

Inter-Modal Broadband Competition

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The opinions expressed are my own, and do not necessarily reflect
the views of the FCC or any of its commissioners.



What is Broadband?

“... the indispensable components of broadband functionality [are] (1) a digital architecture, (2) capable of carrying IP or other multi-layered protocols, (3) that has an ‘always on’ functionality, and (4) that is capable of scaling to greater capacity and functionality as uses evolve and bandwidth hungry applications emerge.”

Michael K. Powell, speech at the National Summit on Broadband Deployment, Washington, DC, , October 25, 2001.



What is Broadband?

“ ...having the capability of supporting, in both the provider-to-consumer (downstream) and the consumer-to-provider (upstream) directions, a speed (in technical terms, "bandwidth") in excess of 200 kilobits per second (kbps) in the last mile...”

First 706 Report

More recent FCC terminology:

bidirectional 200 Kbps: advanced telecommunications services
at least one direction 200 Kbps: high-speed
also identifies services faster than 2 Mbps



What is Broadband?

Broadband Definition 1. Local access link performance should not be the limiting factor in a user's capability for running today's applications.

Broadband Definition 2. Broadband services should provide sufficient performance - and wide enough penetration of services reaching that performance level - to encourage the development of new applications.

National Academy of Sciences, *Broadband: Bringing Home the Bits*, January, 2002, page 11.



Who will Win the Broadband Race?

- “... broadband is not a horse race among technologies, with an eventual winner.”
- Location matters
 - ◆ density and dispersion of population
 - ◆ demographics
 - ◆ topography
 - ◆ condition and age of infrastructure
- Continuing incremental investment in existing infrastructure.
- Continued exploitation of technology skills.
- Varying levels of technology maturity.

National Academy of Sciences, *Broadband: Bringing Home the Bits*, January, 2002, page 18.



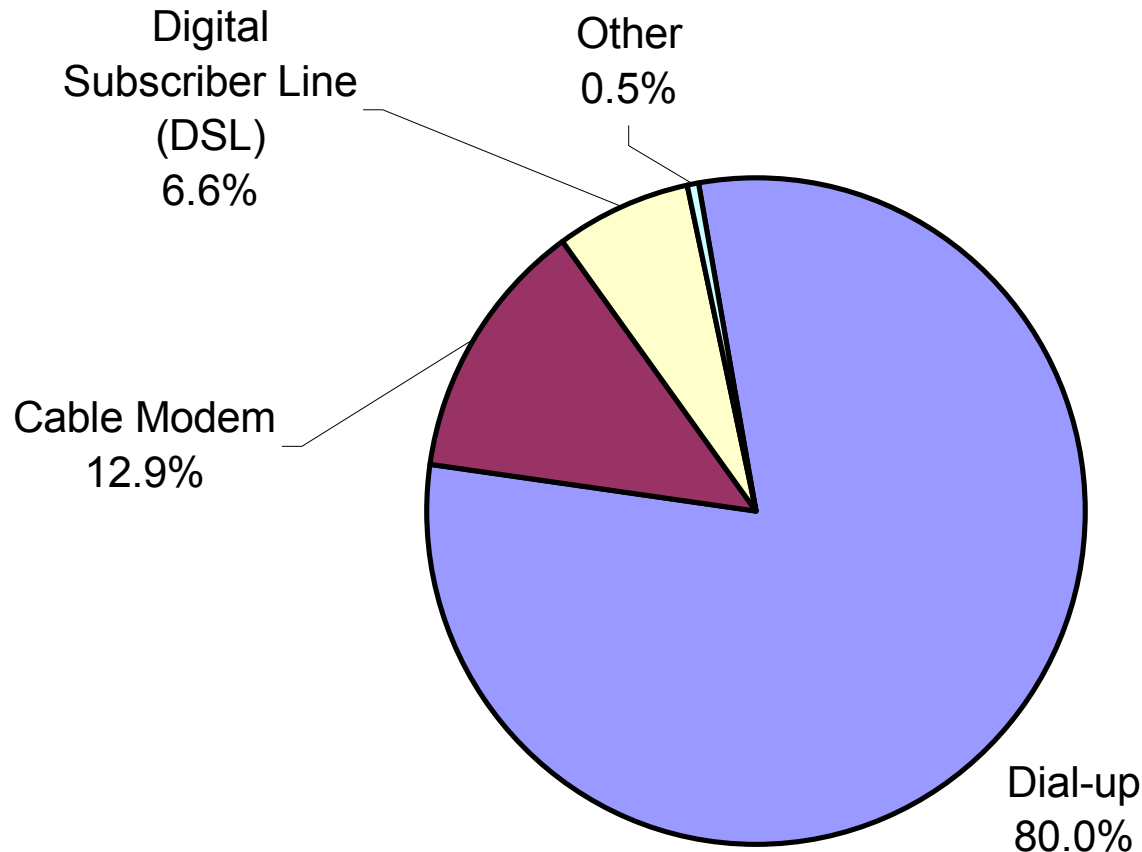
Broadband Adoption

- The addressable market is those with PCs
 - ◆ 174 million Americans (66%) use computers (9/2001 NTIA).
 - ◆ 143 million Americans (54%) use the Internet (9/2001 NTIA).
 - 82% of those Americans with computers use the Internet.
- From August 2000 to September 2001, use of high speed broadband service more than doubled.
 - ◆ from ~4% to ~11% of all individuals
 - ◆ from ~11% to ~20% of all Internet users

U.S. Department of Commerce,
A Nation Online: How Americans are Expanding their Use of the Internet,
<http://www.ntia.doc.gov/ntiahome/dn/index.html>, February 5, 2002.



Access to the Internet Broadband and Narrowband

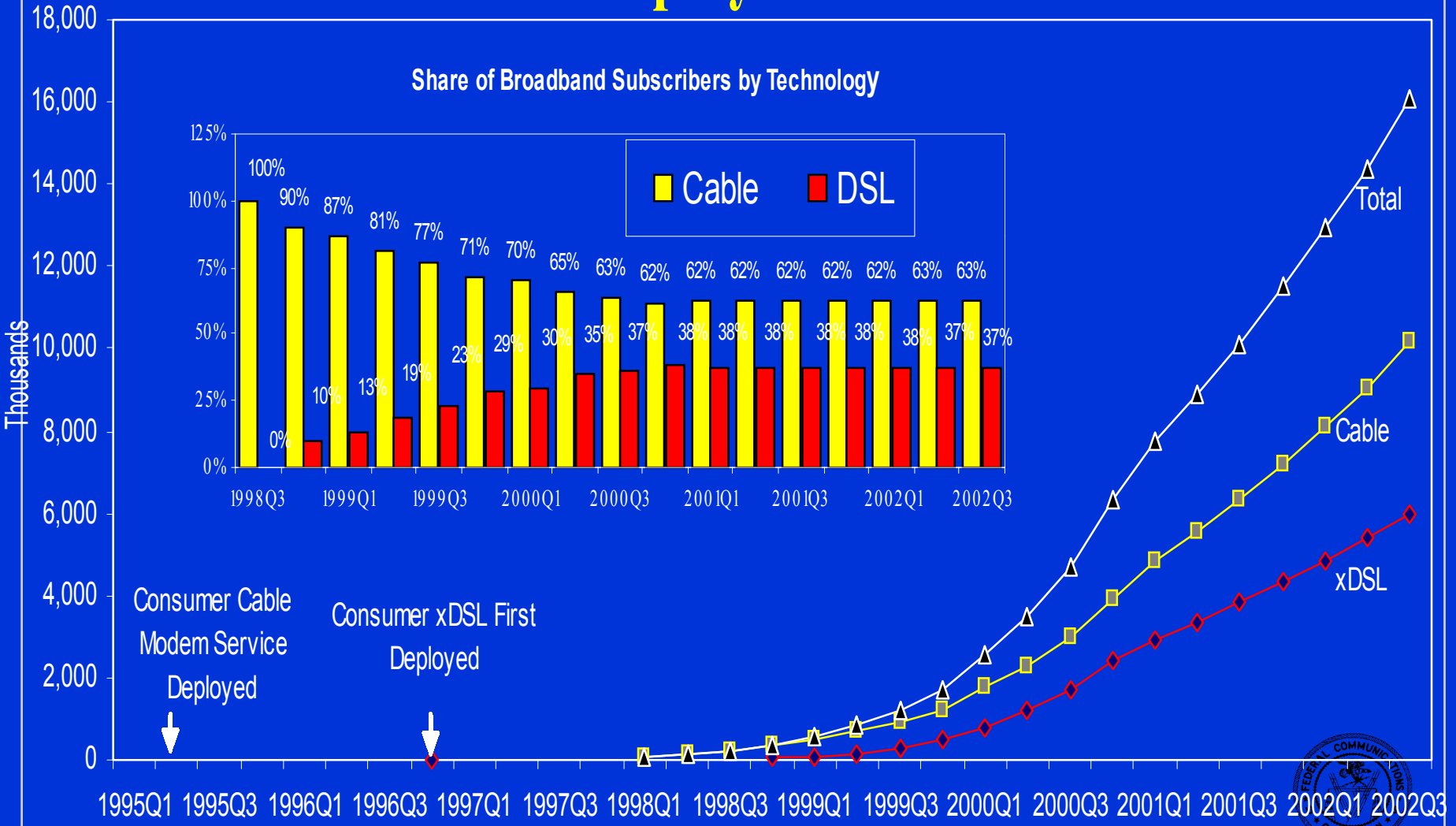


Source: NTIA and ESA, U.S. Department of Commerce, using U.S. Census Bureau Current Population Survey Supplements⁷

from *A Nation Online: How Americans Are Expanding their Use of the Internet.*



DSL and Cable Modem Broadband Deployment



SOURCES: Cable Datacom News, company press releases and SEC filings, Leichtman Research Group.



The Demand Gap?

- What's the value proposition for consumers?
- What applications will drive demand?
 - ◆ Residential or business
 - ◆ Chicken and egg problem - complementary markets
 - ◆ CD players needed CDs
 - ◆ Game consoles need games
 - ◆ VCRs and video cassettes
 - ◆ What bandwidth hungry apps will drive broadband adoption?
- Role of copyright holders



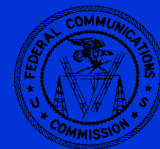
Broadband Applications?

“In practice, what broadband customers see today is largely a better version of the Internet access that they enjoyed with dial-up ISP service, featuring Web-page viewing, e-mail, messaging, and the like.”

National Academy of Sciences, *Broadband: Bringing Home the Bits*, January, 2002, page 82.

“The primary motivation today for residential broadband access is simply to improve the performance of the overall Web browsing experience.”

Ibid., page 84.



The Third “Wire”?

■ Powerline

- ◆ Great technological strides made in the past two years
- ◆ Cultural challenges
- ◆ Great promise, but significant uncertainty

■ Terrestrial Wireless

- ◆ Great promise, but significant uncertainty
- ◆ Wi-Fi – promising, disruptive technology

■ Satellite

- ◆ GEOs – latency, scalability, cost. A niche solution?
- ◆ LEOs – commercial viability in doubt



Wireless

“Wireless is expected to continue to lag wireline in bandwidth, but its greater flexibility, anticipated performance improvements that would make it ‘good enough’ for many applications, and the equipment cost reductions that come from reaching mass-market volumes can make it a long-term competitor.”

National Academy of Sciences, *Broadband: Bringing Home the Bits*, January, 2002, pages 20-21.



Evolution of Wired Broadband

- Progressively deeper fiber deployments for both cable and DSL/VDSL
- FTTH – the end game?



Lessons from the Internet

- Don't impose old rules designed for monopolies on new services and entrants -"Unregulate the Internet".
- When new services compete with the old dominant providers, begin deregulating the dominant incumbents.
- Prevent bottlenecks and anti-competitive behavior by dominant incumbents.



Policy Implications

1. Prioritize widespread deployment and defer new regulation in the early stages.
2. Structure regulation to emphasize facilities-based competition and to encourage new entrants.
3. Reflect the convergent nature of broadband and target policy at the appropriate layer.
4. Take active steps to promote increased or accelerated deployment, including at the local level.
5. Increase local capacity to promote broadband deployment.
6. Defer development of a Universal Service policy for broadband until the nature of broadband services, pace of deployment, distribution of access, and social significance become clearer.
7. Support research and experimentation.

National Academy of Sciences, *Broadband: Bringing Home the Bits*,
January, 2002, pages 24-42.

