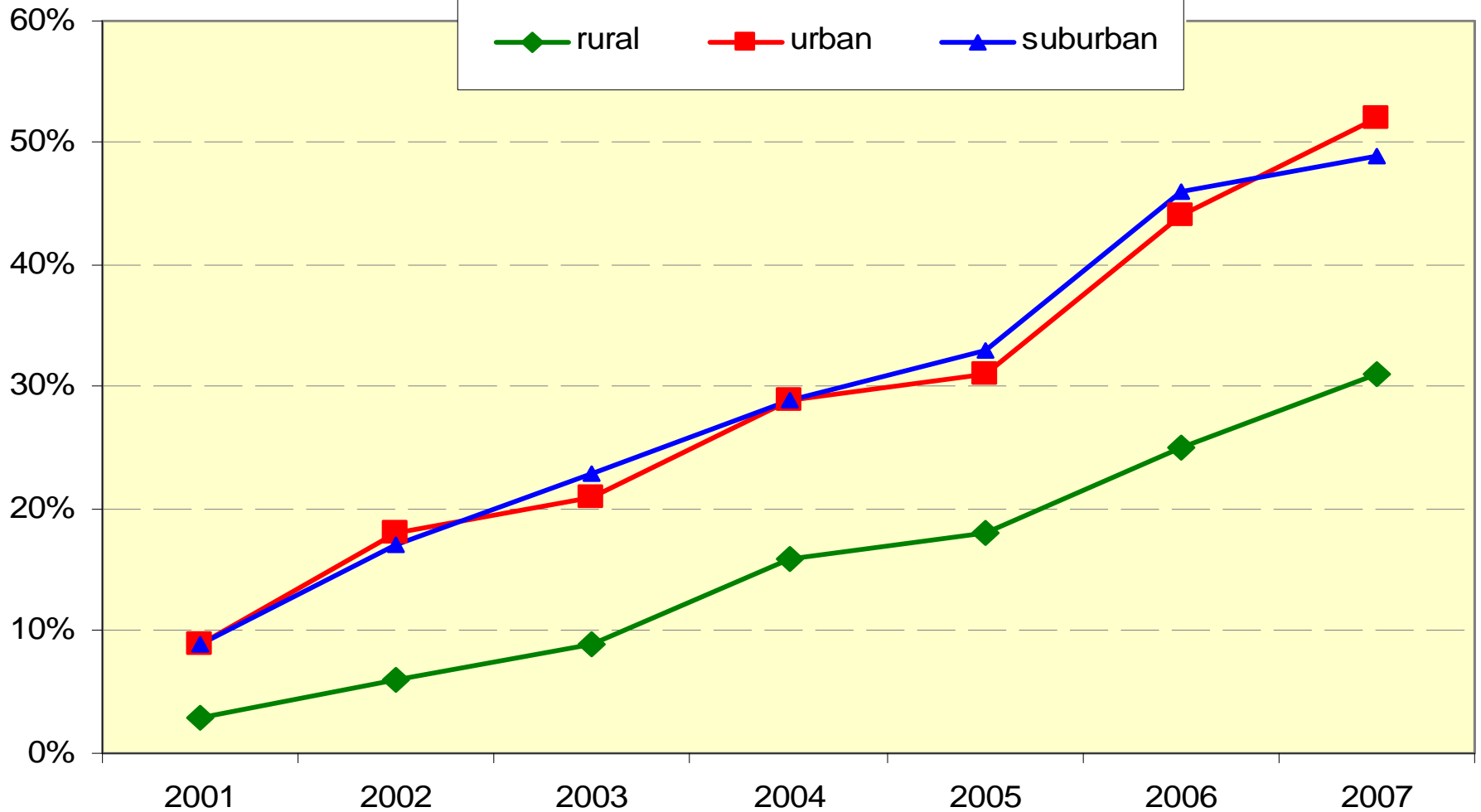
Home Broadband Adoption by Educational Level, 2005-2007



Home Broadband Adoption by Household Income, 2005-2007



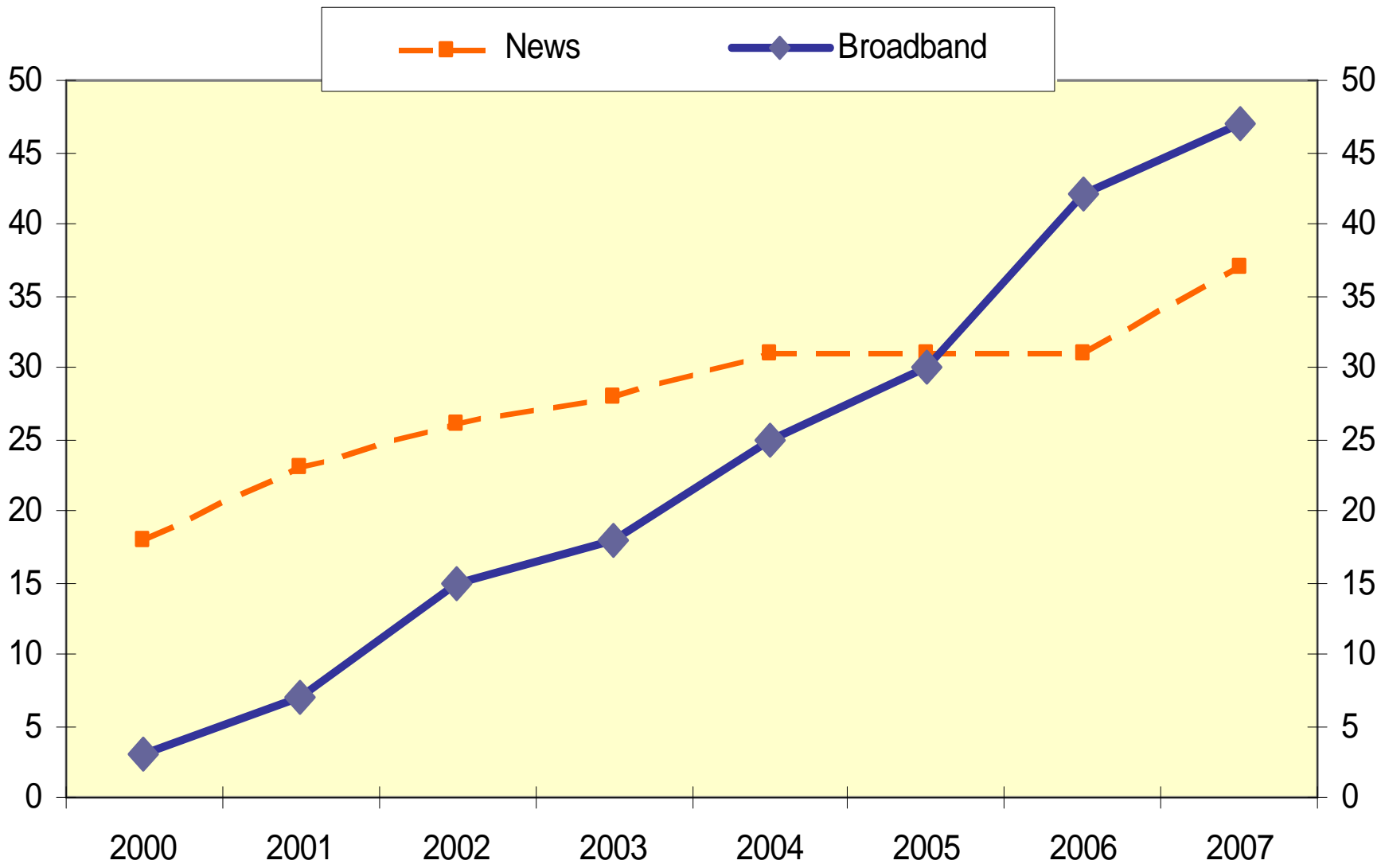
Trends in rural broadband adoption at home



Broadband: What for?

- Home high-speed connection is key differentiator in explaining internet usage patterns
 - Do more things online on the typical day than dial-up users
 - Spend more time online than dial-up users
- Higher levels of internet impacts in:
 - Maintaining social networks
 - Helping in major life decisions
 - Information gathering (news, civic engagement, research)
 - Gathering information about a health or medical condition

Trends in broadband adoption & daily online news usage



Governors Broadband Task Force Working Groups

- Economic Development
- Healthcare
- Emerging Technologies and New Applications
- Public/Private Partnerships for Community Development
- Build-Out
- Education

Economic Development

- Jim Kirkland, Working Group Lead - Senior Vice President, Strategic Development, Covad Communications Group
- Joaquín Alvarado, Director, Institute for Next Generation Internet, San Francisco State University
- Ellis Berns, Economic Development Director, City of Mountain View
- David Finigan, County Supervisor, Del Norte County
- Steve Monaghan, Chief Information Officer, Nevada County
- Peter Pardee, Vice President, Hughes Network Systems
- Jose R. Rodriguez, President/CEO, El Concilio

Our Target Projects:

- #1: Catalogue best practices for broadband demand aggregation - (getting it there).
- #2: Catalogue best practices for community based web portals – (create local demand).
- #3: Identify best practices for using community assets and funding for broadband and content expansion.
- #4: Catalogue other projects that have successfully encouraged broadband deployment for economic development.

Task Force Initiatives Update

- “Directing BTH to create a pilot database linking broadband providers with the state Department of Transportation (Caltrans) to better coordinate fiber optic installation, leading to more consumer choice and efficient pricing”

<http://dot.ca.gov/broadband/>

- Statewide broadband mapping initiative is next.

Final Task Force Report

- All Working groups have submitted their recommendations
- Final draft report to Governor in October
- Published report in late Fall

<http://www.calink.ca.gov>



Some Rural Broadband Needs

- Personal/home use
- Economic development - local businesses
- Healthcare – hospitals and tele-medicine
- Education – K-12 schools
- Public Safety
- Community development, vitality, and sustainability

Rural Build out Challenges

- FTTH / FTTP – Some providers require a minimum of 450+ unit subdivision for ROI to work.
- Cable Modem – 25 units per contiguous quarter mile.
- DSL – 18,000 feet from Central Office (CO), or DSLAM. Neighborhood DSLAM locations requirements similar to Cable Modem. DSLAM requires fiber from CO.
- WiFi – 300' limit. Line of site. Limited bandwidth.
- Motorola Canopy and other similar wireless solutions.
 - Proprietary, expensive, will not be “main stream”.

Many rural neighborhoods lack the economy of scale or sufficient demand to make economics work for private sector providers to build fiber infrastructure.

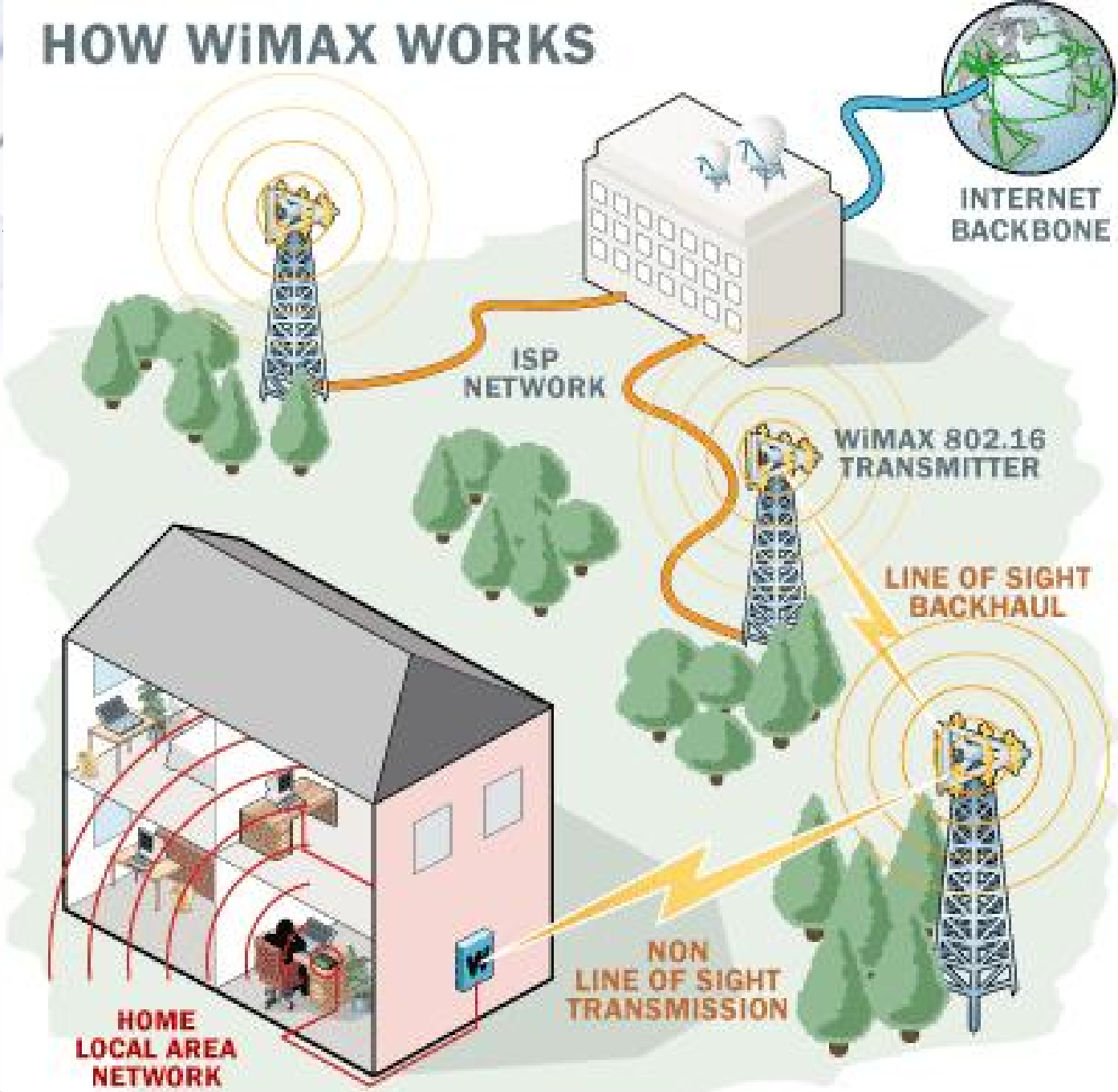


Intel - #1 Chip Maker

Intel's Broadband Vision

“Connecting the next billion people” by extending the reach of broadband access and mobile PC applications via WiMAX

HOW WiMAX WORKS



What can Rural Counties do?

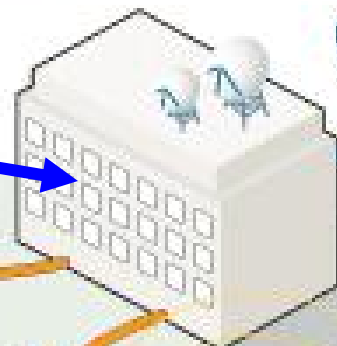
- Craft WiSP friendly regulations
- Economic development micro-loans program
- Share infrastructure such as towers and land
- Regularly communicate needs to service providers
- Partner with schools and other public agencies to build an INet.
- Develop a telecommunications guideline for new development
- Continue to communicate needs to Sacramento
- Help build demand with locally valued content and eGov services

HOW WiMAX WORKS

Micro Loans
for WiSP's



INTERNET
BACKBONE



ISP
NETWORK

Partner with
providers to
build fiber
to/in your
community

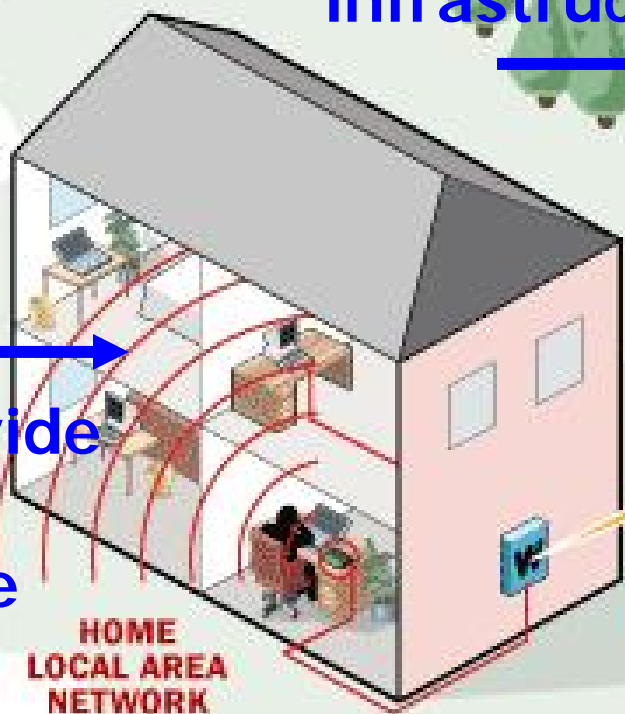
Friendly
regulations
and ROW
access

Share/Partner
infrastructure

WiMAX 802.16
TRANSMITTER

LINE OF SIGHT
BACKHAUL

Zoning
NIMBY
issues



HOME
LOCAL AREA
NETWORK

NON
LINE OF SIGHT
TRANSMISSION

Bridge
digital divide
through
assistance
programs

Thank you

Questions, email:

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Download presentation at:

www.MyNevadaCounty.com/IS

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