Western Telecommunications Alliance
2005 Annual Conference

"Promoting Broadband Deployment Across America"

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The National Telecommunications and Information Administration (NTIA)

- Principal advisor to the President on telecommunications and information policy issues

- Represent the Executive Branch in international & domestic telecommunications policy activities

- Manage Federal Government use of frequency spectrum

- Perform telecommunications research and engineering for both the Federal Government and the private sector
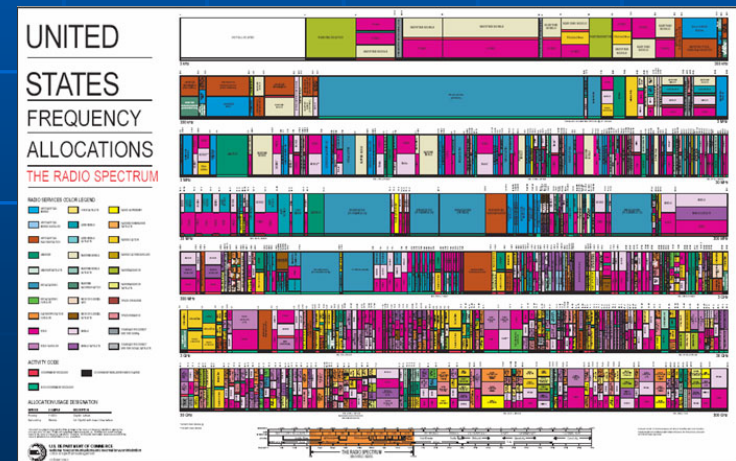

- BASED ON THE TELECOMMUNICATIONS AUTHORIZATION ACT OF 1992

Overarching Goal:
Promoting Economic Growth

Thanks to the President's policies, America's economy is strong:

- GDP grew a strong 3.8% in 3Q 2005, and grew 3.6% during the past 4 quarters, above the averages of each of the past 3 decades. EU25 GDP has grown 1.3% during the past 4 quarters.

- The markets have added approximately $4.4 trillion in new wealth since January 2003.

- Nearly 2.2 million jobs have been created over the past 12 months and 1.5 million since January 2001. Over 4.2 million have been added since May 2003.

- From December 2000 to December 2004, productivity grew at its fastest 4-year rate in over 50 years.

- Manufacturing activity (ISM index) has been growing for 28 straight months.

- National homeownership was 68.6% in 2Q 2005, near its record high of 69.2% in 4Q 2004.

The President's Broadband Vision
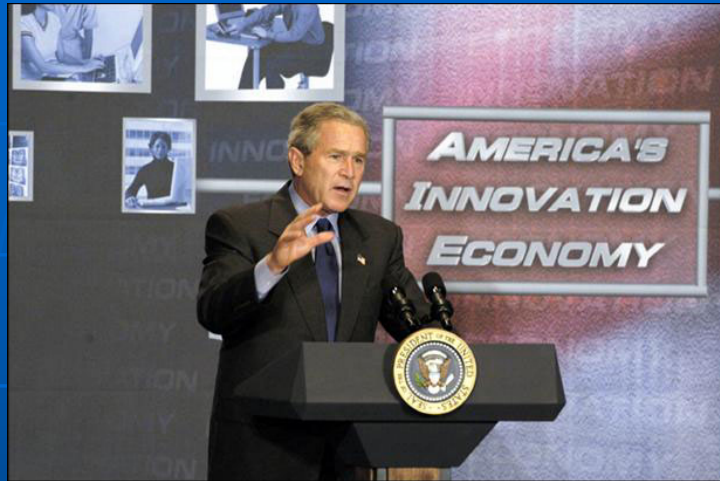
President Bush speaking at the U.S. Department of Commerce June 24, 2004

"This country needs a national goal for broadband technology . . . universal, affordable access for broadband technology by 2007."

— President George W. Bush, Albuquerque, NM, March 26, 2004

Government's Role

"The role of government is not to create wealth; the role of our government is to create an environment in which the entrepreneur can flourish, in which minds can expand, in which technologies can reach new frontiers."

— President George W. Bush, Technology Agenda, November, 2002

Creating Economic Conditions For Broadband Deployment

"We ought not to tax access to broadband. If you want something to flourish, don't tax it."

– President George W. Bush in Baltimore, Maryland on April 27, 2004

- Tax relief has given businesses powerful incentives to invest in broadband technology
  - Accelerated depreciation for capital-intensive equipment
  - Extension of the Internet tax moratorium until Oct. 31, 2007; support making the moratorium permanent
  - An 18-month extension of the research and experimentation tax credit; support making it permanent
  - President's FY 2006 budget requests a record $132 billion for research and development.

Benefits of Broadband

"[B]roadband will not only help industry, it'll help the quality of life of our citizens."
— President George W. Bush, Dept. of Commerce, June 24, 2004

- Tele-Medicine
- Distance Learning
- Tele-Work
- National Security
- Jobs and Economic Growth

The wireless industry is poised to create up to 3 million jobs and save $600 billion over 10 years, according to a new report from Ovum for CTIA. About 2.5% of all jobs in the US now depend on the wireless industry, according to the Ovum report. (Source: TechDaily, 10/3/05)

U.S. Chamber of Commerce study released 10/6/04 found more than 212,000 new jobs would be created and $127 billion a year would be added to GDP over the next five years if telecom regulations were overhauled.
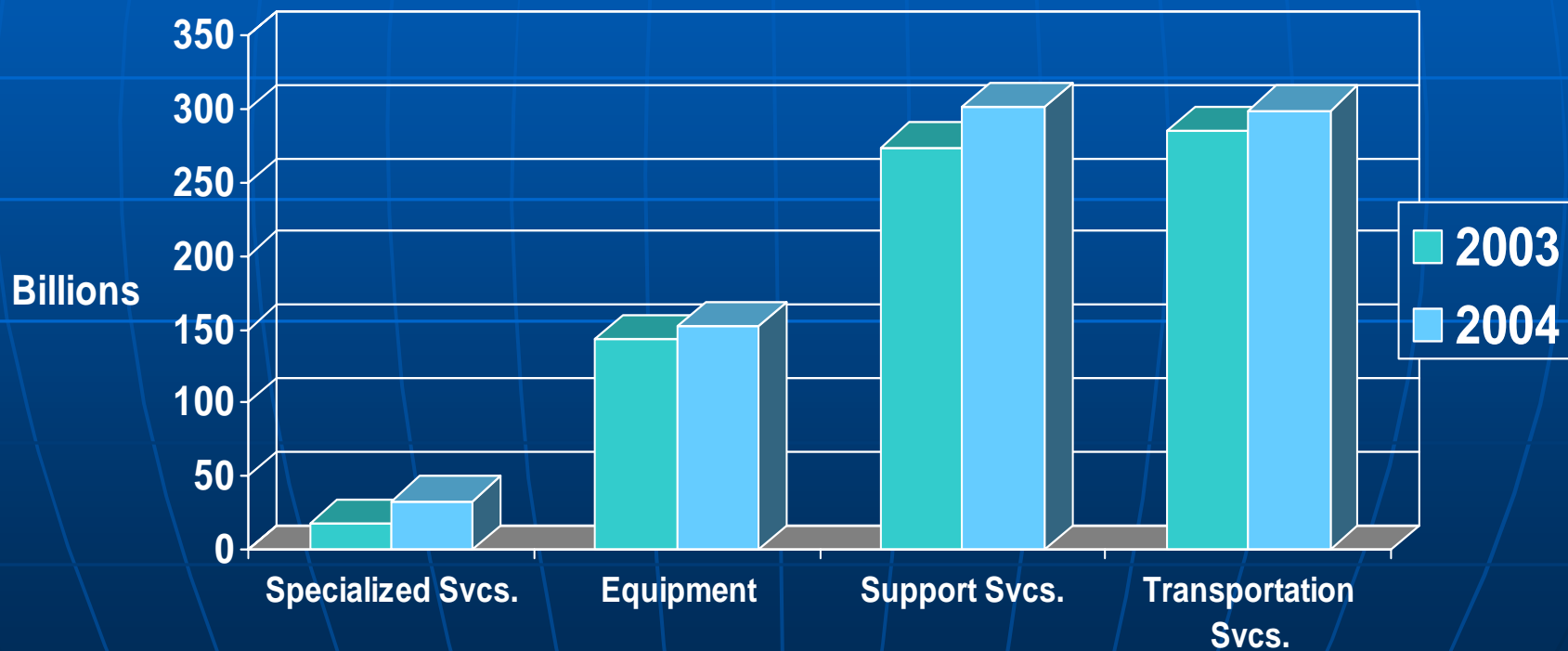
Removing the Regulatory Underbrush

- The Administration supports the FCC's order freeing newly deployed broadband infrastructure from legacy regulation.

- As a result → the number of communities with fiber build outs has increased 83% from 217 communities to 398 communities in 43 states. The number of homes passed by fiber grew from 970,000 in October '04 to 1.6 million in April '05. Many of the communities are outside the "big cities". (Source: FOCUS, FTTH Council and TIA, 5/10/05)

Improving Access to Rights-of-Way:

"[B]roadband providers have trouble getting across federal lands…that's why I signed an order to reduce the regulatory red tape for laying fiberoptic cables and putting up transmission towers on federal lands."
– President George W. Bush, U.S. Department of Commerce, June 24, 2004

- On April 26, 2004, the President signed an executive memorandum directing federal agencies to implement recommendations set out by the Federal Rights-of-Way Working Group. They called for improvements in: 1) Information Access and Collection, 2) Timely Processing, 3) Fees and Other Charges, and 4) Compliance.

President's Spectrum Policy Initiative

"The existing legal and policy framework for spectrum management has not kept pace with the dramatic changes in technology and spectrum use."

- President George W. Bush, Presidential Memorandum, May 29, 2003

- Committed the Administration to develop a comprehensive U.S. spectrum policy for the 21st century.

- The Secretary of Commerce was charged to lead this initiative.

- Established a Federal Government Spectrum Task Force – membership includes the Departments of State, Treasury, Defense, Justice, Interior, Agriculture, Transportation, Energy, Homeland Security, and NASA, OMB, OSTP and Project SAFECOM.

Moore Meets Marconi: Wireless Broadband and New Technologies

"The other promising new broadband technology is wireless. The spectrum that allows for wireless technology is a limited resource . . . [a]nd a wise use of that spectrum is to help our economy grow, and help with the quality of life of our people."   -- President George W. Bush, June 24, 2004
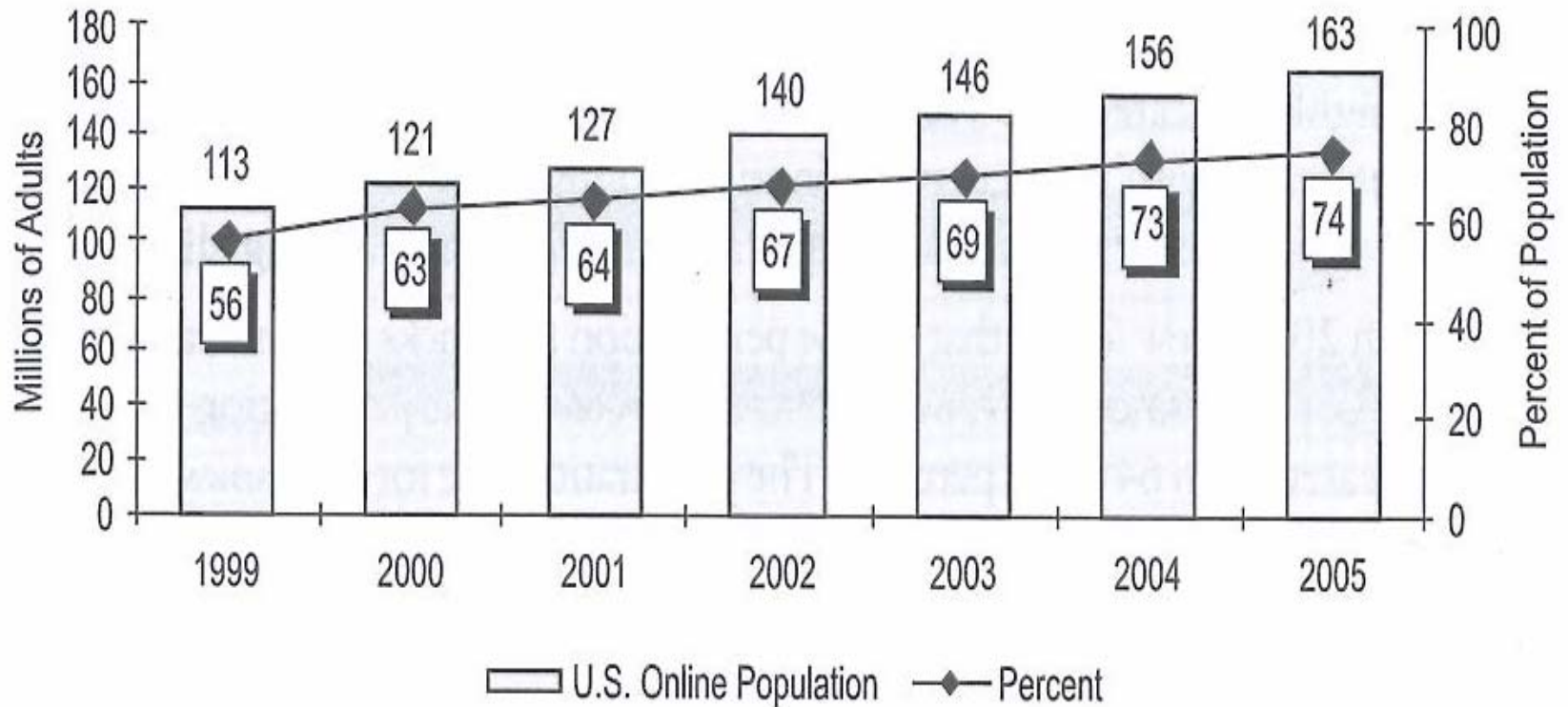
The Administration has made more radio spectrum available for wireless broadband technologies:

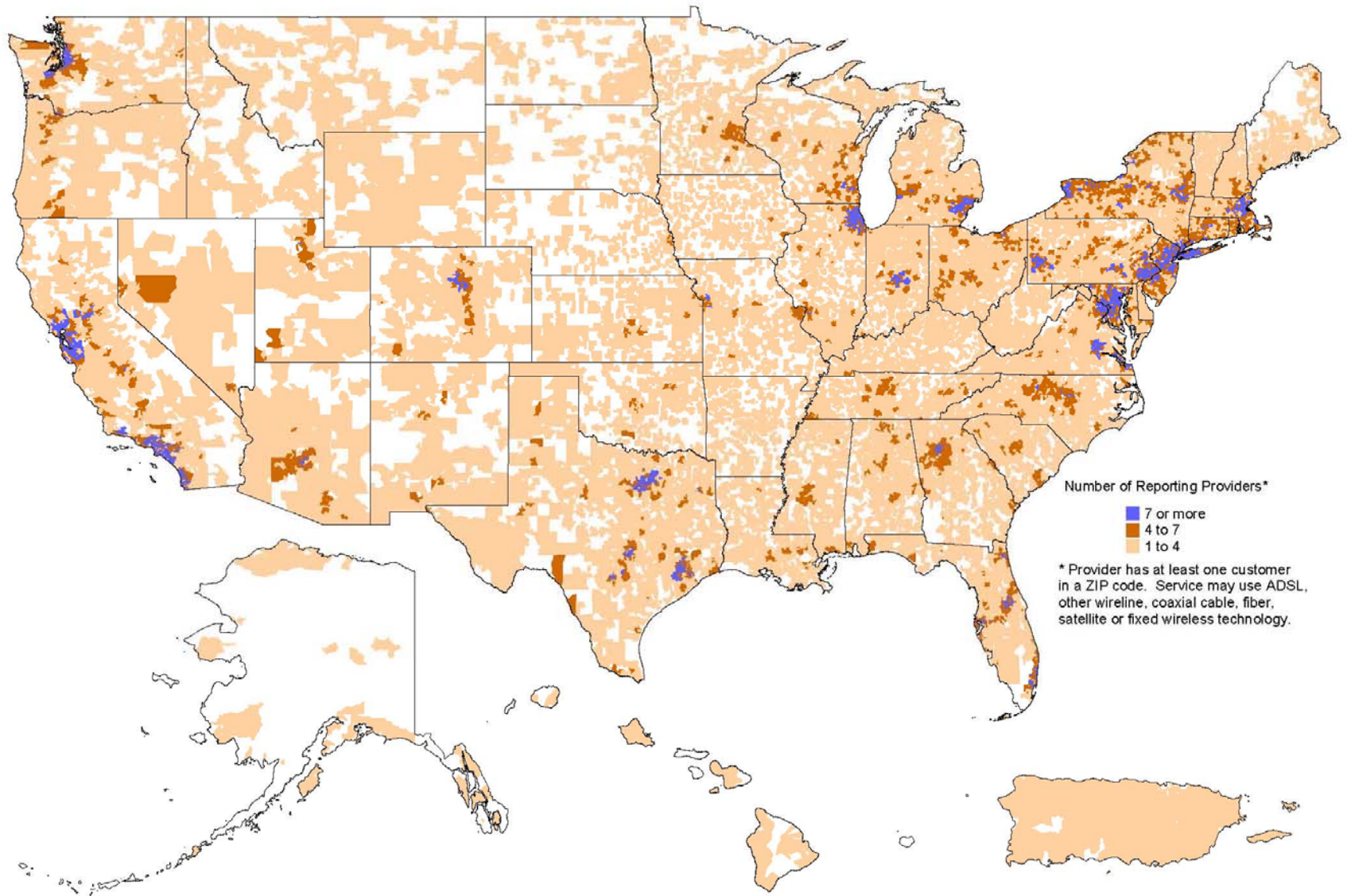- Advanced Wireless Services ("3G")

- Ultra-wideband

- 5 GHz Spectrum

- 70/80/90 GHz

U.S. Population Online

High-Speed Providers by ZIP Code
(As of December 31, 2000)

Number of Reporting Providers*

- 7 or more
- 4 to 7
- 1 to 4

* Provider has at least one customer in a ZIP code. Service may use ADSL, other wireline, coaxial cable, fiber, satellite or fixed wireless technology.

Source: FCC

High-Speed Providers by ZIP Code
(As of December 31, 2004)

Number of Reporting Providers*

- 7 or more
- 4 to 6
- 1 to 3

* Provider serves at least one end user in a ZIP Code. Technology used may be ADSL; Other Wireline; Coaxial Cable; Fiber or Powerline; or Satellite or Wireless. See footnote 2 following Tables 1 - 4 for details.
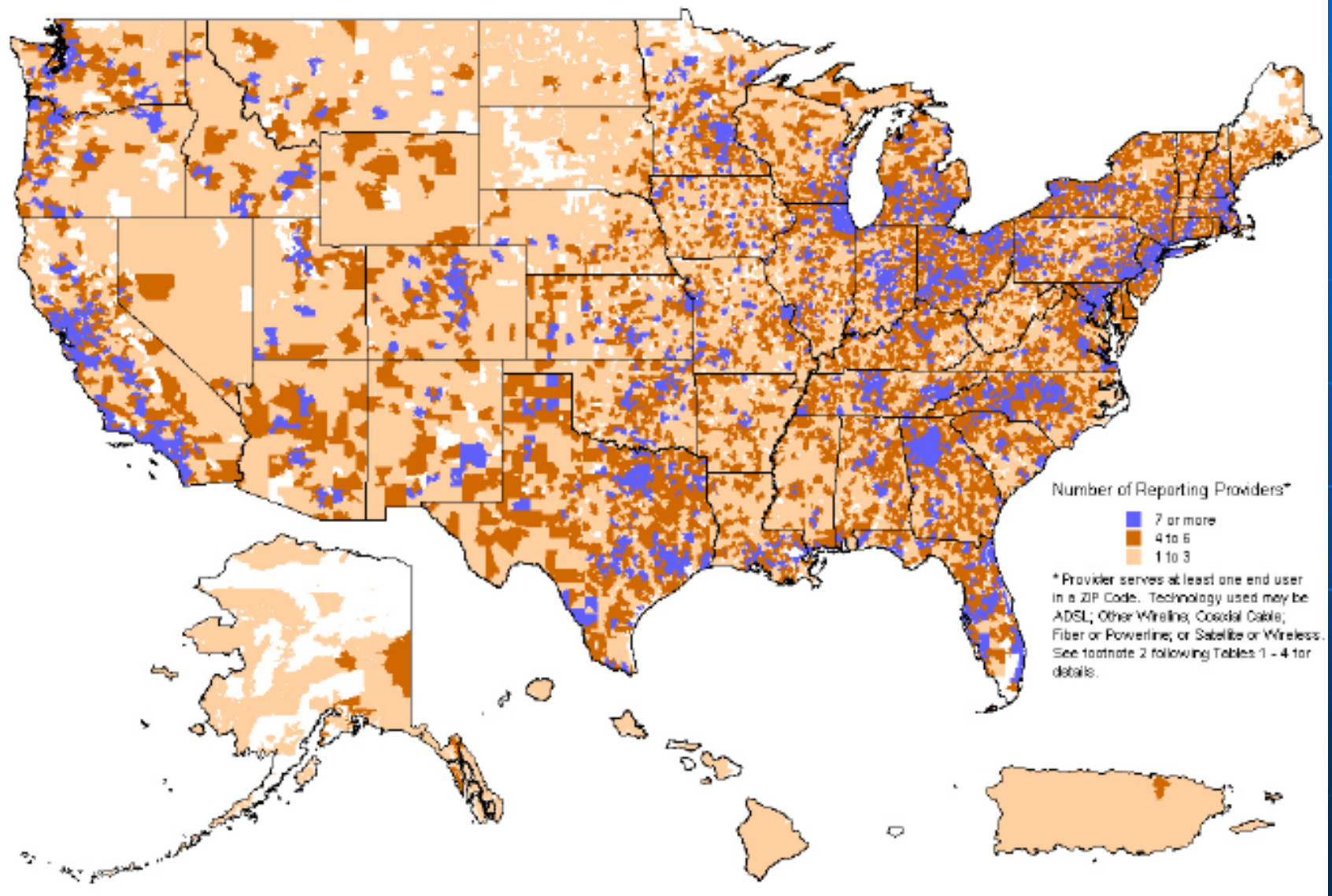
Source: FCC

Trends in Technology Adoption

- A study released Oct. 17, 2005 by USA TODAY and Claritas marketing research firm showed that income is not the driving factor for technology adoption, rather it is a lifestyle or societal movement. The study found that in a county-by-county survey 29% of U.S. households are likely to be early adopters of technology:
  - Four of the 25 counties that contain the highest percentage of tech-centric households are in Colorado (Denver region)
  - Six counties in Northern VA-DC-Baltimore corridor
  - Three counties in Utah (Salt Lake City/Provo region)
  - Also among the top 25 are counties in Iowa, Kentucky, Minnesota, Michigan and Texas.
- The study looked at the percentage of ALL households in the county, which accounts for why Santa Clara, part of Silicon Valley, ranks 149 on the list – the county is big and contains a large non-Silicon Valley population.

Promising Technology Solutions to the Rural Challenge

- **Wi-Fi:** Rural Oregon is home to the world's largest Wi-Fi hotspot → **700 miles^2** Airgo Networks announced plans to sell Wi-Fi chips with data rates up to 240 Mbps by 4th quarter 2005 – 4x the speed of current Wi-Fi chips at 54 Mpbs.

- **WiMAX:** With a range of up to 40 miles, WiMAX may be a promising solution for delivering broadband to rural areas. Although WiMAX is still under development, the FCC and FEMA authorized deployment of a WiMAX network (15 mile range with 45 Mbps bandwidth – 30x faster than standard 1.5 Mbps DSL connections) to link Wi-Fi hotspots in an effort to restore communications damaged by hurricane Katrina.

- **BPL:** Manassas , VA -- a suburb of Washington, DC – recently deployed the nation's first citywide broadband-over-power-line (BPL) system and is available to about 10,000 of the city's 12,500 homes. Central VA Coop, a rural cooperative, also is developing a BPL network in that state.

- **WISPs**: Wireless Internet service providers, approximately 3,000 in the U.S., traditionally provide broadband connectivity in areas not reached by cable or DSL. Now WISPs are expanding into urban areas.

Promising Technology Solutions
to the Rural Challenge (cont'd)

▪ **<u>Unlicensed Mesh Networking:</u>** By linking nodes on an ad hoc basis, mesh technology promises to deliver high bandwidth at an order of magnitude lower cost than existing licensed wireless technologies. Mesh architecture permits the extension of wireless coverage to areas that do not have wire infrastructure, and can link diverse devices or networks. Champaign-Urbana Community Wireless Network (CUWin) in Illinois has offered free 1.5 Mbps Internet access on a mesh network since 2002. The network can support 50-100 simultaneous users with three high-capacity T-1 wires that connect to the Internet. Speeds are comparable to $50/month ISP subscription.

▪ **<u>Satellite</u>**: Satellites have long held potential for communications coverage of large, sparsely populated areas. Hughes-owned DirecWay counts 250,000 subscribers; Denver-based WildBlue launched a similar service in June 2005.
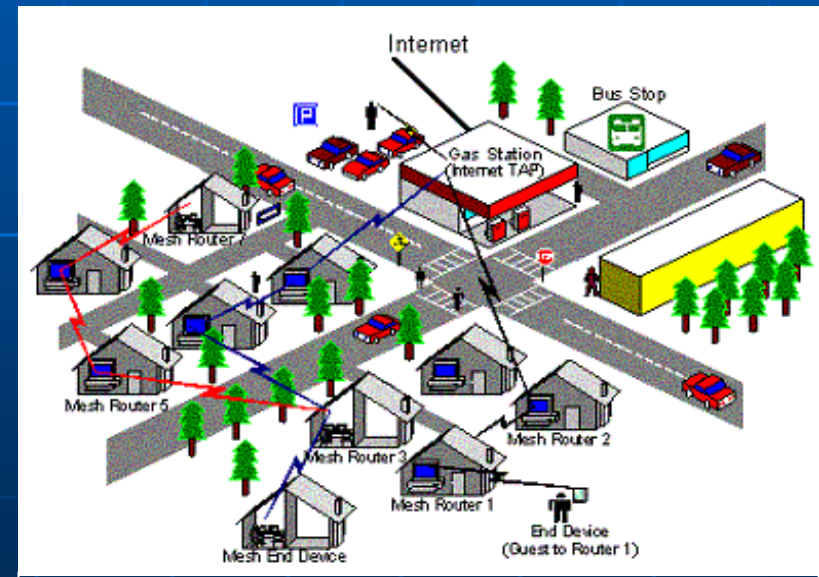
Self-Organizing Neighborhood Wireless Mesh
Networks
(Source: Microsoft Research)

Broadband Over Power Lines: The Third Wire

"We need to get broadband to more Americans . . . one great opportunity is to spread broadband throughout America via our power lines."
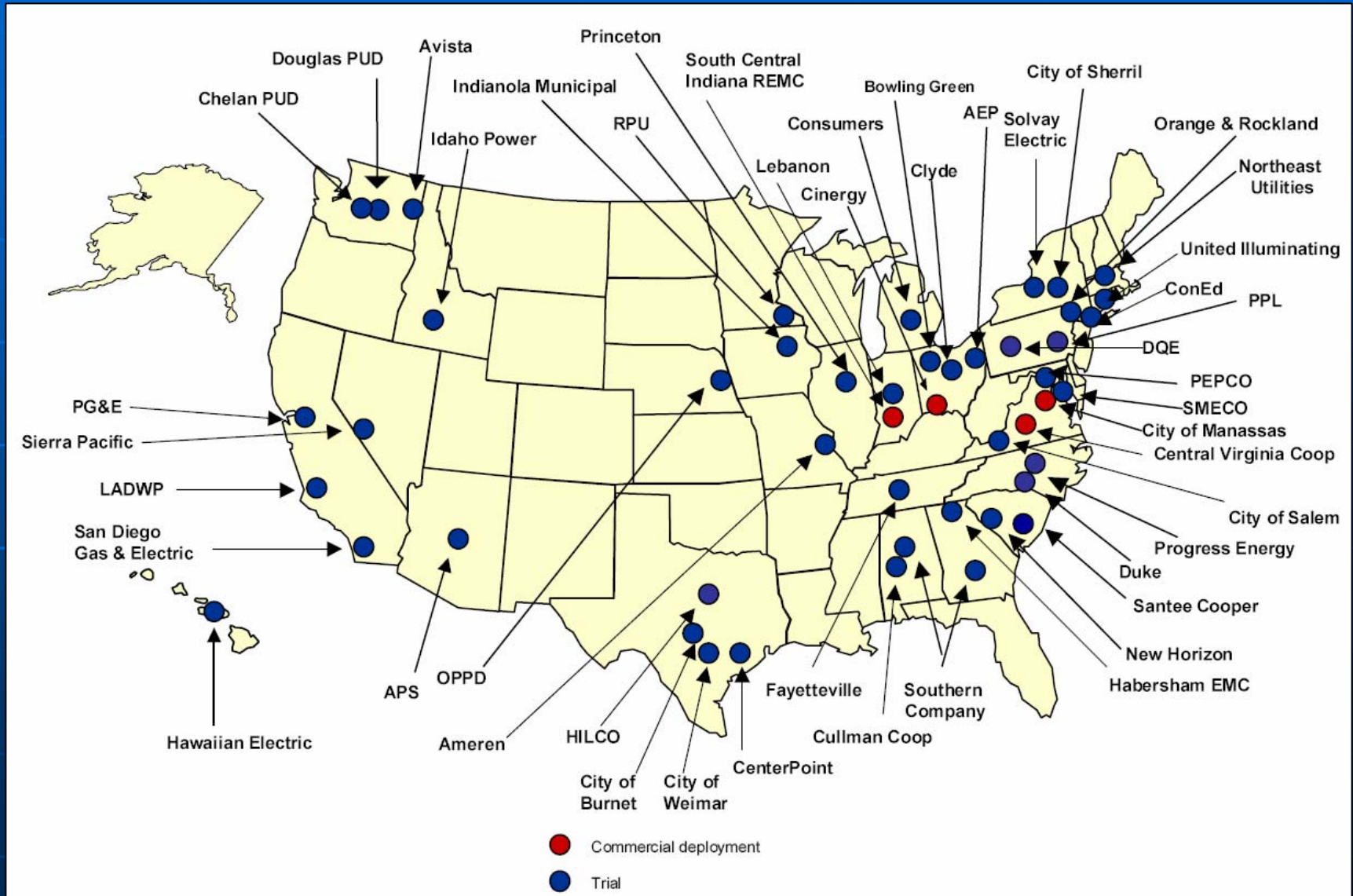
— President George W. Bush, US Department of Commerce, June 24, 2004

- The FCC began a BPL rulemaking on February 12, 2004.
- Principal concern was the risk that BPL systems might interfere with radio communications.
- NTIA submitted to the FCC a Phase 1 study that defined interference risks and potential mitigations (April 2004).
- Based on additional analyses, NTIA recommended several supplements to the FCC proposed BPL rules to reduce risk of BPL interference (June 2004)
- The FCC adopted rules incorporating most NTIA recommendations on October 14, 2004.
- Today, many utilities, hotel operators and others are deploying experimental and operational BPL systems.
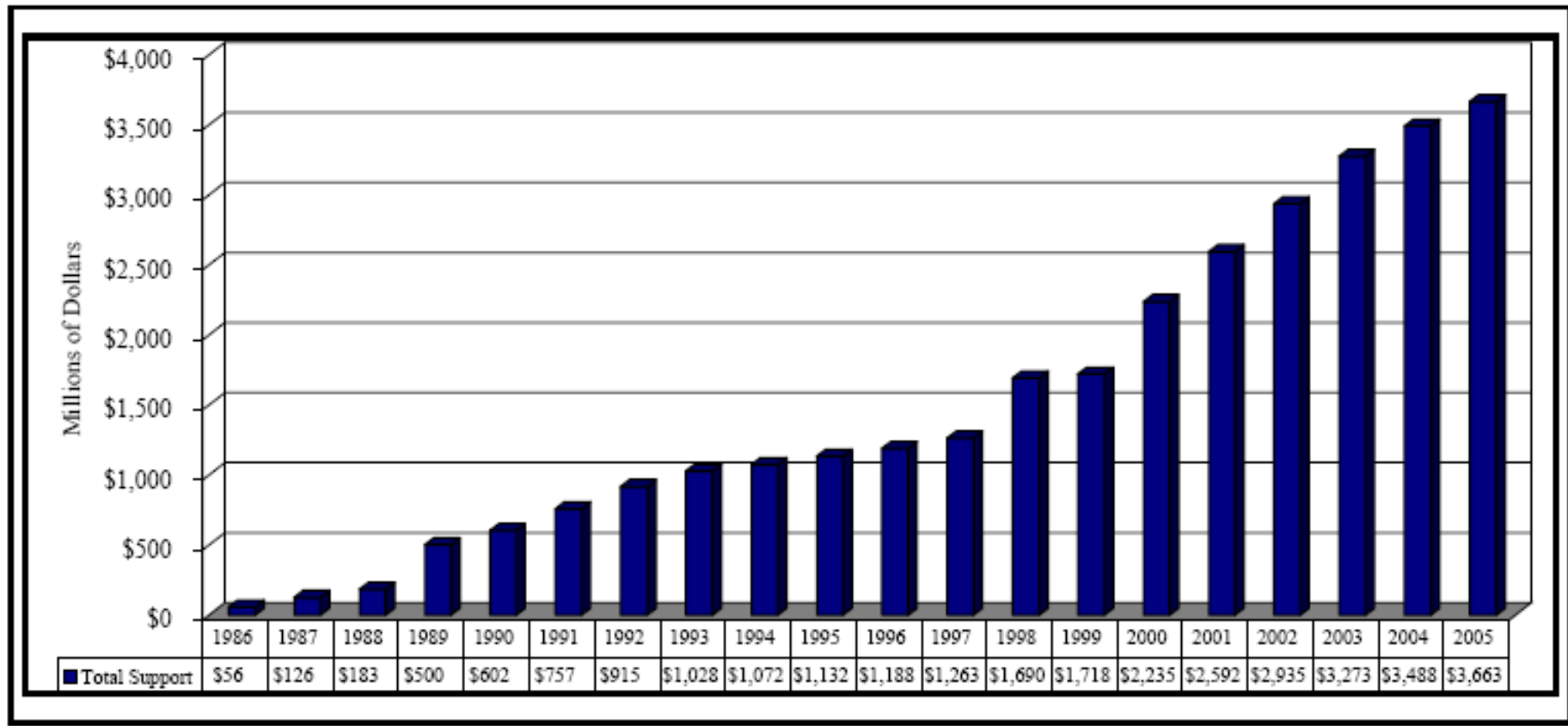
HomePlug Modem can turn an electrical outlet into an Internet connection.

Broadband Over Power Lines: Current Deployments

Universal Service Fund

Total High-Cost Support Fund Payments

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Support	$56	$126	$183	$500	$602	$757	$915	$1,028	$1,072	$1,132	$1,188	$1,263	$1,690	$1,718	$2,235	$2,592	$2,935	$3,273	$3,488	$3,663

Source: FCC, *Trends in Telephone Service*, data as of April 2005

Commerce Department's Economic Development Administration (EDA) Supports Technology

- EDA, the only federal entity with domestic economic development as its sole purpose, provides assistance to rural and urban areas for economic development and revitalization.

  - EDA manages a $2 billion portfolio and EDA grants maximize private sector investment per federal dollar input. Over the past four years, EDA has increased private sector investment from $9 per EDA $1 to an average of $44 per EDA $1.

  - EDA grants are focused on locally-developed, regionally-based economic development initiatives that achieve high return on taxpayers' "investment", create higher-skilled, higher-wage jobs, and directly contribute to economic growth.

- The President's Strengthening America's Communities Initiative will consolidate 18 existing federal economic and community development programs, including EDA. The Administration's proposed FY 2006 budget focuses on robust funding for this Initiative. As a result, no funds are proposed for EDA grant programs in the 2006 budget.

EDA Investment in Broadband Deployment

- EDA supports the proliferation of broadband networks as a key priority for regional economic growth.

- Recent investment examples:
  - Arizona: $2.3 million to Hopi Tribe to build a broadband Internet system
  - Utah: $2.5 million to Utah State University for telecommunications and IT network
  - Idaho: $2 million to Gem County for broadband deployment in regional industrial park
  - Alaska: $2.1 million to City of Ketchikan for Ketchikan Public Utility's telecom transmission lines

- EDA's overall national investment budget is approximately $224 million for FY05 and EDA grants are highly competitive.

- EDA encourages communities eligible for specific broadband programs, such as those offered by USDA's Rural Utility Service, to access those programs before applying for EDA investment dollars.

USDA Rural Development Rural Utilities Service (RUS) Broadband Programs

RUS Broadband Loan Program:

- **During FY 2005, no less than $2.157 billion will be made available for loans and loan guarantees for the construction, improvement, and acquisition of facilities and equipment for broadband service in eligible rural communities. As of 9/30/05:**

  - Received 154 applications for $2,110,788,832 Billion
  - Approved 49 for $780,879,931 Million
  - Processing 13 for $162,292,883 Million

- **35 loans totaling $412,462,931** have been approved for projects located west of the Mississippi River.

RUS Community Connect Broadband Grant Program:

- **$9 Million in grant funds available on a competitive basis to provide first-time broadband in rural communities. Recent grant awards include:**

  - $565,963 to the Pueblo of San Juan, NM to connect 12 community facilities and 90 tribal residences
  - $393,309 to the City of Timber Lake, SD to connect schools, libraries, public buildings, public safety

USDA Rural Development RUS Distance Learning and Telemedicine (DLT) Program

- DLT loans, grants, and loan-grant combinations provide funding for distance learning and telemedicine networks to enhance opportunities in rural areas.
- Funding of up to $500,000 goes towards equipment (e.g., desktop computers and labs), as well as training and infrastructure.
- Funds available for FY 2005:
  - Grants = $20.8 million
  - Loans = $9.6 million
  - Combination Loan-Grants = $44 million
- Application deadline for FY 2005 funds was February 1, check http://www.usda.gov/rus/telecom/dlt/dlt.htm for details on the next grant cycle
- 2004 DLT grants to WTA members' states include:
  - $500,000 education grant to Arizona Western College
  - $422,278 medical grant to Wayne County Hospital in Iowa

Conclusion

- The President has a vision for making advanced technologies available to all Americans – by creating the economic and regulatory environment to enhance competition and promote innovation.

- The telecom sector is growing dynamically, and many new technologies – particularly wireless in nature – show great potential for expanding broadband deployment in rural communities.

- The President's goal will ensure that all Americans have the personal and economic benefits of high-speed Internet applications and services.