Broadband Gaps

November 18, 2009 – FCC open meeting

91 days remaining until Plan is due

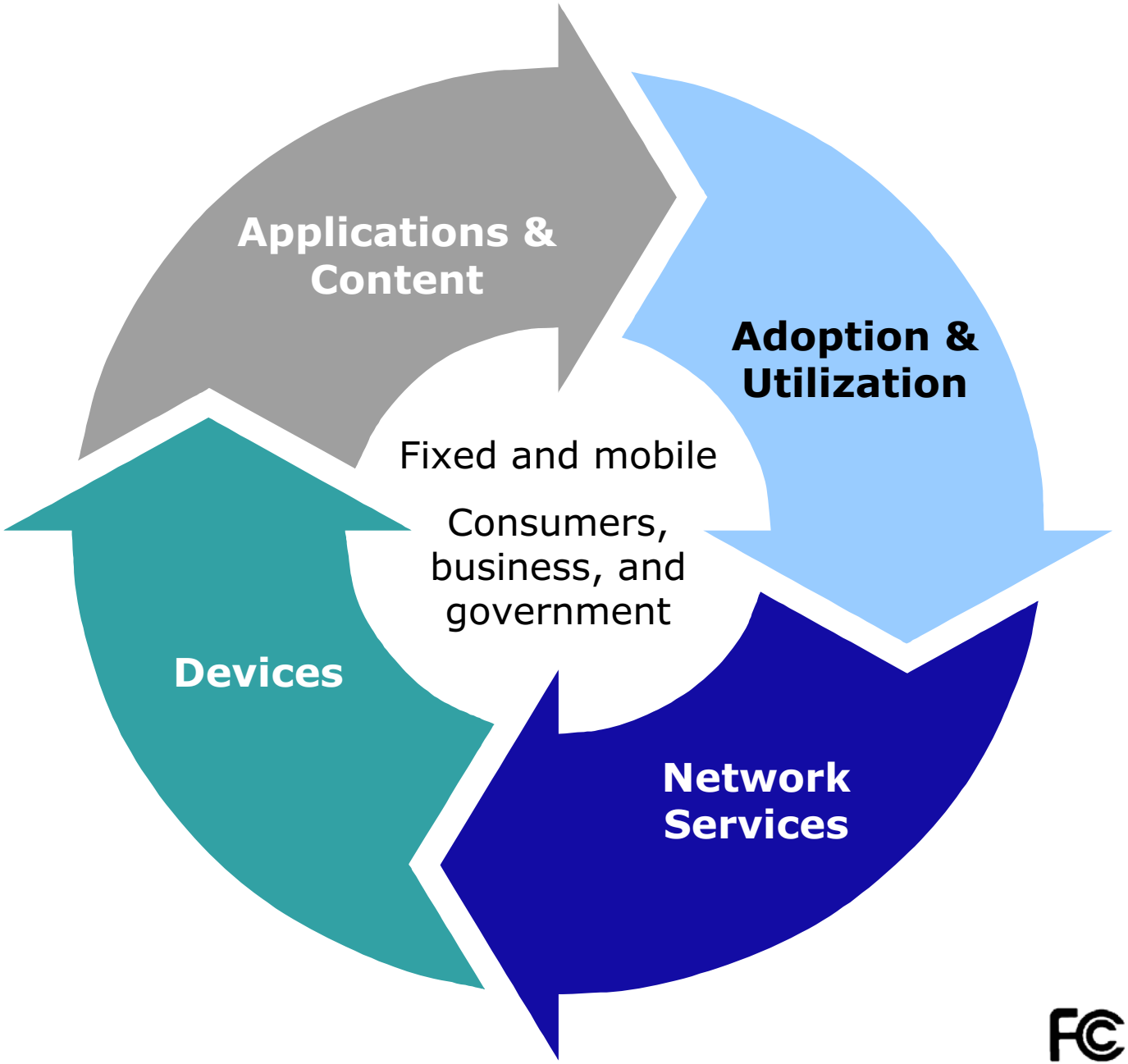
What we hope to accomplish today

- Describe most important broadband gaps
- Ensure public awareness of areas of inquiry and start focused discussion of solutions
- Set agenda for the next 91 days

Key concepts in legislation

- A plan to achieve:
  - Universal access
  - Affordability and adoption
  - Maximum utilization
  - Utilization of broadband to advance national purposes

Plan will accelerate innovation and investment across the broadband ecosystem



Challenges remain to closing the gaps and exploiting the opportunities broadband offers

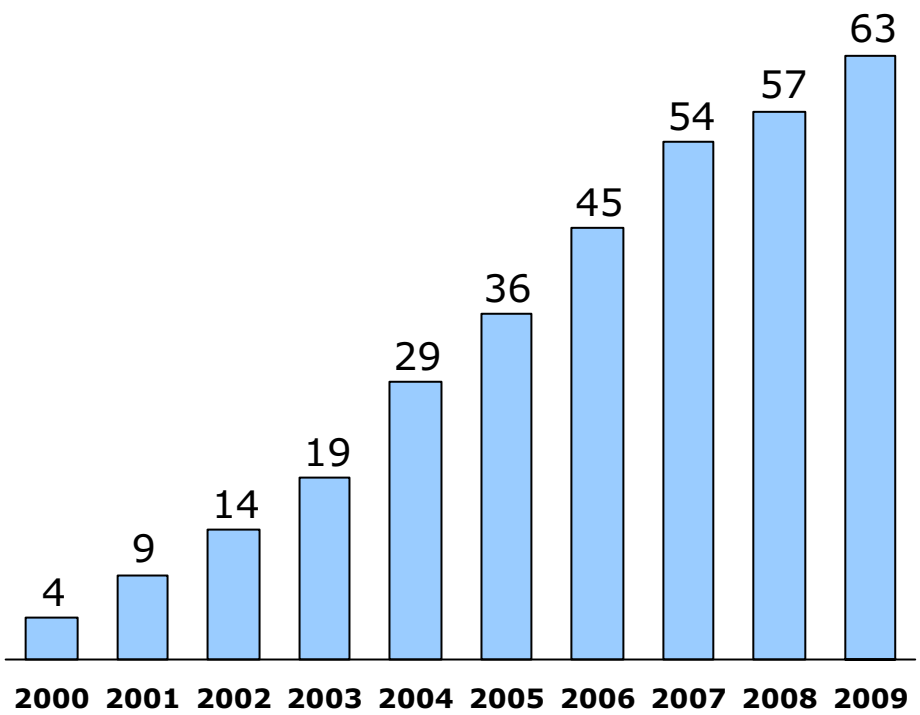
Sources: http://www.mediabistro.com/fishbowlny/original/Glass-of-water.jpg

Broadband penetration has increased since 2000

Fast growth of fixed broadband subscribers…

Wireline broadband adoption, Self-reported

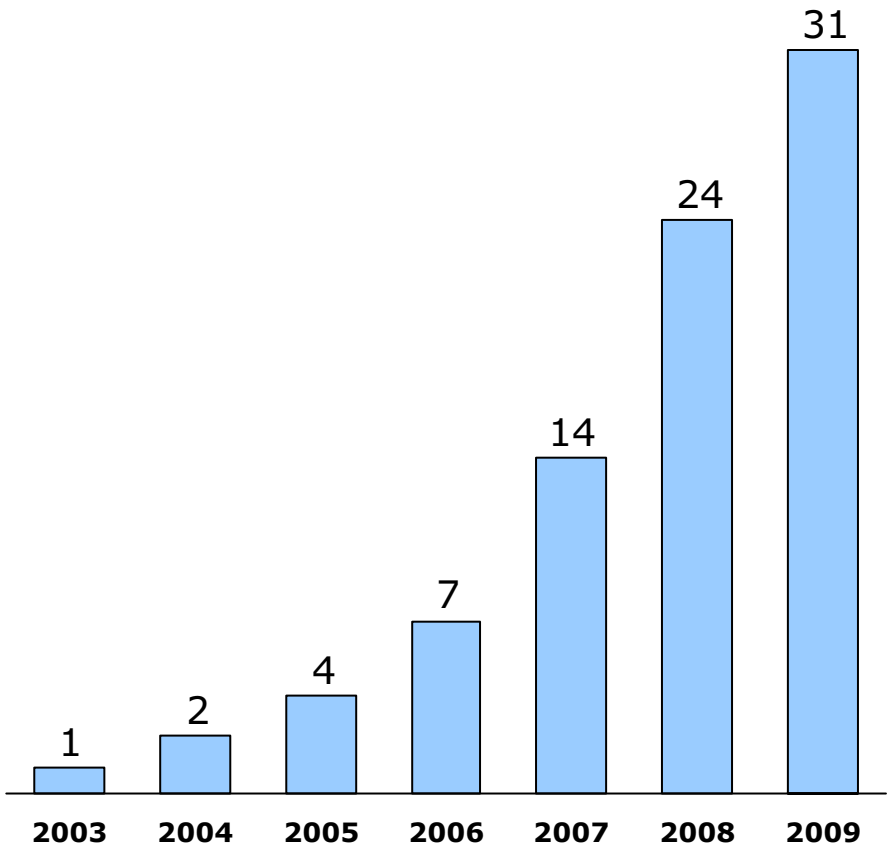
% of U.S. adults



…and smart phones have also become increasingly prevalent

Smart phone penetration

% of U.S. adults



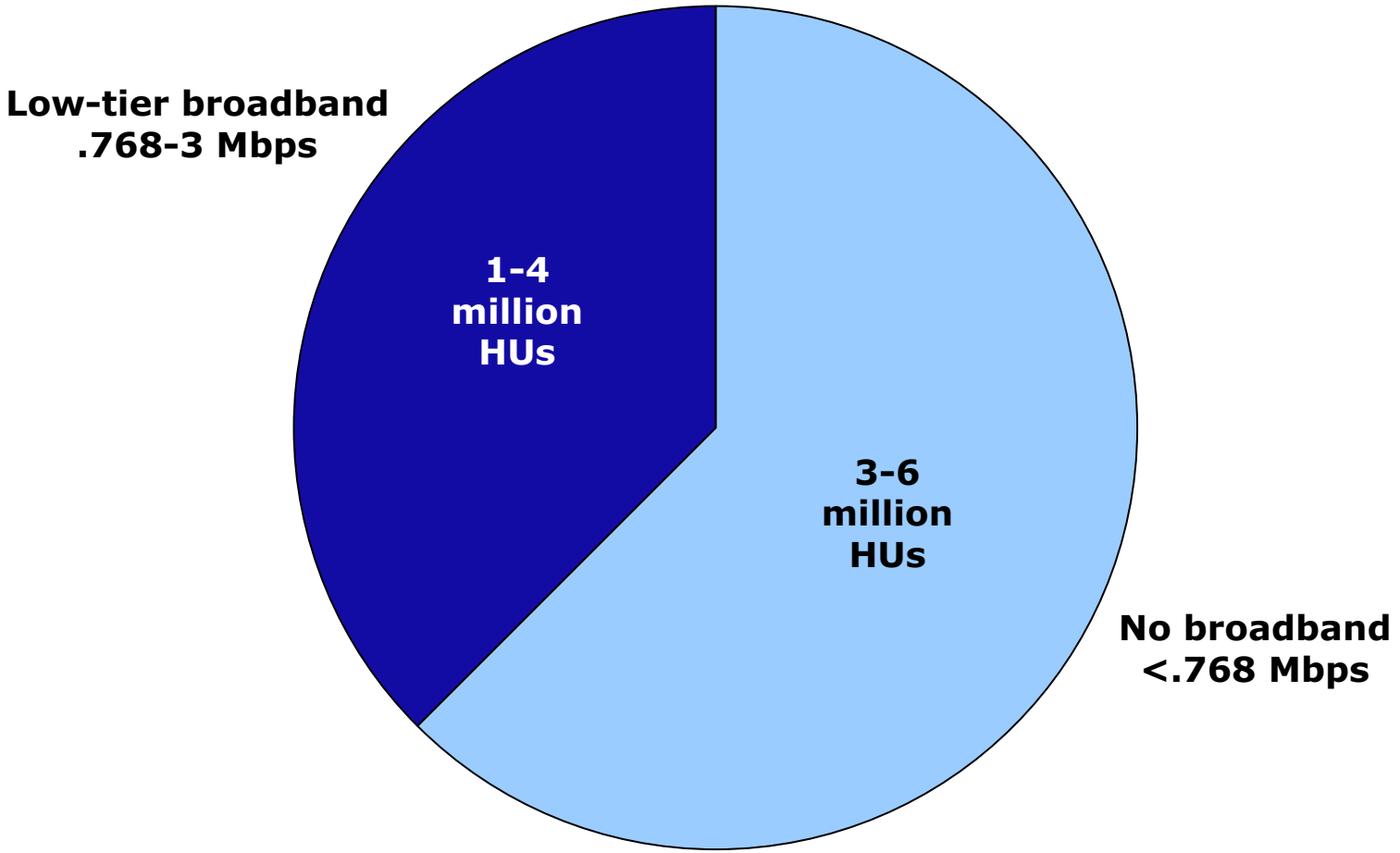
Sources: Pew Internet and American Life surveys; Gartner March 2009 forecasts, Census bureau

Some gaps we will cover

- Fixed infrastructure availability gap
- Middle mile gap
- USF gap
- ROW and pole attachment gap
- Spectrum gap
- Consumer information gap
- Affordability gap
- Set top box gap
- Adoption gap
- End-user control gap
- Data gap
- National purposes gaps
- Other gaps

Broadband infrastructure availability gap

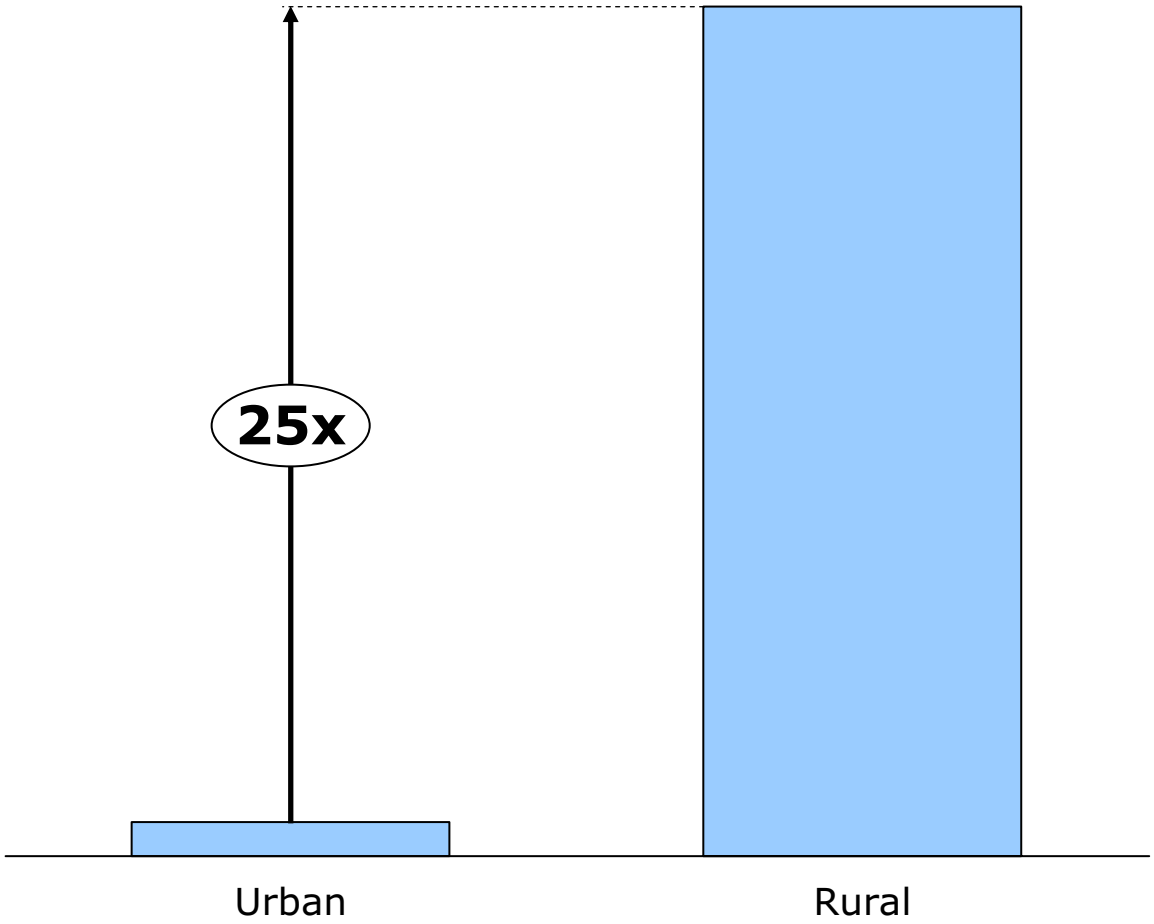
Gaps in fixed terrestrial broadband availability
2009 estimate



Sources: 2009 Form 477 data; service provider, equipment manufacturer, and trade association filings and publications; analyst reports; OBI analysis

Middle mile gap: Costs much higher in rural areas

Estimated annual cost/subscriber for transit and transport to provide fixed broadband[1]
Indexed to urban cost



"It is the middle mile that is the most serious issue for small, competitive, and rural ISPs […] It is by far the largest component of the cost of wholesale bandwidth."

- Comment on Blogband from rural WISP[2]

USF does not directly pay for middle mile costs

[1] Does not include costs already incurred (e.g., spectrum, prior plant build-out). Assumptions made with regard to penetration rate, upgrade path, cost of equipment, maintenance, operations, urban/rural mix, length of fiber run, and discount rate. Sources: Service provider, equipment manufacturer, and trade association filings and publications; analyst reports; OBI analysis

[2] http://blog.broadband.gov/?entryId=10657#comments

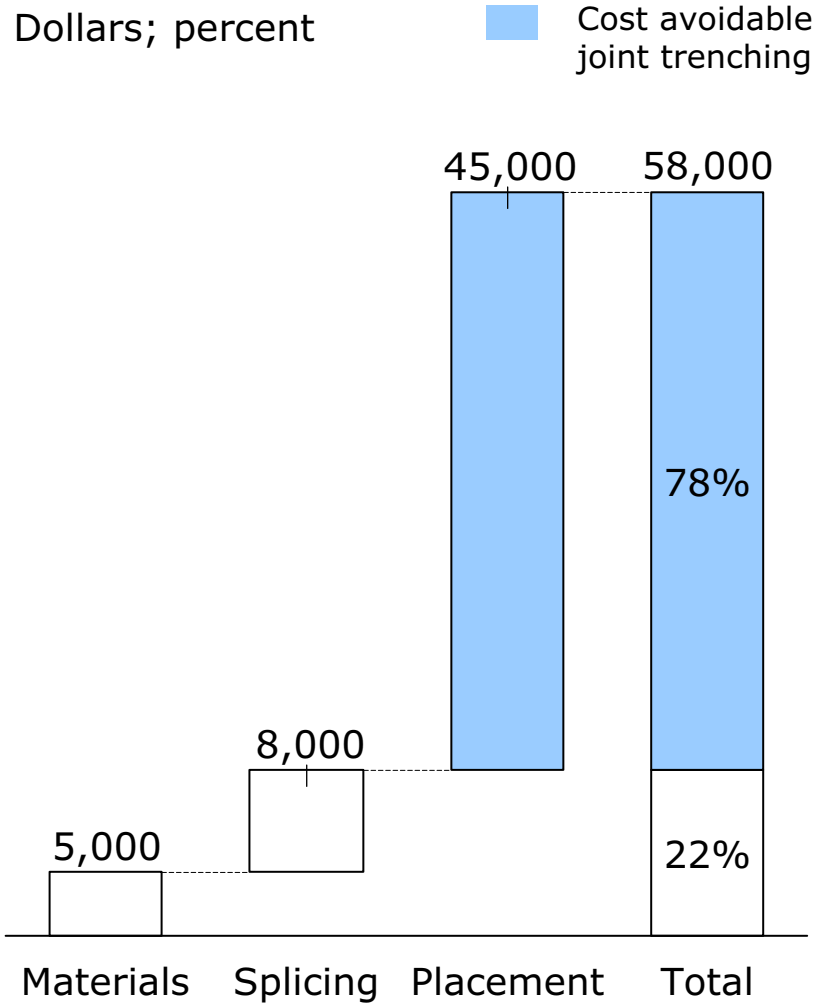
Current USF unlikely to fill gaps due to structural problems

1. Majority of **USF funding targets deployment and adoption of voice, not broadband**
2. The **4 USF support programs are not coordinated** to support broadband gaps
3. High cost funding mechanism **does not encourage least-cost solutions**
4. High cost funding determined by **characteristics of firm, not broadband needs of area**
5. **Current system unsustainable**; the contribution factor more than doubled since 2000
6. **Limited accountability** for use of high cost funds as broadband support

Efficiency gaps exist in infrastructure placement including trenches, pole attachments, and rights of way

Estimated total cost of a fiber build[1]

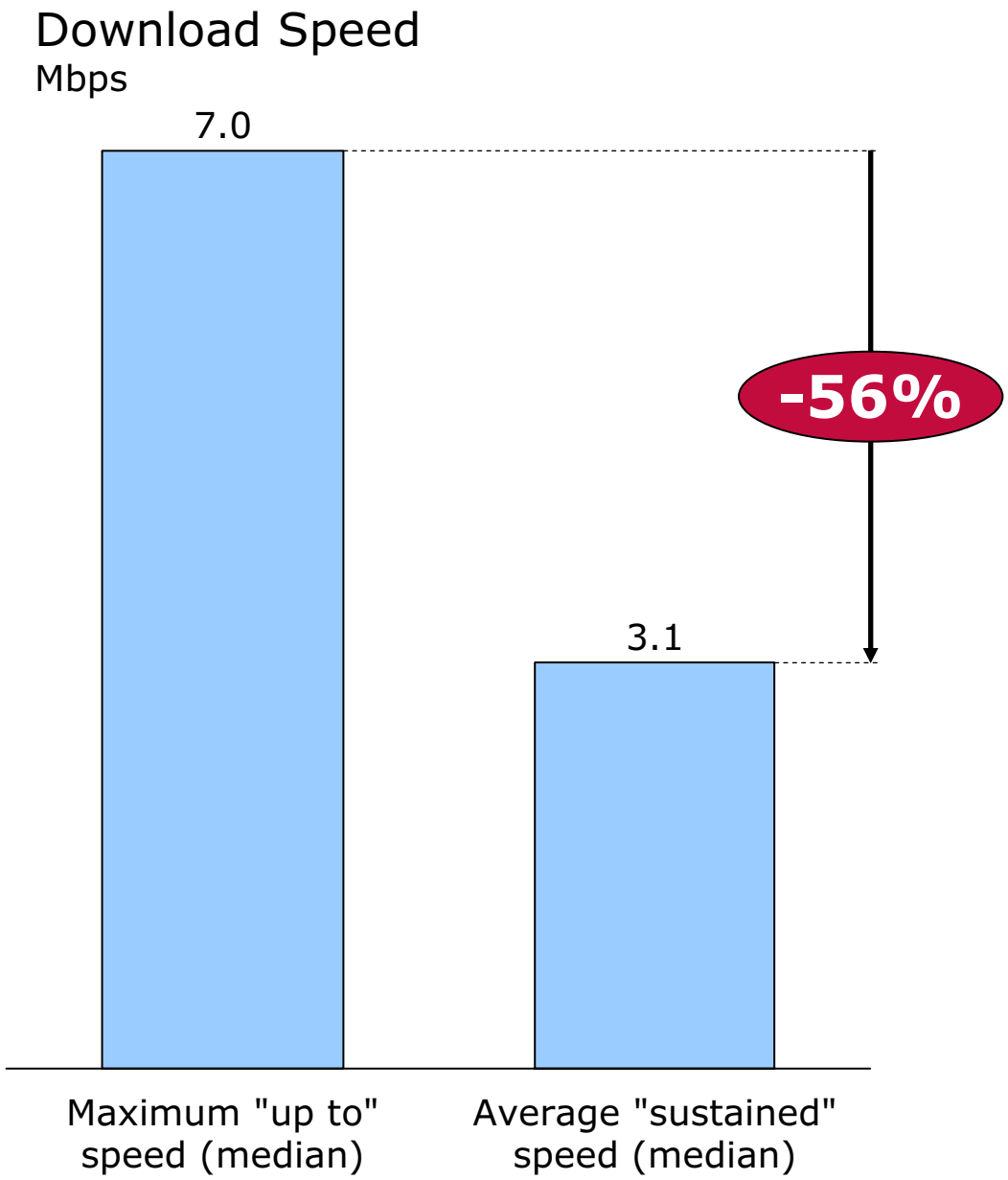
Dollars; percent



[1] 10,000 foot build; assumes 48-fiber strand

Sources: http://www.mckimcreed.com/newsletter/2009/summer/Manatee%20SCADA/540%20SW%20FO%20Conduit%20Trench%201.jpg, OBI analysis

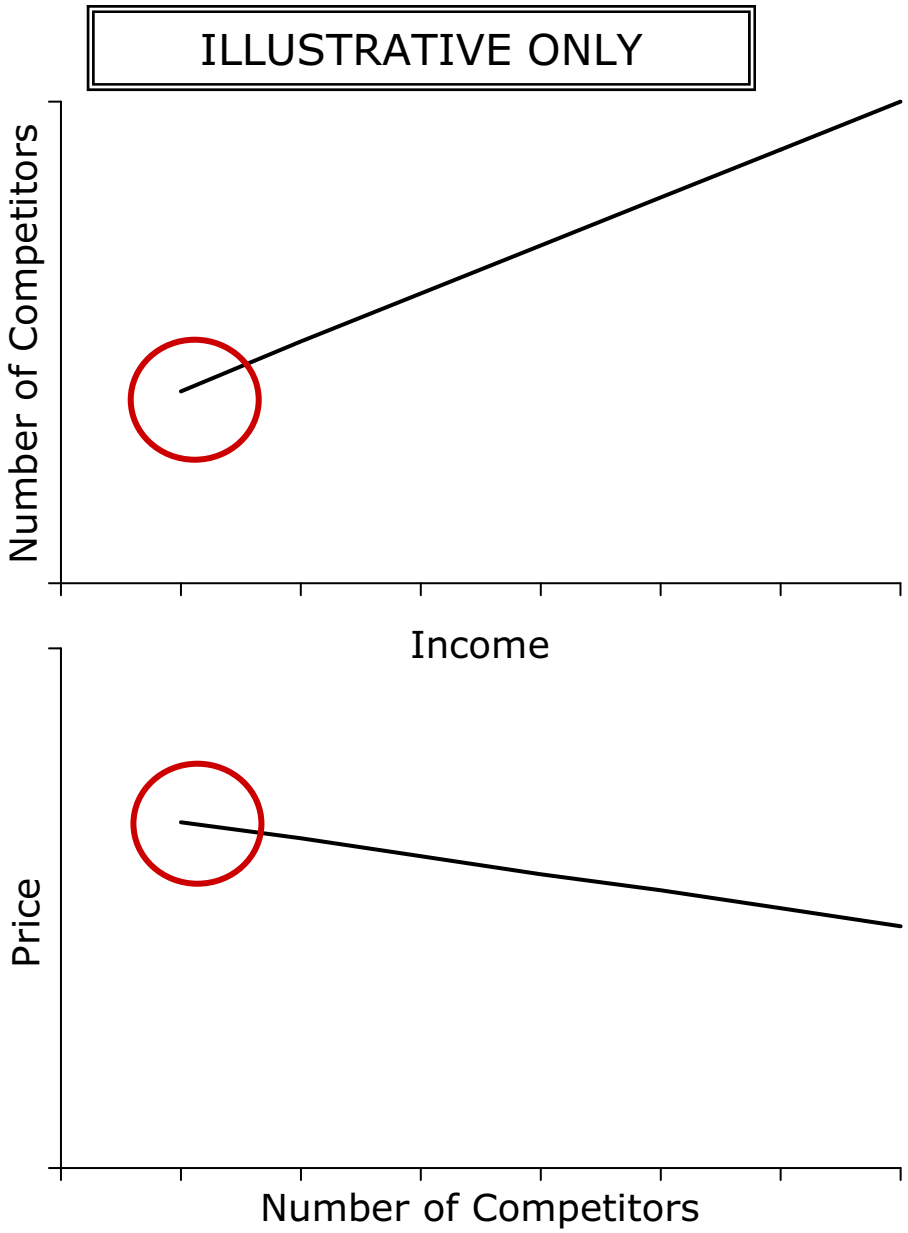
There is a gap in the amount of information consumers have about actual performance of broadband service



- Lack of transparency
  - Consumers lack information about actual performance
  - Consumers cannot compare performance across providers
  - Application providers lack knowledge of performance

Source: ComScore 1H 2009 200K household panel

Potential affordability gap for wireline broadband

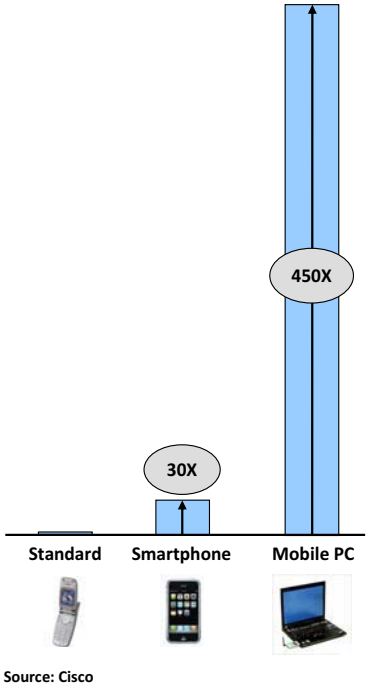


Preliminary analysis suggests:

- Areas with lower income have fewer competitors
- Areas with fewer competitors have higher prices

Sources: Preliminary OBI analysis based on Form 477 and Telogical data

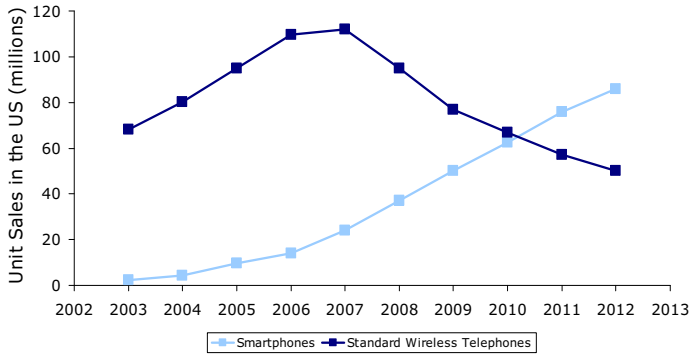
A dramatic increase in demand is driving a spectrum gap



Source: Cisco

Hungry Devices

Smartphone sales to overtake standard phones by 2011



Source: TIA, Wilkofsky Gruen Associates from "TIA's 2009 ICT Market Review and Forecast".

Consumer Apps

National Purposes

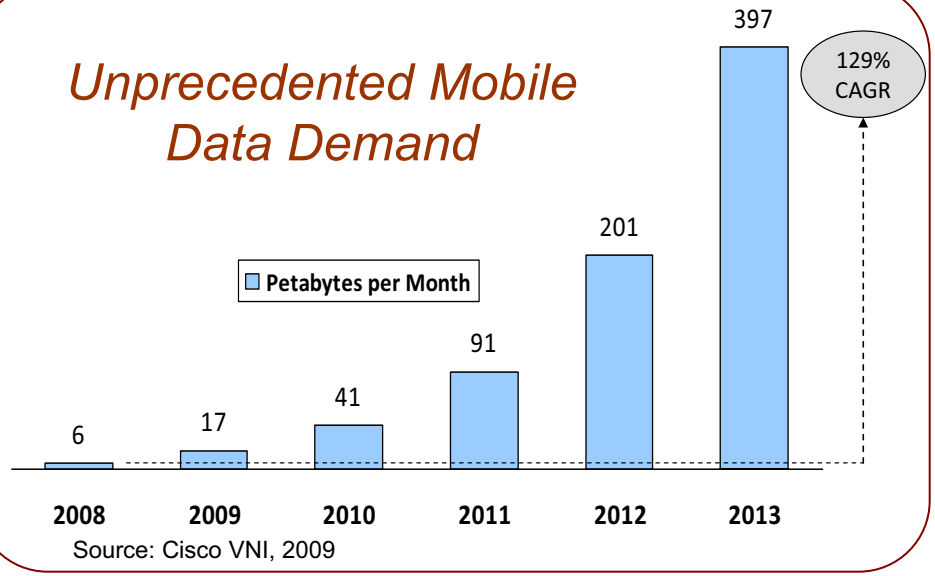
Civic Engagement

Telemedicine

Public Safety

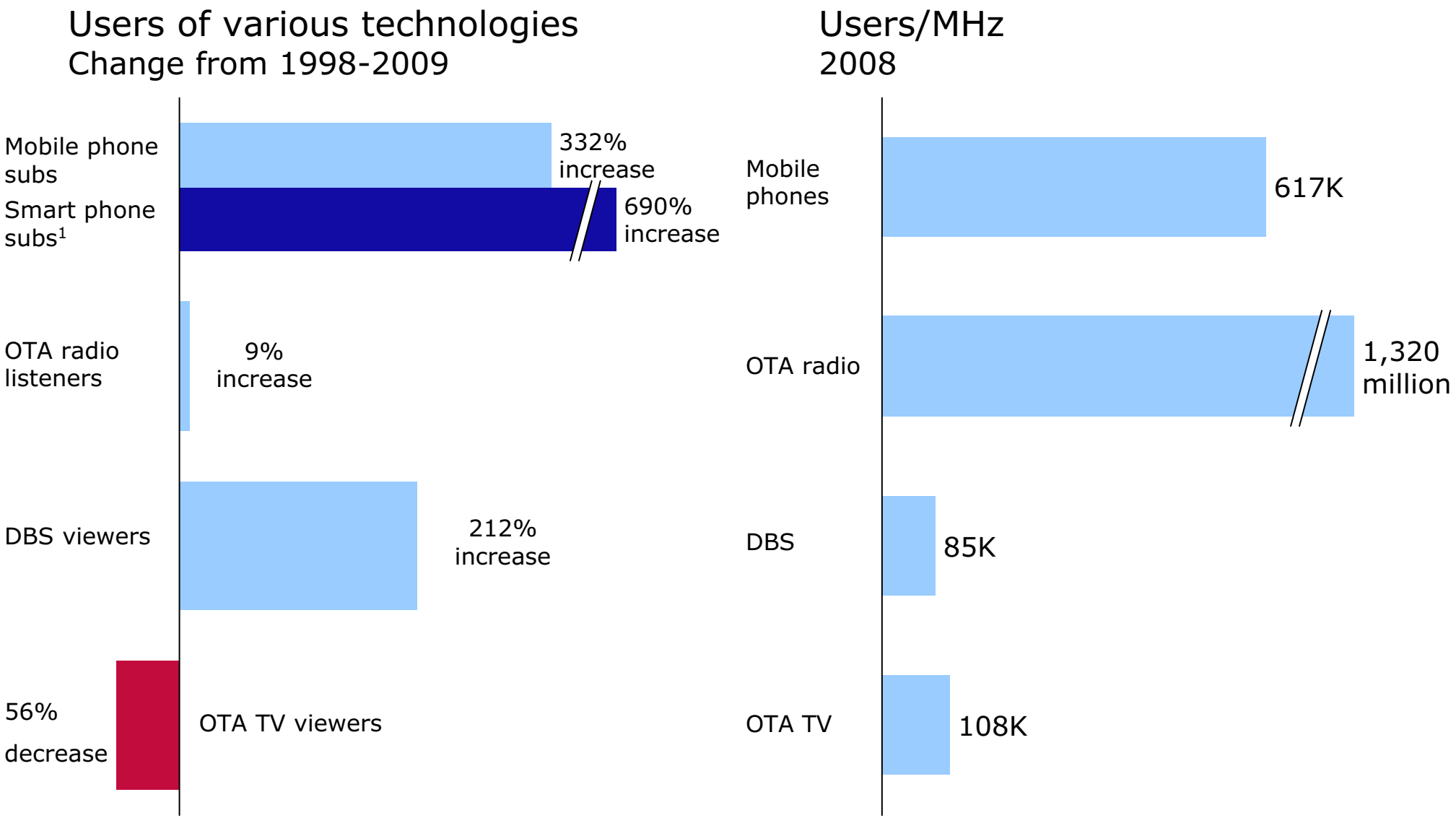
Smart Grid

Unprecedented Mobile Data Demand



Source: Cisco VNI, 2009

Consumer demand for particular services built on spectrum is changing



[1]Measures increase from 2005-2009
Sources: CTIA, Nielsen , SCBA, Gartner March 2009 forecast, Arbitron, FCC analysis

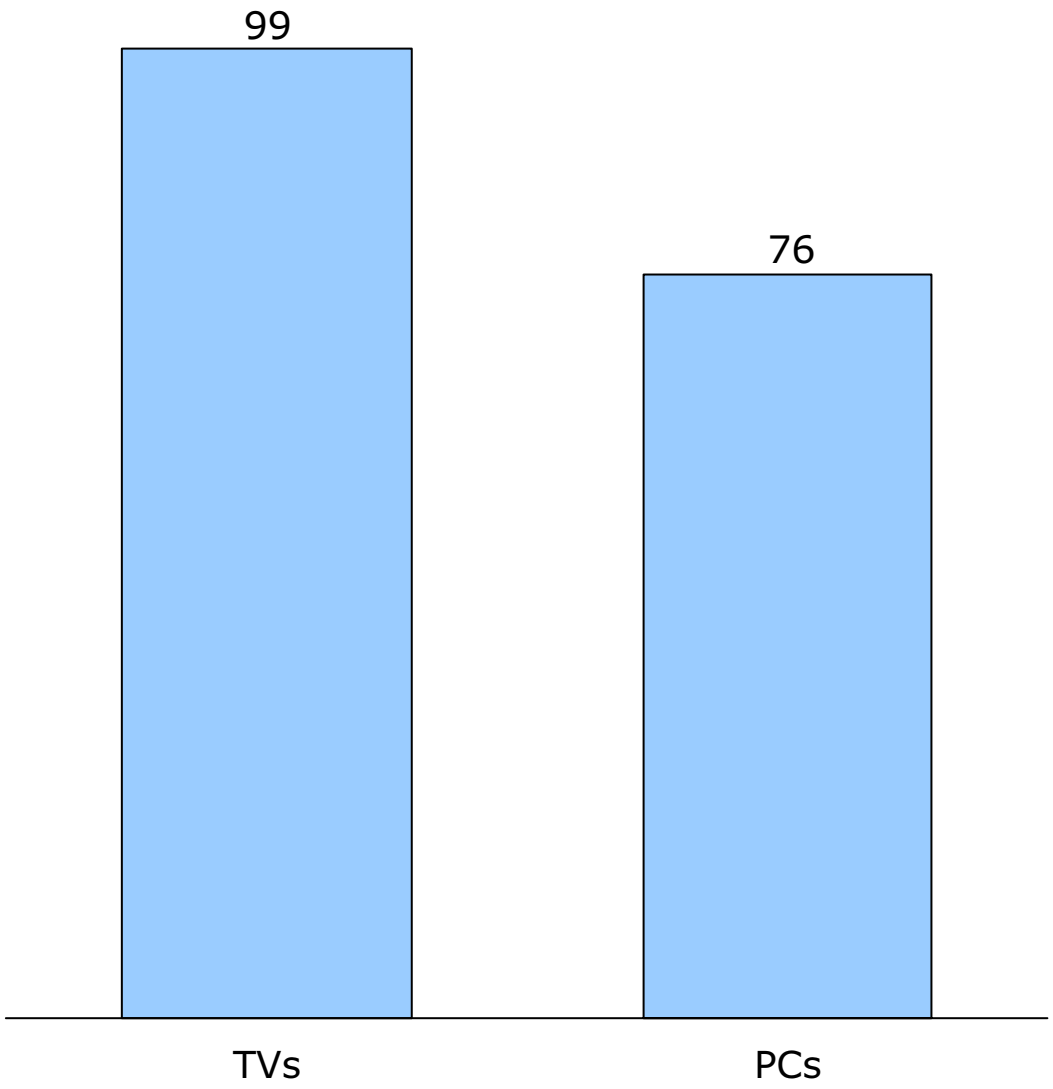
The looming spectrum gap requires near-term action

It takes 6-13 years to reallocate spectrum…

Band	First Step	Available for Use	Approximate Lag Time
Cellular (AMPS)	1970	1981	11 years
PCS	1989	1995	6 years
700 MHz	1996	2009	13 years
AWS-1	2000	2006*	6 years

Merging video and the Internet will increase adoption and utilization

TV and PC penetration
Percent of U.S. HHs

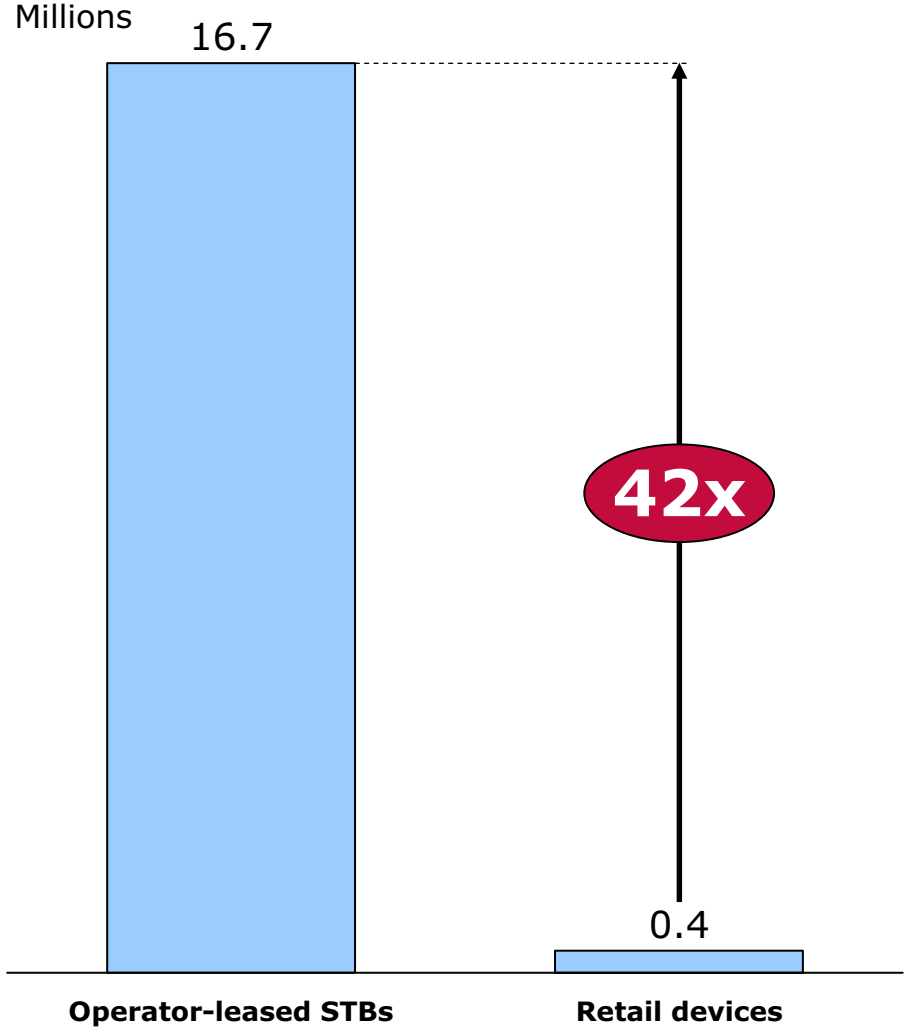


Source: Pew (Dec 2007); SNL/Kagan

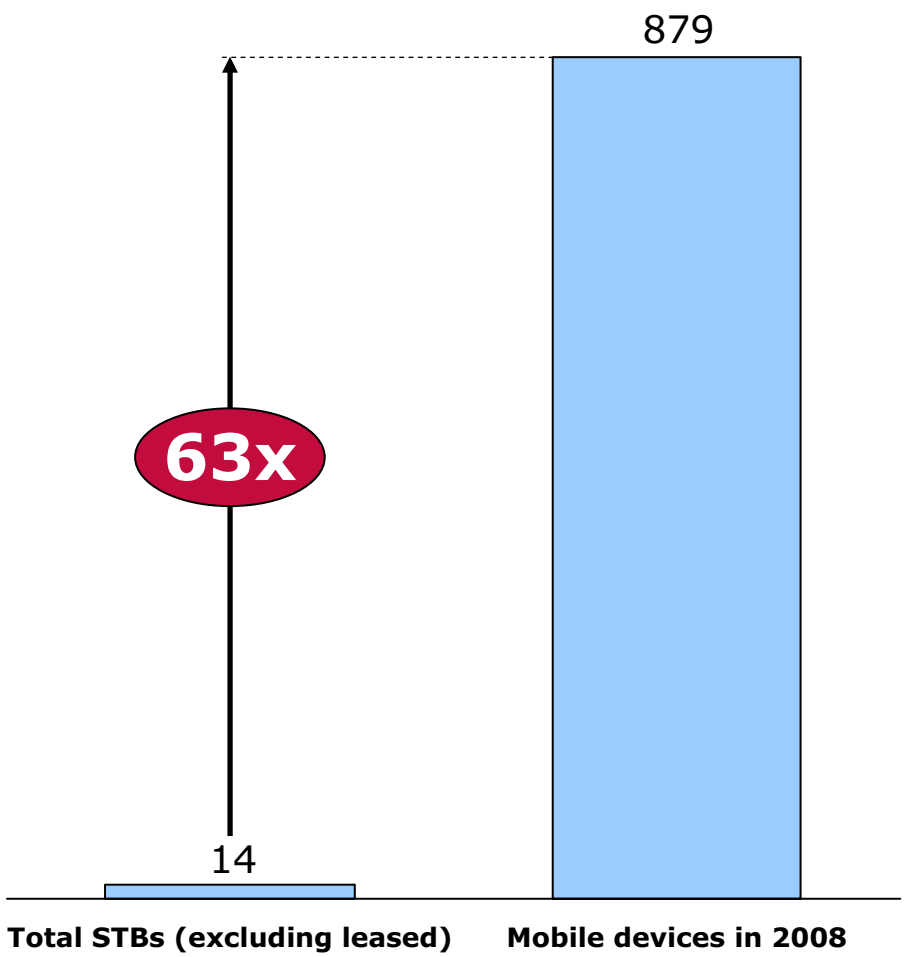
- Convergence of video, TV, and IP is creating a new broadband medium
- TV is becoming an Internet access device
- Innovation in devices merging traditional TV and IP-video is crucial for healthy broadband ecosystem

But set top box innovation gap could hinder convergence

CableCard devices installed – 7/07 – 8/09
Millions

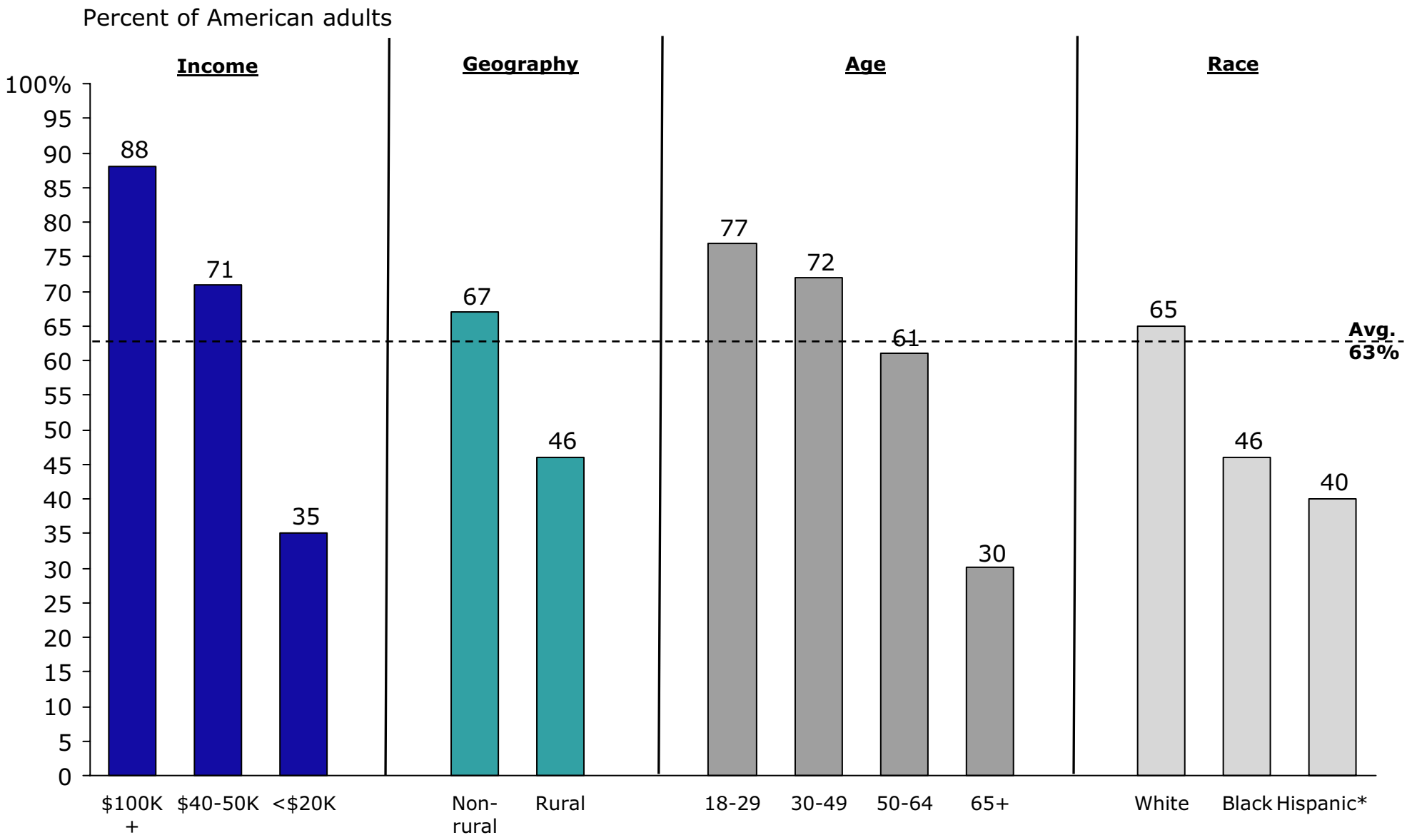


Certified Retail Devices[1]
Models



[1]Total certified set tops per CableLabs excludes leased boxes (a major portion of market share). Mobile device certification per OET.
Sources: NCTA

Adoption levels vary across demographic groups



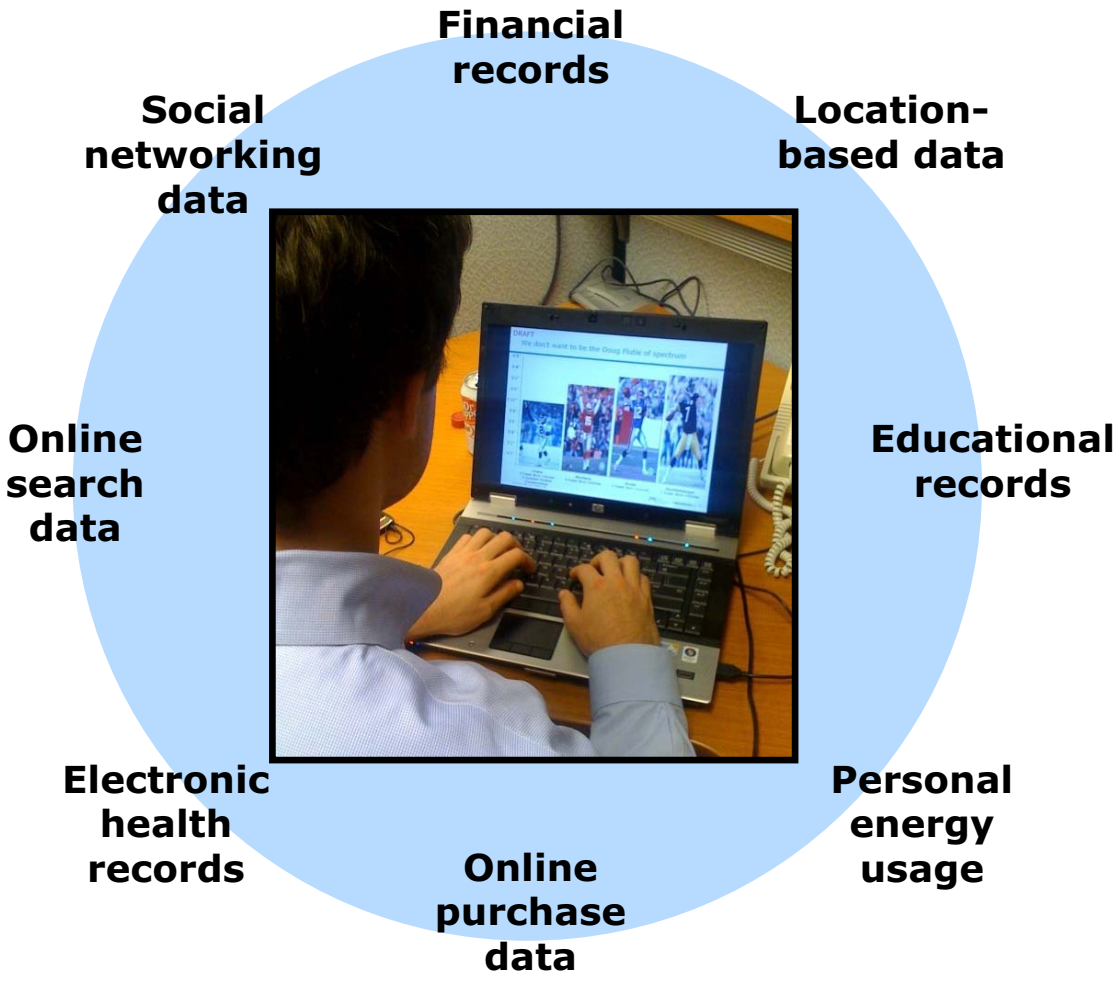
*Hispanics includes both English and Spanish speaking Hispanics; 63% based on survey of English-only respondents

Source: Pew Internet & American Life Project, Home Broadband Adoption, June 2009

The cost of digital exclusion is large and growing

	Broadband improving performance…	…but also widening gap
Education	• 71% of teens say Internet has been primary source for recent school project	• Students not online at growing disadvantage
Jobs	• Most job searches online • Application process increasingly online • Online training improving efficiency	• Those offline find it increasingly harder to search, train, and apply for jobs
Small business	• Broadband enables faster acceleration, small business to function like large enterprises	• Many small businesses don't have connectivity sufficient for new opportunities, like cloud computing
Health care	• 61% of Americans search for health information online	• Finding medical information without online access limits patients' knowledge, choices and care
Consumer welfare	• Broadband-enabling consumer savings and improved product information	• Offline consumers face knowledge and cost gap
Public safety	• Some commercial access available	• But does not provide adequate geographic coverage, and does not meet resiliency requirements

Gap in end-user control of their own information

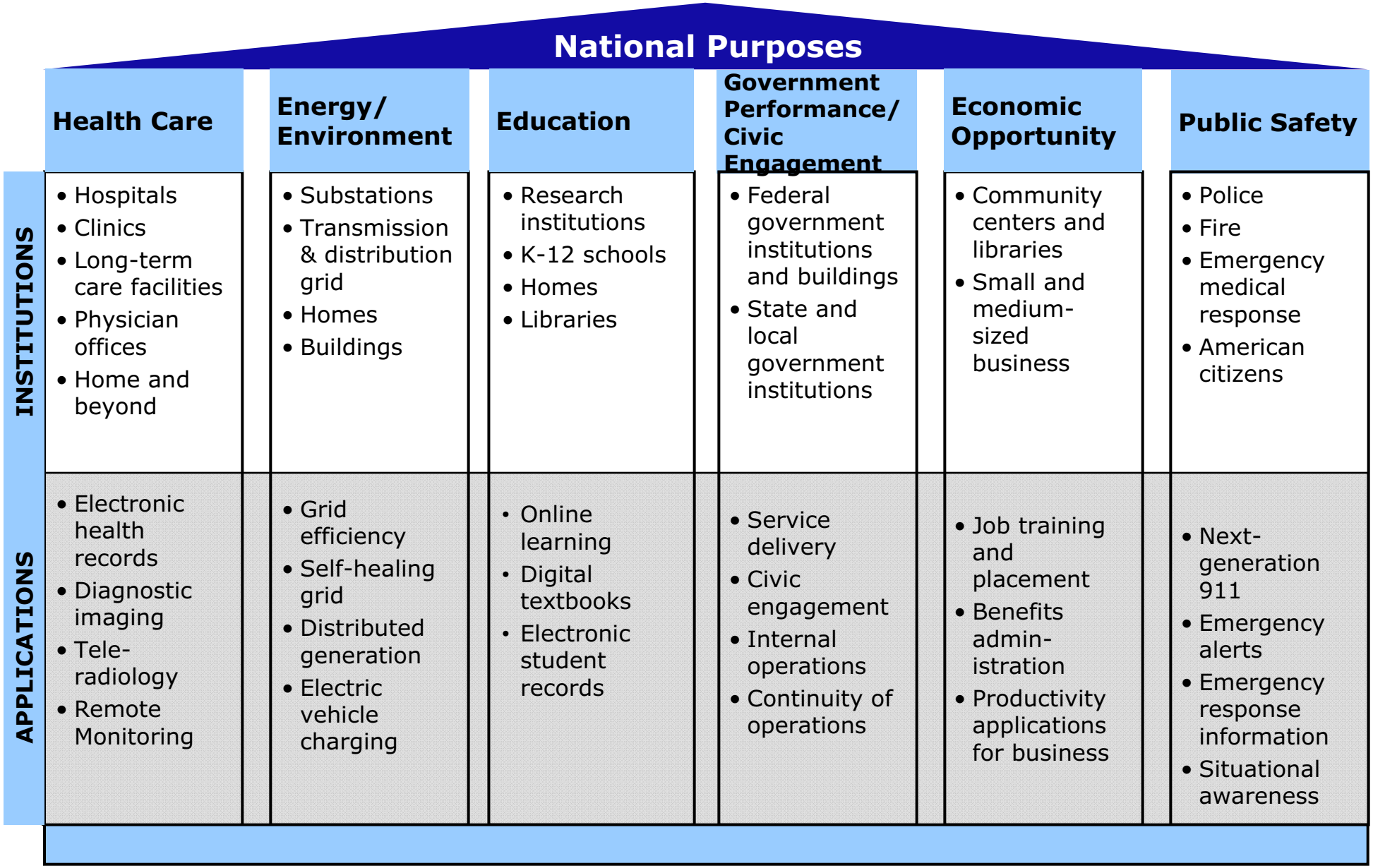


- Increasingly, personal data is being digitized and stored in the cloud
- End-users have limited control of their personal information and liability coverage on its use
- Ensuring guidelines for privacy and security will enable a new generation of applications and help drive national purposes

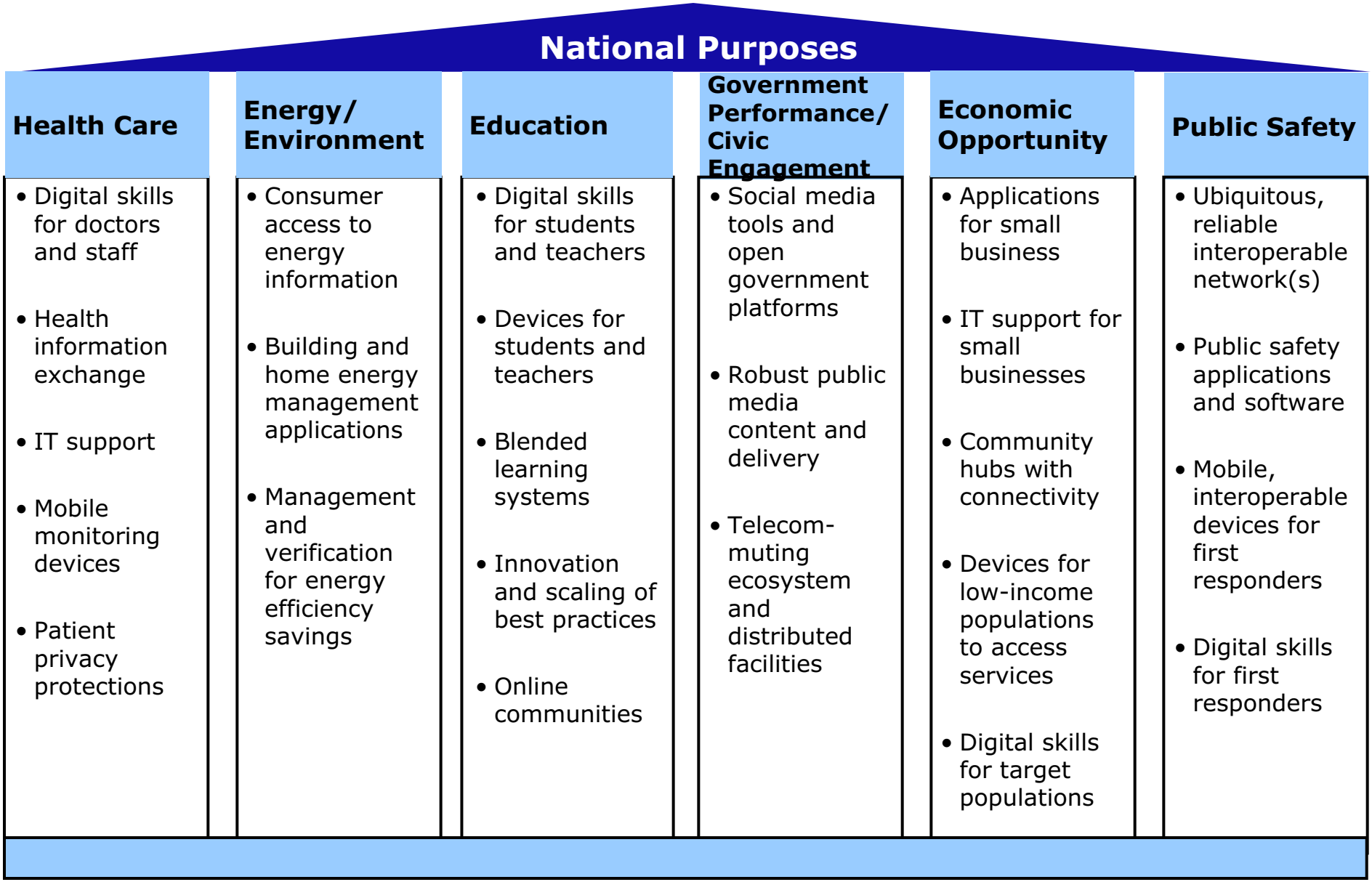
Becoming a data-driven agency will enhance the FCC's capabilities

- Commission needs to collect robust, reliable, and relevant data in line with broadband-policy priorities
- Recent OSP data-review, as well as actions such as improving Form 477, are first steps
- Further data-related initiatives to be launched over coming weeks (as part of longer reform process)

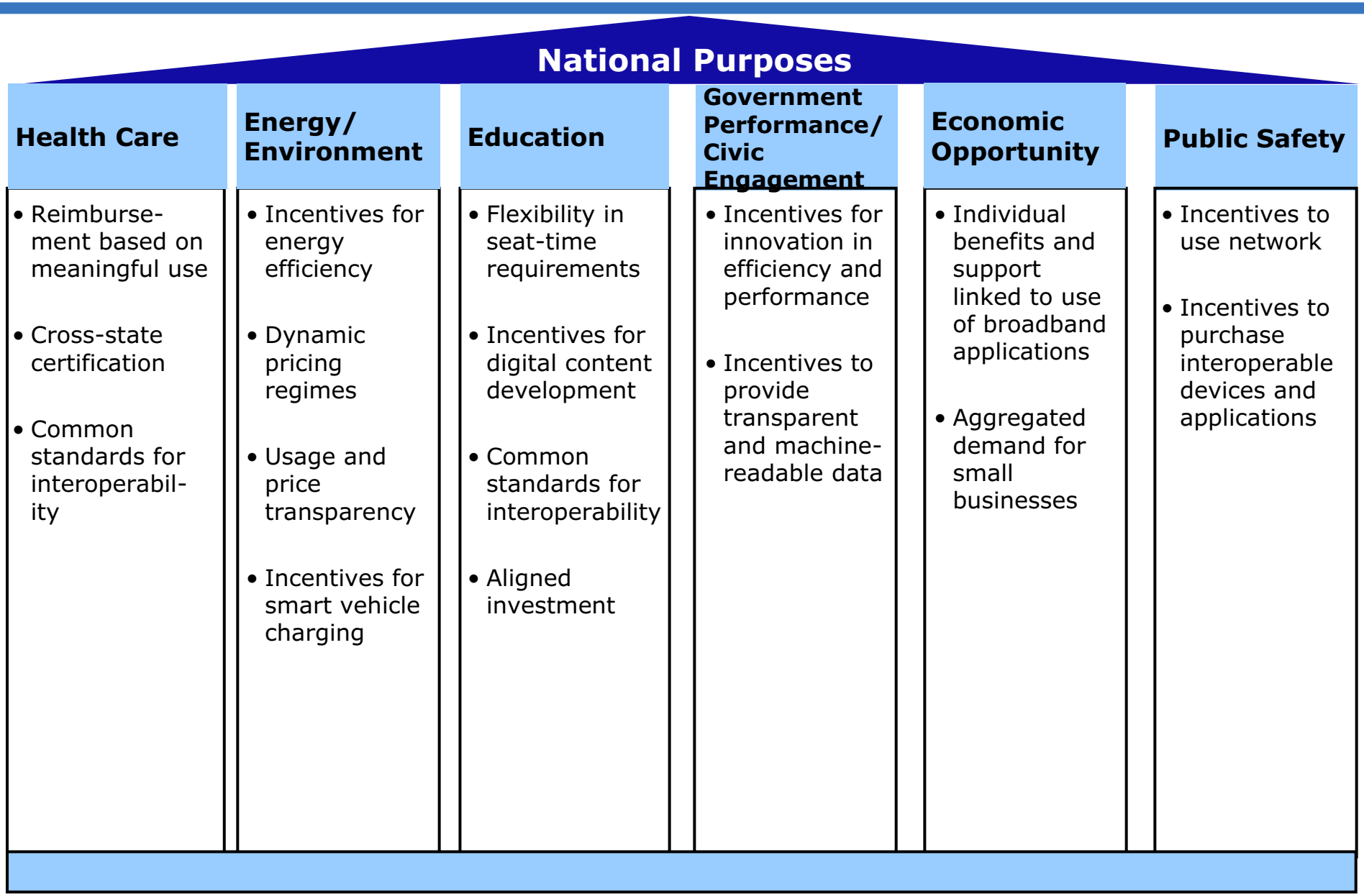
Different institutions/functionalities require different levels of connectivity to improve performance



A complete ecosystem, not just connectivity, is necessary to advance national priorities.



Using broadband for national priorities requires aligning incentives



Other gaps and barriers we are investigating

- Digital rights management/piracy
- Cybersecurity
- Americans with disabilities
- Tribal issues
- Disadvantaged business
- Tax Policy
- Institutional gaps
- Research and development
- Evaluation of progress of projects funded by BTOP/BIP
- Benchmarking
- Best practices
- Improving FCC collection of data
- Mobile payments
- Data roaming
- Technology

The road ahead: Public notices

Completed public notices

- Workshop responses
- Definition of broadband
- Implementation of smart grid technology
- Telework
- Accessibility for people with disabilities
- Spectrum for broadband
- Contribution of federal, state, tribal, and local government to broadband
- Public safety, homeland security, and cybersecurity
- Opportunities for disadvantaged businesses in the age of broadband
- Broadband clearinghouse
- Middle mile
- Connecting anchor institutions to fiber
- Responses to Berkman Center for Internet and Society study

Outstanding public notices

- Broadband deployment and adoption on tribal lands
- Public safety issues related to broadband deployment in rural and tribal areas and broadband communications to and from persons with disabilities
- Broadband needs in education, including changes to E-Rate program to improve broadband deployment
- Adoption
- Health care
- Economic opportunity
- Universal service/Intercarrier compensation
- Digital democracy

The road ahead

Upcoming hearings and workshops

11/19 Workshop: "Future Fiber Architectures and Local Deployment Choices"

11/23 Workshop: "Research Recommendations for the Broadband Task Force"

12/5 Digital Inclusion Town Meeting, Memphis, TN

12/9 Workshop: "Lessons for the National Broadband Plan from Local Officials Representing Under-served Communities"

Commission Meeting	Topic
December	Report on policy framework
January	Report on opportunities to drive national purposes
February	Report on completed plan