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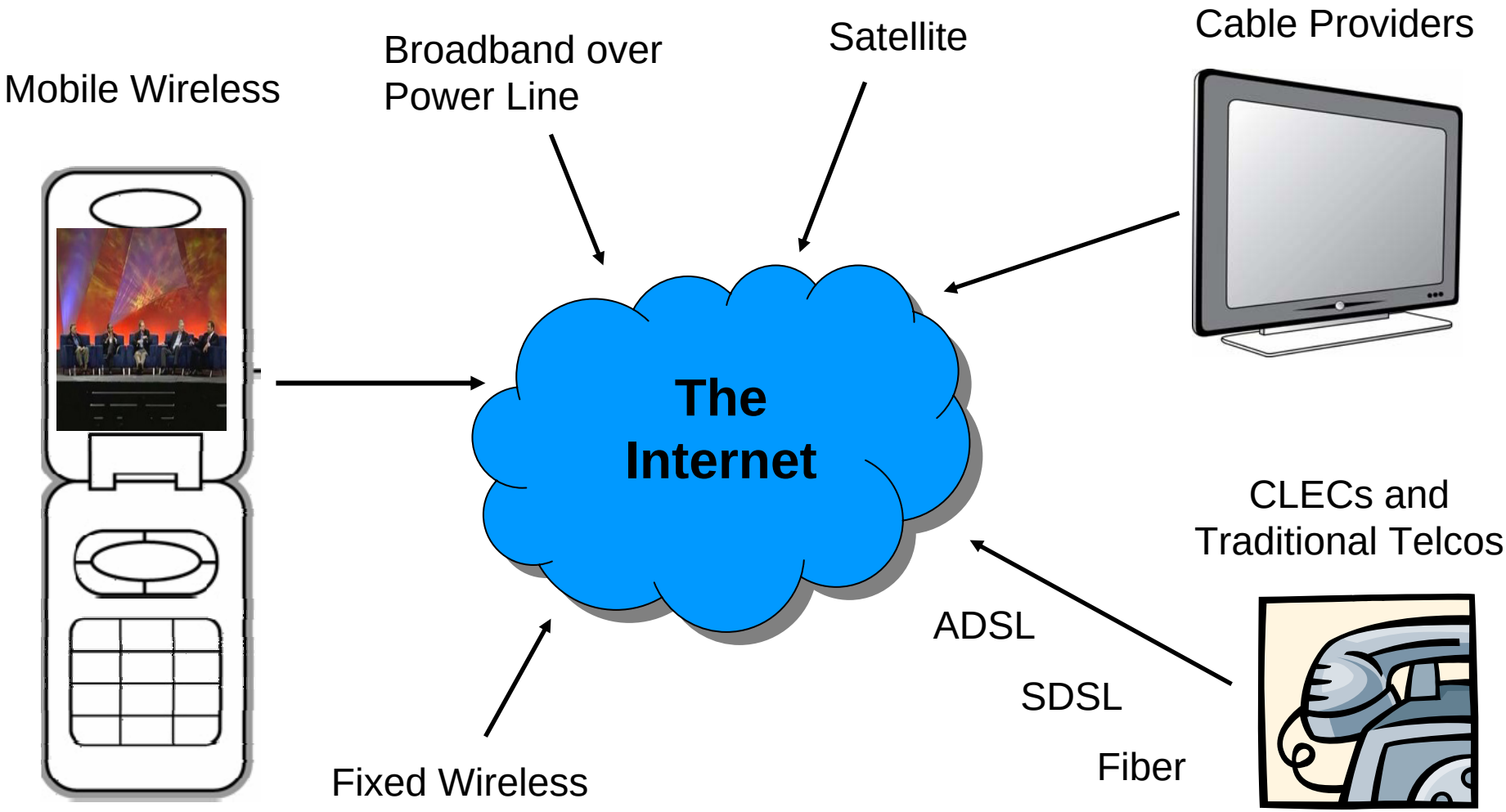
Broadband Competition: The Role of Wireless

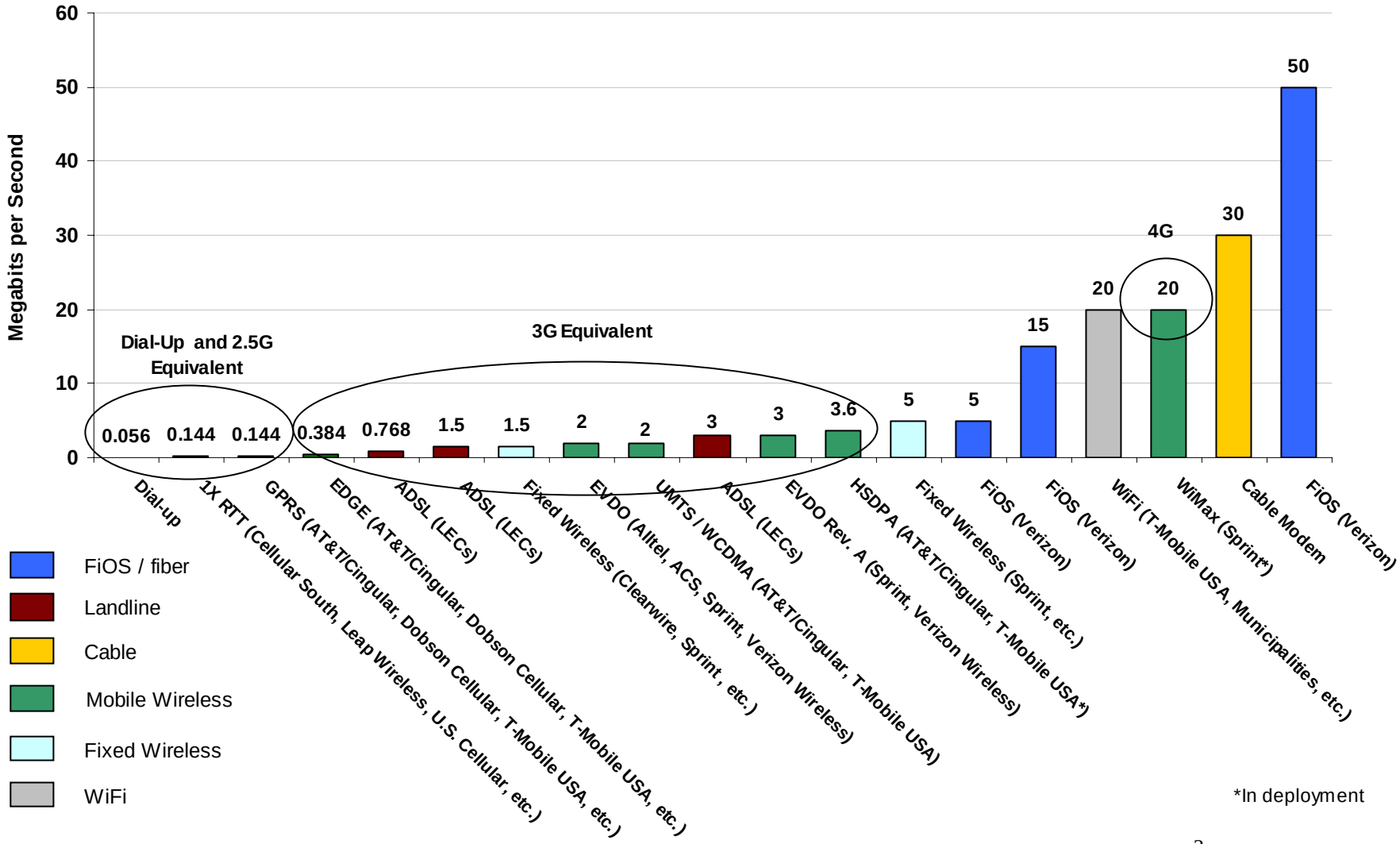
Federal Trade Commission
Broadband Connectivity Competition Policy Workshop

February 13-14, 2007

Multiple broadband providers and technologies access the Internet cloud

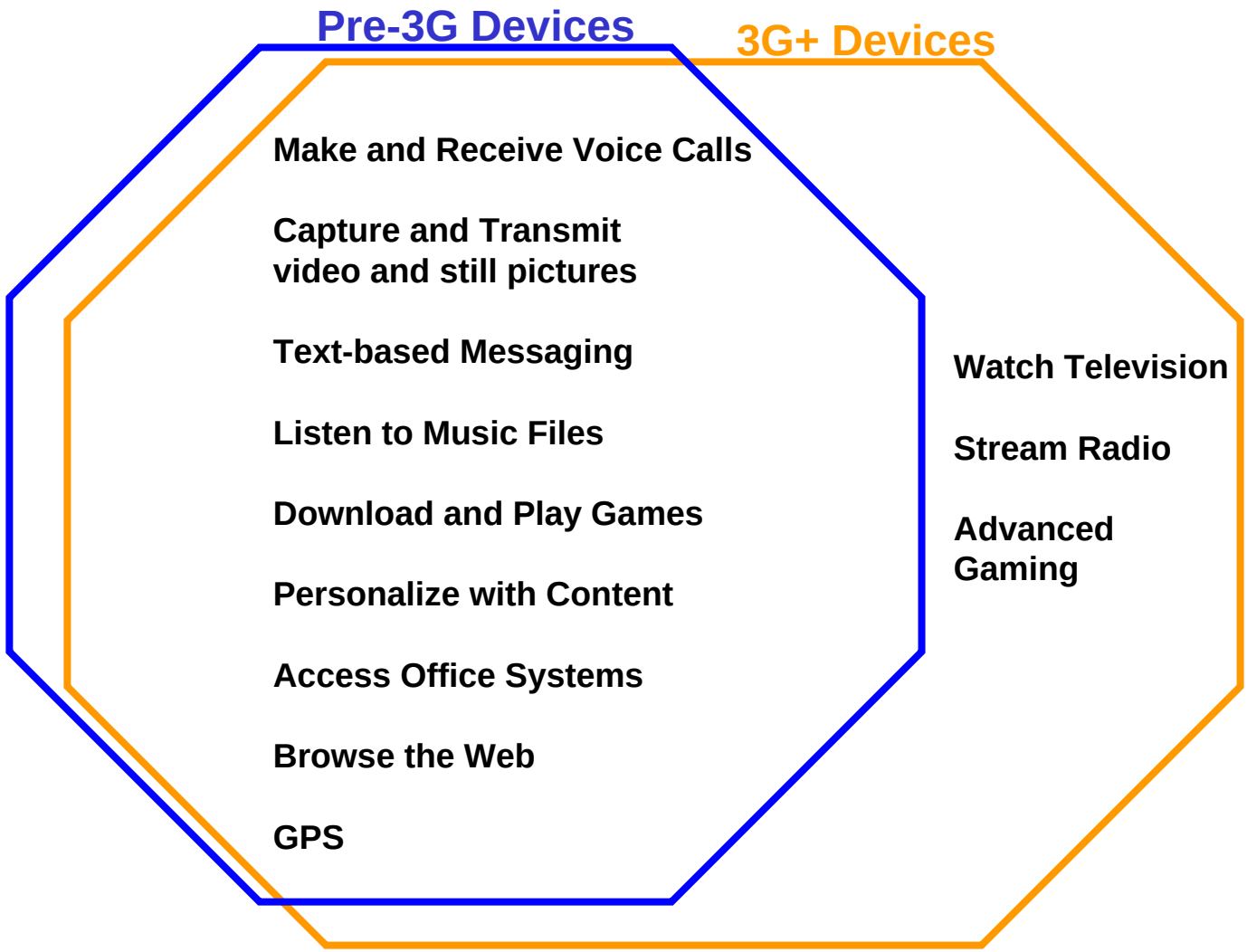


Maximum Theoretical Broadband Download Speeds



Multiple Sources: Webopedia, bandwidthplace.com, PC Magazine, service providers, ISPs, Phonescoop.com, etc.

Applications on Mobile Broadband Networks



Globally, more than 200 Mobile Broadband Devices have been Introduced

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Dell Latitude
D620 / D820
Embedded EV-DO

Lenovo
Thinkpad
T60 / Z60
Embedded EV-DO

Fujitsu Lifebook Q2010
Embedded HSDPA

HP Compaq
nc6140 -6320
Embedded EV-DO

In 2006, there are more than 50 solutions available for embedded laptops or PC Cards

Franklin Wireless
CDU-550
USB Modem
21 grams, EV-DO

LG CU500
HSDPA, Bluetooth

Motorola Q
Windows Mobile 5
Smartphone Edition
EV-DO

Samsung SGH-ZV50
2 MP camera, AAC/MP3,
HSDPA

Casio W21CA
2.6 inch WQVGA,
2 MP Camera,
EV-DO

Novatel Wireless
Merlin S720
EV-DO Rev. A

ZTE MF330
WCDMA / HSDPA

More than 200 EV-DO and HSDPA devices have been commercially introduced, including PC Cards, notebooks with embedded modems, USB modems, smartphones and feature phones. Source: 3Gtoday.com

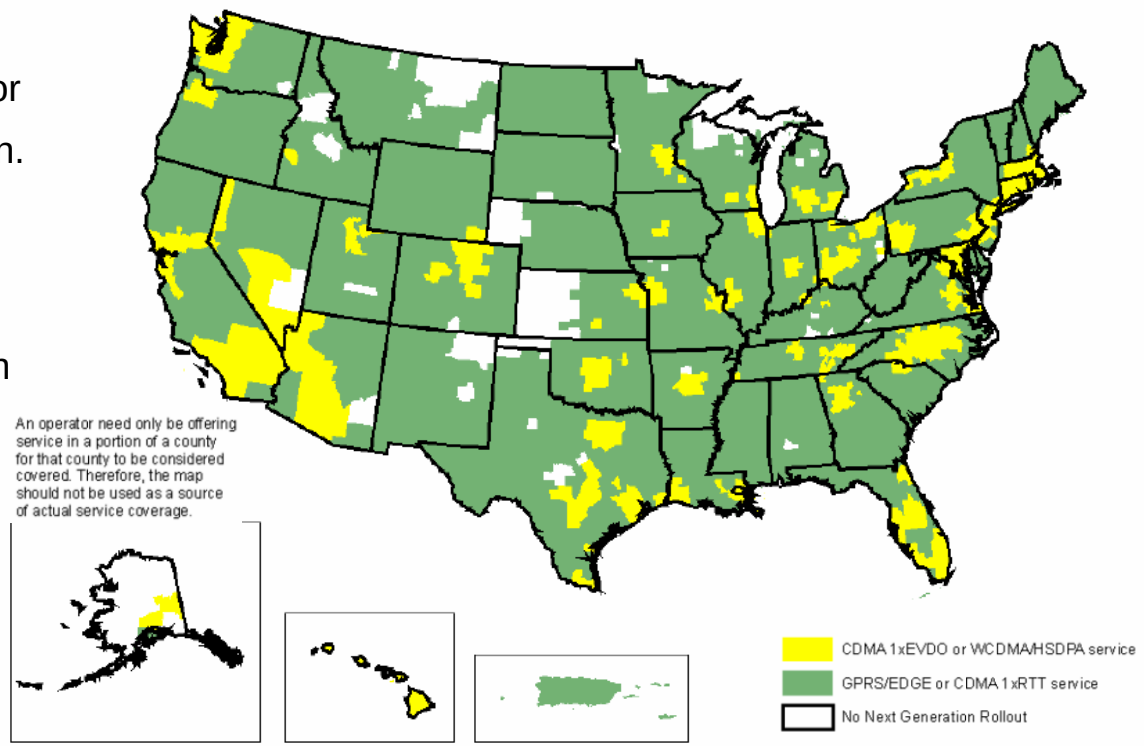
Source: QUALCOMM

High-Speed Wireless Technology Coverage Snapshot

According to the FCC, by the start of 2006:

- CDMA 1xRTT and/or 1xEV-DO had been launched in at least some portion of counties containing 283 million people, or roughly 99 percent of the U.S. population.
- GPRS, EDGE, and/or WCDMA/HSDPA had been launched in at least some portion of counties containing 269 million people, or about 94 percent of the U.S. population.
- Higher speed technologies, EV-DO and WCDMA/HSDPA, were available in counties containing 63 percent and 20 percent of the U.S. population.

Next Generation Network Rollout by County



Source: FCC 11th CMRS Competition Report

Wireless “3G” Network Deployment

- **Alltel:** Axcess[SM] Broadband service (EVDO) offers speeds of 400-700 kbps (more than 100 cities, 44 million pops).
- **Cingular/AT&T Wireless:** BroadbandConnect (HSDPA) service offers speeds of 400-700 kbps (165 cities, including 73 of the top 100 markets).
- **Sprint Nextel:** EVDO service offers speeds of 400-700 kbps (covers more than 200 million pops now, rising to 280 million by YE2008). EVDO Rev A network now covers more than 95 million people, and expansion of network upgrade continues. Rev A offers upload speeds of 350-500 kbps, and download speeds up to 600 kbps-1.4 Mbps.
- **T-Mobile USA:** Offers mobile Internet access through its GPRS/EDGE network, with a typical EDGE download speed of 100 kbps, and operates a network of more than 8,000 wireless hotspots; T-Mobile's HSDPA network is currently in deployment.
- **Verizon Wireless:** EVDO-based broadband service offers speeds of 400-700 kbps (242 cities, 200 million pops). Verizon is upgrading to EVDO Rev. A.

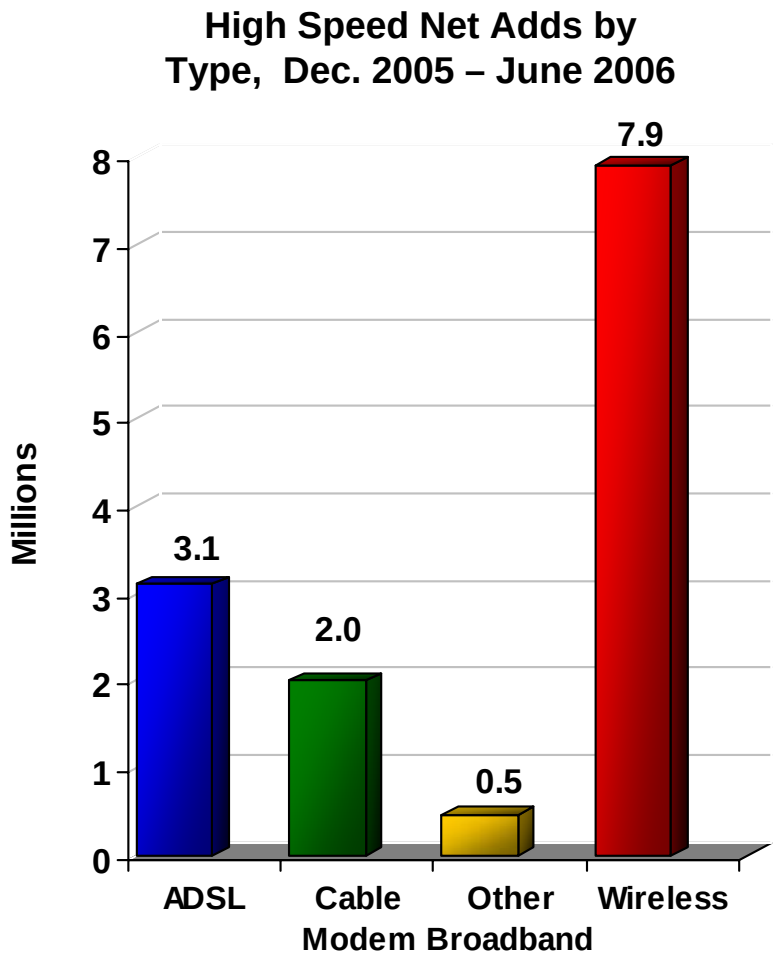
Wireless licensees are deploying “4G” networks

- **Sprint Nextel** will deploy a 4G broadband network, using mobile WiMAX technology with data rates of 2 to 4 Mbps.

  Sprint Nextel intends to launch a mobile WiMAX broadband service capable of serving 100 million people by year-end 2008, using the 2.5 GHz band. Trial markets to be launched later this year include Washington, DC, Baltimore and Chicago.

High-Speed Line Growth

- In 1H06, total high-speed lines grew 26%, from 51.2 million to 64.6 million lines, and 59% of all adds were mobile wireless subscriptions.
- From June 2005 to June 2006:
  - ADSL's share of total broadband lines fell from 38% to 35%,
  - Cable modem's share fell from 56% to 44%.
  - Mobile wireless' share of total broadband lines rose from 1% to 17% of total broadband lines.
  - The share of "other" forms of broadband (including fixed wireless, satellite, fiber, and broadband over power line) remained at 4% of total broadband lines – although their total line count grew 39%.



Sources: FCC Report on "High-Speed Services for Internet Access," Jan. 2007.