



# PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION

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

WT Docket No. 15-125

**Comments Due: June 29, 2015**

**Reply Comments Due: July 14, 2015**

This Public Notice (“*Notice*”) solicits input on competition in the mobile wireless marketplace for the Federal Communications Commission’s (“Commission”) Eighteenth Annual Report on the State of Competition in Mobile Wireless, including Commercial Mobile Radio Services (“*Eighteenth Report*”). The Communications Act requires the submission to Congress each year of Reports analyzing competitive conditions with respect to commercial mobile services.<sup>1</sup> On December 18, 2014, the Wireless Telecommunications Bureau (“Bureau”) released the Seventeenth Mobile Wireless Competition Report (“*Seventeenth Report*”).<sup>2</sup> With this *Notice*, the Bureau seeks to update the information and metrics used in the *Seventeenth Report*, as well as enhance our analysis of competition in the mobile wireless marketplace for the *Eighteenth Report*.

This *Notice* seeks comment and information on competitive dynamics within the mobile wireless marketplace, for example, with respect to the number of subscribers and financial indicators such as revenue or profitability. In addition, we seek comment and information on overall industry metrics such as coverage, including by spectrum band, technology, geography, and demographics. We also seek comment and information on upstream (e.g., spectrum) segments as well as on consumer behavior with respect to mobile wireless services, including consumer usage, handsets, mobile applications, and intermodal developments such as mobile-wireline substitution. Further, we seek comment and information on pricing levels and trends and other non-price factors on which service providers compete, as well as on performance metrics for mobile broadband networks, such as speed and latency, including the methodologies used for assessment.

Finally, we also ask parties to comment on whether the metrics provided in the *Seventeenth Report* were sufficient for analyzing competition in the mobile wireless marketplace in a useful and timely manner, or whether any changes should be made for the metrics included in the *Eighteenth Report*. The Commission actively endeavors to improve and refine the way it collects, analyzes, and reports on wireless industry information and data. This *Notice* contains a series of questions asking for information and analytic

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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. 13-135, *Seventeenth Report*, 29 FCC Rcd. 15311 (2014).

recommendations related to that effort. We seek comment on these and any other approaches to improve the quality of the *Eighteenth Report* as well as subsequent reports.

The information used in the competitive analysis in the *Seventeenth Report* was derived from various sources, including comments in the public record, Mosaik Solutions (“Mosaik”),<sup>3</sup> industry associations, financial industry analysts, company filings and news releases, Security and Exchange Commission (“SEC”) filings, trade publications, industry trade and press releases, research firms’ publicly-available data, university researchers and scholarly publications, vendor market product releases, white papers, service provider web sites, and data submitted to the Commission through other data collection efforts such as FCC Form 477, the Numbering Resource Utilization Forecast (“NRUF”), and Measuring Broadband America. We also utilized the Commission’s Universal Licensing System (“ULS”) for service providers’ spectrum holdings. We seek input on whether there are other sources of information, especially quantitative data, which should be used to perform analysis of competition in the mobile wireless marketplace.

For the *Eighteenth Report*, we request that commenters submit information, data, and statistics available for the second half of 2014 and the first part of 2015, as well as information on any trends and developments that have occurred during 2014 and 2015. In particular, we seek information on events or developments that have arisen after release of the *Seventeenth Report*. Industry stakeholders, the public, and other interested parties are encouraged to submit information, comments, and analyses regarding competition in the mobile wireless marketplace. In order to facilitate our analysis of competitive trends, we request that parties that submit data should submit current data, as well as historic data, that are comparable over time. Commenters seeking confidential treatment of their submissions should request that their submission, or a specific part thereof, be withheld from public inspection.<sup>4</sup>

## I. MOBILE WIRELESS INDUSTRY

The *Seventeenth Report* focused on “competitive market conditions with respect to commercial mobile services,”<sup>5</sup> and employed a more data-centric model than had previous *Reports*, presenting a multitude of industry data on various aspects of mobile wireless competition. Further, with the release of the *Seventeenth Report*, the charts and tables and much of the underlying data were provided on a dedicated website that is updated as new data becomes available in advance of and in conjunction with the release of the *Eighteenth Report*.<sup>6</sup> The *Seventeenth Report* was based on a consumer-oriented view of mobile wireless services, with a focus on specific product categories regardless of their regulatory classification, with analysis of commercial mobile radio services (“CMRS”) integrated into an analysis of all mobile wireless services, including voice, messaging, and broadband. Because consumers increasingly view various mobile services as interchangeable with one another, service providers are competing for customers using CMRS services as well as non-CMRS services. As a result, the Commission has indicated that it is important to consider potential substitutes when analyzing the competitive landscape for these services, and to evaluate the mobile wireless industry as a whole, rather than focusing solely on the provision of CMRS services.<sup>7</sup>

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<sup>3</sup> Mosaik Solutions is an independent consulting firm that produces coverage maps based on public sources as well as confidential information supplied directly by service providers.

<sup>4</sup> 47 C.F.R. § 0.459.

<sup>5</sup> 47 U.S.C. § 332(c)(1)(C).

<sup>6</sup> See [fcc.gov/wireless-competition-report](http://fcc.gov/wireless-competition-report).

<sup>7</sup> See *Seventeenth Report*, ¶ 3; *Sixteenth Report*, ¶ 4; *Fifteenth Report*, ¶ 4. Similar to earlier reports, the *Seventeenth Report* included mobile Broadband Internet Access Service (“BIAS”) in its analysis even though the Commission had not yet classified mobile BIAS as CMRS. See generally, In the Matter of Protecting and Promoting the Open

We anticipate that the *Eighteenth Report* will similarly analyze competition across the entire mobile wireless ecosystem, including key input market segments such as spectrum and infrastructure, as well as downstream segments such as mobile applications. We therefore invite commenters to address the sources of data utilized and the analysis of metrics and information relating to the various aspects of the mobile wireless ecosystem outlined below.

## II. COMPETITIVE DYNAMICS IN THE MOBILE WIRELESS MARKETPLACE

### A. Service Providers

Our analysis of competition within the mobile wireless marketplace starts with a baseline understanding of the competitive dynamics at play. Service providers offer an array of services, including interconnected voice, text and multimedia messaging, and mobile broadband internet access. Service providers also may offer other services such as machine-to-machine connections, smart grid devices, home security monitoring, and vehicle telematics, all part of the “Internet of Things” (“IOT”). We seek comment and analysis to update the information on the roles of nationwide and regional or local facilities-based service providers in the United States mobile wireless marketplace today.<sup>8</sup> In addition, we seek to update the information on the major resellers/Mobile Virtual Network Operators (“MVNOs”), and other providers operating in the United States as presented in the *Seventeenth Report*.<sup>9</sup>

### B. Connections, Net Additions, and Churn

We seek comment on the analysis in the *Seventeenth Report* of the total number of mobile wireless connections nationwide, and by service segment. The main source of data used by the Commission to calculate total mobile wireless connections is NRUF, which tracks the number of phone numbers that have been assigned to mobile wireless devices.<sup>10</sup> As noted in the *Seventeenth Report*, NRUF no longer accurately reflects the number of individual subscribers due primarily to the growth of multi-device accounts, and we seek comment on the effect of these limitations on our analysis.<sup>11</sup> Further, we seek comment on the analysis in the *Seventeenth Report* of net subscriber additions, or “net adds,” for the industry as a whole, and by service provider, and ask whether we should make any changes or add any new measures to the *Eighteenth Report*. In addition, we request up-to-date churn information and ask how the overall churn rate, as well as the churn rates of particular service providers, changed during 2014 and the first part of 2015. Further, we seek information on the reasons for consumer churn, and whether these reasons have changed since the *Seventeenth Report*. Commenters should also provide information and analysis on the usefulness of reporting metrics such as the total number of connections, subscribers, net additions and churn.

### C. Market Shares and Concentration

We seek comment on whether it would be helpful to estimate market shares or market concentration for specific mobile wireless services and how we might estimate such metrics. In the *Seventeenth Report*, we

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Internet, GN Docket No. 14-28, *Report and Order on Remand, Declaratory Ruling, and Order*, FCC 15-24, ¶¶ 388-408 (rel. Mar. 13, 2015) (classifying mobile BIAS as CMRS).

<sup>8</sup> See *Seventeenth Report* at ¶¶ 11-14.

<sup>9</sup> See *Seventeenth Report* at ¶¶ 15-18.

<sup>10</sup> See *Seventeenth Report* at ¶ 20.

<sup>11</sup> When all mobile wireless devices were assigned telephone numbers and subscribers generally carried one mobile device for making voice calls, NRUF provided reasonably accurate measures of subscribership. Consumers today, however, are more likely to use more than one mobile device that has been assigned a telephone number. In addition, certain mobile broadband providers do not assign telephone numbers to at least some of the devices on their networks. As a result, NRUF is becoming less useful in measuring the number of individual subscribers, and instead, provides more of an estimate of the number of connected devices. See *Seventeenth Report* at ¶ 20 n.37.

calculated market shares based on service revenues.<sup>12</sup> In addition, as in previous *Reports*, the *Seventeenth Report* analyzed horizontal concentration by calculating, based on NRUF data, 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>13</sup> We seek comment on the use of the HHI index to measure market concentration and ask whether there are alternative ways of measuring and analyzing market concentration.

#### **D. Financial Indicators**

We also seek comment on the use in the analysis of key financial indicators, including total industry revenues, average revenue per user (“ARPU”), the wireless telephone services Cellular Consumer Price Index (“CPI”) and profitability metrics. We request provider-specific ARPU data for the *Eighteenth Report*, including information on how service providers allocate ARPU to different types of mobile wireless services or devices. Are additional ARPU data available that we should consider, in particular data depicting whether and how ARPU varies by region and/or demographic group? We request comment and information on the possible causes for any recent trends in ARPU, the usefulness of ARPU as a key metric and the methodological issues associated with its calculation. We seek comment on the use of the CPI as a metric. We also request comment on the use of profitability measures such as EBITDA and the EBITDA margin. Are there different estimates of profitability that should be included in the *Eighteenth Report*? What are the most appropriate ways to measure change in profitability over time for the industry as a whole, as well as for individual firms?

### **III. OVERALL MOBILE WIRELESS INDUSTRY METRICS**

#### **A. Network Coverage**

Since the *Twelfth Report*, the Commission has used data from Mosaik to analyze the extent of mobile wireless network deployment. While the analyses based on Mosaik data provide a quantitative baseline that can be compared across network types, technologies, and providers over time, as noted in the *Seventeenth Report*, among other drawbacks, the Mosaik data likely overstate the coverage actually experienced by consumers.<sup>14</sup> In the *Eighteenth Report*, we anticipate being able to use Form 477 coverage data to perform the analyses below, as well as Mosaik data to maintain continuity, and ask for comment on this approach. Using the Form 477 data, and/or the Mosaik data, and population data from the Census Bureau, we should be able to estimate the percentage of the U.S. population covered by (1) a certain number of providers,<sup>15</sup> (2) different types of network technologies, as well provide estimates of U.S. road miles covered. To obtain a better understanding of coverage in rural areas and tribal lands, we request comment on the extent of mobile voice and broadband network deployment in these areas. Are there noteworthy trends in deployment 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?<sup>16</sup> We also seek

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<sup>12</sup> See *Seventeenth Report*, at ¶ 30.

<sup>13</sup> See *Seventeenth Report*, at ¶¶ 32-33. The data source used for this calculation is the NRUF data that are submitted to the Commission on a rate center basis and track the number of phone numbers that have been assigned to mobile wireless devices

<sup>14</sup> See *Seventeenth Report*, at ¶ 45, n.69.

<sup>15</sup> The coverage data may not represent the number of choices actually available to consumers living in particular areas, as service providers provide network coverage in certain areas to serve customers resident elsewhere.

<sup>16</sup> See e.g. Goldman Sachs Equity Research: T-Mobile US Inc. *Three reasons we maintain CL-Buy following management meeting*, Ap. 2, 2015. Brett Feldman, Jonathan Epstein, Jiorden Sanchez and Stephen Laszczyk, in which T-Mobile discusses separately its future plans for its distribution footprint and its broader coverage footprint.

information on providers' use of roaming to provide services in areas where they lack facilities-based coverage.

## **B. Connections and Subscribers**

The *Seventeenth Report*, as did previous Reports, calculated penetration rates by EA.<sup>17</sup> In addition, the *Seventeenth Report* presented information on the number of connections/subscribers by various socio-economic and demographic measures, including income and age. We seek comment on this analysis of the adoption rates of mobile wireless services among different segments of the population, including by age group, income level, and geographic area. Further, we seek comment on whether we should extend this type of analysis to include other factors in the *Eighteenth Report* and if so, the factors that should be considered.

# **IV. INPUT MARKET SEGMENTS IN THE MOBILE WIRELESS INDUSTRY**

## **A. Spectrum**

We ask for comment and information on how mobile wireless service providers and spectrum licensees currently use their licensed spectrum. Are certain frequency bands used heavily while others lie fallow, and if so why? How does this vary across different types of geographic areas or in urban, as compared to rural markets? 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? How much of the spectrum available for the provision of mobile wireless services is actually used to provide service? How do providers utilize, or plan to utilize, unlicensed spectrum to complement their use of licensed spectrum?

What spectrum is being used to provide services over 3G and 4G network technologies versus 2G digital voice technologies? How much, and what, spectrum is being used to roll out services over technologies such as LTE? What additional spectrum will be required to support next generation technologies and mobile broadband applications, and in what locations? What are the benefits of transmitting in different frequency bands and do these benefits vary across geographic areas? How are service providers' network deployment plans affected by their spectrum holdings in the frequencies above and below 1 GHz?

We seek comment on whether there is access to sufficient spectrum, either through Commission auctions or through secondary market transactions for multiple service providers to be able to provide robust competition. Are existing service providers spectrum constrained? If so, in which geographic markets are providers most likely to be constrained? How have advanced network technologies affected spectrum access? 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? To what extent do spectrum licensees lease, partition, or disaggregate their spectrum?

## **B. Non-Spectrum Inputs**

Mobile wireless service providers also depend critically on access to inputs such as network infrastructure (cell sites and towers), as well as backhaul facilities. With respect to infrastructure, we seek comment and information on how many new cell sites were deployed in 2014 and 2015, and by which service providers. Further, to what extent do service providers lease space from independent tower companies, and does this vary across different types of geographic areas? 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? We seek comment on barriers to deployment on federal lands. Commenters should address the need for access to physical infrastructure such as towers, buildings, and

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<sup>17</sup> See *Seventeenth Report*, at ¶ 66.

other structures, conduit, rights-of-way, etc. This should include information on deployments of all sizes including small-cells, distributed antenna systems, and Wi-Fi-offload. We seek information on the extent to which mobile wireless service providers will likely need to purchase additional backhaul transmission facilities – such as T1 lines, cable, wireless microwave, and fiber optics – in order to accommodate increasing mobile broadband traffic. We also seek information on the importance of special access services to mobile wireless service providers. Which types of technologies are service providers using for backhaul, and what are the costs of the different technologies?

## **V. CONSUMERS AND MOBILE WIRELESS**

Handsets, devices, and the download of applications are central to a consumer’s experience. We seek comment on various components of the mobile wireless ecosystem. We seek information on the factors affecting consumers’ choices, including the importance of switching costs, in the mobile wireless industry today, and on the usage of mobile wireless services. Commenters should provide information on use of data, voice, short message service (“SMS”), and multimedia messaging service (“MMS”), including overall usage numbers and trends. While industry-wide data on total and average voice minutes of use (“MOUs”), have been available from the CTIA – The Wireless Association<sup>®</sup> (“CTIA”), data on text messaging and MMS traffic volumes are no longer reported separately by CTIA. Also, although data on the number of megabytes of mobile data traffic are available from several sources, differing methodologies have led to a fairly large range of reported totals.<sup>18</sup> Because of the increasing importance of mobile data and broadband services in the mobile wireless industry, we ask that commenters, particularly mobile wireless service providers, submit data on mobile data traffic volumes.

We seek information on the market penetration of smartphones and other data-centric devices such as tablets, as well as on market developments related to the IoT, such as connected cars, that use embedded wireless devices. We seek comment on how access to such devices differs among customers of various providers and affects competition. We seek information on market shares of smartphones by operating system and manufacturer. Commenters should address marketplace trends such as rates of smartphone adoption as well as new features and services driving consumer demand. We seek comment on the impact of equipment installment plans (“EIPs”) on the previously prevailing subsidy model, as well as on consumer choice and competition between providers. We seek comment on how providers’ implementation of device unlocking has affected competition and consumer choice. Parties should address how handsets’ ability to interoperate on multiple networks affects competition. We also seek comment on whether all service providers have similar access to recently released or flagship devices for their customers.

We also seek information on the number of mobile applications that have been launched, as well as downloaded by customers. Further, what information sources are available to consumers about the availability, effective price, quality, and features of mobile wireless services and devices? How have these information sources evolved in 2014 and 2015? 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 and devices? We seek comment and information on intermodal developments such as mobile wireless-wireline substitution including the numbers of mobile wireless-only households. What type of data provides evidence on the extent of mobile 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?

## **VI. PRICING LEVELS AND TRENDS**

We seek comment and information on innovations or developments that have occurred with mobile wireless pricing plans during 2014 and the first part of 2015. Commenters should discuss developments

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<sup>18</sup> See *Seventeenth Report* at ¶ 73.

such as moves from term contracts to other models and differences between pre-paid and post-paid pricing plans since the advent of EIPs. 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? Are providers targeting different pricing plans to different types of consumers? If so, how? We seek comment on specific prices, plans, promotions, incentives, and features offered by providers during the reporting period. We seek such information for both pre-paid and post-paid service offerings. How have providers responded to moves by their rivals? How do the service offerings differ between pre-paid and post-paid plans? Parties should discuss handset availability, coverage and roaming, data speeds and allowances, and any other key differences. Further, how are providers pricing mobile Internet access services for non-voice devices such as tablets, e-readers, laptops, USB modems, and portable Wi-Fi hotspots, 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?

## **VII. NON-PRICE RIVALRY**

We seek information on capital investments/expenditures in service providers' networks. We ask for updated information on investment levels in the mobile wireless industry, including 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. Did investment – both for the industry as a whole and by individual providers – increase or decrease during 2014 and 2015?

Further, we request information on the extent to which mobile wireless providers have upgraded, or plan to upgrade, their networks with 3G and 4G technologies. What has been the extent of further deployment of these technologies since the release of the *Seventeenth Report*? How extensively have providers deployed advanced technologies in rural areas? We seek information on providers' deployments of LTE and their plans to transition to Voice over LTE ("VoLTE"). We seek information on how and when providers plan to deploy services in the WCS, AWS-3 and AWS-4 bands including the technologies and speeds they plan to offer. Are the services to be offered, and networks to be deployed, using this spectrum likely to be similar to or different from the services offered using other frequency bands, such as AWS-1, Cellular, Broadband PCS, and the 700 MHz Band?

We seek comment on providers' service quality and reliability, including factors such as data speeds and latency. Speed measurements may vary widely due to a large number of factors. It is generally measured in one of two ways: Crowd-sourced tests use mobile applications that allow end users to measure and report the speeds at various times and have the advantage of large sample size; drive-testing is better controlled for location and conditions, but has smaller sample sizes. We seek data collected using both methodologies from a variety of sources. In addition to upload and download speeds we seek data on latency. One common measure is round-trip latency, which measures the amount of time it takes a data packet to travel from a source to a destination and back. For certain applications, such as voice, video, or other real-time communications, latency can be an important factor for quality of service.

We seek comment on how providers use device offerings to differentiate themselves from their rivals and on how providers use device innovations as a way to compete. We seek comment on how providers use marketing and advertising to develop brand awareness and differentiate themselves to potential customers. How much did individual providers, and the industry as a whole, spend on advertising and marketing in 2014 and early 2015? Have providers increased the amount of money spent on customer acquisition? How have advertising and marketing campaigns and practices changed during 2014 and early 2015? In addition, what are the most popular retail channels used by mobile wireless providers, and how has this changed over the past year?

## **VIII. OTHER DEVELOPMENTS IN THE MOBILE WIRELESS INDUSTRY**

In addition to alternative sources of data and information to update the data and metrics used in the *Seventeenth Report* and previous *Reports*, we invite commenters to recommend additional or alternative

indicators to enhance the analysis of competitive market conditions with respect to mobile wireless. To the extent that commenters believe we should include additional metrics or perform additional analyses, we ask that they provide these data and explain these analyses. In each case, the commenter should also submit, or identify sources for, the data and information needed to compile the proposed indicator.

Finally, we seek comment on other factors or developments that may affect or be relevant to competition and consumer choice in the mobile wireless marketplace. For example, we seek information on the participation of minority and women-owned businesses in the mobile wireless marketplace, and how such participation may affect services provided to minority consumers or other niche market segments. In addition, we seek comment on the extent to which features such as network security, privacy, and resiliency are important to consumers when choosing a mobile wireless service provider. We also seek information on consumers' willingness to pay, if at all, for such features. Further, we invite commenters to submit any studies or analyses that compare the mobile wireless marketplace in the United States with that in other countries. Commenters should address any other recent developments in the mobile wireless industry as they find them important to competition.

## **IX. 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 **June 29, 2015** and reply comments on or before **July 14, 2015**. All filings should refer to WT Docket No. **15-125**. Comments may be filed: (1) using 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).

Comments and reply comments filed in response to this *Public Notice* will be available for public inspection and copying in the Commission's Reference Center, Room CY-A257, 445 12th Street, S.W., Washington, D.C. 20554, and via the Commission's Electronic Comment Filing System (ECFS) by entering the docket number, WT 11-186.

Comments may be filed using the ECFS or by filing paper copies. See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (1998). Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/cgb/ecfs/>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters 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." A sample form and directions will be sent in reply.

Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, commenters 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, as follows:

-All hand-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12<sup>th</sup> St., S.W., Room TW-A325, Washington, DC 20554. All hand deliveries must be held together with rubber bands or fasteners. Envelopes must be disposed of before entering the building. The filing hours at this location are 8:00 a.m. to 7:00 p.m. **PLEASE NOTE:** This is the **ONLY** location where hand-delivered or messenger-delivered paper filings for the Commission's Secretary will be accepted. The Commission's former filing location at



236 Massachusetts Ave., N.E., is permanently closed.

-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 12th Street, S.W., Washington, DC 20554.

-All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

Alternate formats of this *Public Notice* (computer diskette, large print, audio recording, and Braille) are available to persons with disabilities by contacting the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY), or send an e-mail to [fcc504@fcc.gov](mailto:fcc504@fcc.gov).

For further information, contact Catherine Mataves, Spectrum & Competition Policy Division, Wireless Telecommunications Bureau, (202) 391-6272, or Leon Jackler, Spectrum & Competition Policy Division, Wireless Telecommunications Bureau, (202) 418-0946.