



# PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION

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## WIRELESS TELECOMMUNICATIONS BUREAU SEEKS COMMENT ON THE STATE OF MOBILE WIRELESS COMPETITION

**WT Docket No. 10-133**

**Comments Due: July 30, 2010**

**Reply Comments Due: August 16, 2010**

This Public Notice (*Notice*) solicits input and data on mobile wireless competition for the Federal Communications Commission's (Commission) Fifteenth Annual Report on the State of Competition in Mobile Wireless, including Commercial Mobile Radio Services (*Fifteenth Report*). The Commission is required to submit annual reports to Congress analyzing competitive conditions with respect to commercial mobile services.<sup>1</sup> On May 20, 2010, the Commission released its Fourteenth Mobile Wireless Competition Report (*Fourteenth Report*).<sup>2</sup> With this *Notice*, the Wireless Telecommunications Bureau (Bureau) seeks to update the information and metrics used in the *Fourteenth Report*, as well as to enhance the Commission's analysis of mobile wireless competition for the *Fifteenth Report*.

The *Fourteenth Report* incorporated new approaches to analyzing mobile wireless competition that reflect fundamental transformations in the mobile marketplace. For example, whereas previous *Competition Reports* analyzed Commercial Mobile Radio Service (CMRS) competition and discussed a variety of metrics, the *Fourteenth Report* integrated an analysis of CMRS into an analysis of all mobile wireless services, including voice, messaging, and broadband.<sup>3</sup> The *Fourteenth Report* also went beyond previous reports in analyzing, for the first time, competition across the entire mobile wireless ecosystem. It examined the role of "upstream" or "input" market segments – such as spectrum, infrastructure, and backhaul – as well as "downstream" or "edge" market segment – such as devices, operating systems, applications, and mobile commerce.<sup>4</sup>

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<sup>1</sup> See 47 U.S.C. § 332(c)(1)(C).

<sup>2</sup> Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services, WT Docket No. 09-66, *Fourteenth Report*, FCC 10-81 (rel. May 20, 2010) (*Fourteenth Report*).

<sup>3</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 8.

<sup>4</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 9-10.

*Analytic Framework.* Using the framework developed in preceding *Competition Reports*,<sup>5</sup> the *Fourteenth Report* reviewed competition in the mobile wireless services industry by grouping indicators into four categories: (1) industry structure; (2) provider conduct; (3) market performance; and (4) consumer behavior.<sup>6</sup> This *Notice* therefore first seeks data and input on mobile wireless services according to that framework. The *Notice* also seeks comment, in subsequent sections, on input and downstream segments, intermodal competition, urban-rural comparisons, and international comparisons, using a structure that mirrors that of the *Fourteenth Report*. We request that commenters provide, to the extent possible, information and insights on competition across the mobile wireless ecosystem using this framework. However, we also ask parties to comment on whether the framework used in the *Fourteenth Report* was adequate for analyzing mobile wireless competition, or whether changes should be made for the *Fifteenth Report*.

*Data.* The Commission is constantly striving to improve and refine the way it collects, analyzes, and reports industry data. For instance, the *Fourteenth Report*, as discussed below, included an analysis of new metrics such as net subscriber additions, investment, and profitability. For the *Fifteenth Report*, the Bureau is seeking to increase further its understanding of competitive conditions in the mobile wireless industry. In particular, we are interested in obtaining data and metrics that quantify the importance of mobile data and mobile broadband services; these would include detailed, comprehensive, historical measurements of mobile data traffic, usage, subscribers, and devices.<sup>7</sup> This *Public Notice* contains a series of questions asking for data and analytic recommendations related to that effort.

The information used in the competitive analysis in the *Fourteenth Report* was derived from various sources including comments, American Roamer,<sup>8</sup> industry associations, financial industry analysts, company filings and news releases, Security and Exchange Commission filings, trade publications, industry trade and press releases, research firms' publicly-available data, university researchers and scholarly publications, and vendor market product releases and white papers. Are there other sources of data, especially quantitative data, that the Commission can use to perform a comprehensive analysis of mobile wireless competition?

For the *Fifteenth Report*, we request that commenters submit data and statistics for the calendar-year 2009 time period, as well as information on any trends and developments that have occurred during 2009 or 2010. In particular, we seek information on events or developments that arose after early 2010 and were therefore not discussed in the *Fourteenth Report*.

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<sup>5</sup> Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, *Ninth Report*, 19 FCC Rcd 20597 (2004); *Tenth Report*, 20 FCC Rcd 15908 (2005); *Eleventh Report*, 21 FCC Rcd 10947 (2006) (*Eleventh Report*); *Twelfth Report*, 23 FCC Rcd 2241 (*Twelfth Report*); *Thirteenth Report*, 24 FCC Rcd 6185 (WTB 2009) (*Thirteenth Report*). The *Competition Reports* can also be found on the FCC's web site at <http://wireless.fcc.gov/cmrsreports.html>.

<sup>6</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 12.

<sup>7</sup> We note that the Commission has announced plans to initiate a rulemaking during the fourth quarter of 2010 to develop rules to, among other things, collect and analyze more detailed and accurate industry-wide data on several key broadband metrics, including subscribership, actual availability, penetration, performance, prices, churn, and bundles. See <http://www.broadband.gov/plan/broadband-action-agenda.html>.

<sup>8</sup> American Roamer is an independent consulting firm that produces coverage maps based on public sources as well as confidential information supplied directly by service providers. See *Twelfth Report*, 23 FCC Rcd at 2261, ¶ 35, n. 61.

Industry members, members of the public, and other interested parties are encouraged to submit information, comments, and analyses regarding mobile wireless competition. Commenters desiring confidential treatment of their submissions should request that their submission, or a specific part thereof, be withheld from public inspection.<sup>9</sup> In order to facilitate its analysis of competitive trends over time, the Bureau requests that parties submit current data as well as historic data that are comparable over time.

## **I. MOBILE WIRELESS SERVICES: INDUSTRY STRUCTURE**

The Bureau's analysis of market structure in the *Fourteenth Report* focused on the deployment of mobile wireless networks, the current level of concentration, the ease or difficulty with which new providers can enter the marketplace, and the conditions under which providers exit the sector.<sup>10</sup> We invite commenters to address the sources of data and the analysis of metrics and information relating to the various aspects of industry structure outlined below.

### **A. Mobile Wireless Service Providers and Service Provision**

Since the *Twelfth Report*, the Commission has used data from American Roamer to analyze the extent of mobile wireless network deployment and competition.<sup>11</sup> This data source provides the Commission with a set of maps of the boundaries of the network coverage areas of every operational, facilities-based, terrestrial mobile wireless provider in the United States and its territories. Using these maps, the Commission is able to estimate (1) the percentage of the U.S. population covered by a certain number of providers, and (2) the percentage of the population covered by different types of network technologies. While this analysis provides a quantitative baseline that can be compared across network types, technologies, and providers over time, it has drawbacks. As noted in the *Fourteenth Report*, the American Roamer analysis likely overstates the coverage actually experienced by consumers, because American Roamer reports advertised coverage as reported to it by many mobile wireless service providers, each of which uses a different definition of coverage.<sup>12</sup> In addition, the data do not expressly account for factors such as signal strength, bit rate, or in-building coverage, and they may convey a false sense of consistency across geographic areas and service providers. We ask commenters to address the extent to which the limitations of the American Roamer data affect the Commission's analysis of the data.

For the *Fifteenth Report*, the Commission will be able to supplement its existing data on mobile data network coverage, available through American Roamer, with data supplied under the revised Form 477 Local Competition and Broadband Reporting requirements. Since March 2009, providers of mobile wireless high-speed services have been required to report the Census Tracts that best represent their broadband service footprint for each of the speed tiers in which they offer service.<sup>13</sup> We seek comment

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<sup>9</sup> 47 C.F.R. § 0.459.

<sup>10</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 20-67.

<sup>11</sup> American Roamer is an independent consulting firm that produces coverage maps based on public sources as well as confidential information supplied directly by service providers. See *Twelfth Report*, 23 FCC Rcd at 2261, ¶ 35, n. 61.

<sup>12</sup> See *Fourteenth Report*, FCC 10-81 at n. 5.

<sup>13</sup> Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Subscriber Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriber Data, *Report and Order and Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9691 (2008) (*Broadband Data Order*). Mobile wireless high-speed providers are also required to report the total number of mobile high-speed subscribers and mobile high-speed capable devices in the state.

on the usefulness of the Form 477 data in analyzing mobile wireless competition.<sup>14</sup>

We note that, on June 1, 2010, the Commission's Consumer and Governmental Affairs Bureau (CGB) sought comment on ways to measure mobile broadband network and performance, and noted that "[w]hile existing data on mobile broadband services are helpful, gaps remain."<sup>15</sup> The Commission also will be receiving, through the National Telecommunications and Information Administration (NTIA), data on the deployment and performance of fixed and mobile broadband services at the state level as part of NTIA's State Broadband Data and Development Grant Program.<sup>16</sup> We request input from commenters on the most effective ways to incorporate the information received in response to these efforts into the Commission's analysis of mobile wireless competition for the *Fifteenth Report*.

Are there additional sources of data that can be used to examine mobile wireless service availability and network deployment? Are there additional analyses of competition that the Commission should perform using the American Roamer data or other data sources? How can the Commission further develop and refine its understanding of mobile voice and broadband availability and deployment? In particular, we seek detailed, disaggregated information from service providers on the current deployment of specific mobile broadband network technologies, such as Wideband Code Division Multiple Access (WCDMA), High-Speed Packet Access (HSPA), Evolution Data-Optimized (EV-DO) or EV-DO Rev A, Long Term Evolution (LTE) and WiMax 802.16e-2005 (WiMax). At what stage of deployment are these various technologies, and what changes have occurred over the past year?

## **B. Other Mobile Wireless Providers**

### **1. Resale/MVNO Providers**

The *Fourteenth Report* included a discussion of the major resellers/Mobile Virtual Network Operators (MVNOs) in the United States and reported that there were at least 60 operational MVNOs.<sup>17</sup> For the *Fifteenth Report*, we seek to update this information. We also ask for comment on the extent to which MVNOs and resellers are creating competitive pressures in the mobile wireless services sector? How many subscribers do these companies have, and how has this changed in 2009 and 2010? From the consumer's perspective, what are the benefits of buying from a reseller/MVNO versus a facilities-based provider? Are resellers/MVNOs selling to specific demographic segments? In what other ways has the MVNO sector evolved during 2009 and 2010?

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<sup>14</sup> We note that the National Broadband Plan recommended further improvements to the Commission's Form 477 data collection, including collecting broadband availability data at the census block level by provider, technology, and offered speed. The Plan recommended that availability for mobile service be defined in terms of coverage specifications determined by the Commission and include information on spectrum used by facilities-based providers. See *Connecting America: The National Broadband Plan*, FCC, at Recommendation 4.2 (rel. Mar. 16, 2010), available at [www.broadband.gov](http://www.broadband.gov).

<sup>15</sup> "Comment Sought on Measurement of Mobile Broadband Network Performance and Coverage," CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36, *Public Notice*, DA 10-988, at 3 (rel. Jun. 1, 2010).

<sup>16</sup> *NTIA Unveils Program to Help States Map Internet Infrastructure*, Press Release, NTIA, July 1, 2009, available at [http://www.ntia.doc.gov/press/2009/BTOP\\_mapping\\_090701.html](http://www.ntia.doc.gov/press/2009/BTOP_mapping_090701.html); *NTIA to Accept Updated Grant Applications from States for Broadband Improvement and Mapping Activities*, Press Release, NTIA, May 28, 2010, available at [http://www.ntia.doc.gov/press/2010/SBDDNewWindow\\_05282010.html](http://www.ntia.doc.gov/press/2010/SBDDNewWindow_05282010.html). NTIA is required to produce and make publicly available a comprehensive, interactive national broadband map by February 17, 2011. *Id.*

<sup>17</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 31-34.

## 2. Mobile Satellite Service Providers

The Bureau seeks information about the role of mobile satellite service (MSS) providers in the mobile wireless services industry.<sup>18</sup> The *Fourteenth Report* stated that, while both terrestrial mobile wireless service providers and satellite mobile wireless service providers provide mobile wireless voice and data services, terrestrial mobile wireless services and MSS have different characteristics and involve different consumer benefits, coverage, prices, product acceptance, and distribution methods.<sup>19</sup> MSS services are generally targeted to users that require service in remote areas, in disaster response situation, or other places where terrestrial mobile wireless network access may be limited. The *Fourteenth Report* also noted that terrestrial mobile wireless services and MSS are not perfectly interchangeable, appear to be imperfect substitutes for one another, and appeal to different market segments.<sup>20</sup> How has this changed during 2009 and 2010? To what extent are mobile wireless service provided by MSS a substitute for or complement to terrestrial mobile wireless services? What mobile wireless services are being offered using Ancillary Terrestrial Component (ATC) authority by MSS companies? To what extent are MSS operators providing broadband services, and how is this affecting mobile broadband competition?

### C. Horizontal Concentration

In the *Fourteenth Report*, as in previous *Competition Reports*, the Commission analyzed horizontal concentration in the mobile wireless industry by the calculating the Herfindahl-Hirschman Index (HHI) for each Economic Area (EA) in the United States, and determining an average HHI, weighted by EA population, for the entire country.<sup>21</sup> The data source used for this calculation is the Numbering Resource Utilization / Forecast (NRUF) data that are submitted to the Commission on a rate center basis.<sup>22</sup> NRUF tracks the number of phone numbers that have been assigned to mobile wireless devices and therefore serves as a proxy for mobile wireless subscribers.<sup>23</sup> We seek comment on the usefulness of the HHI index

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<sup>18</sup> To the extent that satellite providers offer mobile voice and data services that compete with terrestrial commercial mobile wireless services, such satellite-based services will be included in the Commission's analysis of competitive market conditions with respect to mobile wireless. All other competitive issues related to satellite communications will be examined in the Commission's annual reports on the status of competition in the satellite services market. See "IB Invites Comment for Third Annual Report to Congress on Status of Competition in the Satellite Services Market," IB Docket No. 09-16, *Public Notice*, 24 FCC Rcd 5424 (IB 2009).

<sup>19</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 37.

<sup>20</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 37.

<sup>21</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 49-51. EAs are defined by the U. S. Department of Commerce's Bureau of Economic Analysis. See *Twelfth Report*, 23 FCC Rcd at 2331, n. 564.

<sup>22</sup> Rate center boundaries are much smaller than, and not coextensive with, mobile telecommunications license boundaries such as Cellular Market Areas (CMAs), Metropolitan Trading Areas (MTAs), or Basic Trading Areas (BTAs). Due to their relatively small size, rate centers are not necessarily indicative of where a mobile telecommunications subscriber lives, works, or uses a mobile telecommunications device. In addition, in order to protect the confidentiality of the companies submitting NRUF data, the Commission does not report the number of subscribers for geographic areas in which there are three or fewer providers.

<sup>23</sup> The Commission estimates the number of mobile wireless subscribers by counting the number of telephone numbers that have been assigned to end users by mobile wireless providers using NRUF submissions. See *Thirteenth Report*, 24 FCC Rcd at 6278-79, ¶ 196 & n. 551. In NRUF, carriers do not report numbers that have been ported to them. Therefore, in order to develop an estimate of mobile wireless subscribership, it is necessary to adjust the raw NRUF data to account for mobile wireless subscribers who have transferred their wireline numbers to wireless accounts. Porting adjustments are developed from the telephone number porting databases managed by Neustar, acting as the administrator of the regional Number Portability Administration Centers (NPACs). The databases contain all ported numbers currently in service. They also contain information about when the number was most recently ported (to a carrier other than the carrier to which the number originally was assigned) or, in some (continued ...)

in measuring industry concentration and competition, the relationship between concentration and competition, and whether there are other ways the Commission should analyze concentration in the mobile wireless industry. The Bureau also asks whether EAs continue to be an appropriate geographic area for the calculation of HHI measures based on NRUF data in the *Fifteenth Report* or whether a more disaggregated geographic area should be used.

The *Fourteenth Report* noted that the average HHI (weighted by EA population) increased 6.5 percent during 2008 and 32 percent from 2003 to 2008.<sup>24</sup> How has concentration in the mobile wireless services industry changed in 2009 and 2010? To what extent is increasing concentration the result of consolidation? How has increasing concentration affected the mobile wireless industry? Have consolidation and increasing concentration affected mobile data services differently than mobile voice services? Have they affected pricing, the roll-out of new services, or equipment offerings? Have they affected rural areas differently than urban areas?

One limitation of NRUF data is that they do not reveal whether mobile wireless subscribers use their handsets for mobile data as well as mobile voice services, and therefore cannot be used to estimate market shares or concentration in the mobile data sector. We seek data on the extent to which mobile wireless subscribers use their devices for both voice and data services, or for only one of the two types of services. We seek comment on whether data are available on mobile data provider market shares or concentration, and on how we might estimate such market shares.

#### **D. Entry and Exit Conditions**

As discussed in the *Fourteenth Report*, actual entry and exit in a market occur in the context of underlying regulatory, market, and technological conditions that directly influence the total number of firms that can compete successfully.<sup>25</sup> Barriers to entry in the mobile wireless services industry include various regulatory and non-regulatory factors, such as access to spectrum, tower siting policies, large sunk costs for network deployment, and the costs of marketing and distributing wireless services and devices.<sup>26</sup> The Bureau seeks comment on the effects of these and other types of barriers to entry in the mobile wireless industry. What are the most significant barriers to entry? Do barriers to entry vary across different market product segments or niches, or across different types of geographic areas?

#### **E. Recent Entry and Exit**

The Bureau requests information on market entry by mobile wireless service providers, as well as consolidation and other forms of market exit, that occurred over the past year. To what extent have new providers launched service in 2009 and 2010? Are other providers in the process of securing financing and building networks, with plans to begin offering service soon? To what extent have certain providers that offered service in some areas of the country entered new markets, including new cities as well as smaller towns or suburban areas surrounding larger urban areas?

Which mobile wireless service providers exited the market by being absorbed in an acquisition by another company during the past year? How has the pace of consolidation changed in 2009 and 2010? What are the reasons for consolidation by mobile wireless providers and the reasons for any changes in the pace of

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cases, when the database was updated to reflect a new area code. *Trends in Telephone Service*, FCC, Apr. 2005, at 8-2 – 8-3.

<sup>24</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 51.

<sup>25</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 56.

<sup>26</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 57.

consolidation?

## **II. MOBILE WIRELESS SERVICES: PROVIDER CONDUCT**

### **A. Price Rivalry**

For the *Fifteenth Report*, the Bureau seeks information on innovations or developments that have occurred with mobile wireless pricing plans during 2009 and 2010. Have such pricing innovations occurred throughout the mobile wireless industry, or have they been limited to certain types of services or a subset of providers? How are providers targeting different pricing plans to different types of consumers? To what extent do new types of pricing plans reflect price rivalry among mobile wireless service providers?

What pricing methods are providers using specifically to retain customers and reduce churn? What benefits or promotions are providers offering to repeat customers and those with long-term contracts? What developments have occurred with regard to customer retention pricing methods during 2009 and 2010?

What role does handset pricing play in mobile wireless competition? Do providers engage in rivalry via handset pricing? Has this changed in the last year?

The Bureau also seeks comment and information on trends related to the pricing of mobile data and broadband services offered by mobile wireless service providers. Are data on the pricing of these services available on a national or sub-national level? Have the ways in which providers price mobile data and broadband access changed in 2009 and 2010? How are providers pricing mobile Internet access subscriptions for non-voice devices such as laptops and modem cards, and how has this changed in the past year? Are there any reports or analyses that discuss pricing trends for mobile data services? How have such trends affected mobile data subscribership and use?

### **B. Non-Price Rivalry**

#### **1. Network Coverage and Technology Upgrades**

The Bureau requests information on the extent to which mobile wireless providers have upgraded, or plan to upgrade, their networks with technologies such as WCDMA, HSPA (including both High Speed Downlink Packet Access (HSDPA) and High Speed Uplink Packet Access (HSUPA)), EV-DO, EV-DO Rev A, EV-DO Rev B, WiMAX, LTE, and Ultra Mobile Broadband (UMB). Are there other technologies that service providers plan to deploy? In particular, we seek information from AWS-1 and 700 MHz licensees on whether they plan to use their spectrum to offer mobile broadband services and, if so, when and at what speeds. To what extent have licensees in these bands launched service in 2009 and 2010 using this spectrum? Is network and end-user equipment available for these bands? Are the services offered and networks deployed using this spectrum similar to or different from the services offered using other frequencies, such as Cellular and Broadband PCS?

As discussed in the *Fourteenth Report*, as of November 2009, EV-DO/EV-DO Rev. A networks covered 97.9 percent of the U.S. population, WCDMA/HSDPA networks covered 76.2 percent and Mobile WiMAX networks covered 9.8 percent.<sup>27</sup> Has there been further deployment of these three technologies? Have any providers launched additional mobile broadband technologies over the past year? How extensively have providers deployed advanced technologies in rural areas?

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<sup>27</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 122.

We seek information on the relative advantages and disadvantages of the various mobile network technologies, and the impact their differences have on competitive conditions in the mobile wireless industry. To what extent do Third and Fourth Generation (3G and 4G) network technologies improve providers' coverage, capacity, and/or service offerings? In addition, to what extent have providers integrated their mobile wireless network technologies with high-speed wireless local area network (WLAN) technologies such as Wi-Fi, with the aim of offering seamless mobile voice or data services?

## **2. Advertising, Marketing, Sales Expenditures, and Retailing**

As part of its examination of non-price rivalry in the mobile wireless industry, the *Fourteenth Report* discussed provider advertising expenditures, marketing campaigns, and retailing strategies.<sup>28</sup> The Bureau requests comment and updated information on the extent to which provider advertising, marketing, and retailing practices reflect competition in the mobile wireless marketplace. How much did individual providers, and the industry as a whole, spent on advertising and marketing in 2009? Have providers increased the amount of money spent on customer acquisition? How have advertising and marketing campaigns and practices changed during 2009 and 2010? In addition, what are the most popular retail channels used by mobile wireless providers, and how has this changed over the past year? Are different types of customers obtained through different retail channels, and how does this affect the various performance metrics used to analyze competition in the industry?

## **3. Differentiation in Mobile Wireless Handsets/Devices**

For the *Fifteenth Report*, we seek comment on the role of handsets and devices in competition among mobile wireless service providers.<sup>29</sup> The *Fourteenth Report* found that providers compete by introducing new handsets and devices, distinguishing their handset and device offerings from those of their competitors, responding to competitors' device innovations with rival offerings, offering certain device models on an exclusive basis, and allowing devices that they do not sell directly to be used on their networks.<sup>30</sup> Have these trends continued since the *Fourteenth Report*? How are providers using device innovations as a way to compete? Does the variety of available handsets differ significantly depending on where a subscriber lives?

The *Fourteenth Report* also discussed the increasing importance of device platforms and operating systems, and their accompanying application stores, to mobile wireless consumers.<sup>31</sup> How has the role of device operating systems changed since the *Fourteenth Report*? Have certain platforms increased or decreased in popularity and market share? To what extent are mobile wireless customers exhibiting loyalty to certain platforms, as opposed to particular devices or providers, and how is this affecting competition among mobile wireless service providers?

Finally, to what extent are equipment manufacturers and/or retailers selling products that, at least in part, rely on a wireless broadband connection but do not require a long-term contract? For instance,

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<sup>28</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 127-134.

<sup>29</sup> Issues related to handset exclusivity and the extent to which providers limit the types of handsets or other devices that can be attached to their networks are being examined by the Commission in a separate proceeding. See Rural Cellular Association Petition for Rulemaking Regarding Exclusivity Arrangements Between Commercial Wireless Carriers and Handset Manufacturers, filed May, 20, 2008; "Wireless Telecommunications Bureau Seeks Comment on Petition for Rulemaking Regarding Exclusivity Arrangements Between Commercial Wireless Carriers and Handset Manufacturers," RM No. 11497, *Public Notice*, 23 FCC Rcd 14873 (WTB 2008).

<sup>30</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 135.

<sup>31</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 141-143.



Amazon.com's Kindle device allows users to download reading materials wirelessly using AT&T's WCDMA/HSDPA network, but customers do not have a contract with AT&T or pay a monthly fee for access.<sup>32</sup> Have similar services become available over the past year? How many of these types of devices were in use at the end of 2009 or in mid-2010? How much revenue is generated from such devices, and how does their use affect competition in the mobile wireless services sector?

#### 4. Differentiation in Mobile Data Applications

The *Fourteenth Report* found that, as with handsets and devices, mobile wireless service providers also compete by differentiating from their rivals the applications that they allow and provide on their networks.<sup>33</sup> For the *Fifteenth Report*, the Bureau is interested in collecting updated information and analyses of the mobile data applications available on mobile wireless networks, and how consumers are able to access those applications. How are providers differentiating themselves from their rivals by the applications and Internet content that they offer or the level of choice that they allow? How have web browsers on smartphones and application stores affected the ability of mobile wireless service providers to differentiate themselves based on mobile data applications?

We request information from mobile wireless service providers on the processes they have implemented for allowing third-party applications to be used on their networks, and the specific ways in which they have restricted or expanded the types of applications that customers can access on their networks. To what extent have mobile wireless service providers prohibited certain applications from being used on their networks, and why? To what extent do mobile wireless service providers offer consumers a level of choice in content and applications that is similar to or greater than the level of choice available on other broadband technologies? What changes have occurred in this regard during 2009 and 2010?

### III. MOBILE WIRELESS SERVICES: PERFORMANCE

The *Fourteenth Report* included analyses of several new performance metrics, including net subscriber additions, profitability, and investment. It also examined certain metrics using data from a variety of sources and analyzing the data from several different perspectives. For example, when discussing subscribership levels, the *Fourteenth Report* included data on the total number of mobile wireless devices, the total number of data-capable handsets, and the total number of mobile high-speed subscribers, as well as the number of prepaid and postpaid subscribers and number of subscribers in different age cohorts.<sup>34</sup> The *Report* also analyzed investment levels by examining total investment, investment per subscriber, and investment as a percentage of total revenue.<sup>35</sup>

The Bureau intends to continue analyzing a range of mobile wireless performance metrics in the *Fifteenth Report*, including subscribership levels, penetration rates, net subscriber additions, usage levels, pricing levels and trends, revenue, investment, profitability, and network and service quality. Are there additional metrics that would enhance the Commission's analysis of the mobile wireless marketplace? Are there additional ways that existing data can be analyzed to provide further insight into the nature of mobile wireless competition? To the extent that commenters believe additional metrics should be included or additional analyses should be performed, we ask that they provide these data and explain these analyses. Are the additional metrics available on a national as well as a sub-national level?

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<sup>32</sup> Priya Ganapati, Gadget Lab – *Amazon Dumps Sprint for Kindle 2, Embraces AT&T*, WIRED, Oct. 23, 2009, available at <http://www.wired.com/gadgetlab/2009/10/sprint-kindle-att/>.

<sup>33</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 148.

<sup>34</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 155-168.

<sup>35</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 208-213.

## A. Subscribers

As mentioned above, the *Fourteenth Report* analyzed several different measures of mobile wireless subscribership levels and penetration rates, from a variety of data sources. The metrics included: total mobile wireless subscribers in the United States and by provider; mobile wireless high-speed subscribers and devices in use; data-capable, SMS-capable, and web-capable devices; wireless aircards and laptop cards; mobile data subscribers; mobile wireless subscribers by pricing plan; mobile wireless subscribers by age; smartphone and SMS adoption by age; and mobile wireless penetration rates by EA.<sup>36</sup>

The main source of data used by the Commission to calculate total mobile wireless subscribership and EA penetration rates is NRUF. As mentioned above, the NRUF data do not reveal whether mobile wireless subscribers use their devices only for voice, only for data, or for a mix of the two types of services. In addition, the increase in the use of various types of mobile wireless devices – particularly the number of non-voice devices, such as wireless modem cards, mobile broadband-enabled laptops and netbooks, e-readers, and telematics systems – has led to many consumers using more than one mobile wireless device with a phone number assigned to it and, hence, to penetration rates, based on NRUF data, exceeding 100 percent in certain EAs across the country. NRUF data also do not include demographic information about the subscribers with phone numbers assigned to them.<sup>37</sup> We seek comment on the limitations of the NRUF data in analyzing mobile wireless performance and competition. For example, when using NRUF data, the Commission is unable to determine how many people in the United States do not own a mobile wireless handset or device, versus the number of people who use multiple devices. Are there additional sources that the Commission should use to analyze mobile wireless subscribership?

A new resource used in the *Fourteenth Report* to produce a more accurate assessment of the extent to which consumers use mobile devices for high-speed Internet access service was the Commission's Form 477.<sup>38</sup> Under the revised Form 477 Local Telephone Competition and Broadband Reporting rules adopted in 2008, mobile wireless high-speed providers report their number of mobile high-speed subscribers by speed tier and on a state-by-state basis.<sup>39</sup> We note that the Form 477 data do not separately capture those mobile data users who do not have a subscription to a mobile broadband service.<sup>40</sup> We seek comment on the ways we can use the Form 477 data to analyze mobile wireless competition in the *Fifteenth Report*. Are there additional sources that will provide data on either a national or sub-national basis on the number of mobile wireless devices that are used for mobile broadband or high-speed Internet access services exclusively or in conjunction with mobile voice services? In addition, are data available on the number of subscribers broken down by mobile network technologies, such as EV-DO, HSPA, and

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<sup>36</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 155-170.

<sup>37</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 156.

<sup>38</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 158.

<sup>39</sup> *Broadband Data Order*, 23 FCC Rcd at 9700, ¶ 20. Mobile high-speed “subscribers” are defined for Form 477 purposes as customers whose device and subscription permit them to access the lawful Internet content of their choice at data rates exceeding 200 kbps in at least one direction. *Broadband Data Order*, 23 FCC Rcd at 9703 ¶ 23. In addition, mobile wireless broadband providers are required to report the percentage of the total subscribers in each state that are residential (not billed to a corporate, business, government, or institutional account). *Broadband Data Order*, 23 FCC Rcd at 9703 ¶ 24. However, they are not required to submit their number of subscribers broken down on a Census Tract basis, as other broadband providers are required to do. *Broadband Data Order*, 23 FCC Rcd at 9698, ¶ 16.

<sup>40</sup> Mobile data services include data services and applications that are offered over mobile broadband networks (which transfer data at speeds of at least 200 kbps in at least one direction), as well as those that are provided over network technologies with slower data rates.

WiMAX?

As noted above, the *Fourteenth Report*, like previous *Competition Reports*, calculated sub-national penetration rates by EA. The Bureau asks for comment on how to determine which geographic area or areas should be used to calculate mobile wireless subscribership and penetration rates.<sup>41</sup> The Bureau requests comment on the appropriateness of using EAs for such calculations. Given the limitations of NRUF data, insofar as they are reported on the basis of the location of rate centers, would other geographic areas be appropriate to use in place of or in addition to EAs, such as states, MTAs, BTAs, CMAs, or counties? In addition, are there other ways to interpret existing national and sub-national subscribership data for purposes of the *Fifteenth Report*?

#### **B. Net Subscriber Additions**

The *Fourteenth Report*, for the first time, included an analysis of net subscriber additions, or “net adds,” for the industry as a whole, by pricing plan, and by service provider.<sup>42</sup> We ask whether these metrics should continue to be included in the *Fifteenth Report* and whether new measures of net adds should be added. Are there additional data sources or analyses of net adds that commenters can provide? Furthermore, we seek comment on the extent to which net adds metrics provide valuable insight into the level of competition in the mobile wireless services industry.

#### **C. Output and Usage Levels**

To analyze mobile wireless output and usage in the *Fourteenth Report*, the Commission relied on data from CTIA on the average minutes of use per subscriber per month (MOUs), as well as text messaging and multimedia messaging service (MMS) traffic volumes.<sup>43</sup> However, CTIA has not provided data on the number of megabytes of mobile data traffic for the mobile wireless industry, and the *Fourteenth Report* therefore relied on estimates of mobile data usage from other parties, including Validas, Cisco, certain service providers, and Allot Communications.

Because of the increasing importance of mobile data and broadband services in the mobile wireless, we ask that commenters, particularly mobile wireless service providers, submit data on mobile data traffic volumes. For instance, we ask them to provide the total megabytes of mobile data traffic on their networks on a quarterly or annual basis. We ask also for any data on mobile data traffic by type of device, by type of subscription, by age group, and on a sub-national basis.

In addition, the Bureau asks whether there are additional sources of MOU data that should be included in the *Fifteenth Report*. For example, we request data on MOUs and megabytes on a sub-national basis and/or broken down by various demographic groups. Should the Commission perform other analyses or draw additional conclusions about usage and traffic from new or existing data?

#### **D. Pricing Levels and Trends**

The Bureau seeks comment on the use of the pricing measures used in the *Fourteenth Report* – namely

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<sup>41</sup> The use of any particular geographic area to calculate mobile telephone subscribership and penetration rates for purposes of this report does not imply that the same geographic area will be used in any other Commission proceedings to define the relevant geographic markets. Such other proceedings could include an application for a license transfer and may present facts pointing to a narrower or broader geographic market definition than any used, suggested, or implied in the *Competition Reports*.

<sup>42</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 171-175.

<sup>43</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 176-179.

the Cellular Consumer Price Index (CPI) and Revenue Per Minute (RPM) – as a tool in its analysis of the performance of the mobile wireless industry.<sup>44</sup> In particular, to what extent do changes in these pricing measures provide insight into the nature of competition in the mobile wireless services sector?

The Bureau seeks updated information and additional data on the pricing of mobile voice, messaging, and broadband services. In particular, the Commission is able to use existing data to calculate overall mobile wireless RPM, voice RPM, and average revenue per text message, which are used as a proxy for the per-unit prices of these services.<sup>45</sup> However, as noted in the *Fourteenth Report*, we are not aware of a single common unit of measure, analogous to MOUs, that can be used to track pricing trends for mobile broadband services.<sup>46</sup> Therefore, we request data that can be used to derive a unit price measure for this increasingly important mobile wireless service. In general, how has the pricing of mobile voice, messaging, and broadband services changed during 2009 and 2010? Are there additional analyses that can be performed or conclusions that can be drawn from new or existing pricing data?

#### **E. Revenue**

Total industry revenues, as well as average revenue per user (ARPU), are other key metrics that were presented in the *Fourteenth Report*.<sup>47</sup> The Bureau seeks comment on the use of these metrics in its analysis of mobile wireless performance and competition. Are additional ARPU data available that should be considered, in particular data depicting whether and how ARPU varies by region and/or demographic group? In the *Fourteenth Report*, the Commission used data from CTIA to estimate ARPU for voice, text, and other data services. We seek comment on this analysis and request service provider-specific ARPU data for the *Fifteenth Report*, including information on how service providers allocate ARPU the various types of mobile wireless services. Are there additional analyses that can be performed or conclusions that can be drawn from new or existing data? The Bureau requests from commenters additional input on the possible causes for any recent trends in ARPU, as well as additional data that may support various hypotheses.

#### **F. Investment**

The *Fourteenth Report* analyzed capital investment in the mobile wireless industry using data from the Census Bureau and CTIA.<sup>48</sup> The *Report* analyzed total investment levels over time, as well as investment per subscriber, investment as a percentage of revenue, and capital expenditures by individual mobile wireless service providers. We ask for updated information and additional analyses of investment levels in the mobile wireless industry. Did investment – both for the industry as a whole and by individual providers – increase or decrease during 2009? For what purposes are providers using capital expenditures, and how has this changed in the past year? Are there any studies or analyst reports on the investments of nationwide providers versus regional/local providers? Does data exist on investment by geographic region? What does investment reveal about competition?

#### **G. Profitability**

The *Fourteenth Report* included an analysis of mobile wireless provider profitability measures using three different metrics: Earnings Before Interest, Taxes, Debt, and Amortization (EBITDA) per subscriber,

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<sup>44</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 186-190.

<sup>45</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 187-192.

<sup>46</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 193.

<sup>47</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 200-203.

<sup>48</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 208-213.

EBITDA minus CAPEX per subscriber, and reported EBITDA margins.<sup>49</sup> We request input on the use of these profitability estimates as a tool in our analysis of the performance of the mobile wireless industry, including to what extent profit measurements are indicators of competition. How should we use these measures in analyzing the profitability of mobile wireless service providers and assessing the state of competition? Are there different estimates of profitability that should be included in the *Fifteenth Report*, and how should they be analyzed? What are the most appropriate ways to measure changes in profitability over time for the industry as a whole, as well as for individual firms?

## H. Service Quality

The *Fourteenth Report* included information on consumer survey results, such as those from J.D. Power & Associates and *Consumer Reports*, as indicators of service quality performance in the mobile wireless industry.<sup>50</sup> The Bureau seeks comment on the use of such surveys to measure service quality and asks whether additional surveys or other sources should be included in the Commission's analysis. We note that the Commission has conducted its own consumer surveys on the adoption, use, and performance of broadband services, as well as on consumer satisfaction with broadband and mobile wireless services.<sup>51</sup> We seek comment on the extent to which the results of these surveys are relevant to the Commission's analysis of mobile wireless competition for the *Fifteenth Report*.

What factors do the surveys recommended by commenters take into account when evaluating customer satisfaction with service quality? In particular, do the surveys focus primarily or exclusively on network performance and reliability (incidence of dropped calls, interference, and so forth), or do they also take into account other influences on the customer experience such as cost of service, customer service, and billing? In cases where surveys measure overall customer satisfaction with the performance of wireless service providers rather than network performance *per se*, what specific dimensions of service quality are survey respondents asked about, and how are responses to different questions weighted to derive the overall score? What methodologies do the recommended surveys use to select survey respondents, and do these methodologies result in any sample bias?

We invite comment on whether there are additional sources of information on service quality that we should consider, such as those that include quantifiable measures of network quality. What information do service providers or third parties have to indicate that service and network quality have improved or deteriorated during 2009 and 2010? If so, which elements of service quality have changed, and in what ways? Finally, if commenters live or work in a predominantly rural area, do they believe that the service and network quality they experience are adversely affected by their location?

## IV. CONSUMER BEHAVIOR IN THE MOBILE WIRELESS MARKET

### A. Consumer Switching Costs

The *Fourteenth Report* provided information on the costs that consumers incur when switching providers,

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<sup>49</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 215-221.

<sup>50</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 222-224.

<sup>51</sup> John B. Horrigan, *Broadband Adoption and Use in America*, OBI Working Paper Series No. 1, FCC, February 2010, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-296442A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf); John Horrigan and Ellen Satterwhite, *Americans' Perspectives on Connection Speeds for the Home and Mobile Devices*, Summary of Findings, FCC, June 2, 2010, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-298516A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.pdf); John Horrigan and Ellen Satterwhite, *Americans' Perspectives on Early Termination Fees and Bill Shock*, Summary of Findings, FCC, May 26, 2010, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-298516A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.pdf).

including accessing information on services, early termination fees (ETFs), and handset-related costs.<sup>52</sup> For the *Fifteenth Report* we request updated information on these switching costs and ask whether additional costs should be included in our analysis. Specifically, what information sources are available to consumers about the availability, quality, and features of mobile wireless services? How have these information sources evolved in 2009 and 2010? Are there new avenues for consumers to gain information through retailers or third parties, such as online or in-store comparisons of pricing plans, services, and handsets?

As discussed in the *Fourteenth Report*, in January 2010, the CGB and the Wireless Telecommunications Bureau sent letters to four mobile wireless service providers – Verizon Wireless, Sprint Nextel, AT&T, and T-Mobile – as well as Google, asking each company to detail how it determines and assesses ETFs, as well as how it notifies consumers about ETFs. For our analysis in the *Fifteenth Report*, we seek to update and supplement the information collected through these efforts. Have the companies that responded to the letters recently changed their ETF policies? How do other mobile wireless service providers assess and notify their customers about ETFs? What data are available that can be used to analyze how ETFs vary by provider, service plan, device, and geographic area?

In addition, we seek information on consumer behavior in response to ETFs and other service pricing plans and policies. To what extent are consumers able to avoid an ETF by paying the full, non-subsidized price for a device, and how many consumers choose such an option? What do ETF trends reveal about mobile wireless consumer behavior and competition? We note that the Commission conducted a survey of cell phone users on ETFs, “bill shock” (a sudden increase in a consumer’s monthly bill that did not result from a change in service plan), and reasons for staying with their current service provider.<sup>53</sup> We request comment on the most effective to integrate the results of this survey into our analysis of consumer behavior and competition in the mobile wireless services industry.

Finally, the Bureau seeks comment on the role of handsets, handset locking, and handset application in consumer switching costs. To what extent do consumers choose a service provider based on the devices available for use on that provider’s network? Does this vary among different types of consumers? How has this changed over time? When handsets are “locked,” or designed to work on a single network, to what extent can consumers “unlock” or reprogram their devices so they will work on the network of another service provider? How does handset locking affect the willingness of consumers to switch providers? In addition, the *Fourteenth Report* found that “another increasingly important switching cost associated with smartphones is the stranding of mobile applications purchased for a particular handset that cannot be transferred to or used on a new handset.”<sup>54</sup> To what extent are consumers able to transfer downloaded applications from one device to another? How does this change when both the old and new device use the same platform or operating system? How significant are the costs of reacquiring applications for most consumers, and how do they affect whether a consumer is willing to switch to a new device and/or a new provider?

## **B. Churn**

As discussed in the *Fourteenth Report*, “a reasonable proxy to determine whether switching costs are high enough to prevent consumers from making changes is churn... [C]hurn refers to the percentage of current

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<sup>52</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 229-241.

<sup>53</sup> John Horrigan and Ellen Satterwhite, *Americans’ Perspectives on Early Termination Fees and Bill Shock*, Summary of Findings, FCC, May 26, 2010, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-298516A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.pdf).

<sup>54</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 241.

customers an operator loses over a given period of time, *i.e.*, a company's gross loss of customers during that time period. By examining the magnitude and trend over time of service provider churn, we can quantify the degree to which consumers have both the desire and the ability to change service providers to better meet their mobile wireless service needs.<sup>55</sup> The *Report* included an analysis of blended churn, comparative churn, and the average lifetime of subscribers for several providers.<sup>56</sup> For the *Fifteenth Report*, the Bureau requests updated churn information and asks whether other churn data should be included. How did the overall churn rate, as well as the churn rates of particular service providers, change during 2009? In addition, in order to provide a detailed explanation of our analysis of churn, we ask providers to submit descriptions of how they calculate churn. Do the differences in how churn is calculated prohibit a meaningful comparison of churn figures across the mobile wireless industry? Further, the Bureau seeks sub-national or regional churn data, and churn data by demographic groups. What are the reasons for consumer churn? Have the reasons for churn changed or remained the same in 2009 and 2010? In particular, how has ongoing evolution in handset design and functionality affected consumer churn decisions?

## **V. INPUT AND DOWNSTREAM SEGMENTS OF THE MOBILE WIRELESS ECOSYSTEM**

### **A. Input Segments**

#### **1. Spectrum**

The *Fourteenth Report* included an in-depth discussion and analysis of the spectrum used for mobile wireless services, the spectrum holdings of the certain mobile wireless service providers, and the competitive effects of spectrum holdings.<sup>57</sup> We ask for input and feedback on this analysis, as well as updated information, for the *Fifteenth Report*. How should the Commission assess the ways in which spectrum holdings affect the structure, conduct, and performance of the mobile wireless services industry? How do mobile wireless service providers and spectrum licensees currently use their licensed spectrum? Are certain frequencies used heavily while others lie fallow? How does this vary across different types of geographic areas?

How much spectrum is unused or underutilized? To what extent do spectrum licensees lease, partition, or disaggregate their spectrum? How much of the spectrum available for the provision of mobile wireless services is actually used to provide service? Of the spectrum that is currently unused, to what extent do licensees plan to use that spectrum to provide service in the future? Are there geographic areas within spectrum license boundaries that licensees do not plan to serve? Are there any data or estimates available on spectrum utilization or nonutilization/warehousing?

How much additional spectrum will be required to support next generation technologies and mobile broadband applications, and in what locations? How much spectrum is being used to provide services over 3G network technologies versus 2G digital voice technologies? How much spectrum is required to roll out services over next generation or 4G network technologies such as WiMax and LTE? Which technologies, services, and applications require large amounts of spectrum? How should the Commission account for differences in spectrum holdings and bandwidth in evaluating mobile wireless competition?

The different propagation characteristics of different spectrum bands can influence how spectrum is used

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<sup>55</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 230.

<sup>56</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 245-247.

<sup>57</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 250-283.

to deliver mobile wireless services to consumers.<sup>58</sup> What are the benefits of transmitting in different frequency bands? Do these benefits vary across geographic areas? How do such benefits translate into capital and operating cost differences? How are service providers' network deployment plans affected by their spectrum holdings in the frequencies above and below 1 GHz? How does the use of different frequency bands affect competition in the industry? Should the Commission distinguish the competitive effects of different spectrum bands (e.g., above or below 1 GHz)?

The Bureau seeks comment on whether there is access to sufficient spectrum, either through Commission auctions or through secondary market transactions, to prevent spectrum from becoming a significant barrier to entry in the mobile wireless industry. Are existing service providers spectrum constrained? If so, in which geographic markets are providers most likely to be constrained? Do potential entrants have sufficient opportunities to access spectrum, and has this changed in the past year?

How has the licensing of spectrum in the AWS-1 and 700 MHz bands affected the ability of potential entrants to access spectrum and the level to which existing providers are spectrum constrained? How has the licensing of these two bands affected competition in the mobile wireless industry?

How have advanced network technologies affected spectrum access? As these technologies become more prevalent, will potential entrants have more or fewer opportunities to access spectrum? Have mobile wireless service providers become more or less spectrum-constrained after rolling out new networks and services? Do providers anticipate needing additional spectrum to deploy faster and more advanced mobile broadband networks?

Finally, the Bureau seeks comment on whether the Commission's policy to facilitate spectrum leasing has or will provide sufficient opportunities both for existing providers to expand their operations and for new mobile wireless service providers to enter the market.

## **2. Infrastructure and Backhaul**

As discussed in the *Fourteenth Report*, in addition to spectrum access, mobile wireless services depend critically on access to productive inputs such as network infrastructure, such as cell sites and towers, as well as backhaul facilities.<sup>59</sup> Are there other key input markets that affect overall competition? What data are available to measure these effects?

With respect to infrastructure, the Bureau seeks comment on the how the structure of the infrastructure and tower sectors affect competition in the mobile wireless services industry. How many new cell sites were deployed in 2009 and 2010, and by which service providers? To what extent do service providers own their own towers or antenna facilities, and to what extent do they lease space from independent tower companies? Does this vary across different types of geographic areas? How do these different approaches affect service providers' costs and competition in the mobile wireless services sector? In addition, what are the major barriers or constraints faced by service providers needing to add or modify cell sites in their networks? To what extent do regulatory and zoning approvals from state and local government authorities act as barriers to tower and cell site deployment?

As discussed in the *Fourteenth Report*, there is evidence that mobile wireless service providers will likely need to purchase additional backhaul transmission facilities – such as T1 lines, cable, wireless

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<sup>58</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 268-273.

<sup>59</sup> See *Fourteenth Report*, FCC 10-81 at ¶¶ 284-294.



microwave, and fiber optics – in order to accommodate increased broadband traffic.<sup>60</sup> We seek updated information on the types of technologies service providers are using for backhaul and the cost of backhaul. We also seek comment on how the structure of the market for backhaul services affects overall competition in the mobile wireless service sector. How do the differences in technology, availability, and price for backhaul services impact competition?

## **B. Downstream Segments**

### **1. Handsets/Devices and Operating Systems**

The Bureau invites commenters to submit data and information on the mobile wireless device and operating system sectors of the mobile wireless ecosystem. What types of data sources, such as consumer surveys, provide information on consumer preferences with regard to mobile devices? What are the most important factors consumers take into account when choosing a device? To what extent do consumers know and understand the applications and features available on their devices? What types of handset models, features, and innovations are most popular with different groups of consumers, and how has this changed in the past year?

What is the nature of competition among handset providers and among operating system providers, and how does this affect competition among mobile wireless service providers? What are the competitive effects of vertical integration by firms of devices and operating systems, particularly when certain devices are offered exclusively by a single service provider?

During 2009 and 2010, have service providers, operating system developers, and equipment manufacturers changed the way consumers can access applications and use features on their devices? How do devices and operating systems affect the types of applications that a subscriber can access, download, or use? Do devices with greater functionality and more advanced features – such as smartphones with web browsing software and a large, touch screens – allow users to access a wider range of applications and content than devices with more basic capabilities? To what extent does the ability to use a wide array of applications and services influence a consumer's device purchase?

Is there a market for multi-standard handsets that work within U.S. frequency allocations? If yes, what are the benefits of such devices for consumers? Are multi-standard handsets currently available to American consumers? How does the availability of such multi-standard handsets affect competition? How are mobile wireless handsets or devices restricted for consumer use?

What mobile wireless devices other than handsets are currently being used by consumers to access mobile wireless services? How do these devices complement mobile wireless handsets? How are these devices integrated with other segments of the mobile wireless ecosystem?

### **2. Applications**

The Bureau invites commenters to submit data and information on the applications sector of the mobile wireless ecosystem. What are the most common ways that consumers access applications on their mobile wireless handsets and devices, and how has this changed in the past year? What is the role of application stores offered by operating system developers and service providers? Which application stores are most popular with consumers, and how many applications are available on and downloaded from such stores? What types of applications are most popular with consumers? What data sources, such as analyst report and consumer surveys, provide information about consumer preferences with regard to mobile applications and application stores?

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<sup>60</sup> See *Fourteenth Report*, FCC 10-81 at ¶ 293, ¶ 297.

To what extent can consumers access and use the content and applications of their choice? How does this vary by device, operating system, service plan, and service provider? Which of these elements has the greatest impact on consumer choice? What other factors besides the level of choice – such as price, ease of use, security, and reliability – play a role in a consumer’s preference with respect to accessing mobile applications?

## **VI. INTERMODAL COMPETITION**

### **A. Competition in Voice Services**

The Bureau asks for comment and sources of information on the extent to which mobile voice service competes with wireline voice service. What type of data provides evidence on the extent of wireless-wireline voice substitution? How many and what types of households or individuals have “cut the cord” and use a mobile phone as their sole phone? Do mobile-only households have higher voice usage levels than those with wireline phones? Are there any new developments in intermodal voice competition that have occurred in 2009 and 2010? What are the major reasons for these developments?

### **B. Competition in Broadband Services**

Mobile wireless technologies appear to play an increasingly significant role in providing high-speed Internet access services. To what extent do mobile broadband services complement or compete with broadband services offered over wireline technologies such as DSL, cable, or fiber to the home? To what extent are consumers substituting fixed for mobile data usage for certain functions and applications, such as web browsing, e-mail, and accessing social networking sites? What factors – such as price, coverage, uplink and downlink speeds, equipment, and bundling – influence the extent to which mobile broadband services compete with wireline broadband services? What effect will the rollout of mobile broadband network technologies in the AWS-1, 700 MHz, and Broadband Radio Services/Educational Broadband Services spectrum bands have on the provision of mobile broadband services and broadband competition?

### **C. Wireless Local Area Networks**

The wireless local area network technology, Wi-Fi, enables consumers to connect to the Internet wirelessly within the range of 100-300 feet at home, work, or at public “hot spots” – such as restaurants, coffee shops, hotels, airports, convention centers, and city parks – typically using a laptop computer with an internal or external Wi-Fi modem.<sup>61</sup> Wi-Fi can serve as both a competitor and a complement to the wide area networks deployed by facilities-based mobile wireless service providers.<sup>62</sup>

Some mobile wireless service providers use Wi-Fi hot spots to supplement or complement their mobile voice and data offerings provided through the licensed use of spectrum.<sup>63</sup> We ask for information on which mobile wireless service providers use WLANs in these ways, and we seek a description of those service offerings. We also request information about the pricing and usage of such plans. Have new services or applications that integrate both mobile wireless and Wi-Fi networks been launched in the past year? To what extent is Wi-Fi being used to provide location-based services?

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<sup>61</sup> Wi-Fi networks generally must rely on another type of broadband connection, such as wireline, cable, or wireless, for access to the Internet.

<sup>62</sup> WLAN technologies operate on an unlicensed basis under Part 15 of the Commission’s rules. See 47 C.F.R. Part 15.

<sup>63</sup> See *Thirteenth Report*, 24 FCC Rcd at 6296-98, ¶¶ 235-239.

In addition, we ask for information on the extent to which Wi-Fi networks are being used for voice as well as data services, and on whether such voice services are being provided using Voice over Internet Protocol (VoIP) technology or other technologies. Are there estimates available on the amount of voice traffic on Wi-Fi networks? What applications and equipment are available for voice over Wi-Fi? To what extent are Wi-Fi-based voice and data services considered to be complements to, or substitutes for, the mobile voice and data services offered over mobile wireless networks?

Finally, we seek information on the total number of public hot spots, as well as the number of free hot spots and fee-based hot spots. We also request information on the pricing of fee-based hot spots. Has the proportion of free versus fee-based hot spots changed over the past year? Is there a difference in connectivity speeds, reliability, and security at free versus fee-based hot spots? To what extent do hot spots compete with mobile broadband offerings and wireline broadband services? Do the differences between free and fee-based hot spots influence competition between Wi-Fi providers and mobile wireless service providers?

## **VII. SERVICE DEPLOYMENT IN RURAL AREAS AND TRIBAL LANDS**

To obtain a better understanding of the state of mobile wireless competition in rural areas and tribal lands, the Bureau requests comment on the extent of mobile voice and broadband network deployment in these areas. Are there noteworthy trends in the state of competition in rural areas and tribal lands?

Furthermore, regarding rural areas and tribal lands, to what extent do providers offer coverage only in certain parts of these areas, such as near major roads, where they do not market service to residents of those areas? If this is the case, could the Commission's analysis of mobile wireless service deployment and competition be further improved if mobile wireless providers indicated the parts of their coverage areas in which they compete to offer service and the parts that are used only to provide coverage to traveling subscribers based in other locations?

Are commenters aware of pricing studies that look at urban versus rural or other sub-national mobile wireless pricing? We ask commenters to provide input on how the Commission can examine whether pricing in rural areas conforms to national pricing plans, or whether there are meaningful differences in mobile wireless pricing plans and pricing promotions between urban and rural areas. To the extent that such differences exist, what are the reasons for such differences?

Finally, the Bureau seeks comment on how mobile wireless service providers' spectrum holdings vary in urban versus rural areas. To what extent is spectrum unused or under-utilized by licensees to a greater extent in rural versus urban areas? Do licensees plan to deploy networks and offer service using such spectrum in the future? To what extent are service providers and licensees in rural areas spectrum constrained? Is there a greater benefit for service providers to holding spectrum in the frequencies below 1 GHz in rural versus urban areas? If so, why?

## **VIII. INTERNATIONAL COMPARISONS**

The Bureau invites commenters to submit any studies or analyses that compare the mobile wireless marketplace in the United States with that in other countries. Previous reports have relied on data published by Merrill Lynch comparing mobile penetration rates, usage levels, and prices in the United States with those in other countries. Are there additional sources the Commission should consider that provide data on mobile wireless prices, usage, subscribership, and service quality around the world? What is the interplay among the regulatory frameworks, provider practices, and market conditions in other countries? In particular, are there ways to measure the benefits or harm to consumers as a result of provider practices with regard to mobile applications and devices?

## IX. OTHER INDICATORS AND TOPICS

In addition to alternative sources of data and information to update indicators of competition used in the *Fourteenth Report* and previous *Competition Reports*, the Bureau invites commenters to recommend additional or alternative indicators of competition to enhance the analysis of competitive market conditions with respect to mobile wireless in the *Fifteenth Report*. In each case, the commenter should also submit, or identify sources for, the data and information needed to compile the proposed indicator. As necessary and appropriate, the commenter should also explain how the recommended indicator fits into the framework introduced in the *Fourteenth Report*.

In addition, the Commission, for the first time, released a portion of the data used in the *Fourteenth Report* in a manipulable, machine-readable format available for download from the Commission's website.<sup>64</sup> Was this data release useful to consumers, analysts, and data practitioners? Are there additional measures the Commission can take to improve the dissemination of the data for the *Fifteenth Report*, or to make its analysis more transparent and robust?

Finally, the Bureau invites commenters to propose additional topics of interest that are related to the assessment of the status of competition in the mobile wireless marketplace. For example, have any noteworthy new trends or developments relevant to the assessment of competitive conditions in the mobile wireless marketplace emerged during 2009 and 2010?

## X. PROCEDURAL MATTERS

Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments on or before July 30, 2010 and reply comments on or before August 16, 2010. All filings should refer to WT Docket No. 10-133. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), or (2) by filing paper copies. See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

- **Electronic Filers:** Comments may be filed electronically using the Internet by accessing the ECFS: <http://www.fcc.gov/cgb/ecfs/>. Filers should follow the instructions provided on the website for submitting comments. If multiple dockets or rulemaking numbers appear in the caption of this proceeding, filers must transmit one electronic copy of the comments for each docket or rulemaking number referenced in the caption. In completing the transmittal screen, filers should include their full name, Postal Service mailing address, and the applicable docket number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for email comments, filers should send an e-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should include the following words in the body of the message, "get form <your e-mail address>." A sample form and directions will be sent in response.
- **Paper Filers:** Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

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<sup>64</sup> This data can be accessed at [http://reboot.fcc.gov/c/document\\_library/get\\_file?uuid=6d137db1-0f28-4dfa-859a-5d752da79f80&groupId=19001&zip](http://reboot.fcc.gov/c/document_library/get_file?uuid=6d137db1-0f28-4dfa-859a-5d752da79f80&groupId=19001&zip).

- The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12<sup>th</sup> Street, SW, Washington, D.C. 20554.

One copy of each pleading must be delivered electronically, by e-mail or facsimile, or if delivered as paper copy, by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (according to the procedures set forth above for paper filings), to: (1) the Commission's duplicating contractor, Best Copy and Printing, Inc., at [FCC@BCPIWEB.COM](mailto:FCC@BCPIWEB.COM) or (202) 488-5563 (facsimile); (2) Chelsea Fallon, Spectrum and Competition Policy Division, Wireless Telecommunications Bureau, at [chelsea.fallon@fcc.gov](mailto:chelsea.fallon@fcc.gov), (202) 418-7447 (facsimile); (3) Eliot Maenner, Spectrum and Competition Policy Division, Wireless Telecommunications Bureau, at [eliot.maenner@fcc.gov](mailto:eliot.maenner@fcc.gov), or (202) 418-7447 (facsimile).

Copies of the public notice and any subsequently-filed documents in this matter may be obtained from Best Copy and Printing, Inc. in person at 445 12th Street, S.W., Room CY-B402, Washington, D.C. 20554, via telephone at (202) 488-5300, via facsimile at (202) 488-5563, or via e-mail at [FCC@BCPIWEB.COM](mailto:FCC@BCPIWEB.COM). The public notice and any associated documents are also available for public inspection and copying during normal reference room hours at the following Commission office: FCC Reference Information Center, 445 12th Street, S.W., Room CY-A257, Washington, D.C. 20554. The public notice is also available electronically through the Commission's ECFS, which may be accessed on the Commission's Internet website at <http://www.fcc.gov>. Alternate formats of this public notice (computer diskette, large print, audio recording, and Braille) are available to persons with disabilities by contacting Brian Millin at (202) 418-7426 (voice), (202) 418-7365 (TTY), or by sending an e-mail to [access@fcc.gov](mailto:access@fcc.gov).

For further information, contact Chelsea Fallon, Spectrum & Competition Policy Division, Wireless Telecommunications Bureau, (202) 418-7991, or Eliot Maenner, Spectrum & Competition Policy Division, Wireless Telecommunications Bureau, (202) 418-1650.