Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Modernizing the FCC Form 477 Data Program	)	WC Docket No. 11-10
	)	
Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership	)	WC Docket No. 07-38
	)	
Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering	)	WC Docket No. 08-190
	)	
Review of Wireline Competition Bureau Data Practices	)	WC Docket No. 10-132
	)	
Review of Wireless Telecommunications Bureau Data Practices	)	WT Docket No. 10-131

COMMENTS OF FREE PRESS

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I. Introduction and Summary

The National Broadband Plan rightly recognized the central importance of comprehensive broadband data to the Commission's ongoing policymaking, a view shared and partially acted upon by prior agency leadership. The potential further reforms to Form 477 hinted at in this *Notice* are long overdue and must be acted upon as soon as possible in order for the implementation of the National Broadband Plan to be built upon a foundation of fact. While we have repeatedly urged the Commission to stop putting the cart before the horse and wrap up these thoroughly debated reforms months ago, we commend the agency for its commitment to data-driven policymaking and its willingness to move this item forward to a final rule.

The record in the above captioned proceedings is lengthy, reflecting at least four years of debate on many of the questions asked in the instant *Notice*. From this record, it is clear that the Commission must make the following reforms to its broadband data collection and analysis practices in order to adequately fulfill its duties under the Communications Act:

- The Commission must collect basic, granular information about the availability of broadband services.
- The Commission must collect pricing information.
- The Commission should require the reporting of contention ratios as a reliable proxy for a provider's ability to deliver advertised speeds, and as a barometer of timely investment.
- The Commission should monitor metrics of service quality and infrastructure investment.
- The Commission should not make any changes to its current subscribership reporting requirements, nor should it make any changes to the current speed tier reporting categories.
- The Commission must use the subscribership data to calculate HHI concentrations for each census tract, and publish this information in its semi-annual reports.
- The Commission must follow through on the National Broadband Plan's strong recommendation to allow outside researchers to access the underlying Form 477 data.

We applaud the Commission for directly confronting the need to improve the precision, accuracy and meaningfulness of the broadband data it gathers on Form 477. Substantial improvements have already been implemented. But the job of reform started in 2007 is not finished, and will not be until action is taken on the issues of availability, price, service quality and actual speed data; and this effort will not realize its full positive potential unless the Commission both reforms its own analytical efforts and leverages the insight of the third-party research community. We hope the Commission recognizes the consensus developed in the record over the past four years and moves quickly to issue a final Order.

II. The Commission must collect basic, granular information about the availability of broadband services.

In 2008 the Commission adopted long-overdue changes to its Form 477 broadband data collection practices.[1] However, the Commission left the job only half finished -- stopping with new rules on subscribership counts. The critically important matter of broadband *availability* data was left to a Further Notice, accompanied with a promise to reach a resolution by fall 2008. This self-imposed deadline came and went without any further attention paid to the matter. In prior comments and communications, we have recommend the Commission require all providers to report their service footprints by Census Block, broken down by technology type and speed tier.[2]

The NTIA's National Broadband Map offers a good example of this kind of reporting (census block granularity availability data, broken down by speed tier, technology, and name of

[1] See *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Order on Reconsideration, 23 FCC Rcd 9800 (2008) (*Data Order and FNPRM*).

[2] *See* e.g. Comments of Free Press, *In the Matter of A National Broadband Plan for Our Future*, GN Docket No. 09-51, June 8 (2009) (*Free Press Broadband Plan Comments*).

provider), but is unfortunately inferior to the information a reformed Form 477 could provide. While the NTIA should be commended on their efforts, the project was unavoidably hampered by verifiability and methodological issues, at great expense to taxpayers.

But an important lesson from the NTIA's efforts is that the years-long cries from the large ISPs of commercial sensitivity around such data were vastly and irresponsibly overstated.[3] We hope the Commission takes note of this when the inevitable objections are raised in this instant proceeding. That NTIA was able to (through the states) to collect the exact data that we and others have repeatedly asked the Commission to gather under Form 477[4] shows that there are now no political or practical roadblocks to this facet of FCC broadband data reform; it is only a matter of the Commission's willingness to implement the required revisions.

III. The Commission must collect pricing information.

Price is one of the two critical pieces of data for any kind of basic economic analysis (the other being quantity, which the FCC began collecting in 2008 in the form of subscribership data, a reform proposed by consumer groups and others, but opposed by industry). The Commission should simply recognize the empirical value of basic pricing information far outweighs the long-ago debunked, phantom claims of burden and complexity,[5] and move forward.

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[3] Reversing their long stated positions, several telecommunications giants and trade associations agreed to report to the NTIA-funded state-designated entities the availability of broadband services at the Census Block level, and agreed to the public disclosure of the identity of each provider within a given Block. *See* Fawn Johnson, "Commerce Dept Drops Request for Sensitive Telecom Data", Dow Jones Newswires, August 7, 2009.

[4] See e.g. Free Press June 30 Data Comments; See also Letter to Marlene Dortch, Secretary, Federal Communications Commission, from the People of California and the California Public Utilities Commission, WC Docket No. 07-38, August 19, 2008 (encouraging the FCC to collect broadband availability data at the Census Block or street address level).

[5] *See Notice* at para. 68 citing AT&T and ITTA, "Some commenters have argued that broadband providers should not be required to submit price information because prices are competitive; bundled offerings, temporary discounts, different pricing plans, and other service attributes make comparing pricing complex; the production of pricing data is too burdensome;

The Commission should collect the published, stand-alone, non-promotional, non-contractual price, categorized within the Commission's improved speed tiers on a Census Tract level. In doing so, the Commission can create a uniform dataset of broadband price information. Similar to subscribership data, this information should also distinguish between residential and business connections. Given that many providers create uniform pricing across their service territories, a requirement for reporting pricing information at this level of detail will not be burdensome.

In addition to stand alone prices reported by Commission speed tier, the FCC should also require the reporting of average price per megabit per second ($/Mbps), as well as Average Revenue per User (ARPU) data -- all at the Census Tract level. ARPU is the best metric for identifying what users are actually paying (short of bill harvesting studies), and can be further distinguished between averages for users who do and do not bundle additional services. Price per megabit per second is separately and equally valuable for empirical analysis, as it is the closest measure of "value" the Commission could possibly collect.

Finally, when collecting information on price, the Commission should also attempt to account for the "real" price of long-term contracts. Contracts create switching costs that must be taken into account. If a provider does not offer broadband without a contract, the Commission must reflect this in the price. One such way to do this is to amortize the cancellation fee into the monthly price. The Commissions price data must reflect the true costs of the service.

IV. The Commission should require the reporting of contention ratios.

While tackling the issue of availability was supposed to be dealt with on an expedited basis in 2008, the Commission also promised to reach a conclusion on the issue of monitoring

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and requiring the production of price data would impose Title II burdens on broadband providers."

actual speeds and service quality. We believe the record here is complete, and provides a clear path for how the Commission should proceed.

In the 2008 FNPRM the Commission rightly recognized that advertised speeds are not what determine the potential uses of broadband connections -- actual speeds determine weather or not a connection can be used to "originate and receive high quality voice, data, graphics and video telecommunications." Unfortunately, the most obvious method of obtaining this information -- self selected end user speed tests -- is also one of the least useful. As a variety of parties have noted, providing a web address for end users to test the speed of their connection fails to account for a variety of factors. The Commission sensibly recognized these hurdles in the 2004 Broadband Data Order.[6] These speed tests provide end users with helpful information regarding their connections, but are inadequate as a tool for the Commission to gain a more complete understanding of the broadband marketplace.

Fortunately the Commission has other options at their disposal. The much anticipated findings of the Commission's investigation with SamKnows should shed light on potential abuses of the oversubscription model. But this incredibly valuable experiment is expensive, and is unlikely to be repeated. Further, by necessity, the controlled-experiment approach of SamKnows suffers from a lack of granularity, and it will not be possible to merge the data from this experiment with the existing granular data on broadband subscribership.

Thus to overcome these limitations while still capturing meaningful information concerning actual speeds, we suggest the Commission require providers report the contention ratios of their last mile services at the Census Tract level.[7] Contention ratios are a useful proxy

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[6] See *Local Telephone Competition and Broadband Reporting,* Report and Order, WC Docket No. 04-141, 19 FCC Rcd 22340 (2004) at para. 27.

[7] Contention ratio is defined as follows:

for actual speeds, because they reflect the degree to which customers share capacity, and thus the level of oversubscription on a local network.

We suggest that the Commission gather contention ratio data at the Census Tract level, so that it can be integrated with other data on subscribership and availability (if availability data is collected at the Block level, it can be aggregated up to the Tract level). Providers will be easily able to calculate the contention ratios for particular nodes and central offices, whose locations can be converted into census tract numbers. The Commission should dismiss arguments as to the burdens and feasibility of such a reporting system. In order to adequately manage their networks providers *must absolutely know* the contention ratios on their local networks. Furthermore the Commission currently requires providers to report portions of this information in existing forms and need only expand these efforts to collect the remaining information.[8] Contention ratios are certainly not an abstract concept to providers; such figures are routinely used in the advertisements of overseas broadband providers,[9] with at least one foreign government requiring

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$$CR = \frac{\sum Dp}{S},$$

where $\sum Dp$ = sum of potential bandwidth demand

and S = the total bandwidth supply.

Thus, a cable node with 500 customers all subscribing to 16Mbps service, sharing a 38.8Mbps channel, will have a download contention ratio of 206.2. Or a Verizon FiOS BPON fiber drop (total download capacity of 622Mbps) serving ten 20Mbps households will have a download contention ratio of 0.3. These examples are not wild assumptions, but close to the actual realities of the local broadband market. The vast difference between the two illustrate why the Commission tracking of contention ratios is extremely important for a detailed understanding of the development of the U.S. broadband market.

[8] See Comments of Consumers Union, Consumer Federation of America and Free Press, in Comments, *In the Matter of Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, July 2008, at page 15-19.

[9] *See e.g.* http://www.u-want.com/internet_faqs.html#one; http://www.vaioni.com/ultra20

the publishing of contention ratios.[10] Given that the Commission previously sought comment on "how we might require service providers to report this information, *and any alternative means*, in addition to or other than requiring such service provider reporting, for effectively capturing meaningful information about actual speeds",[11] we suggest that the required reporting of contention ratios is clearly less burdensome than requiring providers conduct speed tests throughout their entire service area.

V. The Commission's data focus should go beyond retail metrics and capture information about investment and capacities throughout the broadband network. The Commission should also monitor metrics of service quality and infrastructure investment, and follow through on the tentative conclusions of the *ARMIS NPRM*.

Much of the data gathered (and proposed to be gathered) in Form 477 is concerned with issues surrounding the retail market for broadband: number of subscribers; types of technology subscribed to; speeds of technologies subscribed to; and if further reforms are enacted, the geographic location of retail services, and their prices and actual speeds. Some of this information will be useful to the Commission in efforts to identify the local areas where providers possess market power -- but only in the retail markets. As structured, Form 477 offers no information about the equally important high-capacity data markets -- markets that include special access data services, enterprise data services, and other high-capacity network infrastructure that makes up the portions of the network outside of the last mile. Consequently, the Commission is unable to assess the impacts of any policies that are aimed at opening up this secondary "middle-mile" bottleneck to greater competition -- polices that are intended to lead to greater levels of wireless (fixed and mobile) last-mile deployment, and last-mile intermodal competition.

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[10] *See* http://www.telkom.co.za/athome/products/dsl/home_faq.html#adsl

[11] See *2008 Form 477 Report and Order and FNPRM*, at para. 36 (emphasis added).

Knowing the retail subscriber counts, average speeds and prices is important and should be at the top of the data priority list. But in order to act as a responsible regulator the Commission needs much more information about the underlying economics of the data communications market. It needs to know where all the lines are, both retail and enterprise lines. It needs to know the historical and forward-looking cost of all infrastructure elements. It needs to know the prices charged for all elements, whether or not they are offered pursuant to tariff. It needs to know the revenues earned on each service and element, and the rates of return earned on services that are not subject to effective competition.

In short, the Commission needs financial and operational data from all carriers in the market in order to effectively identify and curb abuses of market power. The Commission had gathered such information from the large price cap carriers in the Automated Reporting Management Information System (ARMIS). However, in 2008 the Commission decided to abandon this system, and issued an NPRM with a tentative conclusion that some type of similar reporting system should be established for all broadband infrastructure providers.[12] The Commission should follow through on this promise made in the *ARMIS NPRM* and establish a unified broadband data reporting system.

Current broadband reporting requirements are void of information related to the underlying infrastructure -- both financial and operational. Successful regulatory oversight of these industries can only be achieved if policymakers have access to detailed and accurate

[12] "[W]e find that significant forbearance from the existing ARMIS service quality and infrastructure reporting requirements is warranted pursuant to section 10 of the Act, subject to certain conditions. However, we recognize that collection of certain of that information might be warranted, if tailored in scope to be consistent with Commission objectives, and if obtained from the entire relevant industry of providers of broadband and telecommunications. See *Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering*, WC Docket No. 08-190, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 23 FCC Rcd 13647 (2008), at para. 33.

network infrastructure data. Indeed, the Commission has for years collected infrastructure information from both the phone and cable industries, and such data is an indispensable component to responsible Universal Service Fund administration and oversight. Only by adopting a modernized reporting system that collects information from all owners of broadband facilities will the Commission be able to effectively implement the National Broadband Plan.

But in addition to infrastructure data, the Commission should collect service quality data for voice and data networks, and such data should include information about network management. Self-reported metrics like those suggested by New America Foundation such as average latency, jitter, dropped packets, uptime, service outages, and customer equipment failures, will be extremely valuable to consumers and policymakers as the central communications infrastructure transitions from circuit-switched to packet switched technology.

VI. The Commission should not make any changes to its current subscribership reporting requirements, nor should it make any changes to the current speed tier reporting categories that reduce the granularity of existing information or disrupt the continuity of time-series analysis.

The National Broadband Plan reported that 4Mbps downstream and 1Mbps upstream are the actual speeds the average U.S. household currently receives. The Commission also (coincidentally) identified this figure as the appropriate threshold for what constitutes advanced telecommunications capability, pursuant to Section 706 of the 1996 Telecommunications Act (unfortunately ignoring the law's focus on the parity between a floor of originating and receiving capabilities). But that this 4/1 Mbps threshold is the current average speed, or the FCC's current (and flawed) view on what constitutes advanced telecom capability, should in no way be a reason for the Commission to change the current speed tiers and disrupt the continuity of the historical data sets. The Commission has indicated that the 4/1 threshold for advanced telecommunications capability will likely change in the future. Further, the 4/1 focus is rightly on delivered, not

advertised speeds, and thus the current speed tiers serve as an appropriate tool to capture subscriptions that are likely to meet that floor.[13]

Similarly, the Commission has yet to even come close to extracting the full value of the subscribership information (see discussion below), and it would be premature to alter the current subscribership reporting requirements. If the Commission makes any changes, they should only be to enhance the granularity of reporting, not reduce or eliminate information.

VII. The Commission must use the subscribership data to calculate HHI concentrations for each census tract, and publish this information in its semi-annual reports.

The new Census-Tract based Form 477 subscribership data proved to be a useful tool in the preparation of the National Broadband Plan. Chapter Four contains numerous findings from an econometric analysis of this data. It is worthy to note that this type of analysis provided far greater insight than the summary statistics released by the Industry Analysis and Technology Division of the Wireline Competition Bureau in their recent "High-Speed" semi-annual reports.

The kind of analysis in Chapter Four of the Broadband Plan provides useful information about local market competition and the impacts on price and speed offerings. This new insight could be highly influential in the policymaking process, but it is important to note that the specific referenced econometric model in the Chapter Four of the Plan is just one among dozens of possible model specifications that could be used to ask questions of the raw Form 477 data. While there is no doubt that the Commission itself can and should continue to explore this new

[13] The current bins have cutoffs near these values. So connections reported with advertised upload speeds above the 1.5Mpbs threshold are likely to deliver actual upstream speeds near 1Mbps. Similarly, connections reported with downstream speeds at or above 6Mpbs are likely delivering 4Mpbs during most times of usage. If the results of the SamKnows experiment indicate that these discount proportions (actual performance is below 1/3 of the advertised speed), then the Commission can revisit this question. However, the value of data continuity and the likelihood the Commission will raise the 4/1 threshold in the future argue for leaving the current bins in place, or at the very least, not collapsing the number of reporting categories.

treasure trove of data, it has thus far failed to do so outside of the National Broadband Plan, and therefore the full utility of the Form 477 data is not being realized.

We therefore strongly urge the Commission to use Form 477 census tract subscribership data to calculate one-firm, two-firm, three-firm, and four-firm concentration ratios for each Census Tract.[14] The Commission must also calculate the Herfindahl-Hirschman Index (HHI) values for each tract.[15] These values would themselves be important inputs into further econometric analysis, but could also be used to produce visual maps that are far more informative than those currently published in the High-Speed Report.[16] Similar market-by-

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[14] Of these, the four-firm concentration ratio is most often used in market analysis. The Department of Justice generally considers markets with four-firm concentration ratios above 60 percent to be a "tight-oligopoly," while markets with ratios above 80 percent indicate duopoly or monopoly power. *See* WILLIAM G. SHEPHERD, THE ECONOMICS OF INDUSTRIAL ORGANIZATION (1985) for further discussion of firm concentration ratios.

[15] The Herfindahl-Hirschman Index (HHI) is calculated as:

$$H = \sum_{i=1}^{n} S_i^2 \text{ x } 10{,}000,$$

where n = the number of firms; Si = the share of the ith firm. The HHI is calculated based on ratios rather than percentages and the decimals are cleared by multiplying by 10,000. The Department of Justice considers a market with fewer than ten equal-sized firms to be concentrated (i.e. HHI=1,000). It considers a market with fewer than the equivalent of approximately 5.5-equal sized firms (HHI = 1800) to be "highly concentrated." Markets with an HHI between 1000 and 1800 are considered "moderately concentrated." These thresholds have been chosen based on theory, empirical evidence and experience with the exercise of market power. *See* U.S. DEPARTMENT OF JUSTICE AND FEDERAL TRADE COMMISSION, HORIZONTAL MERGER GUIDELINES (August 2010), for a discussion of the HHI thresholds.

[16] Because Census Tracts can be large, the level of competition reflected by this analysis may be overstated. For example, it is possible that a single tract may have two or more ILECs that do not directly compete, or two or more cable companies that do not directly compete (as opposed to CLECs or cable overbuilders). In these few cases, the Commission (or outside researchers) could correct this problem by coding the "type" of provider (ILEC, CLEC, Cable MSO, Cable Overbuilder, Other), and either drop or merge the line counts of the non-competing ILECs or Cable MSOs before calculating the firm concentration ratios or HHI values for such tracts. GAO analysts used a similar process to conclude that the median ZIP code had access to two high-speed Internet providers. *See GAO Broadband Deployment Report*.

market HHI values are calculated and reported by the Commission in context of their annual reports on wireless market competition, and there is no reason not to use the Form 477 data in a similar manner.

VIII. The Commission must follow through on the National Broadband Plan's strong recommendation to allow outside researchers to access the underlying Form 477 data.

The National Broadband Plan delivered to Congress one year ago was the result of an unprecedented examination of the broadband market and the Commission's policies. The Plan contains hundreds of recommendations; each carefully considered and designed to foster universal access, affordability and competition in our broadband market. In Chapter Four of the National Broadband Plan, when discussing recommendations to improve competition, the Plan states:[17]

> The FCC should have a general policy of making the data it collects available to the public, including via the Internet in a broadband data depository, except in certain circumstances such as when the data are competitively sensitive or protected by copyright. Further, the FCC should implement a process to make additional data that is not accessible by the public available to academic researchers and others, subject to appropriate restrictions to protect confidentiality of competitively sensitive materials.

Last February Free Press submitted a request to get the ball rolling on implementation of this recommendation.[18] We asked the Commission to issue a protective order to make Form 477 data currently deemed as confidential available for research purposes, as the Commission has already done in numerous other proceedings, including the National Broadband Plan itself. Though the Commission sought comment on this request, it has failed to act on this core recommendation of the National Broadband Plan. This delay is inexplicable. However, we are

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[17] Federal Communications Commission, Connecting America: The National Broadband Plan, Omnibus Broadband Initiative, March 16, 2010 ("National Broadband Plan").

[18] *See Comment Sought 4n Free Press Request to Review Form 477 Data and Request for Protective Order*, WC Docket No. 10-75, Public Notice, 25 FCC Rcd 2704 (2010).

pleased the instant *Notice* once again raises this issue, and we urge swift action on this matter. There is no justifiable reason why such access should be delayed.[19]

IX. Conclusion

The effectiveness of the policy changes made pursuant to the National Broadband Plan cannot be measured and maximized without good broadband data. Indeed, the policies themselves cannot be formulated in any responsible manner without such data. Thus the ultimate success of the plan itself will be inextricably linked to the collection and analysis of meaningful broadband data. A policy regime that aims to encourage the deployment of infrastructure needs data about what infrastructure exists, and where it is deployed. A policy regime that aims to encourage the maximal utilization of infrastructure needs data on the historical and forward looking costs of the infrastructure, and the revenues and charges earned and levied by the owners of the infrastructure. A policy regime that seeks to encourage adoption of broadband needs granular data on price, speed, customer satisfaction, and customer awareness of competitive alternatives, as well as data on other barriers to adoption such as digital literacy and computer ownership. A policy regime that aims to promote meaningful competition must be informed by data that enables the identification and measurement of market power, and the abuse of such power. The record in this proceeding is complete and the Commission knows what kinds of data it needs and how it needs to analyze it. It's time to put some actual data into the commitment to data-driven analysis.

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[19] Last year AT&T, Qwest and NCTA all argued that action on this request is premature, in light of the Commission opening a new proceeding on broadband data. The Commission's inaction served to embrace this argument. But now this requested proceeding is open, and we expect surely that the above mentioned commenters will stand aside and let good third-party analysis of the Form 477 data proceed according to the recommendations of the National Broadband Plan. *See e.g.* Comments of AT&T at 2-3; Comments of NCTA at 1; Comments of Qwest at 5 (all in 10-175).

Respectfully Submitted,

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