



PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

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COMMENT SOUGHT ON MEASUREMENT OF MOBILE BROADBAND NETWORK PERFORMANCE AND COVERAGE

PLEADING CYCLE ESTABLISHED

CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36

Comment Date: July 1, 2010

In the *2009 Consumer Information and Disclosure Notice of Inquiry (NOI)*, the Commission sought comment on ways to protect and empower American consumers by ensuring sufficient access to relevant information about communications services.¹ Subsequent to release of the *2009 Consumer Information and Disclosure NOI*, the Commission released the National Broadband Plan, which recommends that the Commission develop broadband performance standards for mobile services, maintain and expand on current initiatives² to capture user-generated data on network performance and coverage, and continue to work with measurement companies, application designers, device manufactures, and service providers to create an online database to help consumers make better choices for mobile broadband.³ Further, the Plan suggests that the Commission encourage industry to create more transparent and standard disclosure of network performance and coverage for mobile broadband.⁴

As part of the National Broadband Plan proceeding, the Commission issued Public Notice # 24 to gather additional information on fixed residential and small business Internet broadband services.⁵ With that Public Notice, the

¹ *2009 Consumer Information and Disclosure; Truth-in-Billing and Billing Format; IP-Enabled Services*, CG Docket No. 09-158; CC Docket No. 98-170; WC Docket No. 04-36, Notice of Inquiry, 24 FCC Rcd 11380 (*2009 Consumer Information and Disclosure NOI*).

² In March, 2010 the Commission released an iPhone and Android consumer broadband test that collects and reports data rates, latency, and user location when initiated on the handset. The mobile application is available for download from the iPhone or Android App store. The Commission also released a fixed consumer broadband test which collects street address and broadband performance data. The fixed application is accessible at www.broadband.gov/qualitytest. As of May 19, 2010, about 50,000 unique users have installed the FCC's mobile application and about 230,000 unique users have accessed the fixed test. Many unique users have taken the tests multiple times.

³ Federal Communications Commission, *Connecting America: The National Broadband Plan*, 47 (rel. Mar. 16, 2010) (NBP or Plan).

⁴ NBP at 47.

⁵ See *2009 Consumer Information and Disclosure NOI; Comment Sought on Broadband Measurement and Consumer Transparency of Fixed Residential and Small Business Services in the United States – NBP Public Notice #24*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice (rel. Nov. 24, 2009), 24 FCC Rcd 14120 (2009).

Commission began its effort to measure and publish data on actual performance of fixed broadband services, as ultimately recommended in the National Broadband Plan.⁶ The Commission recently contracted with a third-party, SamKnows Limited, to embark on this initiative, and has released a Public Notice seeking comment on the proposed methodology.⁷

As detailed below, we now seek comment on whether and how to pursue a similar measurement program for mobile broadband services given the growing significance of mobile internet access. Additionally, we seek comment on how providers can improve voluntary self-reporting of network performance and coverage.

Because some of the questions below may be related to issues raised in the *2009 Consumer Information and Disclosure NOI*, we encourage parties who have provided responses on related issues in other proceedings to respond to this Public Notice by citing previous filings and expanding on previous comments as appropriate, to ensure that all relevant information is included within the record we are developing.

Measurement metrics for mobile broadband services: We seek to understand the best metrics to measure the performance of mobile broadband services. Performance of mobile broadband networks is becoming more important as mobile broadband plays an increasingly important role in our lives and in our economy.

1. What are the best measurement metrics for mobile broadband services?
 - a. What performance characteristics should be tracked for mobile broadband networks (*e.g.*, typical data throughput, signal strength, accessibility, retainability, latency, other quality of service parameters)? At what level of temporal and geographic granularity?
 - b. What parts of the network should be measured? What starting and ending points (*e.g.*, radio access network, middle mile) are most useful and actionable for consumers, regulators and providers?
 - c. Should measurement processes and standards for mobile broadband services be different than those for fixed broadband connections?

User-generated and other data gathering methods: We seek comment on methods to gather better data for mobile broadband network performance and coverage.

2. What are the best methods for collecting data on mobile broadband performance and coverage for end-users?
 - a. What are the best available tools in the market today for measuring mobile broadband performance and service coverage?
 - b. Are there current data sets already available that could be useful for facilitating better consumer disclosures on mobile broadband performance and coverage?
 - c. Are there existing technologies that can measure actual end-user experience on mobile broadband networks? If so where could the measurements take place (*e.g.*, on the device, inside the network)?
3. How can user generated data (*i.e.*, ‘crowdsourcing’) on mobile broadband network performance and coverage be utilized to assist in collecting data and improving transparency?
 - a. What efforts and technologies currently exist that can enable device level data collection on performance and coverage of mobile broadband networks? What metrics could a device level software application collect that could measure mobile broadband performance and coverage (*e.g.*, signal strength, data throughput rate)? What other data points would be valuable to collect in association with that data (*e.g.*, location, tower ID, handset type)?

⁶ NBP at 45.

⁷ See *Comment Sought on Broadband Residential Fixed Broadband Services Testing and Measurement Solution*, CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36, Public Notice, DA 10-670 (rel. Apr. 20, 2010) (*Fixed Broadband Services Testing PN*).

- b. For collecting device level data, what impact does the type of device (*e.g.*, smartphone, feature phones, laptop, wireless modem) itself have on end-user experienced network performance? How, if at all, could a measurement methodology take variations resulting from device type into consideration?
 - c. How could measurement methodology account for variations in performance due to the location (*e.g.*, basement of house vs. above ground) or movement (*e.g.*, user on a train) of the end-user? How can we account for differences in location determination methods (*e.g.*, GPS) across handsets and providers, if any? How should buildings, topography, weather, continued network build-outs, and other service availability variables be accounted for in the methodology?
 - d. Can a statistically robust sampling method correct for the variables described above, such as the impact on performance and coverage measurements of movement, device and location variability?
 - e. How can we measure performance with minimal impact on the network itself? For example, how can active measurement techniques that generate additional network traffic mitigate potential increases in congestion?
4. What are the benefits and costs of measurement for providers, regulators, customers and others?
- a. What are the benefits (*e.g.*, transparency, better data, network and international comparability, benefits for researchers, verification of National Broadband Map grantee data)?
 - b. What are the costs (*e.g.*, hardware costs, usage of the network, consumer hassle, accurate information already exists)?
 - c. Are there any legal, security, privacy or data sensitivity issues with collecting device level data? If so, how can these issues be addressed?

Publication and communication: We seek comment on the best methods for publishing and communicating mobile broadband network performance metrics to consumers to help them make informed choices about mobile broadband services.

5. How could information on mobile broadband performance and coverage be better communicated to consumers?
- a. What are the current best practices for displaying or communicating mobile broadband performance and coverage to consumers today?
 - b. Are consumers currently being provided with enough accurate and detailed information about performance and service coverage to make informed choices between different mobile broadband network providers?

Current mobile broadband network performance and coverage disclosures: Existing voluntary disclosures related to mobile broadband performance and coverage have proven valuable for consumers. Providers of mobile broadband services usually provide coverage maps and ‘up-to’ or ‘typical’ data throughput rates. Third-parties also provide and compile coverage maps for providers (American Roamer) and consumers (Root Wireless). While existing data on mobile broadband services are helpful, gaps remain. For example, the currently provided ‘up-to’ or ‘typical’ data throughput rates are rough estimations of actual performance and some coverage maps provide a binary ‘yes’ or ‘no’ reading without accounting for signal strength at particular locations, whereas other maps provide more layered readings (such as indoor/outdoor or ‘good’/‘better’/‘best’). Additional voluntary performance measurements and standards could provide better information enabling consumers to make informed choices about mobile broadband services.

6. What measurements are typically performed by service providers today to track mobile broadband network performance and service availability?
- a. What tools are currently available for consumers to check coverage and performance at a specific geographic location by mobile broadband network (*e.g.*, coverage maps), and how accurate are the data for typical outdoor and indoor consumer use?
 - b. How are data for coverage and service area maps collected, verified and displayed (how compiled, how accurate, how granular)? How are data on mobile broadband performance (*i.e.*, data throughput rates) measured and displayed?
 - c. What technologies are used to collect such data (*e.g.*, RF modeled coverage, drive tests, network reporting, handset data collections)?

- d. Are there any voluntary industry standards that are being used in disclosing mobile broadband network performance and coverage to consumers? How could these be improved (e.g., signal strength or throughput bands to map different levels of service quality)?

In addition to written responses, we encourage submission of any data, charts or proposed plans that can be entered into the public record for purposes of building a record on this subject. All parties with knowledge and interest are encouraged to file.

This matter shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules. See 47 C.F.R. §§ 1.1200, 1.1206. Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentations must contain summaries of the substance of the presentations and not merely a listing of the subjects discussed. More than a one-or two-sentence description of the views and arguments presented generally is required. See 47 C.F.R. § 1.1206(b). Other rules pertaining to oral and written *ex parte* presentations in permit-but-disclose proceedings are set forth in section 1.1206(b) of the Commission’s rules, 47 C.F.R. § 1.1206(b).

All comments should refer to CG Docket No. 09-158. CC Docket No. 98-170, and WC Docket No. 04-36. Please title comments responsive to this Notice as “Comments - Mobile Broadband Measurement.”

Comments may be filed using (1) the Commission’s Electronic Comment Filing System (ECFS), (2) the Federal Government’s eRulemaking Portal, or (3) by filing paper copies.⁸ Comments can be filed through the Commission’s ECFS filing interface located at the following Internet address: <http://www.fcc.gov/cgb/ecfs/>. Comments can also be filed via the Federal eRulemaking Portal: <http://www.regulations.gov/>.⁹ Generally, only one copy of an electronic submission must be filed. 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 who choose to file by paper must file an original and four copies of each filing.

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.

- All hand-delivered or messenger-delivered paper filings for the Commission’s Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours 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 12th Street, S.W., Washington, D.C. 20554.

⁸ See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (1998).

⁹ Filers should follow the instructions provided on the Federal eRulemaking Portal website for submitting comments.

People with Disabilities: To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530, (202) 418-0432 (TTY).

For further information about this Public Notice, please contact Jordan Usdan at (202) 418-2035.