The U.S. Wireless Industry Overview
# Table of Contents

- Wireless Economy ........................................................................................................ 5
  - Jobs .......................................................................................................................... 6
  - Infrastructure Investment ......................................................................................... 7
  - U.S. vs. E.U. Infrastructure Investment .................................................................. 8
  - Mobile Shopping ....................................................................................................... 9
  - Wireless Enterprise ................................................................................................. 10
  - Wireless Accessories ............................................................................................... 11
  - Mobile Entertainment ............................................................................................... 12
- Wireless Ecosystem: Innovation .................................................................................... 13
  - Applications ............................................................................................................. 14
  - Devices ..................................................................................................................... 17
- Wireless Demographics and Usage ............................................................................... 23
  - Wireless-Only Households ..................................................................................... 24
  - Prepaid Market ........................................................................................................ 26
  - Data Usage .............................................................................................................. 28
    Projections .............................................................................................................. 30
Table of Contents Continued

- Wireless Competition ................................................................. 31
- U.S. Leads in Wireless Value Thanks to Competition .................. 34
  • U.S. vs. World: Value ................................................................. 35
  • U.S. Ranks #1 ........................................................................... 36
- The “Internet of Things” ............................................................... 38
  • Machine-2-Machine ................................................................. 39
  • Wireless Technology: Healthcare ............................................ 41
  • Wireless Technology: Education ............................................ 45
  • Wireless Technology: Energy .................................................... 47
- Spectrum .................................................................................. 49
  • What’s Spectrum? .................................................................. 50
  • Spectrum is Our Highway ....................................................... 51
  • “Virtuous Cycle” .................................................................. 53
  • Spectrum Shortfall Consequences ......................................... 54
  • NBP on Spectrum .................................................................. 55
  • Spectrum Availability & Pipeline ............................................ 56
  • CTIA’s Position ..................................................................... 57
# Table of Contents Continued

- Wireless Taxes and Fees ........................................................................................................ 59
  - Wireless Tax Fairness Act of 2011 .................................................................................... 60
  - Digital Goods and Services Tax Fairness Act ................................................................. 61
- E-911 Fee & Fund-Raiding ................................................................................................. 62
- Responsible Use .................................................................................................................. 64
- Universal Service Fund ...................................................................................................... 67
- Wireless Sustainability ........................................................................................................ 70
- Safe Driving ....................................................................................................................... 72
  - CTIA PSAs ....................................................................................................................... 75
- Wireless Industry Timeline ............................................................................................... 76
- Wireless Policy Milestones ............................................................................................... 82
- Additional Resources ......................................................................................................... 85
- Appendix ............................................................................................................................. 86
Wireless Economy
Jobs

• Currently, wireless industry directly/indirectly employ >2.4 million Americans.¹
  – Carriers directly employ >238,071 people.²
  – “App” economy employs 466,000 developers and related jobs.³

• Future job projections:
  – Continued 4G network build out means 371,000-771,000 jobs by 2016.⁴
  – Wireless broadband investment will create as many as 205,000 jobs by 2015.⁵

• Wireless jobs paid >50% higher than the national average of other production workers.²
Infrastructure Investment

• Every $1 invested in wireless broadband will create an additional $7-10 for GDP.⁶

• Wireless economic contributions have grown faster (16%) than the rest of the economy (3%).¹

• Wireless cumulative total investment >$223 billion from 2001-2011.⁷
  – From January 2011-December 2011, U.S. wireless capital investment was more than $25.3 billion.⁷

• Wireless services provided $100 billion in “value added” contributions to the U.S. GDP in 2007.¹
U.S. vs. E.U. Infrastructure Investment

- In 2010, U.S. providers reported making capital investments totaling $24.9 billion.\(^7\) Wireless providers in the 5 largest European countries (France, Germany, Italy, Spain and U.K.) spent $13.5 billion combined.\(^8\)

**Comparative Wireless Capex in 2010, EU5 versus USA**

- **Capex in Billions**
  - EU5 Wireless Capex: $13.3
  - U.S. Wireless Capex: $24.9

*Source: Bank of America Merrill Lynch Global Wireless Matrix, 3Q 2011*
Mobile Shopping

- During the 2011 holiday season, 52% of smartphone owners were projected to use their devices to assist in their shopping.\(^9\)
- Survey found consumers used their smartphones to:\(^{10}\)
  - 67% find store locations
  - 59% compare prices
  - 51% obtain product information
  - 46% check product availability
  - 45% read reviews
  - 45% shop online
  - 41% find and use coupons
  - 40% scan bar codes
- 80% of wireless users prefer locally relevant advertising and 75% are more likely to take an action after seeing a location-specific message.\(^{11}\)
- By 2015, mobile shopping is projected to account for $163 billion in sales worldwide and 12% of global ecommerce turnover.\(^{12}\)
Wireless Enterprise

• Businesses spent more than $1.9 billion in 2010 on non-handsets (e.g. tablets, notebooks, e-readers); by 2014, it will be more than $5 billion on non-handsets.  

13

• 38% of businesses are using wireless devices (up from 26% in 2010).  

14

• 43% of businesses plan to integrate wireless into the workplace in the future.  

14

• By 2015, half of the devices on corporate networks will be wireless.  

14

• Business apps have increased productivity by 45% and raised operational efficiency by 44%.  

15

• By 2016:
  – Enterprise services to manage mobile applications, devices, content, network services, expenses, policy and security are projected to grow to $11 billion worldwide.  

16
  – Smartphones and media tablet penetration will also grow to 85% of all employees and 95% of corporate-liable employees in some global regions.  

16
Wireless Accessories

• The global market for accessories was $34 billion in 2011 and is expected to grow to $50.2 billion by 2015.\(^\text{17}\)

• In the U.S., the average consumer spends $60 on accessories for their wireless device.\(^\text{18}\)

• 47% of mobile phone buyers purchase an accessory at the same time they acquire a new phone.\(^\text{19}\)
  – Cases and car chargers are the accessories most often purchased at the time of acquiring the device.

• Accessory revenue in 2010:\(^\text{19}\)
  – 34% from device protection
  – 27% from chargers
  – 17% from screen protection
  – 13% from headsets
Mobile Entertainment

- U.S. mobile content and access revenue was $39.17 billion in 2011, up 27.8 percent from 2010.\(^{20}\)
- Mobile gaming sales in the U.S. will grow from $5 billion in 2011 to $16 billion by 2016.\(^{21}\)
- 64% of users who downloaded an app from June 2011 - July 2011 have downloaded a game.\(^{22}\)
- Mobile music revenues were $3.1 billion 2010 and are projected to reach $5.5 billion by 2015.\(^{23}\)
  - Record labels currently make about 20% of their revenues from digital music.
- 64 million smartphone owners accessed social networking or blogs in Dec. 2011 (up 77% from Dec. 2010).\(^{24}\)
Wireless Ecosystem: Innovation
Innovation – Applications

• In 2008, Apple’s iTunes and Android Market application stores opened.  

• December 2009: >100,000 apps. May 2010: >240,000 apps on 7 operating systems (OS) from 7 different stores. December 2011: >1.9 million apps on >11 OS from >28 different non-carrier stores.  

Sources: CTIA Research, Distimo, Androilib, Application Stores, 148 Apps.biz
## Innovation – Applications Continued

<table>
<thead>
<tr>
<th>Application Store</th>
<th>Date Launched</th>
<th>Number of Applications Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handmark</td>
<td>Dec 2000</td>
<td>5,177</td>
</tr>
<tr>
<td>Mobihand</td>
<td>2004</td>
<td>50,000</td>
</tr>
<tr>
<td>Getjar</td>
<td>Dec 2004</td>
<td>384,253</td>
</tr>
<tr>
<td>Handster (acquired by Opera)</td>
<td>May 2005</td>
<td>30,000</td>
</tr>
<tr>
<td>Appia (formerly PocketGear)</td>
<td>Jun 2008</td>
<td>140,000</td>
</tr>
<tr>
<td>Apple iTunes App Store</td>
<td>Jul 2008</td>
<td>450,000</td>
</tr>
<tr>
<td>Android Market</td>
<td>Oct 2008</td>
<td>352,800</td>
</tr>
<tr>
<td>BlackBerry App World</td>
<td>Apr 2009</td>
<td>42,893</td>
</tr>
<tr>
<td>Nokia Ovi Store</td>
<td>May 2009</td>
<td>104,576</td>
</tr>
<tr>
<td>Palm App Catalog</td>
<td>Jun 2009</td>
<td>7,062</td>
</tr>
<tr>
<td>Archos AppsLib</td>
<td>Sep 2009</td>
<td>38,771</td>
</tr>
<tr>
<td>Windows Mobile Marketplace</td>
<td>Oct 2009</td>
<td>1,579</td>
</tr>
<tr>
<td>Apple Store for iPad</td>
<td>Apr 2010</td>
<td>117,495</td>
</tr>
<tr>
<td>Amazon Appstore for Android</td>
<td>Nov 0210</td>
<td>15,487</td>
</tr>
<tr>
<td>Windows Phone Marketplace</td>
<td>Holiday Season 2010</td>
<td>35,000</td>
</tr>
</tbody>
</table>
Innovation – Applications Continued

• 50% of U.S. cellphone owners (42% of all U.S. adults) have apps on their devices.  

• Mobile app downloads to increase to 25 billion by 2015, from only 2.6 billion in 2009. 

• App revenue: 
  – 2010: $5.2 billion
  – 2011: $15.1 billion
  – 2015: $57 billion

• By 2016, more than 44 billion apps will have been downloaded. 
  – Global population ~7 billion so 6 mobile app downloads for every man, woman and child.

• Average smartphone had 22 apps; feature phone 10 apps. 
  – Most popular apps: Facebook, Google Maps and The Weather Channel (TWC).
  – Most popular categories: Games, news, maps, social networking and music.
Innovation – Devices

• More than 295 million data-capable devices were in the hands of consumers in December 2011 (95% of all devices); compared to 280.5 million in 2010.⁷
  – >111.5 million of these are smartphones; compared to 78.2 million in 2010.⁷
  – >20.2 million of these are wireless-enabled tablets, laptops and modems; compared to 13.6 million in 2010.⁷

• 4G Handsets:
  – In 2010, the first 4G handset (HTC Evo) was introduced at International CTIA WIRELESS.
  – As of March 2012:
    • AT&T: Acer ICONIA TAB; Apple iPad 4G; LG Nitro HD; Samsung Galaxy S II Skyrocket; Samsung Infuse; HTC Vivid; Pantech Burst; Pantech Pocket; Pantech Element; Impulse 4G; Sony Ericsson Experia PLAY.
    • CellularOne: Motorola Atrix 4G; HTC Inspire 4G.
    • MetroPCS: Samsung Galaxy Attain 4G; Samsung Galaxy Indulge; LG Esteem.
    • Sprint: Samsung Galaxy S II; Samsung Conquer 4G; Samsung Epid 4G; HTC EVO 3D; HTC EVO Shift; Motorola PHOTON 4G; Google Nexus S 4G.
    • T-Mobile: LG myTouch 4G; LG DoublePlay; Nokia Lumina 710; HTC Amaze 4G; HTC Radar 4G; Samsung Exhibit II 4G; Samsung Galaxy S II; T-Mobile Sidekick 4G; T-Mobile G2.
    • Verizon Wireless: Apple iPad 4G; LG Revolution; LG Spectrum; HTC Rezound; HTC Thunderbolt; Motorola DROID RAZR; Motorola DROID BIONIC; Motorola DROID XYBOARD; Samsung Galaxy Nexus; Samsung Stratosphere, Samsung Galaxy Tab 7.7.
Innovation – Devices Continued

• >630 different handsets and devices are manufactured for the U.S. market.
  – In UK, 147 handsets are available.32

• Choose from devices manufactured by >32 companies.
  – Between April 2010-March 2011, more than 120 new smartphones from major handset makers were launched.33

• >11 wireless operating systems: Android (Open Handset Alliance); bada (Samsung); Blackberry OS (Research in Motion); BREW (Qualcomm); Java (Sun Microsystems); LiMo (Open Source Linux for Mobile); iOS (Apple); Palm OS (Palm); Symbian (Nokia); WebOS (Palm); Windows Phone (Microsoft).

<table>
<thead>
<tr>
<th>Top Smartphone Platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIM</td>
</tr>
<tr>
<td>43.0%</td>
</tr>
<tr>
<td>Apple</td>
</tr>
<tr>
<td>25.1%</td>
</tr>
<tr>
<td>Microsoft</td>
</tr>
<tr>
<td>15.7%</td>
</tr>
<tr>
<td>Google</td>
</tr>
<tr>
<td>7.1%</td>
</tr>
<tr>
<td>Palm</td>
</tr>
<tr>
<td>5.7%</td>
</tr>
</tbody>
</table>

Source: comScore MobiLens
Innovation – Devices Continued

• The average price of a wireless handset has gone from $85 to less than $35.\textsuperscript{34} The average price of a smartphone has dropped for four consecutive quarters to $135.\textsuperscript{35}

• 50% of American adults own smartphones as of February 2012, up from 38 percent in February 2011.\textsuperscript{36}
  – 49.3% of American adults own a feature phone.\textsuperscript{36}

• By 2015, tablet sales will exceed 49 million units, surpassing laptop sales when one-third of U.S. consumers will own a tablet.\textsuperscript{37}

• By 2015, there will be >15 billion network devices worldwide, or almost 2 devices per person.\textsuperscript{38}
Innovation – Devices Continued

• Competition within the wireless ecosystem means consumers have a choice of where and how to purchase handsets: from wireless providers; online stores; and retailers that offer mobile phones with plans, no contract and pre-paid phones and unlocked phones that can be used on any network.\textsuperscript{39}

• Today, more carriers offer unlocked handsets or offer the ability to use unlocked phones on their network, giving consumers choice for where they wish to purchase their devices.\textsuperscript{40}

• Some of the most advanced wireless devices are launched first in the U.S. – Apple iPhone 4, iPad 2; Google Nexus S and 4G; BlackBerry Curve 8900 and Torch; Motorola Droid Bionic; Samsung Galaxy S II; HTC EVO 3D and Thunderbolt; Amazon Kindle and Kindle Fire; Barnes & Noble Nook; Motorola Xoom.
Innovation – Devices Continued

• Top 5 Devices in Q3 2008 in U.S.\(^{41}\)
  1. Motorola RAZR V3
  2. Motorola MotoKRZR
  3. LG VX8300
  4. Apple iPhone
  5. LG VX8500 (Chocolate, VX8500, VX8550)

• Top 5 Devices in Q3 2009 in U.S.\(^{42}\)
  1. Apple iPhone 3GS
  2. RIM BlackBerry 8300 (Curve, 8310, 8320, 8330, 8350i)
  3. Motorola RAZR V3
  4. LG enV2
  5. LG Voyager

• Top 5 Devices in Q3 2010 in U.S.\(^{43}\)
  1. Apple iPhone 3GS
  2. Samsung Intensity/Doubletake
  3. Motorola Droid
  4. RIM BlackBerry 8500 (Curve 8520, 8530)
  5. Apple iPhone 4

• Top 5 Devices in Q3 2011 in U.S.\(^{44}\)
  1. Apple iPhone 4
  2. Apple iPhone 3GS
  3. HTC EVO 4G
  4. Motorola Droid 3
  5. Samsung Intensity II

• Top 5 Devices in Q4 2011 in U.S.\(^{45}\)
  1. Apple iPhone 4S
  2. Apple iPhone 4
  3. Apple iPhone 3GS
  4. Samsung GALAXY S II
  5. Samsung GALAXY S 4G
Types and Capabilities of Wireless Devices in the U.S.

- 322.9 million total active units
- 308.2 million total survey respondent units
- 294.2 million total data-related respondent units
- 15.2 million CMRS laptops, tablets, wireless modems
- 278.3 million data capable units
- 238.7 million web capable units
- 249.5 million SMS capable units
- 95.8 million Smartphones

Note: Not to Scale
Source: CTIA Semi-Annual Wireless Survey
Wireless Demographics and Usage
U.S. Wireless-Only Households

- As of June 2011, there were 31.6% U.S. wireless-only households. In June 2006, there were only 10.5% wireless-only households.
  - Wireless-only plus wireless-mostly: 61.4%

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>%</th>
<th>Rank</th>
<th>State</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arkansas</td>
<td>35.2</td>
<td>6</td>
<td>Kentucky</td>
<td>31.5</td>
</tr>
<tr>
<td>2</td>
<td>Mississippi</td>
<td>35.1</td>
<td>7</td>
<td>Oregon</td>
<td>30.6</td>
</tr>
<tr>
<td>3</td>
<td>Texas</td>
<td>32.5</td>
<td>8</td>
<td>Colorado</td>
<td>30.4</td>
</tr>
<tr>
<td>4</td>
<td>North Dakota</td>
<td>32.3</td>
<td>9</td>
<td>Nebraska</td>
<td>30.4</td>
</tr>
<tr>
<td>5</td>
<td>Idaho</td>
<td>31.7</td>
<td>10</td>
<td>Oklahoma</td>
<td>30.1</td>
</tr>
</tbody>
</table>
U.S. Wireless-Only Households Continued

- Here are the top 5 states where wireless devices are the primary means of receiving calls:

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Texas</td>
<td>52.8%</td>
</tr>
<tr>
<td>2</td>
<td>Arkansas</td>
<td>50.9%</td>
</tr>
<tr>
<td>3</td>
<td>Mississippi</td>
<td>49.8%</td>
</tr>
<tr>
<td>4</td>
<td>Arizona</td>
<td>48.1%</td>
</tr>
<tr>
<td>5</td>
<td>Nebraska</td>
<td>47.3%</td>
</tr>
</tbody>
</table>
U.S. Prepaid Market

- >71.6 million wireless prepaid/pay-as-you-go subscriptions as of December 2011.  
- Prepaid/Pay-As-You-Go share of overall wireless market (penetration) is 21.6%.  

Source: CTIA Research
U.S. Prepaid Market

• Market demographics:\n  – Gender: 54.3% are female; 45.7% are male
  – Age: 6.5% are 13-17: 6.5%; 9.2% are 18-24; 13.9% are 25-34; 13% are 15.1% are 35-44; 20.8% are 45-54; 17% are 55-64; 17.4% are 65+
  – Income: 30.8% income $25-$50k; 29.7% income <25k; 17.6% income $50-75k; 8.7% income $75-100k, 13.2% income $100k+
  – Ethnicity: 80.2% are white; 10.9% are black/African American; 6.7% are Asian, Native Hawaiian, or other Pacific Islander
Data Usage

• From December 2010 to December 2011, wireless data traffic increased 123% from 388 billion megabytes in 2010 to 866.7 billion megabytes in 2011. 7

• To put this in perspective, if you were walking and listening to five songs per mile and each song lasted for four minutes:
  – In 2010, you would walk 77,601,961,033 miles, or the equivalent of 3,116,419 times around the world for 2,952,890 years and listen to 97 billion songs.
  – In 2011, you would walk 173,364,056,929 miles, or the equivalent of 6,962,132 times around the world for 6,596,806 years and listen to 216.7 billion songs.

• The amount of data the average smartphone user consumers per month has grown by 89% from 230 MB in Q1 2010 to 435 MB in Q1 2011. 51

• Between 2009 and 2010, wireless accounted for more than 85% of all new connections offering download speeds of at least 768 kbps and 61% with at least 3 mbps, regardless of technology. 50
Data Usage

• Number of active smartphones and wireless-enabled PDAs: 115.5 million
  - June 2011: 2443.5 MB per user for 6 months
  - Dec 2010: 1729.9 MB per user for 6 months
  - June 2010: 1094.3 MB per user for 6 months
  - Dec 2009: 672.2 MB per user for 6 months
Data Usage Projections

• Cisco Systems, The Yankee Group and Coda Research projected (on average) that data traffic in 2014 would be 35 times the volume of traffic in 2009.\(^{52}\)

• Cisco’s Visual Networking Index (VNI) has projected that wireless data traffic in North America will grow 20 times from 2010 to 2015, on top of the already extraordinary growth we’ve experienced.\(^{53}\)

  – Combining Cisco’s projections for the last two years, wireless data traffic in 2015 is expected to be **56 times** the volume of traffic in 2009.

Source: Cisco Systems Visual Networking Index, 2011
Wireless Competition
Wireless Competition

• As of midyear 2011, the Herfindahl-Hirschman Index (HHI) for the United States was the lowest among Organisation for Economic Co-operation and Development (OECD) countries.  

• The U.S. is one of only two OECD countries with 5 or more key mobile wireless carriers competing in its wireless market.  

• Of the remaining OECD countries tracked by Bank of America Merrill Lynch, 14 have only three key mobile wireless carriers and 11 have only four mobile wireless carriers.  

<table>
<thead>
<tr>
<th>Number of Carriers in OECD Countries, 2Q 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Mobile Carriers</td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td>Chile</td>
</tr>
<tr>
<td>Czech Republic</td>
</tr>
<tr>
<td>Finland</td>
</tr>
<tr>
<td>France</td>
</tr>
<tr>
<td>Greece</td>
</tr>
<tr>
<td>Hungary</td>
</tr>
<tr>
<td>Netherlands</td>
</tr>
<tr>
<td>New Zealand</td>
</tr>
<tr>
<td>Norway</td>
</tr>
<tr>
<td>Portugal</td>
</tr>
<tr>
<td>Switzerland</td>
</tr>
<tr>
<td>Turkey</td>
</tr>
</tbody>
</table>

Source: Bank of America Merrill Lynch Global Wireless Matrix 3Q2011
## Wireless Mobile Competition

### Wireless Mobile Competition in OECD Countries, 2Q 2011 HHI Values

<table>
<thead>
<tr>
<th>Number of Operators</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>All Others</th>
<th>HHI Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1,836.78</td>
<td>1,017.19</td>
<td>637.51</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,491.48</td>
</tr>
<tr>
<td>Austria</td>
<td>1,696.93</td>
<td>952.56</td>
<td>374.01</td>
<td>74.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,097.51</td>
</tr>
<tr>
<td>Belgium</td>
<td>1,730.77</td>
<td>830.96</td>
<td>654.60</td>
<td>15.89</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,232.22</td>
</tr>
<tr>
<td>Canada#</td>
<td>1,323.57</td>
<td>842.97</td>
<td>800.28</td>
<td>5.14</td>
<td>3.81</td>
<td>1.60</td>
<td>0.00</td>
<td>0.00</td>
<td>2,977.38</td>
</tr>
<tr>
<td>Chile</td>
<td>1,670.31</td>
<td>1,317.91</td>
<td>521.10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,509.31</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1,609.12</td>
<td>1,296.19</td>
<td>570.42</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,475.73</td>
</tr>
<tr>
<td>Denmark*</td>
<td>2,121.22</td>
<td>693.44</td>
<td>358.67</td>
<td>75.19</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,248.52</td>
</tr>
<tr>
<td>Finland</td>
<td>1,554.20</td>
<td>1,325.42</td>
<td>584.20</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,463.83</td>
</tr>
<tr>
<td>France**</td>
<td>2,242.38</td>
<td>1,222.72</td>
<td>312.54</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,777.64</td>
</tr>
<tr>
<td>Germany</td>
<td>1,075.88</td>
<td>987.75</td>
<td>384.59</td>
<td>261.14</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2,709.37</td>
</tr>
<tr>
<td>Greece</td>
<td>2,551.21</td>
<td>681.08</td>
<td>547.23</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,779.52</td>
</tr>
<tr>
<td>Hungary</td>
<td>2,154.99</td>
<td>901.98</td>
<td>554.37</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,611.34</td>
</tr>
<tr>
<td>Israel</td>
<td>1,173.48</td>
<td>1,044.08</td>
<td>865.05</td>
<td>16.16</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,098.77</td>
</tr>
<tr>
<td>Italy</td>
<td>1,175.97</td>
<td>1,097.50</td>
<td>508.71</td>
<td>100.49</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2,882.67</td>
</tr>
<tr>
<td>Japan</td>
<td>2,296.37</td>
<td>748.58</td>
<td>459.80</td>
<td>10.74</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,515.48</td>
</tr>
<tr>
<td>Korea</td>
<td>2,576.71</td>
<td>991.61</td>
<td>315.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,883.35</td>
</tr>
<tr>
<td>Mexico</td>
<td>4,946.63</td>
<td>467.31</td>
<td>19.08</td>
<td>13.56</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>5,446.57</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2,470.34</td>
<td>673.17</td>
<td>593.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,736.53</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2,254.28</td>
<td>1,640.74</td>
<td>144.35</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>4,039.37</td>
</tr>
<tr>
<td>Norway</td>
<td>2,850.40</td>
<td>851.84</td>
<td>80.53</td>
<td>71.42</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,854.18</td>
</tr>
<tr>
<td>Poland</td>
<td>938.93</td>
<td>846.00</td>
<td>774.72</td>
<td>154.71</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2,714.36</td>
</tr>
<tr>
<td>Portugal</td>
<td>1,867.31</td>
<td>1,271.55</td>
<td>446.43</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,585.28</td>
</tr>
<tr>
<td>Spain*</td>
<td>1,853.01</td>
<td>939.22</td>
<td>465.99</td>
<td>22.28</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,280.50</td>
</tr>
<tr>
<td>Sweden</td>
<td>2,072.88</td>
<td>835.92</td>
<td>252.70</td>
<td>93.36</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,254.86</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3,880.61</td>
<td>446.63</td>
<td>274.63</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>4,601.87</td>
</tr>
<tr>
<td>Turkey</td>
<td>2,856.27</td>
<td>752.69</td>
<td>365.60</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3,974.56</td>
</tr>
<tr>
<td>United Kingdom**</td>
<td>1,323.48</td>
<td>855.46</td>
<td>630.24</td>
<td>85.88</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2,895.07</td>
</tr>
<tr>
<td>United States**</td>
<td>1,083.88</td>
<td>932.97</td>
<td>260.64</td>
<td>108.21</td>
<td>7.91</td>
<td>3.42</td>
<td>3.17</td>
<td>12.57</td>
<td>2,412.76</td>
</tr>
</tbody>
</table>

Sources: Bank of America Merrill Lynch Global Wireless Matrix 3Q2011, CTIA Research, Canadian Wireless Telecommunications Association (CWTA), and carrier investor releases.

#Source CWTA.

*Differs from originally reported HHI sum as a result of methodological difference.

**Recalculated by CTIA Research to reflect multiplicity of operators, while still aggregating all companies beyond the top seven into a single “all other” category.
U.S. Leads in Wireless Value Thanks to Competition
U.S. vs. World: Value

The U.S. Offers You the Most for Your Money
(Average Revenue per Voice Minute v. Average Monthly MOUs, MY2011)

Source: Bank of America Merrill Lynch Research, Sept. 2011
U.S. Ranks #1

• Lowest revenue per minute of OECD countries.
  – Average revenue per minute is nearly 70% lower than the averages of the other 27 countries.\(^{54}\)
  – Average revenue per minute is nearly 70% lower than the average European country.\(^{54}\)
  – At the end of 2Q 2011, the average revenue per minute in the U.S. was $0.03. Across Europe’s developed countries, the average revenue per minute was $0.13. As a result, the average wireless consumer in Europe used just 172 minutes a month compared to 777 minutes a month for the U.S.\(^{8}\)
  – Most minutes of use (MOUs) – 2.296 trillion MOUs in 2011 (or 6.3 billion MOUs per day).\(^{7}\)
  – Highest MOUs per month per user and the lowest average revenue per minute of service of the 28 OECD countries tracked by Bank of America Merrill Lynch.\(^{54}\)

• Most mobile Internet users than any other country.\(^{54}\)
  – U.S. wireless consumers account for 29.3% of all mobile Web surfing.\(^{54}\)

• 3G Technology has been deployed to more than 98% of the U.S. population.\(^{34}\)
U.S. Ranks #1 Cont’d

• Total U.S. population is <5% of the world’s total population.  

• Total U.S. subscribership is <6% of the world's total wireless subscribers.

• The U.S. is home to 21% of global 3G/4G subscribers.

• The U.S. is home to 56% of global mobile WiMAX subscribers.

• The U.S. is home to >87% of global LTE subscribers.

• U.S. has >164 million 3G/4G subscribers.
The “Internet of Things”
Machine-2-Machine (M2M)

• M2M are applications or mobile units that use wireless networks to communicate with other machines.
  – Applications may include telemetry and telematic devices, remote monitoring systems (e.g. smart grid, healthcare, transportation, etc) and other devices that provide status reports to businesses’ centers (e.g. operations, traffic management, data management, etc).

• By 2020, >16 billion M2M devices worldwide,\(^\text{57}\) compared to 62 million in 2010.\(^\text{57}\)

• Year-over-year growth is expected to be between 36% to 52%.\(^\text{57}\)

• Transportation and distribution sector is the largest M2M vertical market with >30% market share.\(^\text{58}\)

• By 2015, more than 40% of M2M connections in the U.S. will run 3G or faster networks.\(^\text{58}\)
Machine-2-Machine (M2M) Continued

Source: Analysys Mason
Wireless Technology – Healthcare

• 83% of wireless Internet users have looked online for health information.\textsuperscript{59}

• By 2016, there will be >80 million wearable wireless sensors for fitness and wellbeing.\textsuperscript{60}

• WHO reports 8 in 10 countries are using mHealth, e.g., for help lines, emergency toll-free numbers and telemedicine.\textsuperscript{60}
  – 85% of the world’s population is covered by a commercial wireless signal.\textsuperscript{60}
  – 5 billion cellphone subscribers in the world.\textsuperscript{60}
Wireless Technology – Healthcare Continued

• Examples:

  • **Text4baby** sends texts healthcare tips every week to pregnant women and new moms. While all expectant mothers and new moms may benefit from the text messages, text4baby is focused on reaching and engaging those populations who are statistically more at-risk to experience traumatic births, by promoting healthy behavior through mobile technology. A program of the National Healthy Mothers, Healthy Babies Coalition (HMHB), text4baby is the largest free national health initiative to date and is made possible through a public-private partnership that boasts more than 350 organizations, CTIA-The Wireless Foundation as one of the program’s founding partners.

  • **Wheelmap** is an iPhone app that finds routes for wheelchair users. The user can also see which public transportation hubs are wheelchair accessible and elevator locations.

  • **GreatCall’s MedCoach** iOS app gives users the ability to monitor their prescriptions, a contact list for nearby doctors and nearby pharmacy locations. The app also has a 24/7 email service that links to GreatCall’s HIPPA compliant customer support team.
Wireless Technology – Healthcare Continued

• San Ramon California Fire Chief Richard Price explains why his department created the free "Fire Department" app, which alerts first aid trained individuals of nearby emergencies so they can help save lives. Originally offered only in San Ramon area, the renamed app, PulsePoint, will be available to more cities across the country.

Scan with Smartphone

http://www.youtube.com/watch?v=wDYGH-I1dDw
Wireless Technology – Healthcare Continued

• Whether it's remote monitoring or tracking weight loss, wireless technology may help consumers improve heart health and live healthier. CTIA took a look at some of the new mobile products and services that are available to keep one's heart healthy.

http://www.youtube.com/watch?v=4P0za7R09SM

Scan with Smartphone
Wireless Technology – Education

• Project K-Nect, a program that gave smartphones and wireless service to 9th grade math students in North Carolina. Students in the program used their phones to communicate and collaborate with each other and tutors. When compared to other students in their school, district and state, Project K-Nect students were more likely to achieve proficiency in Algebra I & II as well as feel more successful in math in general (85%). When compared nationwide, Project K-Nect students (61%) have a greater self-perception that they are succeeding academically than their peers (39%).

• With more than 26,000 apps available on iOS for the education market, school districts are integrating iPads into the classroom. As of January 2012, 1.5 million iPads are in use in educational institutions and schools. Studies have shown that iPads in the classroom has achieved higher literacy rates for kindergarteners and can help autistic students communicate.
Wireless Technology – Education

• The Joan Ganz Cooney Center at Sesame Workshop and Nokia Research Center formed a research collaboration to examine improving literacy through mobile media. The first project to come out of the collaboration was Story Visit, a distance learning tool that allows children to read stories with relatives who are far away. It combines video conferencing with connected storybooks. When an adult turns the page, the child’s page turns too, allowing them to read together even though they are physically apart. 67

• Museums are tapping into mobile solutions to enhance their learning experiences. For instance, the American Museum of Natural History in New York offers a mobile application which provides information and turn-by-turn directions to specific points of interests in the museum. 68
Wireless Technology – Energy

• The Telework Research Network said that if 40 percent of employees telecommuted half the time, they’d save more than 280 million barrel of oil; reduce greenhouse gases by 53 million tons (similar to taking almost 10 million cars off the road for a year); and increase national productivity by 5.5 million man-years, or $235 billion worth of work.  

• As of January 1, 2012, most of the new smartphones in the U.S. will have a UCS, which will provide an estimated 50 percent reduction in standby energy consumption. It does this by utilizing the micro-USB format as the common universal charging interface and use energy-efficient chargers that meet U.S. “Energy Star” requirements for external power adapters.

• T-Mobile developed a SIM card specifically designed for M2M applications, including smart grid applications. The M2M SIM is much smaller than traditional SIM cards – it is only about the size of a pin head – and is designed to withstand harsh weather conditions where M2M devices may be deployed.
Wireless Technology – Energy Continued

• Smart grids depend on information conveyed by wireless technology to enable timely action and promote lower energy use. If rolled out nationally, smart grids could eliminate 360 million metric tons of CO2, the equivalent of the emissions produced by 68 million passenger vehicles or the annual energy use of 30 million U.S. homes.\(^{71}\)

• Morgan Stanley predicts the worldwide smart grid market will have grown annually from about $20 billion in 2010 to almost $100 billion by the year 2030.\(^{72}\)

• By 2015, ABI Research says there will be approximately 212 million smart meter systems and smart grid projects installed worldwide.\(^{73}\)

• If America’s power grid was just 5 percent more efficient, IBM estimates it would save greenhouse emissions equivalent to 53 million cars.\(^{74}\)
Spectrum
What’s Spectrum?

• ALL of the apps, speed, devices and other innovations of the wireless industry are in jeopardy without more spectrum.
  – Spectrum is simply defined as the radio frequencies that are designated for specific uses, such as personal communications services and public safety.

“As the demand increases, and the benefits are more compelling by the day, it’s all the more reason why unleashing more spectrum must be a national priority. That’s what I want to talk about today: four core reasons why spectrum is at the top of my agenda -- American competitiveness, opportunity, the enormous dollar benefits of freeing up spectrum and the enormous costs of delay.”

– FCC Chairman Julius Genachowski
  International CTIA WIRELESS 2011 Show
Spectrum is Our Highway

• To the wireless industry, spectrum is our equivalent to lanes on a highway.
  – Cars are like our mobile devices, such as cellphones, smartphones, tablets and wireless Internet cards. In the last ten years, there has been a tremendous increase in the number of cars, or devices, and in the amount of time they’re spending on the ‘roads’. To meet that demand, our members need more lanes, or spectrum. Otherwise, we’ll have a significant traffic jam.
In February 2012, the President signed the Middle Class Tax Relief and Job Creation Act into law. The law includes provisions that would make an important down payment toward the 500 MHz of spectrum that the National Broadband Plan (NBP) identified as needed by the U.S. wireless industry by 2020, 300 MHz of which will be available by 2015.

The act also:
- Authorizes the FCC to conduct incentive auctions to make bands currently occupied by television broadcasters available for wireless broadband services.
- Allows additional unlicensed use in guard bands (subject, appropriately, to interference protection) and at 5.4 GHz.
- Further streamlines the process for deploying wireless facilities (antennas, towers, etc.).

The National Telecommunications and Information Administration (NTIA) released a report in March 2012 that concluded high-value spectrum currently used by the government (1755 to 1850 MHz) should be repurposed for commercial use. The 1755-1780 MHz band can be paired with AWS 3 spectrum and represents a near-term opportunity to bring this spectrum to auction.
“Virtuous Cycle”

As long as more spectrum is available, the industry will continue to invest in networks to handle more capacity, device manufacturers will continue to develop new capabilities for handsets and content developers will continue to create new apps and content. This cycle is driven by competition, not regulation, and has given consumers some of the most ubiquitous, least expensive and most advanced mobile networks, devices services and applications in the world. As long as spectrum is made available, this cycle will never end.
Spectrum Shortfall Consequences

• While it is impossible to identify with precision all of the potential harms of not bringing sufficient spectrum to market, Peter Rysavy, an analyst says:
  – Not being able to augment capacity through additional spectrum will have multiple adverse consequences:
    • Networks will perform at lower levels and be less reliable
    • Service plans will change
    • The vibrant cycle of innovation in the wireless ecosystem will stall.\(^50\)
  – This spectrum drought could lead to the U.S. ceding global leadership in mobile communications and computing to other countries.\(^50\)
  – This outcome could impact not only wireless innovation in the U.S. could also impact investment, job growth and improvement in our health care, education and energy sectors.\(^50\)
NBP on Spectrum

- Auctions generate billions of dollars in revenues to the U.S. Treasury.
  - 700 MHz and AWS—1 auctions raised ~$30B for the U.S. taxpayers

- National Broadband Plan identifies 300 MHz to be made available for commercial use by 2015:

<table>
<thead>
<tr>
<th>Band</th>
<th>Action/Timing</th>
<th>MHz Reallocated/Repurposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCS (2.3 GHz Band)</td>
<td>2010 Order</td>
<td>20</td>
</tr>
<tr>
<td>AWS-2/AWS-3</td>
<td>2010 Order</td>
<td>60</td>
</tr>
<tr>
<td>700 MHz D Block</td>
<td>2010 Order</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2011 Auction</td>
<td></td>
</tr>
<tr>
<td>MSS</td>
<td>2010 Order (L-Band and Big LEO)</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(L Band: SkyTerra and Inmarsat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Big LEO: DBSD and TerreStar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2011 Order (S-Band)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(S Band: Globalstar and Iridium)</td>
<td></td>
</tr>
<tr>
<td>Broadcast TV</td>
<td>2011 Order</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>2012/13 Auction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2015 Clearing</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>300</td>
</tr>
</tbody>
</table>
# Spectrum Availability & Pipeline

## Mid-Year 2011

<table>
<thead>
<tr>
<th>Subscribers**</th>
<th>USA</th>
<th>Japan</th>
<th>Germany</th>
<th>U.K.</th>
<th>France</th>
<th>Italy</th>
<th>Canada</th>
<th>Spain</th>
<th>S. Korea</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>322.8M</td>
<td>121.9M</td>
<td>109.8M</td>
<td>75.7M</td>
<td>63.2M</td>
<td>91.2M</td>
<td>25.7M</td>
<td>57.3M</td>
<td>51.8M</td>
<td>95.1M</td>
<td></td>
</tr>
</tbody>
</table>

| Average Consumers’ Minutes of Use per Month** | 777 | 136 | 130 | 195 | 231 | 161 | 369 | 149 | 303 | 191 |

| Average Revenue per Minute – A Measure of the Effective Price per Voice Minute** | $0.03 | $0.21 | $0.10 | $0.10 | $0.13 | $0.11 | $0.11 | $0.16 | $0.08 | $0.04 |

| Efficient Use of Spectrum -- Subscribers Served per MHz of Spectrum Allocated | 788,418 | 351,297 | 178,537 | 201,867 | 168,800 | 243,200 | 95,185 | 91,680 | 191,852 | 365,769 |

## SpectrumAssigned for Commercial Wireless Use***

<table>
<thead>
<tr>
<th>Spectrum Assigned for Commercial Wireless Use***</th>
<th>409.5 MHz*</th>
<th>347 MHz</th>
<th>615 MHz</th>
<th>375 MHz</th>
<th>375 MHz</th>
<th>270 MHz</th>
<th>625 MHz</th>
<th>270 MHz</th>
<th>260 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially Usable Spectrum/In the Pipeline***</td>
<td>50 MHz</td>
<td>400 MHz</td>
<td>Recently auctioned 350 MHz</td>
<td>310 MHz</td>
<td>250 MHz</td>
<td>250 MHz</td>
<td>up to 200 MHz</td>
<td>59.6 MHz (Recently auctioned 250 MHz)</td>
<td>120 MHz</td>
</tr>
</tbody>
</table>

*Figure includes AWS-1, 700 MHz spectrum not yet in use and 55.5 MHz of spectrum at 2.5 GHz.

CTIA’s Position

• We’ve identified the following areas for the FCC that are ripe for reallocation:
  – Broadcast spectrum
  – Government spectrum
  – Spectrum below 3 GHz that is currently allocated for fixed wireless use
  – Spectrum allocated to U.S. satellite providers

• CTIA encourages policymakers to focus its efforts on spectrum that is:
  – Between 400 MHz and 3 GHz
  – Available in large, contiguous blocks
  – Adjacent to current spectrum allocations
  – Internationally harmonized
Wireless Taxes & Fees
Wireless Taxes & Fees

• Average taxes and fees on wireless consumers is >16.3%, compared to an average general business tax of 7.4%.\(^{75}\)
  – 47 states and the District of Columbia impose local, state and federal taxes and fees higher than other taxable goods and services.\(^{75}\)
  – 22 states and the District of Columbia discriminate against wireless customers by taxing them more than 15%.\(^{75}\)
    • Nebraska (23.69%); Washington (23%); New York (22.83%); Florida (21.62%); Illinois (20.90%); Rhode Island (19.67%); Missouri (19.28%); Pennsylvania (19.13%); Kansas (18.39%); Texas (17.48%); Maryland (17.28%); Utah (17.21%); South Dakota (17.07%); Arizona (17.02%); Washington, DC (16.63%); Tennessee (16.63%); Arkansas (16.12%); Oklahoma (15.79%); North Dakota (15.73%); California (15.72%); New Mexico (15.57%); Kentucky (15.47%); and Colorado (15.45%).

• Center for Disease Control’s semi-annual survey illustrates how high wireless taxes place the greatest burden on those Americans who can least afford it.\(^{76}\)
  – Adults living in poverty (46.8%) and adults living near poverty (38.1%) were more likely than higher income adults (27.7%) to be living in wireless-only households.\(^{76}\)

• Consumer bills based on Primary Place of Use (PPU). This is the street address (business or residence) where the consumer's usage occurs. It is not based on billing address.
Wireless Tax Fairness Act of 2011 (H.R. 1002/S. 543)

• Wireless Tax Fairness Act of 2011 (H.R. 1002/S. 543) would protect consumers from new taxes, fees and surcharges.
  – The bill would protect consumers from new discriminatory state and local wireless taxes and fees for five years while state and local governments reform their existing tax systems.
  – If state or local governments choose to increase taxes and fees for all other goods and services, then wireless taxes may increase. This bill would prevent singling out wireless consumers from being unfairly taxed.

• The U.S. House of Representatives passed the bipartisan "Wireless Tax Fairness Act of 2011" (H.R.1002) in November 2011.
  – U.S. Senate companion bill (S. 543) is under consideration.
Digital Goods and Services Tax Fairness Act (H.R. 1860; S. 971)

• As consumers increasingly choose to download goods (e.g. games, eBooks, apps, etc.), state and local governments are taxing these purchases more (and sometimes multiple times) than if the same items were purchase in-person at a store.

• The Digital Goods and Services Tax Fairness Act (H.R. 1860; S. 971) would establish a national framework to prevent multiple and discriminatory taxation of digital goods and services. It provides tax administrators and consumers a better understanding of how digital commerce should be taxed while continuing to encourage digital commerce to flourish, supporting hundreds of thousands jobs and the U.S. economy.

• The bill has received broad bipartisan support in Congress. Its passage would prevent the unfair and discriminatory taxes on wireless goods and services.
Enhanced 911 (E-911)
E-911 Fee & Fund-raiding

• More than 400,000 wireless E-911 calls are made every single day, or almost 278 calls every minute.\(^{26}\)

• States and localities impose 911 fees on wireless consumers to support and maintain these local 911 services.

• National average is $0.75 per month per line; wireless carriers remit more than $2 billion per year in 911 fees.\(^{77}\)

• Fund-raiding:
  – Many states have misappropriated dedicated 911 fees for non-911 or general purposes.
  – ENHANCE 911 Act and NET 911 Improvement Act prohibit raiding but there is no strict enforcement.
  – In a 2011 FCC report that covers 2010, there were 7 states that used some or all of the E-911 funds to support non-911 programs.\(^{78}\)
    • Arizona, Illinois, Oregon and Rhode Island diverted 911 fees to their state’s general fund.
    • South Dakota did not provide disclosure information.
    • Virginia and West Virginia used the diverted E-911 fees for other public safety-related purposes.
Responsible Use
Responsible Use – Kids and Devices

• Mobile Ownership by Children and Teens: \(^{79}\)
  – 75% of children ages 12 to 17 regularly use a cellphone.
  – 57% of teens somewhat/strongly agree having a mobile phone has improved the quality of their life.
  – For children ages 13 to 17:
    • 25.5% used a mobile browser to access news or information;
    • 32.2% took photos weekly and 66.8 percent took photos monthly;
    • 12.1% captured video weekly and 34.7 percent captured video monthly;
    • 21.3% uploaded photos to the web monthly; and
    • 19.8% used email monthly.
  – 98% of parents of cell-owning teens say a major reason their child has the phone is that they can be in touch, regardless of the teen’s location.

• Mobile Behavioral Issues: \(^{79}\)
  – 26% have been bullied or harassed through text messages and phone calls.
  – One in three texting teens ages 16 to 17 say they have texted while driving.
Responsible Use Continued

• CTIA is committed to help protect America’s next-gen wireless users by educating parents and teachers with tools and resources to help kids make safe and responsible choices when using their wireless devices and services.
  – In 2010, CTIA launched the “Be Smart. Be Fair, Be Safe: Wireless Responsible Use” (www.besmartwireless.com). The site has has reached >6 million teachers, students and parents.
    • Offers responsible mobile behavior and driving initiatives.
    • Lesson plans for educators.

• “CTIA Mobile Application Rating System with ESRB” provides parents and consumers with reliable information so that parents and guardians may make decisions about the age-appropriateness of applications. The rating system uses well-known and trusted ESRB age rating icons.
Universal Service Fund
Universal Service Fund (USF)

- Created by the FCC in 1997 and reformed in October 2011 to promote quality and affordable telecommunications services for all consumers.
  - Increased access to telecommunication services in remote locations, schools, libraries and rural health care facilities.
  - 2011 high cost universal service reforms include creation of a $300 million dedicated Mobility Fund that makes significant funds potentially available through 2014. However, this sets the long-term funding-level for mobile services at only 11 percent of the high cost fund, failing to acknowledge the fact that consumers are migrating to mobile broadband services.

- Programs:
  - Lifeline Program subsidizes basic cellphone service for low-income consumers. Reformed in January 2012 to address concerns about waste, fraud and abuse and to create a database to verify customer eligibility.
  - Link-Up Program offers reduced fees for installation and startup fees for wireline and wireless services.

- Paid for by consumers paying out about $8.7 billion in 2011.

- In January 2012, FCC voted to reform the outdated intercarrier compensation to reflect IP-based and mobile communication technologies used today.
Wireless Sustainability
Sustainability

• CTIA carrier and supplier members are becoming more environmentally responsible.
  – Some members have saved up to 70% in their energy costs and have significantly reduced their carbon dioxide (CO2) emissions.
  – Members have saved tons of CO2 emissions and fuel consumption by increasing the number of service and passenger alternative-fuel vehicles.
  – Wireless companies have implemented waste reduction and recycling programs, started commuter/telework programs encouraging employees to carpool or work from home, and created sustainable ecological offices that use renewable energy and are more efficient.
  – Companies have started using e-billing systems to reduce carbon footprint.

• April 2011, CTIA launched go wireless go green (www.gowirelessgogreen.com) to help educate consumers and policy makers by:
  – Providing useful information about measures consumers can take to be more environmentally responsible.
  – Informing consumers of CTIA members’ initiatives to improve their operations to be more sustainable.
  – Acknowledging the eco-friendly value wireless provides to other industries.
Sustainability Continued

• All businesses can benefit from wireless technology:
  – Businesses are saving billions of dollars and reducing their environmental footprint through implementing wireless technology:
    • Millions are saved by wirelessly submitting work orders, customer forms and credit card payments.
    • Wireless monitoring offers real-time management of fleets (such as delivery vehicles, school buses or farm equipment) which has the potential to reduce CO2 emissions by about 36 million metric tons (MT) per year, equivalent to annual greenhouse gas emissions from about 6 million passenger vehicles or energy use of 3 million U.S. homes.
    • Wireless networks connect appliances and smart meters to the smart grid, which has the potential to save 360 million MT of CO2 (equivalent to the greenhouse gas emissions from about 70 million passenger vehicles or the energy use of 30 million U.S. homes) and $15 billion to $35 billion by 2020.
    • Wireless data provides farmers with actionable knowledge about more precise and resourceful farming techniques. Studies suggest that precision agriculture could conserve water by up to 50 percent and reduce use of fertilizers and pesticides, allowing crop yields to improve while decreasing environmental costs.
Safe Driving
Safe Driving

• Mobile devices are one of the greatest public safety tools (more than 400,000 wireless E-911 calls made every day), but we believe there are appropriate and inappropriate times to use them.

• Consumers should make their own decision about what legislation they support at the state and local levels—whether that’s hands-free or bans on talking on their mobile device while driving.

• Support ban on manual texting and emailing while driving
  – Worked with Dept. of Transportation, National Conference of State Legislatures, the American Legislative Exchange Council and other state organizations to develop model legislation (http://ssl.csg.org/SSLinnovationsblogs/DOTTexting_Law_021910.pdf).

• Support wireless restrictions or limits for inexperienced or novice drivers
  – Developed with the National Safety Council our teen-focused TV PSA—“On the Road, Off the Phone” (www.onroadoffphone.org).
Safe Driving Continued

• We call for a 3-prong solution:
  1. **Legislation** – Worked with the U.S. Department of Transportation, the National Conference of State Legislatures, the American Legislative Exchange Council and other state organizations to craft model legislation that could be adopted across the country that would prohibit manual texting and emailing while driving.
  2. **Technology** – Support but caution that it cannot be based on inflexible mandates that could stifle innovation. They must also be affordable and consumer-friendly.
  3. **Education** – This is vital. Agree with DOT Secretary LaHood that personal responsibility is important and every single person needs to be aware about the serious dangers and possible consequences of texting and driving.

• CTIA and its members have been education consumers about the dangers of distracted driving since 1997.
  – Developed pocket-sized brochure using the phrase “BE SAFE” as an acronym to provide 6 simple tips for drivers: (http://files.ctia.org/pdf/032012SafeDriving.pdf)
Safe Driving Continued

• CTIA & National Safety Council Teen-Focused PSAs "On the Road, Off the Phone"

• TV
  http://www.youtube.com/watch?v=7Uf-XZODtXw

• Radio
  http://www.youtube.com/watch?v=wtC14qfAS1U
Wireless Industry: Timeline
Wireless Industry Highlights

• Oct. 13, 1983 – The first commercial cell phone service was operational in Chicago.

• Dec. 1983 – Baltimore/Washington, DC corridor was the 2nd commercial service system to be activated.

• 1984 – CTIA (then known as Cellular Telecommunications Industry Association) was founded.

• 1985 – 340,213 subscribers; total revenue was $482.4 million; carriers directly employed almost 3,000 people.

• 1987 – Cell phone industry tops $1 billion in revenue.

• 1988 – Average consumer used his/her phone for 122 minutes per month, paying $98.02.

• 1992 – World’s first commercial text message sent by Logica CMG employees.
Wireless Industry Highlights Continued

1995 – 33.8 million subscribers using 37.8 billion minutes; total revenue was $19 billion; carriers directly employed almost 68,000.

1996 – U.S. has 44 million cell phone users at year-end.

1998 – First “bucket” of minutes plan offered. 53

2000 – 109 million subscribers using 258.8 billion minutes; total revenue was $52.5 billion; industry directly/indirectly employed 1 million Americans.

2001 – Average consumer used his/her phone for 384 minutes per month, and the average wireless bill was $45.56.


2004 – U.S. has 180 million wireless subscribers.
Wireless Industry Highlights Continued

• 2005 – 207.9 million subscribers using 1.5 trillion minutes; 81 billion SMS messages sent and received; total revenue was $113.5 billion; carriers directly employed 233,067 Americans.

• 2007 – U.S. wireless services delivered nearly $100 billion in "valued added" contributions to the U.S. GDP.

• 2008 – 270.3 million subscribers using 2.2 trillion minutes; 1 trillion SMS messages sent and received; total revenue was $148.1 billion; industry directly/indirectly employed 2.4 million Americans.54
  – The average monthly minutes-of-use was 829 (Merrill Lynch) and the average wireless bill was $50.07.2
  – Jul – Apple iTunes App Store was launched = >65,000 apps.12
  – Oct – Android Market = >1,000 apps.12
Wireless Industry Highlights Continued

• 2009
  – There are more than 285.6 million U.S. wireless subscriber connections which is approximately 91% of the total U.S. population.
  – Wireless subscribers use more than 6.2 billion minutes per day (2.275 trillion for the year) and more than 5 billion SMS messages per day (1.563 trillion for the year). More than 34 billion MMS sent and received.
  – Data traffic on wireless networks for the last six months was 107.8 MB.
  – Palm Software Store (January), BlackBerry App World (April), Nokia Ovi Store (May), Palm App Catalog (June) and Windows Mobile Marketplace (July) application stores open.
Wireless Industry Highlights Continued

• 2010
  – HTC Supersonic 4G phone for Sprint introduced at International CTIA WIRELESS (March)
  – After the devastating January earthquake in Port-au-Prince, Haiti, a record-breaking $35 million is donated via text message.
  – FCC proposes National Broadband Plan, recommending 500 MHz of spectrum be allocated for commercial wireless use by 2020.
  – In June, President Obama signs a memorandum committing to freeing up 500 MHz of spectrum for the wireless industry.

• 2011
  – CTIA unveils redesigned AccessWireless.org at International CTIA WIRELESS; site wins FCC Chairman’s Award for Advancement in Accessibility in October 2011.
  – CTIA launches “go wireless, go green” website on Earth Day.
  – There are more than 322.8 million U.S. wireless subscriber connections, which is more than 102% of the total U.S. population.
  – More than 31.6% of U.S. households are wireless-only.
  – January – June 2011: U.S. wireless consumers used more than 1.1 trillion voice minutes; exchanged more than 1.1 trillion text messages and sent 388 billion MB.
Wireless Policy Milestones

• 1912 – **Radio Act of 1912** – Served as the first federal statute to establish a structure for spectrum management and authorized the Secretary of Commerce to issue radio licenses.

• 1927 – **Radio Act of 1927** – Congress transferred radio licensing authority from the Department of Commerce to the Federal Radio Commission (FRC), which issued and revoked licenses, assigned radio frequencies and regulated transmission power levels.

• 1934 – **Communications Act of 1934** – Replaced the FRC with the Federal Communications Commission (FCC) to regulate interstate communication by wire and radio.

• 1981 – **Cellular Communications Systems Order** – FCC determined the cellular industry should have two carriers per market and creates cellular “A” and “B” licenses for each area of the country.
Wireless Policy Milestones Continued

• 1982 – *Communications Amendments Act of 1982* – Congress gave the FCC authority to issue licenses by lottery and required applicants to meet certain minimal conditions.

• 1988 – *Auxiliary Cellular Services Order* – FCC adopted technical flexibility rules for cellular radio without mandating specific standards, which permitted the introduction of advanced cellular technologies by the industry.

• 1993 – *Omnibus Budget Reconciliation Act* – Congress authorized the FCC to auction spectrum licenses, granted the FCC broad authority to forbear from applying unnecessary regulation and preempted state regulation of wireless rates and entry.

• 1996 – *Telecommunications Act* – Congress established a national framework for wireless tower siting.

• 1997 – *Balanced Budget Act* – Congress directed the FCC to reallocate spectrum in the 700 MHz band to commercial and public safety from its previous use for television broadcasting, resulting in the auctioning of recaptured spectrum.
Wireless Policy Milestones Continued

• 1999 – **Wireless Communications and Public Safety Act of 1999** – The FCC designated 911 as the universal emergency number for wireline and wireless service and promoted the use of technologies that help public safety service providers locate wireless 911 callers.

• 2003 – **Secondary Markets Order** – The FCC created a “secondary market” which permitted licensees to lease any amount of their spectrum.

• 2004 – **Commercial Spectrum Enhancement Act** – Congress created the Spectrum Relocation Fund, financed by auction proceeds, to recover the costs associated with relocating radio communication systems from certain bands.

• 2005 – **Deficit Reduction Act** – Congress required television broadcasters to terminate their analog broadcasts on February 18, 2009 and extended the FCC’s auction authority through the end of fiscal year 2011.

• 2012 - **Middle Class Tax Relief and Job Creation Act** - Authorizes the FCC to conduct incentive auctions to make bands currently occupied by television broadcasters available for wireless broadband as well as provisions on tower siting and antennas.
Additional Resources/Social Networks

• CTIA’s Position on Policy Topics: http://www.ctia.org/advocacy/policy_topics/

• CTIA’s FCC filings: http://www.ctia.org/advocacy/filings/

• CTIA’s Blog: http://www.ctia.org/blog/

• CTIA’s website: http://www.ctia.org/

• CTIA LinkedIn: http://www.linkedin.com/groups?gid=4109608&trk=myg_ugrp_ovr

• CTIA Twitter: @ctia

• CTIA Facebook: www.facebook.com/CTIAthewirelessassoc

• CTIA YouTube: http://www.youtube.com/user/CTIATheWirelessAssoc

• CTIA Flickr: http://www.flickr.com/photos/ctia/
Appendix

Appendix Continued


26. CTIA Research


Appendix Continued


54. Bank of America/Merrill Lynch, “Global Wireless Matrix 3Q11”.


66. Indystar, “Purdue students use iPad app to give autistic kids a voice,” April 2012. Available at http://www.indystar.com/article/20120402/NEWS04/204020352/Purdue-students-use-iPad-app-give-autistic-kids-voice


Appendix Continued


77. CTIA Comments to the FCC on State 911/E911 Fees and Expenditures. Available at http://files.ctia.org/pdf/filings/111206_FILED_CTIA_911_Fund_Diversion_PN_Comments.pdf

