Before the
Federal Communications Commission
Washington, D.C. 20554

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| In the Matter of | ) | |
| | ) | |
| Deployment of Nationwide Broadband Data to | ) | |
| Evaluate Reasonable and Timely Deployment of | ) | |
| Advanced Services to All Americans, | ) | WC Docket No. 07-38 |
| Improvement of Wireless Broadband | ) | |
| Subscribership Data, and Development of Data on | ) | |
| Interconnected Voice over Internet Protocol | ) | |
| (VoIP) Subscribership | ) | |

**FURTHER COMMENTS OF CONSUMERS UNION, CONSUMER FEDERATION OF AMERICA, FREE PRESS AND PUBLIC KNOWLEDGE**


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July 17, 2008

## Summary

This expedited comment cycle within the Further Notice of Proposed Rulemaking seeks input on the creation of a broadband availability map to facilitate deployment efforts across the country. The Commission requests comment not only on the characteristics of the map itself, but the methodology used to collect the underlying data. Section 706 of the Telecommunications Act of 1996 mandates the Commission encourage the universal and timely deployment of advanced telecommunications capability. In order to begin to fulfill this mandate, the Commission first needs detailed, granular and accurate information on the location of broadband infrastructure deployed throughout the country. The Commission can then further aid the timely deployment and adoption of broadband by disseminating this availability data and accompanying visual aids to the public in an easily accessible format.

We recommend that the Commission collect availability information from providers at the Census Block Group level. Many of the nation's largest providers have already reported data in this fashion to the California Public Utility Commission, indicating that such a reporting requirement is completely feasible and not burdensome. In these Comments we outline why Census Block Groups, and not Census Tracts, are the appropriate geographic metric for availability reporting. A move to Census Tracts (from the current ZIP code availability methodology) will improve the level of granularity of information concerning availability in broadband in urban areas, but will likely lead to a *decrease* in the granularity of broadband availability information in rural areas (as compared to the current ZIP code methodology). The use of Census Block Groups to measure availability will preserve (and in most cases improve) the level of detail

provided by the current ZIP code methodology, and will be completely compatible with the new Census Tract subscriber information gathered on the modified Form 477.

The Commission should dismiss any claims of competitive disadvantage through the release of this information to the public. The website's of major providers already provide visitors the ability to input address information to inquire on the availability of service. Indeed, this website information was leveraged to create the Massachusetts broadband availability map.

The Commission should recognize that availability maps are merely a visual representation of the underlying information, and thus are limited in comparison to the actual data itself. The Commission should also recognize the inadequacy of maps made available through state efforts, and seek to produce more useful maps in its future efforts. The state maps in all cases are simply image files, and do not provide consumers with a detailed portrait of broadband availability at the neighborhood level. We encourage the Commission to employ a more intuitive and interactive interface utilizing the innovative mapping technologies that are commonly used across the Web. Geographic annotation and visualization is a burgeoning online movement that currently provides a wealth of opportunities to inform consumers in innovative ways.

Through the release of the underlying availability data and creation of innovative visual aids, the Commission can provide benefits to a wide-array of stakeholders including government (at all levels), consumers, public-private organizations, and the business community. We request that the Commission adopt the proposals offered in these comments in order to adequately fulfill the obligations of Section 706.

## Table of Contents

# I. Introduction

## A. Interest and Expertise of Commenters

The interest and expertise of the Commenters was set forth in the original comment period.[1]

## B. The Commission's Action to Improve Form 477 is Commendable, But Policymakers Need Meaningful Broadband Availability Data

During the June 2007 comment period in this proceeding, we provided a thorough critique of the Commission's broadband data collection methods, demonstrating that information reported by carriers in Form 477 was inadequate for the purposes of implementation of Section 706 of the 1996 Telecom Act.[2] In March of this year the Commission adopted a *Report and Order* that made substantial changes to the Form 477 reporting requirements, addressing many of our concerns. We applaud the Commission for its action. The new data will enable a highly accurate understanding of the state of broadband adoption and marketplace competition in the U.S. and will ultimately facilitate more effective policymaking. Nonetheless, the collection of this information is only the first step. While the new Form 477 will compel providers to disclose more detailed information about broadband subscribership, there is no reporting requirement for broadband availability. Furthermore, the question of how to make such data accessible to the wide-variety of stakeholders remains open. In these comments we offer the Commission practical solutions to the unanswered questions concerning broadband availability.

[1] Consumers Union et al. Comments at 7-8.
[2] Consumers Union et al. Comments at II (B).

### C. The Utility of Broadband Availability Mapping

The Commission has created an expedited comment period in order to receive public input on creating "a highly detailed map of broadband availability nationwide."[3] The Commission states that the goal of such an availability map is to better target public and private resources towards areas that remain unserved. The Commission tentatively concludes that it will compel broadband providers to submit the information that they use to determine address-by-address availability.

We strongly agree that a highly detailed understanding of broadband availability is critical for the purposes of efficient allocation of the scarce resources available for broadband deployment to unserved areas. Detailed availability information is also critical for the understanding of the factors influencing broadband deployment in *underserved* areas. We encourage the Commission to gather the most detailed availability data that it can. However, we urge the Commission to avoid the, perhaps distracting, singular focus on broadband *maps*. The Commission must recognize that an availability map or any visual representation is just that -- a visual representation of data, and therefore is not in and of itself superior to the information contained in the underlying data.

The Commission rightly noted the "focus" a map can bring to broadband deployment, highlighting the *perceived* "success" of the ConnectKentucky Mapping program.[4] But the utility of these maps is not in the colorful pdf files produced, but in the

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[3] FNPRM ¶34

[4] FNPRM ¶34. While we applaud the important efforts undertaken at the state-level by groups like ConnectedNation, we strongly urge the commission to be more critical in its assessment of the actual impact of such public-private programs. To date, there has been no empirical program evaluation of these projects, and the benefits have not been quantified. ConnectedNation has released "studies" that claim their program is

detailed information provided to stakeholders and consumers. Because of this, we believe it is imperative that the Commission provides the underlying availability data to

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successful, as measured by increases in broadband adoption. But these claims are based on a completely flawed analysis, and are not a reliable assessment of the programs effectiveness. For example, in the ConnectedNation report claiming the positive impact of the ConnectKentucky program, the entire claim for success is based on data showing that during the 2005-2007 period the broadband adoption growth rate was 83% in KY versus 57% for the U.S. as a whole. But there is a major flaw in this approach. In 2005 Kentucky was a very low-ranked state in terms of broadband adoption -- improvement by a subject with a low performing metric almost always results in greater percentage gains when compared to improvement by a subject with a higher performing metric. This is especially true when comparing a low performing subject with the improvement of the average of the entire study group (in this case, comparing the improvement of a low performing state with the average improvement of all states). For example: Kentucky went from 24 percent of homes with broadband to 44 percent of homes with broadband over the 2005-2007 period -- an 83 percent increase (note percent increase, not percentage point increase). Over the same period (according to Pew) nationwide, adults using broadband in the home went from 30 percent to 47 percent, a 57 percent increase. ConnectedNation then reasons that if they would have followed the "national rate", they should have ended up at 37 percent of homes covered, not 44 percent. But the national rate average is just that -- an *average* of all states, both low and high performing. It is composed of many states that already had high broadband penetration in 2005, and thus didn't have much room to improve to 2007. Thus we'd certainly expect the national rate of improvement to be somewhat lower than the rate of improvement of some of the lower ranking states -- simply because they had more room to improve. Indeed, using Form 477 data to examine changes in broadband penetration over the 2002 to 2006 reveals that the states with the highest percentage change in broadband penetration were the worst performing states in 2002, and their percentage improvement were far higher than the national average. The nationwide improvement over this period was 179 percent. Kentucky, which was ranked 50th in penetration in 2002 improved 544 percent; but Montana (ranked 49th in 2002), which had no mapping program intervention had a 568 percent improvement. Alaska had the lowest improvement over this period (97 percent), but was also ranked 3rd in penetration in 2002. Simply stated, *a big percentage improvement by a low performing state is unremarkable, especially compared to the nationwide average improvement*. Let us be clear, we are not suggesting that the ConnectedNation programs are unsuccessful; we are merely urging the Commission to recognize that there has been no proper study conducted to determine this basic claim, and thus the direction of public policy should not necessarily be charted to follow this program in lieu of other policies. A proper quasi-experimental study seeking to evaluate the program would not compare KY's performance to the national average; it would compare KY's performance to other states that had no such program and also had similar broadband penetration and other characteristics to Kentucky's.

the general public. Unlike the detailed subscribership data that will be reported on the modified Form 477, we strongly feel that there is no reasonable claim of confidentiality over availability data, even data at a very detailed geographic level. Broadband providers offer services and advertise those services to the public. Providers routinely disclose the availability of service at a specific address to anyone who inquires, in many cases making such information available via a web interface. Thus there is no reason why the Commission cannot make detailed availability information available to the public. Only then will the Commission fully empower federal, state and local government, civic groups, private entities, researchers, and others interested in facilitating broadband deployment on both a local and national level.

## II. Discussion

### A. The Commission is the Appropriate Entity to Gather and Disseminate Broadband Information to the Public

In the process of crafting and adopting the Telecommunications Act of 1996 ("The Act"), Congress directed the Commission to facilitate the deployment and adoption of universal, affordable and competitive broadband services.[5] In doing so, Congress provided the FCC with the authority to collect and distribute information on the deployment and adoption of advanced telecommunications and information services in the United States -- recognizing that the Commission contains the necessary expertise and experience to carry out such a task.[6] Thus, there is no doubt that the Commission is the appropriate agency to undertake the critical effort of determining the status of broadband deployment.

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[5] .47 U.S.C. § 157. See § 706(a) of the Telecommunications Act of 1996, 104 P.L. 104; 110 Stat. 56; 1996 Enacted S. 652; February 8, 1996; Consumers Union et al. Comments, GN Docket No. 07-45, p. 9-11, May 16, 2007.

[6] Id.

The current patchwork of state-level mapping efforts, while filling an unmet need, cannot surpass the authority and efficiency of the availability mapping that the Commission, as the expert agency, is capable of conducting.[7] State broadband mapping efforts have acted as trailblazers during federal government inaction[8], but the scope of these projects is limited and they are in many cases reliant on the voluntary participation of entrenched telecom and cable incumbents. Now that the Commission has indicated its willingness to fully assume the responsibility for assessing broadband deployment, state and local governments will be able to devote their scarce resources towards deployment and demand aggregation programs.

Indeed, during the original comment period, several state agencies that had participated in availability mapping efforts recognized the Commission's role as the appropriate agency to collect such information.[9] The California Public Utility Commission stated:

> The FCC has jurisdiction over broadband providers and plays a valuable role in ensuring that, on a nationwide basis, granular data about key aspects of broadband services are consistently developed, collected, and

[7] See for instance, Comments of New York State Department of Public Service.

[8] See for example, Mary Branham Dusenberry, "Broad Base of Broadband," Council of State Governments, April 2008, Available at http://www.csg.org/pubs/Documents/sn0804BroadBaseofBroadband.pdf. Also for instance, Sean Slone, "Health Policy Rx: States Taking the Lead, Setting Examples," April 2007, Council of State Governments, Available at http://www.csg.org/pubs/Documents/sn0704HealthPolicyRX.pdf; Janet Pelley, "States take lead on climate change laws," Environment Science & Technology, Dec. 11, 2003, Available at http://pubs.acs.org/subscribe/journals/esthag-w/2003/dec/policy/jp_states.html.

[9] Joint Comments of the Massachusetts Department of Telecommunications and Cable and the Maine Public Utility Commission at 7; Comments of the National Association of State Utility Consumer Advocates at 3-4; Comments of the National Association of Telecommunications Officers and Advisors, the National Association of Counties, The U.S. Conference of Mayors, and The National League of Cities at 3; Comments of the New Jersey Division of Rate Counsel at 4-5.

> maintained. The FCC should use their jurisdictional authority to develop detailed information about *current* subscribership and broadband availability for every state and territory.[10]

Thus a clear consensus has developed that the Commission act on their authority and produce a comprehensive broadband availability database accompanied by visual aids to facilitate the utility of this information.

### B. The Commission Can Learn From Past State Initiatives

Several U.S. states -- from Washington to Kansas to South Carolina -- have implemented initiatives aimed at fostering a better understanding of local broadband deployment and adoption. The legislatures in these states recognized that prior to acting to improve broadband adoption, they first needed to identify the areas that lack broadband infrastructure. Many states produced availability maps. The Commission can learn from and improve upon these efforts.

The most illustrative example that can guide the Commission is the broadband availability reporting and mapping project conducted by the state of California. California requires entities that apply for state video franchises to disclose availability information at the Census Block Group (CBG) level. During the initial comment period in this proceeding, the California Public Utility Commission noted three entities had applied for statewide franchises and all three were "able to define its service footprint using CBGs."[11] Since that time this number has greatly expanded to now include the two largest providers of DSL service in the United States and the four largest providers of

[10] Comments of California Public Utility Commission at 3-4.
[11] Id. at 10.

cable modem service.[12] Thus it is clear that it is completely feasible to request carriers to disclose their service *availability* at the detailed geographic level of a Census Block Group (we discuss the need for availability information at a level more detailed than the Census Tract below). It is essential that the Commission recognize this model was quickly and successfully implemented in the Nation's most populous state, comprising more than 12 percent of all Americans.[13] Still, we believe the Commission can improve on California's efforts.

While California set an example in gathering this information, the dissemination of the data was far from adequate. Similar to other state efforts, the only availability information made public as a result of the California program was a map published in a single portable document file (.pdf) of considerable size. This dissemination method brought with it considerable problems. First, due to the file size, navigating and zooming within the file was slow and frustrating. Second, the map itself is presented in a fashion that is incapable of conveying the level detail provided by the underlying data. While California partially addressed the first concern by providing maps of specific regions, this did nothing to address the second concern.

For example, the wireline map for the Bay Area presents information concerning the availability of wireline broadband service broken down by five speed tiers in 11 counties. But if a user zooms down to examine a specific area in a county, the map becomes blurry and there is uncertainty as to where certain speed tiers (and areas of unavailability) overlap. Furthermore, the smallest identifying geographic market is a

[12] See http://www.cpuc.ca.gov/puc/hottopics/2telco/videofranchising.htm; http://www.ncta.com/Statistic/Statistic/Top25MSOs.aspx.
[13] See http://www.census.gov/popest/states/NST-ann-est.html.

highway, leaving those users genuinely interested in the status of broadband deployment in their section of the county with very little useful information. In short, the map looks nice, but its utility beyond that point is questionable. This is unfortunate, as the state is in possession of information at the Census Block Group level. If it desired, the state could release that information to the public and create a user-friendly Internet interface for accessing information about deployment in a specific Census Block Group. The only thing preventing this dissemination is unreasonable claims of confidentiality by broadband providers.

We believe the Commission can easily improve on previous mapping efforts and below offer suggestions on how to do so.

### C. The Task Before The Commission

By leveraging and improving on state efforts, the Commission has the opportunity to provide Americans with a critical information tool. However, before this can become reality, the Commission must address a number of key issues.

#### i. The Real Utility of Broadband Availability Maps Is Not in the Map Itself, But in the Underlying Information

The singular purpose of a broadband availability map is to convey information about where broadband infrastructure is deployed. This is essentially a "yes or no" question. But in the process of answering that question, the mapmaker will gather information that is of equal or greater value than knowing the areas with no broadband availability. For a given geographic area (be it a specific address, a Census unit, or a radius -- whichever the mapmaker chooses) the mapmaker will know the total number of service providers; the names of the service providers; the technologies deployed and the general quality (in terms of speed) of the services offered. Thus the mapmaker is left

with two important choices: what is the appropriate geographic unit of measurement, and what method is best for conveying all of the details gathered?

We suggest the Commission follow the example set by California and require the reporting of broadband availability at the Census Block Group geographic level.

In the *Data Report and Order* the commission struck the right balance between the need for detailed subscribership data and the burden of gathering such information by choosing the Census Tract as the geographic reporting unit. Census Tracts are reasonably small by population (generally encompassing between 2,500 and 8,000 persons) and geography (in more populated areas a single county can have multiple tracts; in sparsely populated areas a county will have only one tract). Tracts are associated with a wealth of Census Bureau data. Census Block Groups are subunits of Tracts, generally encompassing between 600 and 3,000 persons, with an optimal level of 1,500.[14] Like Tracts, in sparsely populated areas a county will have just a single Block Group.

We urge the use of Census Block Groups and not Census Tracts for availability information because this information must not only be compatible with the new subscribership information (gathered at the Census Tract level) but *must also be as informative as or an improvement over the current availability metric* -- the use of ZIP codes. Currently, the Commission reports the number of providers who report having at least one customer subscribing for each U.S. postal ZIP code. This is not a direct measurement of deployment or availability, but a proxy for such. In our 2007 comments,

[14] See http://www.census.gov/geo/www/cob/bg_metadata.html (for census block groups) and http://www.census.gov/geo/www/cob/tr_metadata.html (for census tracts). The Census Block Group is simply a sub-metric of the Census Tract. Thus, incorporation of the Census Block Group availability data into the larger Census Tract dataset will be a straightforward process for the Commission and researchers.

we (as did many others) criticized this methodology for lacking meaningfulness by overstating the level of deployment and competition. Part of our critique was based on the large size (in terms of population and geography) of ZIP codes. In urban areas ZIP codes can encompass more than 100,000 persons, while in sparse rural areas occupied ZIP codes can have as little as one occupant.[15] The median populated ZIP code (or more precisely ZIP Code Tabulation Area or ZCTA) contains over 2,700 persons, while the average number of people living in a ZIP code is nearly 9,000. ZIP codes have an inverse exponential population distribution, with nearly 20 percent of ZCTAs having less than 500 persons.

In contrast, Census Tracts typically between 2,500 and 8,000 persons, while Census Block Groups encompass typically between 600 and 3,000 persons with an optimal level of 1,500 persons. Thus, if the Commission moves from reporting the number of providers at the ZIP code level to the number of providers at the Census Tract level, it will gain more information for the more densely populated areas (as the upper end of tracts is near 8,000 persons while the upper end of ZIP codes is well over 100,000 persons); but the Commission will lose some information for the less populated areas (as the lower end of tracts is typically 2,500 persons, near the median level for ZIP codes). Thus we strongly urge the move to Census Block Groups for availability reporting, as there will be on average an improvement in the level of information compared to the old ZIP code metric (because the optimal CBG contains 1,500 persons, while the median ZIP

[15] There is no comprehensive population data for ZIP codes. There is however Census data for ZIP Code Tabulation Areas (ZCTAs), which generally correspond to the standard ZIP codes. Non-standard ZIP codes included Post Office Boxes and single-entity ZIP codes used by certain businesses. In total, there were over 32,000 populated 5-digit ZIP Code Tabulation areas.

code contains 2,700 persons). In many rural areas an entire county will consist of a single Census Tract, but multiple ZIP codes or Block Groups. Therefore in order to maximize the utility of the availability information where it is presumably needed the most (rural areas), the Commission should use Block Groups in leiu of Tracts.

To illustrate the differences between ZIP codes (or ZCTAs), Census Tracts and Census Blocks, we examine five counties in the state of Montana. We chose counties that range from the most to least populated in the state. As shown in Figure 1, the range of population in ZCTAs in the most populated county (Yellowstone) is vast, ranging from a low of 63 to a high above 44,000. As the total population of a county decreases, we see the high end of the ZCTA diminish substantially. Also, as we move from the most to the least populated counties, we see that the average size of a Census Tract far exceed the averages for ZCTAs and Census Block Groups (until we get to the least populated county in the state, which is comprised of just a single ZCTA, Tract and Block Group).

## Figure 1:
## Block Groups Provide an Improvement in Detail over ZIP Codes

| Geographic Unit | Yellowstone County, MT (most populated county in MT) | | | |
|---|---|---|---|---|
| | Number of Geographic Units in County | Population Range | Average Population | Total Population |
| ZIP Code Tabulation Areas (ZCTA) | 15 | 63 - 44,391 | 8,623 | 129,352 |
| Census Tracts | 27 | 380 - 9,976 | 4,791 | 129,352 |
| Census Block Groups | 96 | 380 - 4,430 | 1,347 | 129,352 |

| Geographic Unit | Big Horm County, MT (14th most populated county in MT, out of 56 total) | | | |
|---|---|---|---|---|
| | Number of Geographic Units in County | Population Range | Average Population | Total Population |
| ZIP Code Tabulation Areas (ZCTA) | 10 | 96 - 4,726 | 1,267 | 12,671 |
| Census Tracts | 6 | 145 - 4,358 | 2,112 | 12,671 |
| Census Block Groups | 13 | 145 - 2,477 | 975 | 12,671 |

| Geographic Unit | Blaine County, MT (28th most populated county in MT, out of 56 total) | | | |
|---|---|---|---|---|
| | Number of Geographic Units in County | Population Range | Average Population | Total Population |
| ZIP Code Tabulation Areas (ZCTA) | 7 | 40 - 2,595 | 1,001 | 7,009 |
| Census Tracts | 4 | 1,353 - 2,733 | 1,752 | 7,009 |
| Census Block Groups | 8 | 426 - 1,448 | 876 | 7,009 |

| Geographic Unit | Granite County, MT (42nd most populated county in MT, out of 56 total) | | | |
|---|---|---|---|---|
| | Number of Geographic Units in County | Population Range | Average Population | Total Population |
| ZIP Code Tabulation Areas (ZCTA) | 3 | 211 - 1,533 | 943 | 2,830 |
| Census Tracts | 1 | 2,830 | 2,830 | 2,830 |
| Census Block Groups | 3 | 908 - 967 | 943 | 2,830 |

| Geographic Unit | Petroleum County, MT (least populated county in MT) | | | |
|---|---|---|---|---|
| | Number of Geographic Units in County | Population Range | Average Population | Total Population |
| ZIP Code Tabulation Areas (ZCTA) | 1 | 493 | 493 | 493 |
| Census Tracts | 1 | 493 | 493 | 493 |
| Census Block Groups | 1 | 493 | 493 | 493 |

*Source: 2000 Census*

The ease at which carriers were able to report their service footprint at the CBG level in California is a clear demonstration that this requirement is feasible and not in any way overly burdensome. While we urge the Commission to report the availability of broadband service on a variety of dimensions (including name and number of providers,

types of technology and speeds offered), if the Commission maintains the practice of only reporting the number of providers, then they *must move to the Census Block Group level*, as a move to the Census Tract level will potentially lead to *less* information concerning deployment in rural areas (as mentioned above, the move to the Census Tract level will improve the level of information concerning deployment in urban areas).

Despite the repeated appeals by network providers, the Commission need not be concerned with confidentiality in collecting and disclosing information related to the mere availability of a service. Many public-private partnerships on the state level failed to disclose this underlying data, severely limiting the usefulness of their efforts. Consumers inquiring about broadband availability using these limited maps are unable to locate their specific addresses or general neighborhoods in any reasonable fashion. As the Commission rightly recognizes, a citizen need only inquire with an Internet service provider (through phone, in person contact or the company's website[16]) in order to find out whether service is offered at a specific location.[17] Furthermore, the public interest benefits created through collection of this information far outweigh any supposed confidentiality concerns. Given this reality, any claims of competitive disadvantage due to disclosure should be dismissed.

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[16] For instance, Verizon's FTTH service, the availability of which may be the most sensitive in the current U.S. broadband market, is available. See http://www22.verizon.com/content/consumerfios/check+availability/check+availability.htm.

[17] In fact, the John Adams Innovation Institute utilized this fact in creating an availability map for the state of Massachusetts. See Joint Comments of the Massachusetts Department of Telecommunications and Cable and the Maine Public Utility Commission at 4.

### ii. The Commission Should Not Bound Itself to Traditional Mapping

Once the Commission gathers the raw availability data from providers, it must then create user-friendly interfaces in order to make the best use of this information. We stress again, the Commission should make as much of the entire underlying data set as possible publicly available for download, as this is the only way for comprehensive analysis of the data by third party researchers. With that in mind, we recognize that the Commission has expressed their intention to utilize the data to create a map of broadband availability across the United States. As we have discussed above, the previous maps created through state programs are far from adequate, and the Commission should avoid these approaches. There are several components that must be a part of the Commission's map: The Commission must include information on where service is available (of any kind), the technologies available and the maximum speeds (download and upload) provided to local customers through each available technology. A viewer should also have the ability to see the number of providers available and the names of the companies providing service. It would also be helpful to hyperlink to each provider's main website. The Commission should also *only* include service providers, whose "data plans allow them to browse the Internet and access the Internet content of their choice."[18] We detailed this problem during the initial comment period and urge the Commission to exclude those providers whose customers are precluded from basic openness principles (to get around this issue, the Commission could do something similar to California and provide maps that only include wireline and fixed terrestrial wireless services[19]).[20]

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[18] Report and Order ¶3.

[19] See http://www.calink.ca.gov/taskforce/appendix_wirelinemaps.asp. Given its closed nature, the user experience is vastly different on mobile vs. fixed platforms.

In order to provide all of the above forms of information, the Commission must utilize a more intuitive interface than a traditional map. We recommend that the Commission implement the type of interactive map now common across the Internet.[21] Through the use of optional overlays and actual zoom, an interactive map will not only provide detail at a very high level, but it will simplify the viewing experience. In employing this model, the Commission can utilize a communications medium that has become the starting point for education and research, one that is already used by government agencies such as NASA and the ESA.[22] Furthermore, for those preferring a traditional map (one that can be printed out), the interactive map can simply add a function allowing a viewer to export a certain view as an image file or send a Web link to an interested party thereby providing seamless and speedy access.[23]

We also suggest the Commission explore the use of "kmz" files. These files utilize an open standard known as "Keyhole Markup Language" (KML) for image

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Furthermore, the gap between speeds offered on mobile versus fixed platforms is so great that mobile broadband is clearly a complementary service... to be used when mobile, not at home.

[20] Reply Comments of Consumers Union et al. at 13-17.

[21] See for instance http://maps.google.com/; http://www.mapquest.com/; http://maps.yahoo.com/.

[22] Juan Carlos Perez, "Google to put NASA data on the Web," InfoWorld, Dec. 18, 2006, Available at http://www.infoworld.com/article/06/12/18/HNgoognasa_1.html; European Space Agency, "Eurepean Space Agency and Google Earth showcase our planet," Nov. 16, 2006, Available at http://www.esa.int/esaCP/SEMOAM0CYTE_index_1.html; Todd Bishop, "Microsoft photo software to showcase space shuttle," *Seattle Post-Intelligencer*, August 5, 2007, Available at http://seattlepi.nwsource.com/business/326453_software06.html; "NASA Signs With Yahoo! and Akamai To Bring Shuttle Mission Online," NASA Press Release, July 12, 2005, Available at http://www.nasa.gov/home/hqnews/2005/jul/HQ_05_182_RTF_Bandwidth_Sponsorship.html.

[23] A tool allowing the wide breadth of online bloggers and content creators to embed a certain map would also be valuable.

overlays with mapping applications such as Microsoft's Virtual Earth, AOL's MapQuest, NASA's World Wind and Google Maps.[24] The National Weather Service[25] and National Severe Storms Laboratory[26], among other National Oceanic and Atmospheric Administration programs[27], have implemented such a system with their weather related information. KML is also increasingly used for a variety of innovative uses.[28]

Because Census Block Groups are coded in the standard TIGER format, the task of conversion of the underlying availability information into .kmz files has already been automated, thus providing a streamlined method for construction of the service.[29] In providing public access to the underlying dataset, the Commission can not only afford the research community a rich database, but also leverage the creativity of the wider Internet mapping community to present KML information in ways not considered by the Commission (several groups have already used Census data to integrate with mapping programs, including on data at the CBG level[30]). We also believe the Commission must create a simple and straightforward Web address and include a prominent link to this Webpage on the www.fcc.gov homepage. Through these strategies, we believe the

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[24] See John Timmer, "Google's KML map markup language now an official standard," Ars Technica, April 14, 2008, Available at http://arstechnica.com/news.ars/post/20080414-googles-kml-map-markup-language-now-an-official-standard.html.

[25] See http://radar.weather.gov/ridge/kmzgenerator.php; http://www.srh.noaa.gov/ridge/kml/KML_PDD_National.pdf.

[26] See http://wdssii.nssl.noaa.gov/geotiff_new/.

[27] See http://www.nosa.noaa.gov/google_earth.html.

[28] See for example, Yahoo Blog, "Pipes Adds Interactive Yahoo! Maps, KML Support (and More)," May 2, 2007, Available at http://blog.pipes.yahoo.com/2007/05/02/pipes-adds-interactive-yahoo-maps-kml-support-and-more/; http://mapufacture.com/; http://virtualglobetrotting.com; http://maps.webfoot.com/index.php.

[29] See http://tnatlas.geog.utk.edu/tea/downloadfree.htm.

[30] See http://gecensus.stanford.edu/gcensus/index.html; http://www.juiceanalytics.com/writing/census-data-in-google-earth/.

Commission can best "provide an information resource that will facilitate" broadband deployment and education efforts.[31]

## III. Positive Consequences of Effective Mapping

### A. Federal, State and Local Policymakers Will Benefit From Commission Action

As the Commission noted, mapping efforts at the state level have resulted in "public and private resources being focused to provide service to unserved areas."[32] The underlying detailed availability data and interactive maps as detailed as the one we propose above will significantly increase the effectiveness of state and federal deployment efforts. At the federal level, detailed information about broadband availability will facilitate efficient allocation of scarce Universal Service Fund monies (assuming that the Commission adopts the Joint Board's decision to classify broadband as a supported service). At the state level, the detailed availability data will free up funds that were earmarked for mapping efforts and thus increase the amount available for actual technology deployment.

The Commission has also requested comment on partnering with the Department of Agriculture's Rural Utility Service (RUS). We support this proposal and as the Commission rightly notes it would "combine the expertise of the Commission and its staff with that of the RUS in supporting rural infrastructure deployment."[33] This collaboration would further the Commission's goals as set by Congress (in Section 706) and improve the implementation of the Department of Agriculture's deployment

[31] FNPRM ¶34.
[32] Id.
[33] Id.

program. The Commission can play the role of the expert agency by gathering the data, while the RUS can leverage its expertise in using the data to target funding.

We believe an illustrative representation of the value of the Commission providing the service of data collection is reflected in a previous draft of the now passed Farm Bill. A version of the bill, passed by the Senate, included $25 million dollars for the broadband deployment efforts of the Rural Utility Service program while allocating $40 million for a mapping program.[34] Clearly, if the Commission fulfills its obligation to provide detailed availability information, it will free up significant funding for the RUS program to use on actual broadband deployment.

### B. Consumers and Businesses Will Benefit from Broadband Availability Tools

While the underlying availability data will be an indispensable component of federal, state, and local government and public-private broadband deployment efforts, consumers and businesses will also derive much utility from the underlying data and the interactive maps proposed above. There are many examples: Parents seeking to relocate and concerned that their kids maintain or gain access to broadband (an increasingly indispensable homework resource) could use the Commission data to learn which technologies are available and what providers offer these services. Real estate agents would have an invaluable tool at their disposal, providing them a straightforward interface to gain broadband information on a given area. Identifying areas with sufficient broadband capabilities is critical for new small businesses or other businesses seeking to

[34] See Sec. 6110 (j)(1); Sec. 6202 (k). Food and Energy Security Act of 2007. H.R. 2419. 110th Congress, 2nd Session, Available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h2419eas.txt.pdf.

expand. Many other sectors of society and the economy would also stand to benefit provided that the Commission act on the recommendations described above.[35]

## IV. Conclusion

The Commission has an opportunity to not only fulfill the intent of Congress but also provide an invaluable resource to state and local policymakers as well as researchers, private businesses and consumers. We look forward to providing further comment on the availability, structure and utility of the underlying database of information in the non-expedited comment cycle. For now we urge the Commission to require disclosure of availability information at the Census Block Group level, and at a minimum that information be used for the creation of an interactive visual aid that maximizes the utility of the underlying information.

Respectfully submitted,

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[35] We applaud the efforts of private groups that have taken on the task of providing online broadband availability information. Groups like BroadbandCensus.com have played an important role and provide valuable information to the public. However, these resources are mostly derived from self-reported information, and are not a substitute for Commission action. The Commission as the expert agency not only has the authority to compel complete and auditable reporting by all providers, but they also have the resources and the authority to make that information publicly available.

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Dated: July 17, 2008