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

In the Matter of	)	
	)	
Development 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	)	

COMMENTS OF CONSUMERS UNION, CONSUMER FEDERATION OF AMERICA AND FREE PRESS

Gene Kimmelman
Vice President for Federal and International
Policy
Consumers Union
1101 17th Street, NW Suite 500
Washington, DC 20036
202-462-6262

Mark Cooper
Director of Research
Consumer Federation of America
1424 16th Street, N.W. Suite 310
Washington, D.C. 20036
301-384-2204

Ben Scott
Policy Director
Free Press
501 Third Street, NW, Suite 875
Washington, DC 20001
202-265-1490

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SUMMARY

This Notice of Proposed Rulemaking seeks input into how the Commission's can improve its data gathering practices that enable it to oversee the reasonable and timely deployment of advanced telecommunication services, as mandated by the Telecommunications Act of 1996 ("The Act"). The Commission's data gathering efforts stem from their duty to "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion." In assigning the Commission this duty, Congress chose a very specific definition of "advanced telecommunications capability". The Act states, "[t]he term 'advanced telecommunications capability' is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."

In previous comments, we argued that the Commission wrongly concluded in its previous four Section 706 Reports that the deployment of *advanced telecommunications capability* was being deployed to *all* Americans in a reasonable and timely fashion. We believe the lack reasonable and timely universal deployment is apparent from the large array of publicly available data -- both from the Commission's Form 477 reports, and from other published sources. However, we also believe that the current Form 477 data (which provides the bulk of the information that guides the Commission's determination of the fulfillment of Section 706) could be substantially improved in order to enable the Commission to more adequately determine the true level of advanced telecommunications deployment. Such improvements will also provide the Commission

with better information to guide their policymaking if they determine that advanced telecommunication deployment is not proceeding in a reasonable and timely fashion to all Americans.

In these comments we detail the shortcomings of the current Form 477 reporting methodology and summary reports. Among these shortcomings:

- The Commission's ZIP code methodology is totally meaningless and provides no information about the true level of broadband deployment at the local level.
- The Commission only reports subscriber counts at the state and national level, leaving policymakers in the dark as to the state of residential consumer adoption of broadband at the local and neighborhood levels.
- The Commission's ZIP code methodology vastly overstates the level of marketplace competition. The Commission does not gather or report the crucial *marketshare* information needed to determine the true level of local broadband market competition.
- The Commission does not gather information about the price and actual speeds of residential or business broadband connections, and thus is not able to promote the goal that is in the very first sentence of the Communications Act, "to make available... to all people... adequate facilities at reasonable charges."
- The Commission's six speed tiers are wholly inadequate to measure the real-world changes in the broadband market. The sizes of the "bins" are too large,

the data does not separate out residential connections, and the data completely ignores upload speeds.

We offer modest and reasonable changes to the Form 477 reporting requirements that will finally enable the Commission to begin to adequately fulfill its obligations under Section 706. The task before the Commission is clear: to revise their data collection practices in a manner that best enables intelligent policy decisions that will facilitate the deployment of universal, affordable and competitive broadband offerings to every American home.

We recommend the following changes:

- The Commission should require providers to report the number of subscribers at the ZIP or ZIP+4 level. This will enable the calculation of granular residential household penetration and quasi-empirical studies into the determinants of broadband adoption. Furthermore, the data would also enable the Commission or other researchers to calculate *marketshare* at the local level, enabling examination of the effects of market concentration.
- The Commission should modify its speed tiers to a more granular level to better monitor marketplace development. We offer a system that consists of 11 download speed categories and 12 upload speed categories.
- The Commission should revise the definition of "advanced services". The 200 kbps symmetrical definition does not adequately reflect the very precise language contained in Section 706 of the Act.

- The Commission should gather information at the 9-digit ZIP code level. This will provide an adequately detailed window into the broadband market and will enable better targeting of public and private resources.
- The Commission should collect data on service price and "value". Providers should report the average price charged for service, and the average speed. This will allow for longitudinal monitoring of the change in service "value" -- the price per unit of speed.
- The Commission should conduct consumer surveys. Though providers may balk at being required to report the price paid and average speed throughput for lines at the ZIP or ZIP+4 level, the Commission can create a reasonable snapshot of the marketplace by conducting a large periodic national consumer survey that collects this information.
- The Commission should monitor provider business practices. The vision of the 1996 Act was to foster the deployment of an affordable and universal two-way communications system. However, this country's broadband providers have largely ignored demand for symmetrical connections, and place onerous restrictions on customer's use of their broadband connections. The Commission should begin to monitor these terms of service to determine if the spirit of Section 706 is being upheld in the marketplace.

We feel these changes are modest, unburdensome, easy to implement, and will ultimately provide the Commission with the data it, Congress, and state and local governments need to solve our broadband problem.

TABLE OF CONTENTS

Before the
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In the Matter of	)	
	)	
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COMMENTS OF CONSUMERS UNION,
CONSUMER FEDERATION OF AMERICA AND FREE PRESS

Consumers Union, Consumer Federation of America and Free Press (collectively, "CU et al."), respectfully submit these Joint Comments in response to the Notice of Proposed Rulemaking, FCC 07-17, WC Docket No. 07-38 ("Notice" or "NPRM"), released April 16, 2007 by the Federal Communications Commission ("FCC" or Commission").

II. INTRODUCTION

A. Interest and Expertise of Commenters

Consumers Union, the publisher of Consumer Reports®, is an independent, nonprofit testing and information organization serving only consumers. CU does advocacy work from four offices in New York, Washington, San Francisco, and Austin. CU's public policy staff addresses a broad range of telecommunications, media and other policy issues affecting consumers at the regional, national and international level. CU staff members frequently testify before Federal and state legislative and regulatory bodies and participate in rulemaking activities at the Commission and elsewhere.

The Consumer Federation of America is an advocacy, research, education and service organization established in 1968. CFA has as its members some 300 nonprofit organizations from throughout the nation with a combined membership exceeding 50 million people. As an advocacy group, CFA works to advance pro-consumer policy on a variety of issues before Congress, the White House, federal and state regulatory agencies, state legislatures, and the courts.

Free Press is a national nonpartisan organization working to increase informed public participation in crucial media policy debates, and to generate policies that will produce a more competitive and public interest-oriented media system with a strong nonprofit and non-commercial sector.

B. The Task Before the Commission

This Notice of Proposed Rulemaking seeks input into how the Commission's can improve its data gathering practices that enable it to oversee the reasonable and timely deployment of advanced telecommunication services, as mandated by the Telecommunications Act of 1996 ("The Act").[1] The Commission's data gathering efforts stem from their duty to "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."[2] In assigning the Commission this duty, Congress chose a very specific definition of "advanced telecommunications capability". The Act states, "[t]he term 'advanced telecommunications capability' is defined, without regard to any transmission media or

[1] 47 U.S.C. § 157. See § 706(b) of the Telecommunications Act of 1996, 104 P.L. 104; 110 Stat. 56; 1996 Enacted S. 652; February 8, 1996. Section 706(b) details the mandate for periodic inquiry.

[2] *Ibid.*

technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."[3]

In previous comments[4], we argued that the Commission wrongly concluded in its previous four Section 706 Reports that the deployment of *advanced telecommunications capability* was being deployed to *all* Americans in a reasonable and timely fashion.[5] We believe the lack reasonable and timely universal deployment is apparent from the large array of publicly available data -- both from the Commission's Form 477 reports, and from other published sources. However, we also believe that the current Form 477 data (which provides the bulk of the information that guides the Commission's determination of the fulfillment of Section 706) could be substantially improved in order to enable the Commission to more adequately determine the true level of advanced telecommunications deployment. Such improvements will also provide the Commission

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[3] See § 706(c) of the 1996 Act.

[4] "Comments of Consumers Union, Consumer Federation of America, and Free Press", in the matter of *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45, May 16, 2007.

[5] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 14 FCC Rcd 2398 (1999); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913 (2000); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 17 FCC Rcd 2844 (2002); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540 (2004).

with better information to guide their policymaking if they determine that advanced telecommunication deployment is not proceeding in a reasonable and timely fashion to all Americans.

In these comments we detail the shortcomings of the current Form 477 reporting methodology and summary reports, and offer modest and reasonable changes to the reporting requirements that will finally enable the Commission to begin to adequately fulfill its obligations under Section 706. The task before the Commission is clear: to revise their data collection practices in a manner that best enables intelligent policy decisions that will facilitate the deployment of universal, affordable and competitive broadband offerings to every American home.

III. DISCUSSION

A. The Inadequacies of the Current Form 477 Data

i. No Knowledge of the True Extent of Deployment

The Commission's ability to monitor the marketplace for the reasonable and timely universal deployment of advanced services is only as good as the data it collects. And it is in this effort that the Commission has failed.

To fulfill the monitoring requirements of the Act, the Commission implemented the Form 477 reporting requirements.[6] Initially, all providers of high-speed and advanced services with at least 250 customers in a given state were required to report twice a year about their broadband deployment activities. This information included the total number of subscribers in a state and type of technology to which they subscribed, as well as a

[6] See "Local Competition and Broadband Reporting", *Report and Order*, CC Docket No. 99-301, 15 FCC Rcd 7717, (2000).

listing of each 5-digit ZIP code where a provider had at least one subscriber residing. Providers were required to report connections based on the Commission's definitions of "high-speed" (200 kbps asymmetrical) and "advanced service" (200 kbps symmetrical) Internet connections.

Four years after these reporting requirements were implemented, the FCC released an updated Order on Form 477.[7] All companies are now required to report regardless of how many subscribers they serve. Also, companies now must report some limited information on the speeds and types of the connections to which their customers subscribe. These are welcome changes, as they do provide the FCC and Congress with a more detailed understanding of the U.S. broadband market.

However, the only information that Form 477 provides on *local* broadband activity is the absolutely meaningless metric of ZIP code coverage. The FCC reports the number of providers in a given ZIP code that report serving at least one subscriber in that ZIP code. Given the large geographic size of ZIP codes, especially in rural areas, this metric provides no realistic measure of actual broadband deployment and adoption at the local level. The 1996 Act clearly requires the FCC to determine the pace and extent of the deployment of broadband to *all* Americans. Yet the Commission itself admits that its ZIP code methodology is not meant to be a measure of broadband deployment.[8]

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

[8] See "Local Competition and Broadband Reporting", *Report and Order*, CC Docket No. 99-301, 15 FCC Rcd 7717, (2000).

In its May 2006 report on broadband deployment, the GAO chided the FCC on its use of the meaningless ZIP code metric.[9] The GAO stated that "the use of subscriber indicators at the ZIP code level to imply availability, or deployment, may overstate terrestrially based deployment." The GAO added: "Based on our analysis it appears that these [ZIP code] data may not provide a highly accurate depiction of deployment of broadband infrastructures for residential service in some areas." **The GAO concluded, "the number of providers reported in the ZIP code *overstates the level of competition to individual households.*"**

Indeed, various non-Commission data indicates that urban users have home broadband connections at nearly twice the level of rural users, a gap that has held quite steady over the years.[10] We know that at least 10 percent of Americans nationwide report having no broadband service available where they live, and that in certain less-populated areas a quarter of households have no broadband service.[11] However, the latest FCC Form 477 data from June 2006 indicates that "high-speed" service is reported in 99.3 percent of all U.S. ZIP codes, and that 99.9 percent of the U.S. population lives within

[9] "Broadband Deployment is Extensive throughout the United Sates, but it is Difficult to Assess the Extent of Deployment Gaps in Rural Areas", United States Government Accountability Office, Report to Congressional Committees, GAO-06-426, May 2006 ("GAO Report").

[10] In 2005 18 percent of rural adults reported a home broadband connection, compared to 31 percent of urban adults. In 2006 25 percent of rural adults reported a home broadband connection compared to 44 percent of urban adults. See John B. Horrigan, "Home Broadband Adoption 2006", Pew Internet & American Life Project, May 28 2006.

[11] *See* GAO Report.

these served areas.[12] Thus there is a clear divergence between reality, and what the Form 477 data portrays as reality.

Other data in the Form 477 reports illustrate this divergence. Nationwide, the FCC reports that DSL service is not offered on 21 percent of incumbent telephone companies' lines, and that cable companies do not offer modem service on 7 percent of their lines. In some states, these numbers are very high. In South Dakota, 42 percent of the cable lines are not modem-capable, while over 40 percent of New Hampshire's Incumbent telephone lines are not equipped with DSL. The DSL and cable modem platforms account for 96 percent of all residential advanced service lines, while 3.5 of the remaining 4 percent is composed of fiber and mobile wireless connections -- technologies which have largely been deployed only in urban and suburban areas that are already served by cable and DSL providers. Thus, the Commission's reported cable modem and DSL availability data indicates that the Commission's finding of 99.9 percent availability, which is based on their ZIP code methodology, is simply not true.

This result is further borne out by a different look at the Form 477 ZIP code data. Even this data, which overstates the level of deployment, shows that 12 percent of ZIP codes have *no* users reporting cable modem and/or DSL service, and that nearly 40 percent of ZIP codes have one or less cable modem and/or DSL providers. This same data shows that nine out of every 10 ZIP codes have one or less providers of cable

[12] "High-Speed Services for Internet Access as of June 30, 2006," Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission.

modem service, and six out of every ten ZIP codes have one or less providers of DSL service.[13]

ii. No Granular Knowledge of Household Broadband Adoption

Because of the granularity of Form 477 data, which only reports the number of residential lines at the state-level, conclusions based on this data about the differences in proliferation of advanced services can only be made at this high aggregate level.[14] This is somewhat problematic because the variation in local deployment at such a large aggregate will be somewhat misleading and understated, ultimately providing little usable information for formulating responsible public policy.

For example, the current Form 477 data allows us to calculate that the state of Michigan currently ranks 35th among the 50 states and DC in household broadband penetration with 36.8 percent of homes subscribing in 2006 (see Figure 1). The data indicates that Michigan has improved from 15.2 percent penetration in 2002; and we know that this level of growth is 41st among the 50 states and DC. The current data indicates that in June of 2006, 66.4 percent of ILEC telephone lines in the state were capable of providing DSL service (see Figure 2). We know that 73.3 percent of these lines are owned by a RBOC, and Census Bureau data tells us that 25 percent of the state's population lives in rural areas. The data also shows that in June of 2006, 91.7 percent of

[13] *Ibid.*

[14] Form 477 reports the number of residential high-speed lines for each state and the District of Columbia (previous data reported the number of residential and small business lines aggregated together at the state-level, and redacted certain state's tallies (such as Hawaii) out of concerns for the privacy of providers). Assuming one line per household, and using Census Bureau state-level household estimates, a reasonably accurate estimate of state-level household broadband penetration can be calculated (however, this estimate may be a slight overstatement, as it is likely that many of the mobile wireless residential connections are found in homes with a wireline provider).

cable lines were capable of cable modem service in Michigan -- a decrease from the year before when that number was over 98 percent. We can also see that the trend lines for broadband in Michigan show a decline in the growth rate from 2005 to 2006. But what accounts for all these data? Why is growth slowing in Michigan? Why has the availability of cable modem declined significantly? Why is it that a nearby state like Wisconsin, who has a higher rural population, is fairing better than Michigan in terms of DSL and cable modem availability, as well as household penetration? Is the problem in Michigan in the rural parts of the state, or in the inner city of Detroit, or both? The current FCC Form 477 data simply do not allow for answers to these questions. To do so would require subscriber counts at a much more granular level.

Figure 1: State-Level Household Broadband Penetration[15]

State	Percent of Homes Subscribing to Broadband (2006)	Rank
Hawaii	61.1	1
New Jersey	60.7	2
Connecticut	59.9	3
Massachusetts	57.3	4
California	56.8	5
New Hampshire	56.8	6
Maryland	53.3	7
Rhode Island	52.6	8
New York	51.8	9
Delaware	51.4	10
Nevada	50.4	11
Florida	48.2	12
Washington	47.9	13
Colorado	47.9	14
Oregon	47.5	15
Kansas	46.9	16
Virginia	46.1	17
DC	45.0	18
Arizona	45.0	19
Alaska	44.4	20
Georgia	44.1	21
Illinois	44.0	22
Texas	43.8	23
Nebraska	42.9	24
Minnesota	42.8	25
Maine	41.6	26
Utah	41.1	27
Pennsylvania	40.8	28
Ohio	40.2	29
Vermont	40.2	30
Wisconsin	39.0	31
Missouri	38.9	32
Indiana	37.6	33
Oklahoma	37.0	34
Michigan	36.8	35
Louisiana	36.1	36
Wyoming	35.6	37
South Carolina	34.5	38
Tennessee	33.5	39
Montana	33.4	40
North Carolina	33.3	41
Iowa	32.5	42
Kentucky	31.7	43
Idaho	31.4	44
West Virginia	30.8	45
Arkansas	30.1	46
New Mexico	29.8	47
Alabama	29.4	48
South Dakota	21.3	49
North Dakota	20.4	50
Mississippi	20.2	51
Nationwide	**44.6**	

State	Percent of Homes Subscribing to Broadband in 2002	Percent of Homes Subscribing to Broadband in 2006	Percentage Point Change 2002 to 2006	Improvement Rank
New Jersey	14.5	60.7	46.2	1
New Hampshire	18.9	56.8	37.9	2
Connecticut	22.2	59.9	37.8	3
Maryland	16.4	53.3	36.9	4
Delaware	16.2	51.4	35.3	5
California	21.7	56.8	35.1	6
Nevada	16.7	50.4	33.7	7
Massachusetts	23.8	57.3	33.5	8
Colorado	14.7	47.9	33.2	9
Rhode Island	19.9	52.6	32.8	10
Virginia	14.4	46.1	31.8	11
Illinois	13.5	44.0	30.6	12
Washington	17.4	47.9	30.5	13
Indiana	7.3	37.6	30.3	14
Oregon	17.2	47.5	30.2	15
DC	14.9	45.0	30.1	16
Florida	18.5	48.2	29.7	17
Pennsylvania	11.1	40.8	29.7	18
Kansas	17.5	46.9	29.4	19
Maine	12.4	41.6	29.2	20
Wyoming	6.7	35.6	28.9	21
Montana	5.0	33.4	28.4	22
Missouri	10.5	38.9	28.4	23
Vermont	12.0	40.2	28.2	24
Texas	15.9	43.8	27.9	25
Arizona	17.1	45.0	27.9	26
Minnesota	15.5	42.8	27.2	27
New York	24.8	51.8	27.0	28
Kentucky	4.9	31.7	26.7	29
Utah	14.5	41.1	26.6	30
Georgia	17.6	44.1	26.5	31
Ohio	14.1	40.2	26.1	32
Nebraska	16.8	42.9	26.0	33
Wisconsin	14.4	39.0	24.6	34
Oklahoma	13.7	37.0	23.3	35
Iowa	9.8	32.5	22.7	36
New Mexico	7.4	29.8	22.4	37
Alaska	22.6	44.4	21.9	38
Louisiana	14.4	36.1	21.7	39
South Carolina	12.8	34.5	21.7	40
Michigan	15.2	36.8	21.6	41
Idaho	9.9	31.4	21.5	42
Arkansas	8.9	30.1	21.2	43
West Virginia	10.1	30.8	20.7	44
Tennessee	14.4	33.5	19.1	45
Alabama	11.8	29.4	17.6	46
North Carolina	16.2	33.3	17.0	47
South Dakota	5.7	21.3	15.7	48
Mississippi	6.8	20.2	13.4	49
North Dakota	7.4	20.4	13.0	50
Hawaii	N/A	61.1	N/A	N/A
Nationwide	**16.0**	**44.6**	**28.6**	

[15] All data based on number of residential lines in each state reported in FCC Form 477 as of June 30 2006. Percentages assume one line per household, based on U.S. Census household estimates.

Figure 2: State-Level Broadband Availability[16]

Cable Modem Availability Where Cable Systems Offer Cable TV Service (% of end user premises)				Percent Rural Pop	xDSL Availability Where ILECs Offer Local Telephone Service (% of residential end user premises)				Percent Rural Pop	Percent of Telephone Lines that are RBOC
State	Jun-05	Dec-05	Jun-06		State	Jun-05	Dec-05	Jun-06		
New Jersey	96.8%	96.8%	99.9%	5.6%	New Jersey	86.8%	88.0%	88.0%	5.6%	75.7%
Massachusetts	98.3%	98.9%	98.9%	8.6%	Florida	84.6%	85.6%	88.0%	10.7%	65.0%
New York	98.3%	97.3%	98.8%	12.5%	Louisiana	85.3%	85.2%	87.4%	27.4%	74.3%
Maryland	94.1%	97.3%	97.6%	13.9%	Georgia	77.0%	83.7%	87.3%	28.4%	65.6%
California	96.6%	97.7%	97.2%	5.6%	North Dakota	81.3%	83.7%	86.2%	44.1%	33.3%
Illinois	96.9%	98.4%	97.2%	12.2%	Nebraska	52.0%	70.7%	86.1%	30.2%	29.4%
Wisconsin	96.5%	N/A	96.3%	31.7%	California	84.1%	84.8%	85.9%	5.6%	80.8%
Missouri	88.9%	89.4%	96.0%	30.6%	Nevada	81.2%	84.0%	85.3%	8.5%	25.7%
Florida	93.7%	97.1%	95.9%	10.7%	Kentucky	59.8%	74.3%	84.5%	44.2%	42.1%
Virginia	94.6%	95.9%	95.9%	27.0%	Iowa	77.3%	80.5%	83.1%	38.9%	51.8%
Colorado	87.3%	95.9%	95.8%	15.5%	North Carolina	74.9%	78.8%	82.7%	39.8%	44.8%
Tennessee	94.9%	97.0%	95.2%	36.4%	Pennsylvania	74.3%	76.2%	82.5%	22.9%	62.2%
Texas	86.6%	88.1%	95.1%	17.5%	Utah	77.7%	80.1%	82.1%	11.8%	68.6%
Ohio	97.7%	96.4%	94.8%	22.6%	Colorado	74.3%	80.2%	82.0%	15.5%	76.6%
North Carolina	95.4%	96.1%	94.8%	39.8%	Minnesota	75.9%	78.5%	81.1%	29.1%	50.1%
Indiana	92.9%	96.1%	94.0%	29.2%	Ohio	73.0%	78.7%	81.0%	22.6%	56.6%
Washington	92.4%	93.0%	93.6%	18.0%	Oregon	77.1%	79.2%	80.7%	21.3%	71.2%
Pennsylvania	89.5%	92.5%	93.5%	22.9%	Tennessee	79.8%	80.2%	80.7%	36.4%	63.0%
Michigan	98.0%	98.3%	91.7%	25.3%	Washington	74.8%	78.4%	80.1%	18.0%	75.0%
Arizona	85.0%	95.3%	91.4%	11.8%	Kansas	77.5%	78.6%	79.5%	28.6%	58.4%
Nebraska	90.8%	91.4%	91.4%	30.2%	South Carolina	73.3%	75.6%	78.2%	39.5%	57.9%
Alabama	91.1%	95.3%	90.9%	44.6%	New York	80.9%	80.1%	78.1%	12.5%	59.2%
Minnesota	88.6%	95.5%	90.8%	29.1%	Alabama	75.7%	76.5%	78.1%	44.6%	63.0%
Kentucky	86.7%	88.5%	90.6%	44.2%	Illinois	76.6%	76.8%	77.9%	12.2%	75.2%
Oregon	89.7%	89.7%	89.7%	21.3%	Alaska	72.0%	75.4%	77.9%	34.4%	0.0%
Maine	82.9%	85.8%	89.1%	59.8%	Wyoming	70.1%	73.7%	77.3%	34.9%	68.3%
Georgia	88.3%	92.3%	89.1%	28.4%	Wisconsin	75.1%	76.6%	76.1%	31.7%	54.4%
Iowa	85.0%	91.9%	88.5%	38.9%	Montana	70.5%	70.8%	76.1%	45.9%	55.8%
West Virginia	82.2%	82.4%	88.2%	53.9%	South Dakota	72.9%	72.6%	76.0%	48.1%	34.9%
Oklahoma	80.1%	84.5%	87.6%	34.7%	Idaho	68.1%	69.7%	75.6%	33.6%	81.1%
Louisiana	93.6%	55.6%	87.1%	27.4%	Texas	71.5%	74.2%	75.4%	17.5%	69.4%
Kansas	86.8%	87.4%	86.1%	28.6%	Maryland	75.6%	77.1%	75.1%	13.9%	80.8%
South Carolina	79.3%	82.7%	84.2%	39.5%	Oklahoma	72.4%	73.1%	75.0%	34.7%	61.8%
Connecticut	83.0%	83.4%	83.7%	12.3%	New Mexico	71.8%	75.5%	75.0%	25.0%	78.0%
Montana	21.0%	87.1%	83.3%	45.9%	Indiana	70.7%	72.7%	74.2%	29.2%	74.4%
Idaho	77.6%	82.8%	83.3%	33.6%	Mississippi	72.6%	73.0%	73.5%	51.2%	80.5%
New Hampshire	95.6%	81.6%	82.8%	40.7%	Missouri	68.3%	68.6%	71.9%	30.6%	59.8%
New Mexico	71.6%	74.8%	79.5%	25.0%	West Virginia	56.9%	61.2%	68.3%	53.9%	70.9%
North Dakota	79.2%	89.1%	79.4%	44.1%	Maine	69.9%	67.2%	67.0%	59.8%	62.3%
Mississippi	76.9%	91.9%	78.9%	51.2%	Arizona	61.2%	64.5%	66.9%	11.8%	63.4%
Arkansas	64.6%	67.1%	77.3%	47.5%	Michigan	64.8%	65.1%	66.4%	25.3%	73.3%
South Dakota	62.1%	N/A	58.5%	48.1%	Virginia	66.0%	66.9%	65.6%	27.0%	66.7%
Alaska	N/A	N/A	N/A	34.4%	Arkansas	57.2%	62.9%	65.6%	47.5%	56.5%
DC	N/A	N/A	N/A	0.0%	Vermont	64.4%	61.3%	59.9%	61.8%	71.1%
Delaware	N/A	N/A	N/A	19.9%	New Hampshire	65.0%	62.6%	59.4%	40.7%	67.8%
Hawaii	N/A	N/A	N/A	8.5%	Connecticut	N/A	N/A	N/A	12.3%	84.3%
Nevada	N/A	N/A	N/A	8.5%	DC	N/A	N/A	N/A	0.0%	82.7%
Rhode Island	N/A	N/A	N/A	9.1%	Delaware	N/A	N/A	N/A	19.9%	80.0%
Utah	N/A	N/A	N/A	11.8%	Hawaii	N/A	N/A	N/A	8.5%	0.0%
Vermont	N/A	N/A	N/A	61.8%	Massachusetts	N/A	N/A	N/A	8.6%	73.8%
Wyoming	N/A	N/A	N/A	34.9%	Rhode Island	N/A	N/A	N/A	9.1%	54.7%
Nationwide	91.1%	92.6%	93.1%	21.1%	Nationwide	75.9%	77.7%	79.3%	21.1%	66.7%

[16] Data as reported in FCC Form 477 as of June 30 2006. Percent rural population obtained from the U.S. Census Bureau.

Furthermore, the data on the availability of cable modem and DSL suggests a very slow increase in the provision of service at the nationwide level. And quite disconcertingly, from December 2005 to June 2006, 20 states saw a decrease in the availability of cable modem service and 5 states saw a decrease in the availability of DSL service (see figure 2). What can we make of these trends?

Finally, Form 477 data tells us very little about socioeconomic and demographic differences in broadband adoption. The data does seem to indicate a real difference in the deployment/availability/adoption of broadband depending on the median household income in a given ZIP code. Just over 90 percent of ZIP codes with average median household incomes below $21,000 report at least one served customer, while nearly all of the ZIP codes with average median household incomes above $53,000 report service (however, the ZIP code methodology provides no information as to whether this difference is due to low-income consumers not subscribing to available deployed services, or due to providers not deploying services in low-income areas - or a combination of both). Other survey data indicates that there is a large gap between broadband adoption in low and high-income homes, much more pronounced than the Commission's data indicates.[17] And nothing in the Form 477 data informs the issue of a racial/ethnic digital divide. Recent data from Pew (2006) indicates that while 43% of white American adults have a broadband connection in the home, only 29% of Latino and

[17] The 2006 Pew survey found that adults living in homes with annual household incomes below $30,000 are more than three times less likely to report having a broadband connection as those with annual household incomes above $75,000. The 2006 GAO study revealed that approximately one out of 10 households with incomes below $30,000 reported having broadband access, while broadband connections were in six out of every 10 households with incomes above $100,000.

31% of African American adults report access.[18] In order for the Commission to live up to the mandate of Section 706, it needs to gather data that allows it to determine if broadband is being deployed to *all* Americans, regardless of location, income or race.

iii. No Knowledge of Marketplace Competition

Robust market competition is a key driver behind the availability of affordable advanced telecommunications services. Competition spurs innovation in the core service market as well as the adjacent and complementary markets, which leads to the deployment of a more valuable broadband product. This in turn stimulates demand, and entices more providers to enter the market, particularly in rural areas with pent-up demand for high-speed services. Without robust competition, service providers have little incentive to improve the value of their products, and the market is held in an artificially depressed state relative to what it would be if anti-competitive forces were held at bay.

Given these basic economic considerations, the Commission should be using Form 477 as a tool for monitoring marketplace competition. But it is not. The only metrics in the Form 477 data that even come close to portraying market competition is the number of reporting providers by technology, by ZIP code. These data seem to indicate that all is well. For example, the Commission reports that the median number of broadband ISP's available to the typical American household is eight. However, the GAO's audit of the Form 477 data revealed that the actual median number of terrestrial

[18] "Latinos Online: Hispanics with lower levels of education and English proficiency remain largely disconnected from the Internet", March 14, 2007, Pew Internet & American Life Project and the Pew Hispanic Center; Also, *Ibid.* at 20.

providers is just two -- a figure more in line with the reality of the cable-DSL duopoly marketplace.

Reporting the number of providers in a ZIP code is simply not an informative metric, and it provides no insight into the true state of marketplace competition. For example, the Commission reports that in the District of Columbia, there are eight providers of asymmetric DSL service, nine providers of symmetric DSL service, eleven traditional wireline providers, between one and three cable modem provides, four fiber providers, between one and three satellite providers, between one and three fixed wireless providers, and four mobile wireless providers -- for a grand total of 26 unduplicated high-speed Internet service providers. This seems to indicate a highly competitive market. But is it? DC is Verizon territory, and it is very likely that they have a near 100 percent share of the residential ADSL market, as opposed to having one-eighth of the market's residential ADSL subscribers. Are the other seven reporting providers CLEC's who serve businesses exclusively? The Form 477 data provides no insight into this question.

The key missing piece of data is *marketshare*. A simple tally of the number of providers does not give any information about the market power held and exerted by the large incumbents. For example, even if the now-debunked FCC assertion of 8 providers available to the average household were true -- and each provider held an equal marketshare, then the Herfindahl-Hirschman Index (HHI) for the average home would be 1,250, below the 1,800 threshold that indicates a highly concentrated market. However, if the top two providers held 95 percent of the marketshare equally, and the remaining 5 percent was distributed among the other six providers equally, then the HHI would be 4,517 -- an alarming level of market concentration. And it is this latter situation that

better reflects market reality. Indeed, the GAO's finding of just two providers being available to the average household indicates that the local broadband market HHI is likely to be at or above 5,000, indicating an extremely concentrated duopoly market.

Given that the reporting of the number of providers in a ZIP code is totally meaningless without marketshare information, it is perplexing why the Commission continues to promote this misleading metric. The Commission can easily change the Form 477 reporting requirements in a manner that will enable the adequate monitoring of marketplace competition, without increasing the burden on service providers or raising proprietary concerns. We further discuss this below in the "data improvements" section.

iv. Commission's Speed Tiers Have Limited Real-World Value

Beginning with the data reported as of June 30th 2005, the Commission began collecting information about the speeds of broadband connections. The six mutually exclusive speed categories are: 1) exceeding 200 kbps in only one direction; exceeding 200 kbps in both directions, and: 2) greater than 200 kbps and less than 2.5 mbps in the faster direction; 3) greater than or equal to 2.5 mbps and less than 10 mbps in the faster direction; 4) greater than or equal to 10 mbps and less than 25 mbps in the faster direction; 5) greater than or equal to 25 mbps and less than 100 mbps in the faster direction; 6) greater than or equal to 100 mbps in the faster direction.

The monitoring of product speeds is a welcome addition to the Form 477 data. But the major flaw in its presentation is that it is for all lines, both residential and business. This has the effect of overstating the availability of true advanced telecommunications services to household consumers. Furthermore, the data is only

presented at the national level, providing no information about the differences in products available to consumers in the diverse regions of the country.

In addition, the speed categories chosen by the Commission seem arbitrary and do not adequately reflect the products actually offered to consumers. The wide bin between 200 kbps and 2.5 Mbps overstates the availability of connections at the high end of that bin, and understates the availability of connections at the low end of the bin. Similarly, the wide bin between 2.5 Mbps and 10 Mbps also has the same limitations.

The cable modem platform accounts for nearly 60 percent of the residential advanced services market, and 55 percent of the entire residential market. The typical speeds offered by a cable modem provider are in the 3 to 6 Mbps range (see Figure 3), with some providers offering higher tiers of service in limited markets (for example, Cablevision's Optimum Online product is 10Mbps, but only offered in its very limited service area). The cable companies have slowly and steadily increased their speed offerings, but in discrete increments -- from 3 to 4 Mbps, then to 6 Mbps, and now in some markets to 8 Mbps and higher. However, the Commission's 2.5 Mbps to 10 Mbps bin won't adequately capture this progress.

The asymmetric DSL platform accounts for 36 percent of the residential advanced services market, and 40 percent of the entire residential market. The typical speeds offered by these providers range from 768 Kbps to 3 Mbps (see Figure 3), with some providers offering 6 Mbps service in large urban cities (AT&T has rolled this product out in markets such as San Francisco). The DSL companies have also made slow and steady advances to their speed offerings -- with most RBOC's increasing their standard offering from 1.5 Mbps to 3 Mbps in the past several years. But there also seems to be a trend of

pushing the lower-tier introductory ADSL speeds. The proportion of ADSL lines that had upload speeds slower than 200 kbps increased over the December 2005 to June 2006 time period from 18.4 percent to 18.9 percent. In total, only 27 percent of ADSL connections are faster than 2.5 Mbps. But again, the FCC's speed bins are inadequate to capture the progress (or lack thereof) in the ADSL residential market. The 200 kbps to 2.5 Mbps cannot tell us if there is a large increase in the "DSL-Lite" 768 kbps offerings. The 2.5 Mbps to 10 Mbps cannot capture if the providers are rolling out 4 and 6 Mbps service.

Figure 3: Offerings of Leading U.S. Internet Providers[19]

Service Type	Provider	Monthly Fee	Maximum Download Speed (Mbps)	Maximum Upload Speed (Mbps)	Must Bundle or Bundle for Rate?
Cable Modem	Comcast[1]	$42.95	6	0.768	Yes
	TimeWarner	$44.95	5	0.384	Yes
	Cox[2]	$41.95	7	0.512	Yes
	Charter	$42.99	3	0.256	Yes
	Cablevision	$44.95	10	1	Yes
DSL	AT&T[3]	$49.95	3	0.512	Yes
	Verizon	$37.99	3	0.768	Yes
	Qwest	$31.95	1.5	0.896	Yes
3G Wireless	Verizon[4]	$79.99	0.4 to 1.4	0.05 to 0.5	No
	AT&T[5]	$79.99	0.4 to 0.7	0.05 to 0.07	No
	Sprint[6]	$79.99	0.4 to 1.4	0.05 to 0.5	No
Fiber	Verizon	$199.95	30	5	No
Satellite	HughesNet[7]	$59.99	0.7	0.128	No
	WildBlue[8]	$49.95	0.5	0.128	No

[1] $59.95 without video bundle

[2] Services at this price vary by location

[3] Standard rate; must be voice customer; contract terms depend on location

[4] One-year contract; $175 early termination fee; usage restrictions; $25-$35 activation fee; faster (Rev-A) service availbility is limited

[5] One-year contract; $175 early termination fee; usage restrictions; $36 activation fee

[6] One-year contract; $200 early termination fee; usage restrictions; $36 activation fee; faster (Rev-A) service availbility is limited

[7] Require a minimum 2 year service agreement; $299.98 for equipment and standard installation; usage resrictions; $300 service termination fee

[8] $299 equipment fee; $179.95 installation fee; minimum service term is 12 months with early termination fee

In total, we know from the current Form 477 data that slightly more than half of all connections are slower than 2.5 Mbps (see Figure 4). We know that nearly 73 percent

[19] The information in this figure was gathered from each companies published offerings as of May 15 2007.

of all ADSL connections are slower than 2.5 Mbps, while only 12 percent of all cable modem connections are below this threshold (see Figure 5).

Figure 4: Speeds (Percent of All U.S. Lines)

Technology	Percent of All U.S. High-Speed Lines (as of June 30 2006)					
	Exceeding 200 kbps in only one direction	Exceeding 200 kbps in both directions, and:				
		Greater than 200 kbps and less than 2.5 mbps in the faster direction	Greater than or equal to 2.5 mbps and less than 10 mbps in the faster direction	Greater than or equal to 10 mbps and less than 25 mbps in the faster direction	Greater than or equal to 25 mbps and less than 100 mbps in the faster direction	Greater than or equal to 100 mbps in the faster direction
ADSL	6.61	18.85	9.46	0.02	0.00	0.00
SDSL	0.00	0.51	0.01	0.00	0.00	0.00
Traditional Wireline	0.00	0.90	0.02	0.00	0.02	0.01
Cable Modem	0.45	4.73	35.66	3.25	0.04	0.00
Fiber [3]	0.00	0.34	0.49	0.21	0.02	0.02
Satellite	0.72	0.04		0.00	0.00	0.00
Fixed Wireless	0.04	0.48	0.03	0.00	0.00	0.00
Mobile Wireless	14.09	2.96		0.00	0.00	0.00
Power Line and Other	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL LINES	21.92	28.82	45.67	3.48	0.09	0.03

Figure 5: Speeds (Percent of Each Technology's Lines)

Connection Speed		Percent of Lines of Each Technology, by Speed (As of June 30 2006)									
		ADSL	SDSL	Trad. Wireline	Cable Modem	Fiber [3]	Satellite	Fixed Wireless	Mobile Wireless	Power Line and Other	TOTAL LINES
Exceeding 200 kbps in only one direction		18.93	0.24	0.07	1.03	0.16	94.45	7.73	82.63	0.00	21.92
Exceeding 200 kbps in both directions and:	Greater than 200 kbps and less than 2.5 mbps in the faster direction	53.94	97.02	95.50	10.71	31.60	5.55	86.71	17.37	100	28.82
	Greater than or equal to 2.5 mbps and less than 10 mbps in the faster direction	27.07	2.73	1.70	80.80	45.03		4.77			45.67
	Greater than or equal to 10 mbps and less than 25 mbps in the faster direction	0.05	0.00	0.15	7.36	19.05	0.00	0.71	0.00	0.00	3.48
	Greater than or equal to 25 mbps and less than 100 mbps in the faster direction	0.01	0.00	2.01	0.10	2.25	0.00	0.06	0.00	0.00	0.09
	Greater than or equal to 100 mbps in the faster direction			0.58	0.00	1.91	0.00	0.01	0.00	0.00	0.03
	Percent of All Lines	34.94	0.52	0.95	44.13	1.08	0.77	0.56	17.05	0.01	100

A final, and perhaps most important flaw in the Commission's speed tiers is the complete omission of the differences in upload speeds, and how these may be changing over time. The promise of the Internet to affect social and economic change is based upon its fundamental nature as a two-way communications medium. In the 1996 Telecommunications Act, Congress clearly articulated its intent to foster universal deployment and adoption of a two-way communications technology, and not another one-way, one-to-many broadcast medium. The Act specifically directs the Commission to oversee deployment of broadband technology that enables users to both receive *and originate* high-quality data, including high-quality video.

But the Commission has completely ignored the issue of upload speeds, and the official speed tiers reflect this omission. Depending upon the compression standard, a user would need approximately 2 to 4 Mbps of upload speed to originate a standard-definition quality television signal, and 30-40 Mbps of upload speed to originate a professional high-definition quality television signal over the Internet (see Figure 6).

But an examination of the offerings of the leading providers of non-dial-up Internet service reveals that very few, if any U.S. consumers are able to purchase an advanced service product that allows them to originate high-quality video. Nearly all the products offered by the leading companies who provide the DSL and cable platforms (which have a combined share of 96% of the residential market[20]) have upload speeds below 1 Mbps (see Figure 3 above). The so-called "third-pipe" satellite and 3G mobile wireless products offer upload speed that are in some cases incapable of originating even

[20] "High-Speed Services for Internet Access as of June 30, 2006," Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission.

low-quality VOIP data. At these levels of upload speed, users have no hope of originating high-quality video.

Figure 6: Speeds Required for Video Transfer[21]

Data Speed Required (Mbps)	Application	Compression Standard
0.384	Low Quality Video Conference	MPEG-4
1.5	Video in a Window (You Tube)	MPEG-1
1 to 2	VHS Quality Full Screen	MPEG-2
2 to 3	Broadcast NTSC	MPEG-2
4 to 6	Broadcast PAL	MPEG-2
8 to 10	Professional PAL	MPEG-2
12 to 20	Broadcast HDTV	MPEG-2
28 to 40	DVB Satellite Multiplex	MPEG-2 Transport
32 to 40	Professional HDTV	MPEG-2
34 to 50	Contribution TV	MPEG-2-I
140	Contribution HDTV	MPEG-2-I
168	Raw NTSC	Uncompressed
216	Raw PAL	Uncompressed
270	Raw Contribution PAL	Uncompressed
1000 to 1500	Raw HDTV	Uncompressed

The only major U.S. provider that is deploying advanced services with upload speeds that even come close to approaching the intent of Section 706 is Verizon with its FIOS fiber optic service. However, the 30Mbps download/5Mbps upload service is the very top tier FIOS offering, and is only available in a few limited areas (and the terms of use put practical limitations on a user's ability to actually use the connection for meaningful content origination). Moreover, the $200 price tag is clearly outside of the realm of "affordable" -- a term used many times in the legislative activities that produced the 1996 Act.

Furthermore, almost every major high-speed Internet provider restricts end-users from hosting their own websites by using their home connection as a server. This is

[21] See http://erg.abdn.ac.uk/research/future-net/digital-video/mpeg2.html

articulated in the acceptable use policies that must be agreed to when subscribing to the service, and is achieved in practice by the use of Dynamic Internet Protocol Addresses.[22] Thus, even if carriers offered the speeds needed for users to originate high-quality video content, doing so would likely be forbidden under standard terms of use.

The Commission's abandonment of the focus on upload speeds has fostered an industry that deploys extremely asymmetrical connections. FCC data reveals that the proportion of slow connections is on the rise.[23] In December 2005, 15% of broadband lines had upload speeds slower than 200kbps. By June 2006 this had increased to 22% of lines. This trend likely will continue, leaving home users without the ability to originate high-quality high-bandwidth content, regardless of future advances in compression technology.

The Commission's speed monitoring has added a very interesting and somewhat valuable new dimension to their data. But they could greatly increase this data's value by making a few minor modifications to the process. We discuss this in depth below.

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[22] In order to host a website server using their home Internet connection, a user would need a static Internet Protocol Address, something that if offered by carriers is far more expensive than their Dynamic IP services, and use of the static IP as a server would possibly still violate the acceptable use policy (AUP). For example, Comcast's AUP states, "[t]he Service is for personal and non-commercial use only and you agree not to use the Service for operation as an Internet service provider or for any business enterprise or purpose... you may only access and use the Service with a dynamic Internet Protocol ("IP") address that adheres to the dynamic host configuration protocol ("DHCP"). You may not configure the Service or any related equipment to access or use a static IP address or use any protocol other than DHCP unless you are subject to a Service plan that expressly permits otherwise."

[23] *Ibid.*

B. How the Commission Can Improve Form 477

i. The Commission Should Require Providers to Report Subscriber Counts at the ZIP or ZIP+4 Level

Simply stated, there is no reason why the Commission should not require providers to report the number of subscribers served by ZIP code. This information will impose a marginal additional reporting burden on providers but will provide extremely valuable information that will lead to better public policy.

If the Commission knows the number of residential subscribers in a given ZIP code, then it can report those data publicly[24], which will allow researchers to calculate estimates of household level penetration at the granular level of ZIP code, which in turn can be aggregated up to the town and city level.[25] These penetration data can also be

[24] Providers are likely to cite confidentiality concerns about publishing such data at this granular level. We respectfully argue that these concerns are overstated.

[25] The ever-changing ZIP code system will complicate this somewhat, but the data will still be overwhelmingly accurate. The Census Bureau created "ZIP Code Tabulation Area" (ZCTA) for the 2000 census. According to the Bureau, "ZCTAs are generalized area representations of USPS ZIP Code service areas. Simply put, each one is built by aggregating the Census 2000 blocks, whose addresses use a given ZIP Code, into a ZCTA which gets that ZIP Code assigned as its ZCTA code. They represent the majority of USPS five-digit ZIP Codes found in a given area." Thus, there is a very high level of overlap between a 5-digit ZIP code and ZCTA. There are however some ZIP codes that are not captured by ZCTAs, though these omissions will have almost no effect on the calculations of residential broadband penetration. According to the Bureau, "[b]ased on the January 2000 list of ZIP Codes from the USPS's Delivery Type File, the ZCTA delineation process excluded 10,068 ZIP Codes in the United States and Puerto Rico (not counting overseas military ZIP Codes). These included 2,523 ZIP Codes that served specific companies or organizations with high volumes of mail and 6,419 ZIP Codes dedicated to Post Office (PO) Box and/or general delivery addresses primarily located in areas otherwise served by rural route or city style mail delivery. The remainder represents ZIP Codes that were either inactive or insufficiently represented in the MAF and therefore did not become ZCTAs." Several private firms have created population and demographic data sets from Census ZCTA data that correspond to 5-digit ZIP codes. Indeed, the Commission uses such information in their Form 477 reports.

combined with other demographic data to investigate potential demand factors that may account for differences in local penetration levels. Similarly, geographic and economic data can be used to investigate potential supply factors that may account for differences in local penetration levels.

Having penetration level at such a granular level will immediately enable researchers and policymakers to see the "outliers". For example, if penetration in the ZIP codes of a particular town are all near a certain level, while one or two of the ZIP codes lie far below that average, this would signal a problem in need of further investigation. It could be that these low-penetration ZIP codes are in lower-income neighborhoods that have broadband available, but residents do not have the means purchase service or do not perceive the technology as valuable. If this were the case, then local government or civic groups may choose to target these areas with programs that facilitate use of broadband. Alternatively, it could be that broadband providers do just simply not serve these particular low-penetration ZIP codes. Localized penetration data with improved deployment data will provide the answers to these questions, which will ultimately facilitate the universal deployment and adoption of broadband technology.

Having subscribers report the number of subscribers at the ZIP or ZIP+4 level will also enable the calculation of local marketshare data. We would argue that the Commission should publish the number of subscribers each reported by each provider for each ZIP code. However, if the Commission decides that firm confidentiality is the paramount concern, then they themselves could calculate Herfindahl-Hirschman Index (HHI) values for each ZIP code. Market concentration is a fundamental variable to explain the variation in local broadband penetration levels. We hypothesize that local

market concentration leads to higher prices and slower advances in upgraded speed offerings, which both in turn lead to lower consumer adoption and satisfaction. If concentration is indeed a key explanatory factor behind the variation in price, speed and adoption of broadband service, then the Commission and Congress should be aware of this, as there are a number of pro-competitive policies that could be implemented to break local market monopolies and duopolies.

In the NPRM, the Commission writes that it is "skeptical that analysis of customer totals submitted at the 5-digit level of aggregation could significantly increase [its] understanding of the dynamics of broadband availability and deployment, i.e., because any methodology based on a 5-digit Zip Code aggregation will continue to yield results that do not accurately depict broadband availability in particular, localized areas within a Zip Code." We think this statement exhibits a failure of imagination on the part of the Commission, but also raises a valid point. As we have shown above, ZIP code residential subscriber counts would enable the calculation of local household penetration levels. These counts, if reported by provider, would also enable the calculation of local market concentration values. Both of these are extremely valuable metrics. However, the Commission is right, the large scope of 5-digit ZIP codes somewhat hinders the potential value of these metrics. If the Commission knew these data at the ZIP+4 level, or Census Block level, then the total potential of the data would be unlocked. Below we argue why ZIP+4 should be the threshold reporting level. However, if the Commission chooses to not require reporting at that granular level, it should not decline to require the reporting of subscriber counts at the 5-digit ZIP code level, as this data would provide invaluable information for the telecommunications policymaking process.

ii. The Commission Should Refine Its Speed Tiers to a More Granular Level in Order To Better Monitor Market Development

As discussed above, the Commission current bins of speed tiers are not defined in a way that provides meaningful information about the proliferation of broadband technologies. The entire speed reporting system lumps business and residential connections together, overstating the range of speed offerings that typify the home broadband marketplace. And the system completely ignores the aspect of upload speeds, which hides the disturbing fact that little progress is being made in this critical portion of the communications infrastructure.

We don't recommend that the Commission peg its speed tiers to the exact current conditions of the marketplace. But we do think more narrow bins, and more expansive upload bins would better reflect market reality and create a more informative data set. Figure 7 details the *download* and *upload* speed tiers that we recommend the Commission adopt.[26] These tiers consist of a total of 11 download categories and 12 upload categories, for a grand total of 134 bins (all categories match with the exception of the additional upload category, which is "less than 200 kbps"). However, because essentially no provider will have faster upload speeds than download speeds, there are a practical total of 77 bins. We reiterate that these should be tracked for residential and

[26] The 12 upload speed categories are: Less than 200 kbps; 200 kbps to 500 kbps; 500 kbps to 800 kbps; 800 kbps to 1 Mbps; 1 Mbps to 3 Mbps; 3 Mbps to 6 Mbps; 6 Mbps to 10 Mbps; 10 Mbps to 15 Mbps; 15 Mbps to 30 Mbps; 30 Mbps to 50 Mbps; 50 Mbps to 100 Mbps; Greater than 100 Mbps. The 11 download categories are: 200 kbps to 500 kbps; 500 kbps to 800 kbps; 800 kbps to 1 Mbps; 1 Mbps to 3 Mbps; 3 Mbps to 6 Mbps; 6 Mbps to 10 Mbps; 10 Mbps to 15 Mbps; 15 Mbps to 30 Mbps; 30 Mbps to 50 Mbps; 50 Mbps to 100 Mbps; Greater than 100 Mbps.

business lines separately, and that they should continue to be reported by the nine different technology categories that the Commission currently uses.

Figure 7: Proposed Speed Tiers That Should Be Incorporated into Form 477

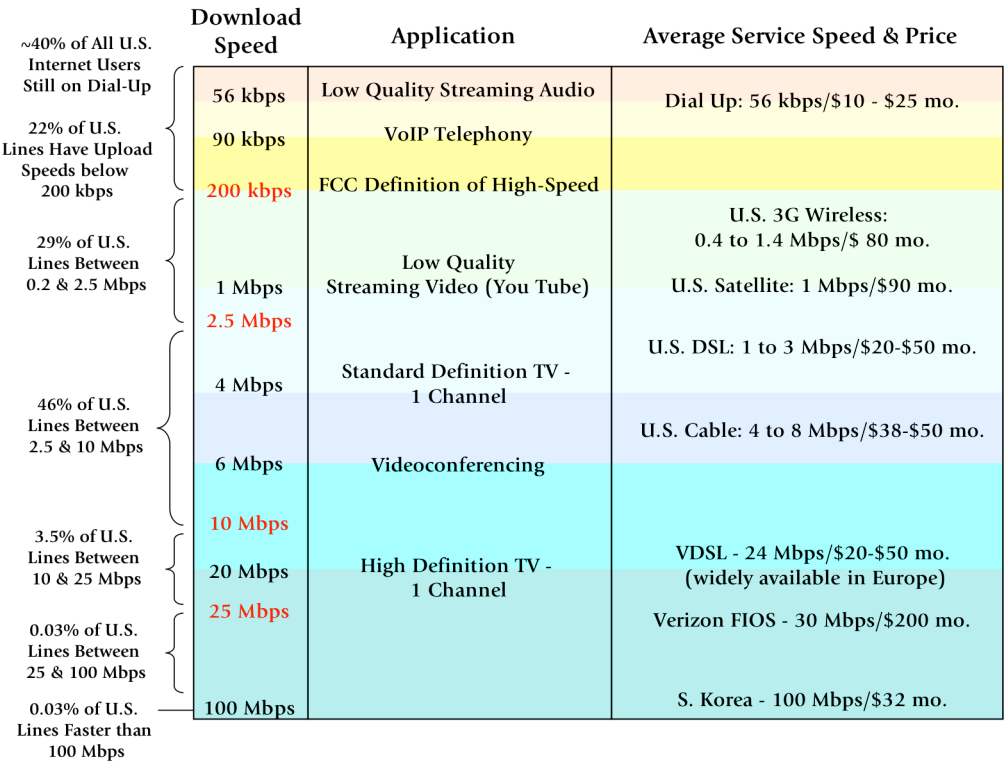
Upload Speed	Download Speed										
	200 kbps to 500 kbps	500 kbps to 800 kbps	800 kbps to 1 Mbps	1 Mbps to 3 Mbps	3 Mbps to 6 Mbps	6 Mbps to 10 Mbps	10 Mbps to 15 Mbps	15 Mbps to 30 Mbps	30 Mbps to 50 Mbps	50 Mbps to 100 Mbps	Greater than 100 Mbps
Less than 200 kbps	?	?	?	?	?	?	?	?	?	?	?
200 kbps to 500 kbps	Symmetrical	?	?	?	?	?	?	?	?	?	?
500 kbps to 800 kbps		Symmetrical	?	?	?	?	?	?	?	?	?
800 kbps to 1 Mbps			Symmetrical	?	?	?	?	?	?	?	?
1 Mbps to 3 Mbps				Symmetrical	?	?	?	?	?	?	?
3 Mbps to 6 Mbps					Symmetrical	?	?	?	?	?	?
6 Mbps to 10 Mbps						Symmetrical	?	?	?	?	?
10 Mbps to 15 Mbps							Symmetrical	?	?	?	?
15 Mbps to 30 Mbps								Symmetrical	?	?	?
30 Mbps to 50 Mbps									Symmetrical	?	?
50 Mbps to 100 Mbps										Symmetrical	?
Greater than 100 Mbps											Symmetrical

iii. The Commission Should Revise The Definition of Advanced Services

Congress articulated a clear vision of a two-way symmetrical broadband marketplace. Section 706 is very specific in its language guiding the Commission's oversight of the deployment of advanced telecommunications, which enable users to originate and receive high-quality data and video. However, it is clear from the Commission's own data that very few consumers are able to purchase a broadband connection that allows them to *receive* high-quality video data, and almost no residential consumer has the ability to *originate* such data. Typical DSL offerings have download speeds that range from 768 kbps to 3 Mbps, with a few carriers now rolling out 6 Mbps service. Cable, the leading platform in the U.S., continues to outperform DSL in speed, but the typical cable offering is 6 Mbps, with a few limited areas seeing 10-15 Mbps service.

According to the most recent FCC data, more than half of all U.S. high-speed lines (residential and business) are slower than 2.5 Mbps. At this speed, using the standard video compression format (MPEG-2), none of these users could receive a standard-definition quality video service, which requires about 3 Mbps of bandwidth. Only 3.5% of all U.S. high-speed connections are between 10 and 25 Mbps, and thus capable of receiving a broadcast HDTV quality signal. In total less than 0.01% of U.S. lines can receive professional quality HDTV data, which requires speeds between 30 and 40Mbps using the MPEG-2 compression standard (see Figure 8).

Figure 8: Speeds of U.S. High-Speed Lines[27]



[27] "High-Speed Services for Internet Access as of June 30, 2006," Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission; *Ibid.* at 8; Free Press Research.

Thus it is clear, the Commission's implementation of Section 706 and its definition of "advanced services" as at least 200 kbps symmetrical falls far short of meeting its statutory obligation to monitor deployment of broadband technology.

The Commission should rethink its approach to fulfilling its obligations under Section 706 and revise the definition of "advanced services" from 200 kbps symmetrical to a more realistic definition that reflects both the intent of Congress and the technical realities of the marketplace. At the very minimum this definition should initially be set at 3 Mbps symmetrical, which reflects the bandwidth needed for standard TV quality transmission. If HDTV were chosen as the benchmark, the commission would need to update the definition of advanced service capability to encompass only the lines capably of 12-40 Mbps symmetrical transmission.

Let us be very clear. We do think that the Commission should revise upward its definition of "advanced services". We do not think the Commission should stop monitoring the deployment, availability and adoption of all non-dial-up Internet connections that would fall below a revised definition of advanced services. It is very important for the purposes of policymaking to know what types of Internet access products are available and used in the marketplace. Connections below 200 kbps are essentially dial-up connections, which are near-universally available (IDSN lines at 128 kbps would fall into this class, but they are so few that they can be ignored). Connections above 200 kbps but below a reasonable threshold for advanced services (3-4 Mbps symmetrical) comprise nearly all the residential market, save a few fiber and cable offerings. It is imperative to set the benchmark at the level articulated by Congress in

Section 706, but it would be counterproductive to cease monitoring of the commercial products that do not meet these definitions.

Similarly, it is probably wise for the Commission to update the definition of "high-speed service" to better reflect the typical broadband users needs. This definition would need to be at least 1 to 3 Mbps in the faster direction, in order to capture the typical web experience of navigating flash-animation web sites, and downloading or streaming audio and video files. But again, if the Commission updates the definition of "high-speed" (a statutory less relevant term than "advanced services") then it should continue to measure all non-dial-up Internet connections that fall below this revised threshold.

iv. The Commission Should Collect Information at the 9-Digit ZIP Code Level

Internet providers routinely send bills to customers at a 9-digit ZIP code, even if the consumer has no knowledge themselves of their 9-digit ZIP code. Thus it seems that reporting subscribers at the ZIP+4 level would not add a significant burden to providers. If the provider knows the 9-digit ZIP code at the service location, then they can provide this information. If they only know the service location's 5-digit ZIP code, and are not willing to determine the 9-digit value, then they can report the 9-digit ZIP code of the billing address. For most residential subscribers the billing address will likely match the service address. The provider can perform a simple check to see if these two addresses match, and in the event that they do not, they can report the 5-digit ZIP code of the serviced location.

A 9-digit ZIP code in general corresponds to identify a geographic segment within the five-digit ZIP code delivery area. These more granular segments can include city blocks, an apartment or condominium complex, or individual high-volume receiver of mail (some 5-digit ZIP codes also correspond to individual receivers). Thus, subscriber and provider information reported at the 9-digit ZIP code will enable a very precise understanding of the broadband market.

Unfortunately, 9-digit ZIP codes do not map directly onto Census blocks. In fact, the 5-digit ZIP codes themselves do not map directly onto Census data, which is reported at the "ZIP Code Tabulation Area" (ZCTA) for the 2000 census. However, there is a very high level of overlap between a 5-digit ZIP code and ZCTA, and several private firms have created population and demographic data sets from Census ZCTA data that correspond to 5-digit ZIP codes. Indeed, the Commission uses such information in their Form 477 reports. There is no reason in theory why Census block data couldn't be mapped onto 9-digit ZIP codes. Regardless, knowing the market concentration and household penetration at the 9-digit ZIP code will enable geophysical mapping of where gaps in adoption and competition are. This combined with provider reporting of deployment at the ZIP+4 or specific latitude/longitude level will enable more efficient targeting of public and private funds for the deployment of broadband infrastructure.

v. The Commission Should Gather Data on Service Price and Value

The Communications Act established the FCC for the purpose of promoting the universal availability of communications services at reasonable charges. However, the Commission does not gather *any* information about the prices of broadband services.

Numerous surveys indicate that price and perceived value are the key reasons why consumers who could purchase broadband choose to not do so. For millions of American's broadband is an unaffordable luxury, while millions of others view it as an absolute necessity. The persistence of a rich-poor digital divide is antithecal to the spirit of the Communications Act and the Commission has the duty to bridge this divide.

To accomplish this, the Commission needs to begin to understand what consumers are being charged for what types of broadband service. This is not a straightforward task. Service providers often charge two people in the same building two very different prices for the same exact product. Services are bundled, fees are added, and rates are constantly changed. While it is certain that each provider knows exactly what they charge for each line, providers will likely cry foul if they are required to report price and speed information together for each line. If the Commission decides that this level of reporting is too burdensome, then at the very least they should require each provider to report the *average* price per Mbps, preferably at the ZIP code level, but at the very least at the state level. This information, while not perfect, will enable the Commission to better monitor the deployment of *affordable* and *valuable* broadband services.

vi. The Commission Should Conduct Consumer Surveys

We recognize that there is a low likelihood that the Commission will require providers to report the price paid and *average actual* speed for each line. But the Commission could create a valuable data set with this information by conducting large-scale periodic national consumer surveys to determine these metrics as well as other general broadband related information. By conducting a properly designed survey with a

reasonably large sample size (N>10,000) in a representative array of geographic areas, the Commission can generate the information they need to complement the revised Form 477 reports.

vii. The Commission Should Monitor Provider Business Practices

The vision of the 1996 Act was to foster the deployment of an affordable and universal two-way communications system. However, this country's broadband providers have largely ignored demand for symmetrical connections, and place onerous restrictions on customer's use of their broadband connections. Appendix A details the Terms of Service and Acceptable Use Policies of this country's leading residential broadband providers. The Internet providers studied not only place severe restrictions on customer usage, but assert a disconcerting level of control over their customer's online service. These agreements assert the right to monitor all traffic and block or remove any traffic for a wide range of reasons, many of which have nothing to do with lawful content or network management. For example, Verizon asserts the right to deny or terminate service for "any reason or no reason," if customers: Damage the name or reputation of Verizon or its affiliates; Generate excessive amounts (as determined by Verizon) of Internet traffic; Use the service in a way that is "objectionable for any reason"; Interfere with another person's usage or enjoyment; Transmit information that is "defamatory"; Use any name or mark of Verizon as a hypertext link to any Web site; Use the service to "disrupt the normal flow of online dialogue".

AT&T has a similar set of policies: "AT&T does not pre-screen Content, but AT&T and its designees shall have the right (but not the obligation) to monitor any and

all traffic routed though the Service, and in their sole discretion to refuse, block, move or remove any Content that is available via the Service".

The control over content that the broadband network providers exert is paralleled by their assertion of control over applications. They forbid the operation of servers or hosting, reserve the right to monitor and throttle transmission speeds, and restrict the access to permanent IP addresses, which are necessary to upload content.

One might take some solace in these restrictions if they were in some way limited to acts that are unlawful. That is obviously not the case, as is not so explicitly stated in the policies. Comcast goes a step further, asserting this control over content and use, where it is legal, stating "Comcast reserves the right, but not the obligation, to refuse to transmit or post and to remove or block any information or materials, in whole or in part, that it, in its sole discretion, deems to be offensive, indecent, or otherwise inappropriate, regardless of whether this material or its dissemination is unlawful. Although Comcast has no obligation to monitor the Service and/or the network, Comcast and its suppliers reserve the right at any time to monitor bandwidth, usage, transmissions, and content from time to time to operate the Service; to identify violations of this Policy; and/or to protect the network, the Service and Comcast users."

The customer agreements also seek to lock consumers into their providers with long term contract, early termination charges, unbundling penalties and to drive them to more costly packages to obtain the elements necessary for fully functional communications on advanced telecommunications networks (e.g. static IP addresses and sufficient bandwidth to upload content). The lack of competition has allowed these practices to exist and persist and undermine the achievement of the telecommunications

network that Congress envisioned in Section 706 where it stated “advanced telecommunications capability is defined without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high quality voice, data, and video telecommunications using any technology.”

The Commission should begin to monitor these terms of service and general market practices of providers to determine if the spirit of Section 706 is being upheld in the marketplace.

IV. Conclusion

As consumer advocates, we strongly support policies that will bring more broadband competition to American households. Building a solid base of knowledge on which to make competition policy is an important step that should enjoy broad support. The Form 477 data is by far the best available method for building this knowledge. Thus, the Commission should use this NPRM to revise the reporting practice in a manner that provides it, researchers and Congress with the best most informative data.

The current broadband problems we face are severe and the consequences of resting on the status quo unacceptable. We urge the Commission to move forward with the recommendations contained in this filing, in order to swiftly improve the available data on U.S. broadband performance. We must have this information in order to understand, confront and remedy the problems in the current broadband market. Indeed, both Congressional Committees that oversee this area are currently considering legislation that would direct the Commission to do much of what we've recommended here in these comments. And it is worth noting that the Senate Commerce Committee in the last Congress unanimously approved an amendment that directed the Commission to modify its Form 477 data collection in much the same way we've suggested here. Thus, there is clear political will to change the status quo.

And the status quo is certainly unacceptable. If we watch and wait, trusting that today's artificially constrained marketplace will magically solve the broadband problem, we will see the U.S. slip farther behind the rest of the world and widen the digital divide -- both domestically and internationally. The consequences are too severe to tolerate this narrow path. The current trend-lines are clear. We continue to have large gaps in

broadband service across the nation. Worse still, the networks we do have are slower, more expensive and less competitive than the global leaders in broadband performance. The first step on the road to broadband recovery is understanding the problem. We must rectify the deplorable state of data collection in the broadband market. What we do not know undercuts our ability to craft and target viable solutions. Unfortunately, we have just enough data to see the outlines of our problems, but we lack the specific information that would allow us to target and implement solutions at the local level. The Commission has the duty and the ability to rectify this situation.

Respectfully submitted,

CONSUMER FEDERATION OF AMERICA
CONSUMERS UNION
FREE PRESS

By:_____
S. Derek Turner
501 Third Street NW,
Suite 875
Washington, DC 20001
202-265-1490
dturner@freepress.net

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Appendix A – Terms of Service for Major U.S. Broadband Providers

Free Press extensively analyzed the terms of service, subscriber agreements, and acceptable use policies for the high-speed Internet offerings of AT&T, Verizon, Qwest, Comcast, Time Warner, and HughesNet. We found that these companies place an abundant amount of unnecessary restrictions on their customers, and assert a disconcerting level of control over their customer's online activities. Most American consumers do not take the time to read through these policies, due to a number of factors including the legal verbiage and small text size. This is a similar situation to the one faced by American consumers who try to distinguish the fine print that appears at the end of advertisements. The fine text can be extremely important. A recent example of this practice is seen in a TV advertisement for the upcoming release of the Apple iPhone. Towards the end of the advertisement, in small print at the bottom of the screen, AT&T notes that at minimum a new two-year agreement is required in order to be able to use the phone.[28] This is an important fact that the overwhelming majority of consumers would not be aware of until trying to activate the cell phone. The dominant cable and telephone providers utilize this same strategy in the conditions they apply to a customer's Internet service. These companies appear much more interested in selling their service than adequately disclosing to consumers that they assert the right to examine and stop their online activities.

The foremost restriction found in our analysis was the ease with which providers could monitor their customer's online activities and terminate their service. By giving themselves the right to monitor a customer's activities, these Internet providers can act as supervisors to the online world. These same Internet providers can terminate Internet access at will, giving them the power to silence a customer's voice to the world with the flip of a switch. Some providers assert the right to terminate service is they deem that a customer has damaged the company's reputation. Others state that they can drop a customer for any or no reason. One cannot imagine Internet providers gaining such vast power over their customers in a market where intense competition exists.

In the 1996 Telecommunications Act, Congress specifically required the FCC to promote the universal availability of "advanced telecommunications capability" that would enable users to receive *and originate* "high-quality voice, data, graphics, and video". This legislative directive illustrates that Congress recognized the importance of preserving the two-way capabilities of the Internet as it transitioned from dial-up technology. Our analysis however illustrates the significant obstacles put in place by broadband providers that deny American consumers the ability to originate content, particularly high-quality audio and video. In order for a consumer to adequately originate content, a static IP address is needed. A static IP address provides a permanent location for another user's computer to request the information. With a dynamic IP address, this location changes regularly denying the consumer the ability to host or originate content. None of the Internet providers in our analysis allow for static IP addresses within their basic tiers of service. Furthermore, the upload speeds supplied by these providers are completely

[28] See http://www.youtube.com/watch?v=FLxB4pHH_GY

inadequate for the online uses intended by Congress. In order to gain the ability to host and originate content, customers of the dominant telephone and cable companies must purchase business tiers that are too expensive for the average consumer.

These six providers analyzed provide over three-quarters of all residential U.S. broadband connections. The staggering control that these companies assert over their customers is a symptom of an uncompetitive market where abuses go unchecked.

AT&T

An analysis of AT&T's Subscriber Agreement reveals a wide variety of limitations placed on customers.

AT&T:

- Retains the power to monitor any and all traffic
- Declares the right to block and remove any content that is available to customers
- Monitors the transmission speed and can modify it at any time
- Restricts residential customers from operating an Internet server
- Reserves the right to terminate service
- Does not guarantee a minimum Internet speed

> *AT&T does not pre-screen Content, but AT&T and its designees shall have the right (but not the obligation) to monitor any and all traffic routed though the Service, and in their sole discretion to refuse, block, move or remove any Content that is available via the Service.*
>
> -AT&T DSL Service Subscriber Agreement

AT&T can not only monitor all traffic routed through its lines but can also block any content they deem "objectionable" or "defamatory" and terminate a customer's account if this content originated with them. Furthermore, AT&T does not guarantee a minimum Internet speed. So while AT&T is intent on redefining their service as a 6 mbps service, they cannot guarantee their customers even 6 *kbps*. AT&T can also monitor and change a customer's current connection speed at any time and without notice.

AT&T customers are barred from creating a network or hosting a server that could originate content. In the 1996 Telecommunications Act, Congress specifically required the FCC to promote the universal availability of "advanced telecommunications capability" that would enable users to receive and originate "high-quality voice, data, graphics, and video". By requiring a customer to consent to rules that block their ability to originate any content including multimedia, AT&T spurns the broadband vision as defined by Congress.

Through their acceptable use policy, AT&T exerts an unacceptable level of control over their customer's Internet activities. This control has little bearing on the company's ability to ensure network security and reliability. By asserting the legal ability to restrict content or terminate service for any lawful purpose they deem to be inappropriate, AT&T is denying their customers the true advanced telecommunications access that Congress envisioned.

Verizon

Verizon, as outlined in their Terms of Service Agreement, has many unreasonable restrictions that are for the most part unbeknownst to customers

Verizon:

- Reserves the right to refuse, move, or remove any content that the company determines is "objectionable"
- Insists on the right to change, limit or terminate a customer's Internet service
- Monitors a customer's Internet connection
- Retains the power to increase the cost or terminate Internet service if a customer cancels their Verizon telephone service.
- Asserts the right to deny service or terminate existing service for "any reason or no reason" or if you:
    - Damage the name or reputation of Verizon or its affiliates
    - Generate excessive amounts (as determined by Verizon) of Internet traffic
    - Use the service in a way that is "objectionable for any reason"
    - Interfere with another person's usage or enjoyment
    - Transmit information that is "defamatory"
    - Use any name or mark of Verizon as a hypertext link to any Web site
    - Use the service to "disrupt the normal flow of online dialogue"
    - Attempt to procure a permanent IP address as a result of having a dynamic IP address

> *Verizon reserves the right and sole discretion to change, limit, terminate, modify at any time, temporarily or permanently cease to provide the Service or any part thereof to any user or group of users, without prior notice and for any reason or no reason.*
>
> *Verizon, in its sole discretion, may refuse to accept your application for Service following a termination or suspension of your use of the Service.*
>
> -Verizon Terms of Service

Verizon, through their Terms of Service employs tremendous power over their customers. By insisting on the authority to monitor and block or remove any content "that violates this agreement or that Verizon determines, in its sole discretion, is otherwise objectionable", Verizon gains a firm grip over the online activities of its customers. Furthermore, a Verizon customer can be denied service for any number of reasons. The most egregious is worth quoting in full "Verizon reserves the right and sole discretion to change, limit, terminate, modify at any time, temporarily or permanently cease to provide the Service or any part thereof to any user or group of users, without prior notice and for any reason or no reason". Such a blanket statement is rare amongst the Internet provider policies we analyzed. Verizon goes on to highlight specific circumstances that they believe warrant service termination. A particularly chilling cause

for termination is damaging "the name or reputation of Verizon, its parent, affiliates and subsidiaries, or any third parties". Other acts that give Verizon the right to terminate an account include to "disrupt the normal flow of online dialogue", "generate excessive amounts (as determined by Verizon in its sole discretion) of Internet traffic", "interfere with another person's usage or enjoyment of the Internet", "post or transmit information or communications that are defamatory", and when assigned a dynamic IP address to "use such IP address to circumvent the changing of IP addresses assigned by the Service". The last restriction is important when looking back to the intent of Congress in passing the 1996 Telecommunications Act.

The two-way capability envisioned by Congress is not realized when a consumer has a dynamic IP address. This characteristic restricts Verizon customers from originating content. Verizon does offer customers a static IP address. However, this can only be obtained with a business account and for an extra fee per month. Furthermore, in order to originate high-quality video, one would need an upload speed much higher than the typical DSL or cable offering. The best possible speed comes from Verizon's Fiber service (Fios), which is available in a few high-income markets. The highest package offered provides a 5 Mbps upload speed.[29] However, this service is completely out of the price range of the average consumer at close to four hundred dollars per month.[30]

Verizon employs a number of strategies to keep customers from changing to another broadband provider. If a consumer decides to purchase both Internet and telephone service through Verizon and then decides to do away with their Verizon landline phone for a Sprint cell phone, Verizon states they can "terminate your service" and "you agree to pay any higher monthly fee that may apply to your new service agreement". Keeping in mind the early cancellation fees, these terms paint a clear picture of anticompetitive practices in the broadband industry. Similarly, once an area has had fiber lines installed, Verizon can terminate a customer's DSL Internet access at their discretion. Considering the Commission's reliance on intermodal competition, this fact should be particularly unsettling.

Through their terms of service, Verizon exerts an unacceptable and unrivaled level of control over their customer's Internet activities. This control has little bearing on the company's ability to ensure network security and reliability. Verizon appears to have crafted their Terms of Service to do all they can to provide themselves with a laundry list of reasons to terminate the service of anyone who offends them and deny customers the opportunity to switch providers. By asserting the legal ability to restrict content, terminate service for "no reason", and create policies that limit consumer choice, Verizon is denying their customers the true advanced telecommunications access that Congress envisioned.

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[29] As published June 11, 2007 at http://biz.verizon.net/pands/fios/features.asp

[30] The service costs $389.99 per month with $99 setup fee, a required one-year contract and a $250 early cancellation fee. Id.

Qwest

An analysis of Qwest's Subscriber Agreement and Acceptable Use Policy expose a number of controls placed on consumers in order to gain access to the service.

Qwest:

- Monitors material accessed through their service
- Retains the power to block any "defamatory" material
- Asserts the right to restrict use for a variety of reasons
- Denies residential customers the ability to host any content through their home connection
- Restricts business status customers from hosting excessive amounts of multimedia

> *Qwest reserves the right to block access to such material and suspend or terminate any User creating, storing or disseminating such material.*
>
> -Qwest Acceptable Use Policy
>
> *Qwest Web hosting accounts may not be used for purposes of distributing and storing excessive amounts of multimedia files. Multimedia files are defined as any graphics, audio, and video files.*
>
> -Qwest Broadband Subscriber Agreement

Qwest grants itself the power to monitor and block material that is "defamatory". A residential broadband subscriber does not have the option to host content. Qwest provides itself the right to restrict use "to ensure the provision of acceptable service levels to all Qwest customers". For a customer willing to pay even more for service, a business account will provide 25MB of web hosting.

In the 1996 Telecommunications Act, Congress specifically required the FCC to promote the universal availability of "advanced telecommunications capability" that would enable users to receive and originate "high-quality voice, data, graphics, and video". A business customer is allowed to use no more than 70 percent of this web hosting space for multimedia files. Multimedia files are defined as "any graphics, audio, and video files". The Qwest terms of service require a customer to consent to rules that not only block their ability to originate content but also inhibit hosting the types of content considered by Congress to be essential to our broadband future.

Through their Acceptable Use Policy and Terms of Service, Qwest exerts an unacceptable level of control over their customer's Internet activities. This control has little bearing on the company's ability to ensure network security and reliability. By asserting the legal ability to restrict content or terminate service for any lawful purpose they deem to be inappropriate, Qwest is denying their customers the true advanced telecommunications access that Congress envisioned. These abundant restrictions and limitations fly in the face of both Congress' intent and the Commission's four broadband principles.

Comcast

An analysis of Comcast's Acceptable Use Policy reveals that the company places a variety of unreasonable restrictions on customers.

Comcast:

- Restricts customers to a dynamic IP address.
- Denies customers the ability to host any content through their home connection.
- Retains the power to block any content it deems inappropriate, unacceptable and/or undesirable.
- Asserts the right to change the speed and upstream/downstream bandwidth limitations without notice.
- Monitors bandwidth, usage, transmissions, and content including email and IP audio.
- Reserves the right to terminate service based on Comcast's sole judgment that a customer represents an overly large burden on the network.

> *"Comcast reserves the right, but not the obligation, to refuse to transmit or post and to remove or block any information or materials, in whole or in part, that it, in its sole discretion, deems to be offensive, indecent, or otherwise inappropriate, regardless of whether this material or its dissemination is unlawful.*
>
> *Although Comcast has no obligation to monitor the Service and/or the network, Comcast and its suppliers reserve the right at any time to monitor bandwidth, usage, transmissions, and content from time to time to operate the Service; to identify violations of this Policy; and/or to protect the network, the Service and Comcast users."*
>
> - Comcast Acceptable Use Policy

Comcast reserves the right to block any content it deems to be inappropriate, even if this information is lawful. Comcast also retains the right to monitor any transmission, including e-mail. Further, if Comcast, in its sole judgment, deems a customer to be an "overly large burden on the network" or exceed the bandwidth limitations (which are not specified and can change at any time and without notice), they have the right to terminate service without notice.

Comcast's overly restrictive terms of service prevent millions of Americans from participating in the democratic telecommunications marketplace that Congress envisioned. By restricting a consumer's service to a dynamic Internet Protocol (IP) address and explicitly prohibiting the use of a static IP address, Comcast spurns the broadband vision as defined by Congress. Similarly, Comcast does not allow its customers to originate their own content from home servers.

Through their acceptable use policy, Comcast exerts an unacceptable level of control over their customer's Internet activities. This control has little bearing on the company's ability to ensure network security and reliability. By asserting the legal ability to restrict content or terminate service for any lawful purpose they deem to be inappropriate, Comcast is denying their customers the true advanced telecommunications access that Congress envisioned. Normally such boorish restrictions would be mitigated by the

demands of a competitive consumer marketplace. However, those who wish to take their business elsewhere have little option. Comcast's only viable competitors are the regional DSL monopolists, who themselves offer a much slower product with equally overbearing terms of service.

Comcast may not realize the irony contained in another section of their policy, which states, "you should remain vigilant in your use of the Internet." These abundant restrictions and limitations fly in the face of both Congress' intent and the Commission's four broadband principles.

Time Warner

An examination of Time Warner Cable's Subscriber Agreement and Acceptable Use Policy reveals excessive restrictions on customers

Time Warner Cable:

- Reserves the right to modify or delete any aspect of the Internet service including content
- Assumes no liability for the accuracy of the information it transmits
- Retain the ability to change the speed of any service tier with customer acceptance coming from continued use
- Monitors a customer's usage to ensure compliance
- Allow themselves to copy and distribute any material transmitted through their Internet service
- Asserts the right to suspend or reduce the speed of Internet service
- Reserves the right to edit, block or remove any "unacceptable" material
- May terminate a customer's service for "any or no reason"
- Disallows transmitting content that infringes on the dignity of others

> *I agree that TWC or ISP may change the speed of any tier by amending the price list or Terms of Use. My continued use of the HSD Service following such a change will constitute my acceptance of any new speed. I also agree that TWC may use technical means, including but not limited to suspending or reducing the speed of my HSD Service, to ensure compliance with its Terms of Use and to ensure that its service operates efficiently.*
>
> *Either TWC or I may terminate all or any portion of my Services at any time for any or no reason, in its sole discretion, in accordance with applicable law.*
>
> - Time Warner Cable Subscriber Agreement

Time Warner Cable through their subscriber agreement and acceptable use policy seizes tremendous control over their customers. By ensuring a customer has as little power as possible, Time Warner Cable can manhandle a customer as they see fit. The cable provider can "modify, or delete any aspect, feature or requirement of the Services (including content, price, equipment and system requirements)". In addition, Time Warner Cable may "change the speed of any tier". The customer through their "continued use" of the Internet service consents to these restrictions.

Further, Time Warner Cable can reduce or suspend your Internet access to ensure that "its service operates efficiently". By granting themselves the right to monitor a customer's "usage patterns", Time Warner Cable opens an avenue to peer into a user's online activities. A customer would violate Time Warner Cable's acceptable use policy by transmitting any materials that infringe on the "dignity of others". Moreover, Time Warner Cable can terminate a customers Internet access "for any or no reason". In turn, the cable provider has the "right…to edit, refuse to post or transmit…or remove or block

any material transmitted through, submitted to or posted on the HSD Service, if it determines in its discretion that the material is unacceptable". This material includes "personal home pages".

Similar to other Internet providers, Time Warner Cable does not provide residential subscribers with a static IP address.[31] This is an important note considering in the 1996 Telecommunications Act, Congress specifically required the FCC to promote the universal availability of "advanced telecommunications capability" that would enable users to receive and originate "high-quality voice, data, graphics, and video". In an effort to still provide a place for users to originate content, the company does offer a residential customer a personal home page. Unfortunately, the service only provides 5 MB of storage space, nowhere near enough space to originate video. Furthermore, the personal home page service also denies a customer the ability to stream both audio and video.[32]

Through their Subscriber Agreement and Acceptable Use Policy, Time Warner Cable exerts considerable power over their customer activities and options. This control has little bearing on the company's ability to ensure network security and reliability. By asserting the legal ability to restrict content and terminate service for "no reason", Time Warner Cable is denying their customers the true advanced telecommunications access that Congress envisioned.

[31] A customer must subscribe to the third level of Business Class service in order to receive a static IP address. This subscription costs a $124.95 per month, with a required one-year contract and a $100 installation fee. See http://natdiv.twcbc.com/pdfs/products_prices111506.pdf

[32] Time Warner Cable, Personal Home Page Policy, Available at http://www.timewarnercable.com/kansascity/customer/policies/homepolicy.html

HughesNet

An analysis of HughesNet's Acceptable Use Policy, Subscriber Agreement, and Fair Access Policy brings to light a variety of unreasonable restrictions placed on customers.

HughesNet:

- Controls the maximum number and size of emails and the maximum amount of bandwidth for all customers
- Limits the amount of data that can be downloaded during a typical day
- Asserts the right to reduce the connection speed of any customers who exceeds their download threshold.
- Asserts the right to suspend or terminate existing service if you:
    - Damage the name or reputation of HughesNet or its affiliates
    - Generate excessive amounts of Internet traffic
    - Interfere with another person's usage or enjoyment
    - Transmit information that is "defamatory"
    - Use any name or mark of HughesNet as a hypertext link to any Web site
    - Use the service to "disrupt the normal flow of online dialogue"
    - Operate a server of any kind

Download Limits For a Typical Day

Service Plan	Threshold
Home	200 MB
Pro	375 MB
ProPlus	425 MB
Small Office	500 MB
Business Internet	1250 MB

- HughesNet Fair Access Policy

HughesNet places onerous restrictions on their customers through their various policies and agreements. With an Accepatable Use Policy strikingly similar to Verizon, HughesNet succeeds in placing a wide variety of vague and overbearing reasons for an Internet service suspension or termination. This becomes all the more unsettling when considering that many HughesNet customers do not have any other broadband options available to them. Like Verizon, HughesNet reserves the right to terminate service for damaging "the name or reputation of HughesNet, Hughes Network Systems, or its affiliates and subsidiaries, or any third parties". Other acts that give HughesNet the right to terminate an account include to "disrupt the normal flow of online dialogue", "generate excessive amounts (as determined in our sole discretion) of Internet traffic", and "interfere with another person's usage or enjoyment of the Internet". These controls put in place by HughesNet, serve to rob the customer of rights and bolster the position of their Internet provider.

HughesNet also places cumbersome download limits on customers. A typical residential customer faces stiff consequences when they exceed the limit. Upon exceeding the threshold, customers receive sub-dial up speeds for the ensuing 24 hours.[33] This severely hampers the online activities of customers who wish to receive high-quality video. Correspondingly, customers who seek to originate high-quality video will have similar difficulties. HughesNet requires a subscription to the highest residential Internet package in order to gain access to a static IP address for an extra $10 per month.[34] While HughesNet should be commended for offering residential customers the opportunity to originate content, the upload speed of this package is 200 kbps, far from adequate in order for a customer to originate high-quality video or audio. HughesNet also burdens customers with a wide variety of equipment and cancellation fees.

Through their various policies and agreements, HughesNet places a heavy burden on their customers and has extensive control over their Internet access speeds. HughesNet provides service primarily to those who do not have access to a wireline provider. Unfortunately, these speed limitations and freedom to restrict customer's access create a service that is a far cry from the "third pipe" provider both consumers and the Commission are seeking.

[33] See http://www.dslreports.com/shownews/84296

[34] The highest residential tier "ProPlus" costs $79.99 per month. All packages require a $399.98 installation fee and a two-year contract (a $100 mail-in rebate is offered). Figures collected on June 13, 2007 from http://www.nationwidesatellite.com/HughesNet/service_plans/HughesNet_plans.asp

The following are excerpts from AT&T's DSL Subscriber Agreement [*emphasis added*], available at: http://www.att.net/general-info/terms-dsl-data.html

h. Speed of Service. The actual speed of the Services experienced by you may vary and depends on a number of factors, such as the location of your residence, the amount of traffic on the Internet, the ability of your computer to process data, environmental factors, and other factors beyond the control of AT&T. **AT&T reserves the right to monitor or change your current plan speed at any time. No minimum level of speed is guaranteed.**

a. Improper Use. You agree to comply with the "ABCs of AT&T Worldnetiquette," which are described in Section 10. **You cannot create a network (whether inside or outside of your residence) with AT&T DSL Service using any type of device, equipment, or multiple computers unless AT&T has granted you permission to do so and you use equipment and standards acceptable to AT&T.** AT&T may cancel, restrict, or suspend the Services and this Agreement under Section 11 below for violating these provisions.

b. You may not use your Service connection to host a dedicated Internet server site.

b. Monitoring and Removal of Content. AT&T does not pre-screen Content, but **AT&T and its designees shall have the right (but not the obligation) to monitor any and all traffic routed though the Service, and in their sole discretion to refuse, block, move or remove any Content that is available via the Service. Without limiting the foregoing, we shall have the right to remove any Content that violates this Agreement or is otherwise objectionable.** You agree that you must evaluate, and bear all risks associated with, the use of any Content, including any reliance on the accuracy, completeness, or usefulness of such Content. In this regard, you acknowledge that you may not rely on any Content created by us or submitted to us.

b. AT&T Cancellation for Violation of the Agreement. We may immediately suspend, restrict, or cancel the Services and this Agreement, should you violate any of the terms of this Agreement. If the Services are suspended, restricted, or cancelled under this Section (11.b.), any fees and charges will accrue through the date that AT&T fully processes the suspension, restriction, or cancellation.

The following are excerpts from Verizon's Terms of Service [*emphasis added*], available at: http://www2.verizon.net/policies/tos.asp

3.7.1 You may not resell the Broadband Service, **use it for high volume purposes**, or engage in similar activities that constitute resale (commercial or non-commercial), as determined solely by Verizon.

3.7.5 **You may not use the Broadband Service to host any type of server whether personal or commercial in nature.**

6. REVISIONS. We may revise the terms and conditions of this Agreement from time to time (including any of the policies which may be applicable to usage of the Service) by posting such revisions to the Website at the Resource Center under Announcements. You agree to visit these pages periodically to be aware of and review any such revisions. Increases to the monthly price of the Service (excluding other charges as detailed in Paragraphs 12.1(a)-(d)) shall be effective thirty (30) days after posting; revisions to any other terms and conditions shall be effective upon posting. **By continuing to use the Service after revisions are in effect, you accept and agree to the revisions and to abide by them.** If you do not agree to the revision(s), you must terminate your Service immediately.

8.2 **Verizon or its suppliers may, at any time, without notice or liability, restrict the use of the Service or limit its time of availability in order to perform maintenance activities and to maintain session control.**

8.3 **Changes to your local voice telephony service. If you change your local telephone company, or move your local telephone service to a wireless or Internet telephony service provider, we may in our discretion either terminate your Service or continue to provide Broadband without local service at the then-current rates, terms and conditions applicable to your new Service arrangement**. **You agree to pay any higher monthly fee that may apply to your new Service arrangement.** Please see Paragraph 12.2 for additional terms relating to price changes**. If we elect to terminate your Service under this Paragraph 8.3, then we reserve the right to charge any early termination fees that may apply**, and you will be required to return any Equipment you received at no charge from Verizon or an Equipment fee will apply.

8.4 **Conversion from DSL Service to Verizon Fios Internet Service.** At such time as **Verizon is able to provision the Service utilizing fiber optic technologies, we may in our discretion terminate your DSL Service and no longer make DSL service available to your location.** In cases of such termination, we will offer to you Verizon Fios Internet Service and we will

disclose to you applicable rates and additional terms, if any, and such rates and terms may differ from the DSL Services provided under this Agreement.

12.1 **Prices and Fees.** You agree to pay the fees and charges applicable to your selected Service(s). You also agree to pay all other charges, including but not limited to a) applicable taxes, b) surcharges, c) recovery fees, d) telephone charges, e) activation fees, f) installation fees, g) set-up fees, h) equipment charges, i) termination fees, and j) other nonrecurring charges. The taxes, fees and other charges detailed in this paragraph a)-d) may vary on a monthly basis; any variations will be reflected in your monthly charge. **Surcharges and recovery fees are not taxes and are not required by law, but are set by Verizon. The amounts and what is included in such charges are subject to change. You also agree to pay any additional charges or fees applied to your billing account for any reason, including but not limited to, interest, and charges due to insufficient credit or insufficient funds.** Set up fees, activation fees, installation fees, other non-recurring fees, and equipment charges, if applicable, will be included in your first month's bill. Monthly recurring charges will be billed one month in advance; usage charges will be billed in arrears, if applicable. Verizon or its agent will bill you directly, or bill your credit card or your local Verizon telephone bill (telephone billing available in selected areas only), as you request and as approved by Verizon. Your billing options will be presented to you during the ordering process. IF YOU ELECT TO BE BILLED ON YOUR VERIZON PHONE BILL, BY USING THE SERVICES YOU AGREE TO HAVE VERIZON CHARGES INCLUDED ON YOUR PHONE BILL.

13.1.3 **Termination and/or Suspension by Verizon.** Without prejudice to any other rights that Verizon may have, **Verizon reserves the right and sole discretion to change, limit, terminate, modify at any time, temporarily or permanently cease to provide the Service or any part thereof to any user or group of users, without prior notice and for any reason or no reason.** In the event you or Verizon terminate this Agreement, you must immediately stop using the Service

13.2 **Terminated Account. Verizon, in its sole discretion, may refuse to accept your application for Service following a termination or suspension of your use of the Service.** If your Service is terminated for any reason, you agree to pay a reconnection fee if the Service is reactivated.

14.2.1 By You: You are responsible for management of your information, including but not limited to back-up and restoration of data (for example, address book and calendaring information), erasing data from disk space you control and changing data on or settings for your modem and/or router. **Verizon is not responsible for the loss of your data or for the back-up or restoration of your data regardless of whether this data is maintained on our servers** or your computer or server.

14.2.2 By Verizon: For the purposes of backup and maintenance, we may use, copy, display, store, transmit, translate, rearrange, reformat, view and distribute your information to multiple Verizon servers. **Verizon may access, copy, block or remove any content stored on a Verizon Service, whether pursuant to a subpoena or otherwise.** We do not guarantee that these procedures will prevent the loss of, alteration of, or the improper access to, your information.

14.4 **Monitor of Network Performance.** Verizon automatically measures and monitors network performance and the performance of your Internet connection and our network as part of this process. We also will access and record information about your computer's profile and settings and the installation of software we provide in order to provide customized technical support and you agree to permit us to access and record such data for the purposes described in this Agreement. We do not share information collected for the purpose of network or computer performance monitoring or for providing customized technical support outside of Verizon or its authorized vendors, contractors and agents. **You hereby consent to Verizon's monitoring of your Internet connection and network performance, and the access to and adjustment of your computer settings, as they relate to the Service, Software, or other services, which we may offer from time to time.**

15.7 You agree that Verizon assumes no responsibility for the accuracy, integrity, quality completeness, usefulness or value of any Content, data, documents, graphics, images, information, advice, or opinion contained in any emails, message boards, chat rooms or community services, or in any other public services, and does not endorse any advice or opinion contained therein. **Verizon does not monitor or control such services, although we reserve the right to do so**. **Verizon may take any action we deem appropriate, in our sole discretion, to maintain the high quality of our Service and to protect others and ourselves.**

ATTACHMENT A

ACCEPTABLE USE POLICY

2. Verizon reserves the right to deny Service to you, or immediately to terminate your Service for material breach, if your use of the Service or your use of an alias or the aliases of additional users on your account, whether explicitly or implicitly, and in the sole discretion of Verizon: (a) is obscene, indecent, pornographic, sadistic, cruel or racist in nature, or of a sexually explicit or graphic nature; (b) espouses, promotes or incites bigotry, hatred or racism; (c)

might be legally actionable for any reason, (d) **is objectionable for any reason,** or (e) in any manner violates the terms of this Acceptable Use Policy.

3. You may NOT use the Service as follows: (a) **for any** unlawful, **improper** or illegal **purpose or activity**; (b) to post or transmit information or communications that, whether explicitly stated, implied, or suggested through use of symbols, are obscene, indecent, pornographic, sadistic, cruel, or racist in content, or of a sexually explicit or graphic nature; or which espouses, promotes or incites bigotry, hatred or racism; or which might be legally actionable for any reason; (c) to access or attempt to access the accounts of others, to spoof or attempt to spoof the URL or DNS or IP addresses of Verizon or any other entity, or to attempt to penetrate or penetrate security measures of Verizon or other entities' systems ("hacking") whether or not the intrusion results in corruption or loss of data; (d) to bombard individuals or newsgroups with uninvited communications, data or information, or other similar activities, including but not limited to "spamming", "flaming" or denial or distributed denial of service attacks; (e) to transmit unsolicited voluminous emails (for example, spamming) or to intercept, interfere with or redirect email intended for third parties using the Service; (f) to introduce viruses, worms, harmful code and/or Trojan horses on the Internet; (g) to post information on newsgroups which is not in the topic area or charter (e.g. off-topic posting) of the newsgroup; (h) **to interfere with another person's usage or enjoyment of the Internet or this Service;** (i**) to post or transmit information or communications that are defamatory,** fraudulent, obscene or deceptive, including but not limited to scams such as "make-money-fast" schemes or "pyramid/chain" letters; **(j) to damage the name or reputation of Verizon, its parent, affiliates and subsidiaries, or any third parties;** (k) to transmit confidential or proprietary information, except solely at your own risk; (l) to violate Verizon's or any third party's copyright, trademark, proprietary or other intellectual property rights, including trade secret rights; (m) to use more than one IP address obtained from Verizon; (n) **to generate excessive amounts (as determined by Verizon in its sole discretion) of Internet traffic**, or to disrupt net user groups or email use by others; (o) to engage in activities designed to or having the effect of degrading or denying Service to Verizon users or others (including activities that compromise a server, router, circuit, software or other Internet component ; (p) to use any name or mark of Verizon, its parent, affiliates or subsidiaries, as a hypertext link to any Web site or in any advertising publicity or other commercial manner; (q) to use the Service to operate a server in a manner that interferes with the network or other users' use of the Service; (r) to use the Service or the Internet in a manner intended to threaten, harass, intimidate; (s) to cause the screen to "scroll" faster than other subscribers or users are able to type to it, or any action that has a similar disruptive effect, on or through the Service; **(t) to use the Service to disrupt the normal flow of online dialogue**, (u) to use the Service to violate any operating rule, policy or guideline of any other online services provider or interactive service; (v) to attempt to subvert or to aid third parties to subvert, the security of any computer facility or system connected to the Internet; (w) to

impersonate any Verizon employee or official or other person or use a false name while using the Service or implying an association with Verizon; (x) to install "auto-responders," "cancel-bots" or similar automated or manual routines which generate excessive amounts of net traffic, or disrupt net user groups or email use by others; (y) to make false or unverified complaints against any Verizon subscriber, or otherwise abusing any of Verizon's complaint response procedures; (z) to use software or any other device that would allow your account to stay logged on while you are not actively using the Service, unless you are a Broadband customer; (aa) to export software or any information in violation of US export laws; (bb) to use the Service in contravention of the limitations of the pricing plan you have chosen; (cc) **for Broadband customers who use static IP address, to use an IP address other than the one assigned by Verizon; (dd) for customer who have been assigned a dynamic IP address to use such IP address to circumvent the changing of IP addresses assigned by the Service or (ee) to open connections to more than one Verizon Usenet news service at a time.**

8. Verizon may, but is not required to, monitor your compliance, or the compliance of other subscribers, with the terms, conditions or policies of this Agreement. **You acknowledge that Verizon shall have the right, but not the obligation, to pre-screen, refuse, move or remove any content available on the Service, including but not limited to content that violates this Agreement or that Verizon determines, in its sole discretion, is otherwise objectionable.**

The following are excerpts from Qwest's Acceptable Use Policy [*emphasis added*], available at: http://www.qwest.com/legal/usagePolicy.html

> **Inappropriate Content.** Users shall not use the Qwest Network and Services to transmit, distribute or store material that is inappropriate, as reasonably determined by Qwest, or material that is obscene (including child pornography), **defamatory**, libelous, threatening, abusive, hateful, or excessively violent.
>
> **Email and Unsolicited Messages.** Users shall not use the Qwest Network and Services to transmit unsolicited e-mail messages, including, without limitation, unsolicited bulk email , where such emails could reasonably be expected to provoke complaints ("spam"). Further, Users are prohibited from using the service of another provider to send spam to promote a site hosted on or connected to the Qwest Network and Services. In addition, Users shall not use the Qwest Network and Services in order to (a) send e-mail messages which are excessive and/or intended to harass or annoy others, (b) continue to send e-mail messages to a recipient that has indicated that he/she does not wish to receive them, (c) send e-mail with forged TCP/IP packet header information, (d) send malicious e-mail, including, without limitation, "mailbombing", (e) send or receive e-mail messages in a manner that violates the use policies of any other Internet service provider, or (f) **use an e-mail box exclusively as a storage space for data.**
>
> Qwest takes no responsibility for any material created or accessible on or through the Qwest Network and Services. **Qwest is not obligated to monitor such material, but reserves the right to do so**. Qwest will not exercise any editorial control over such material. In the event that Qwest becomes aware that any such material may violate this AUP and/or expose Qwest to civil or criminal liability, **Qwest reserves the right to block access to such material and suspend or terminate any User creating, storing or disseminating such material.**

The following are excerpts from Qwest's Subscriber Agreement [*emphasis added*], available at:
http://www.qwest.com/legal/highspeedinternetsubscriberagreement/files/HSI_Subscriber_Agreement_ENG_v8_030107-.pdf

> (v) *Web Hosting Service*. Some Qwest customers are eligible to receive one of four optional Web hosting packages, described more fully on the Qwest.net web site. Additional charges may apply. If you are an eligible Web hosting customer, Qwest will provide the Services described for the package you select, including space on a shared Web server for your Web site, as well as assistance with domain name registrations. If you use the Web hosting feature of the Services, this section also applies to your use of the Services.

(C) Web Hosting Storage Space and Other Limitations. Your Web hosting storage space is limited. Limits are based on your Service type and are available at http://sitecontrol.qwestoffice.net and http://www.qwest.com/smallbusiness/internet/qwestnet_features.html. **Qwest Web hosting accounts may not be used for purposes of distributing and storing excessive amounts of multimedia files. Multimedia files are defined as any graphics, audio, and video files. Any Web hosting site whose disk space usage for storing multimedia files exceeds 70% of its total usage in terms of total size or number of files will be considered to be using an excessive amount.** If you selected MSN Premium or windows Live™ this Section does not apply to you; provided that you agree to the terms of either the MSN or Windows Live™ Subscription Agreement.

(D) Traffic Allowance. Traffic limits are located at http://sitecontrol.qwestoffice.net**. If you exceed your traffic allowance, you will be charged a traffic overage charge depending on the resources utilized, and you may be given the option to either (a) reduce the resources used to an acceptable level, or (b) upgrade your Service to a higher priced plan.**

(a) Limits on Use**. You agree not to use the Service for high volume or excessive use, in a business or for any commercial purpose if your Service is a residential service, or in a way that impacts Qwest network resources or Qwest's ability to provide services**. You agree not to: (i) offer public information services (unlimited usage or otherwise), (ii) permit more than one dial-up log-on session to be active at one time, or (iii) permit more than one broadband log-on session to be active at one time, except if using a roaming dial9up access provider. The active session may be shared to connect multiple computers/devices within a single home or office location or within a single unit within a multiple dwelling unit (e.g., single apartment or office within an apartment complex) to your modem and/or router to access the Service (including the establishment of a wireless fidelity ('WiFi") hotspot), but the Service may only be used at the single home or office location or single unit within a multiple dwelling unit for which Service is provisioned by Qwest. You may not use a WiFi hotspot in violation of this Agreement or in a way that circumvents Qwest's ability to provide Service to another customer (e.g., you cannot use a WiFi hotspot to provide Service outside your single home or office location or outside your single unit within a multiple dwelling unit and you cannot resell Service provided over a WiFi hotspot). You may not use more than one IP address for each log on session unless an advanced service allocating you more than one IP address has been purchased. Service may only be used in the U.S. Service may be used to host a server, personal or commercial, as long as such server is used pursuant to the terms and conditions of the this Agreement applicable to Service and not for any malicious purposes. Malicious purposes include without limitation Spam, viruses, worms, Trojans, etc. **Qwest may restrict your use of or interrupt the Service without notice for: (i) maintenance activities; (ii) equipment, network, or facility upgrades or**

modifications; and (iii) to ensure the provision of acceptable service levels to all Qwest customers. Qwest is not responsible or liable for any Service deficiencies or interruptions caused by such events

(e) Monitoring and Testing the Service. **Qwest may, but is not obligated to, monitor the Service.** You are responsible for monitoring your accounts for access to newsgroups and Web sites that may contain improper material. You will notify Qwest of the continual receipt of e-mail that you view as illegal or that is unsolicited. You must not design or provide systems used for the collection of information about others without their express knowledge and consent. Qwest may also test Service for maintenance purposes to detect and/or clear trouble.

The following is an excerpt from Comcast's Acceptable Use Policy [*emphasis added*], available at: http://www.comcast.net/terms/subscriber.jsp

Prohibited Uses and Activities

i. undertake or accomplish any unlawful purpose. This includes, but is not limited to, posting, storing, transmitting or disseminating information, data or material which is **libelous, obscene, unlawful, threatening, defamatory, or which infringes the intellectual property rights of any person or entity**, or which in any way constitutes or encourages conduct that would constitute a criminal offense, give rise to civil liability, or otherwise violate any local, state, federal or international law, order or regulation;

ii. post, store, send, transmit, or disseminate any information or material which a reasonable person could deem to be objectionable, offensive, indecent, pornographic, harassing, threatening, embarrassing, distressing, vulgar, hateful, racially or ethnically offensive, or otherwise inappropriate, **regardless of whether this material or its dissemination is unlawful**;

xiv. **run programs, equipment, or servers from the Premises that provide network content or any other services to anyone outside of your Premises LAN (Local Area Network), also commonly referred to as public services or servers**. Examples of prohibited services and servers include, but are not limited to, e-mail, Web hosting, file sharing, and proxy services and servers;

xix.**service, alter, modify, or tamper with the Comcast Equipment or Service or permit any other person to do the same who is not authorized by Comcast;**

4. CHANGES TO SERVICES

Subject to applicable law, we have the right to change our Services, Comcast Equipment and rates or charges, at any time with or without notice. **We also may rearrange, delete, add to or otherwise change programming or features or offerings contained in the Services, including but not limited to, content, functionality, hours of availability, customer equipment requirements, speed and upstream and downstream rate limitations**. If we do give you notice, it may be provided on your monthly bill, as a bill insert, in a newspaper or other communication permitted under applicable law. If you find a change in the Service(s) unacceptable, you have the right to cancel your Service(s). However, if you continue to receive Service(s) after the change, this will constitute your acceptance of the change. Please take the time to read any notices of changes to the Service(s). We are not liable for failure to deliver any programming, services, features or offerings except as provided in Section 11e.

Inappropriate Content and Transmissions

Comcast reserves the right, but not the obligation, to **refuse to transmit or post and to remove or block any information or materials, in whole or in part, that it, in its sole discretion, deems to be offensive, indecent, or otherwise inappropriate, regardless of whether this material or its dissemination is unlawful**. Neither Comcast nor any of its affiliates, suppliers, or agents have any obligation to monitor transmissions or postings (including, but not limited to, e-mail, newsgroup, and instant message transmissions as well as materials available on the Personal Web Pages and Online Storage features) made on the Service. However, Comcast and its affiliates, suppliers, and agents have the right to monitor these transmissions and postings from time to time for violations of this Policy and to disclose, block, or remove them in accordance with the Subscriber Agreement and any other applicable agreements and policies.

IP ADDRESSES

Comcast will provide you with dynamic Internet protocol ("IP") address(es) as a component of HSI, and these IP address(es) can and do change over time. You will not alter, modify, or tamper with dynamic IP address(es) assigned to you or any other customer. You agree not to use a dynamic domain name server or DNS to associate a host name with the dynamic IP address(es) for any commercial purpose. You also agree not to use any software that provides for static IP address(es) on or in conjunction with any computer(s) or network device connected to HSI. If applicable, Comcast will release and/or recover the dynamic IP address(es) when the Service or this Agreement is disconnected, discontinued, or terminated.

Monitoring of Postings and Transmissions.

Comcast shall have no obligation to monitor postings or transmissions made in connection with HSI. **However, you acknowledge and agree that Comcast and its agents have the right to monitor, from time to time, any such postings and transmissions, including without limitation e-mail, newsgroups, chat, IP audio and video, and Web space content.** Comcast may also use and disclose them in accordance with the Comcast High-Speed Internet Acceptable Use Policy and other applicable policies, and as otherwise required by law or government request. **We reserve the right to refuse to upload, post, publish, transmit or store any information or materials, in whole or in part, that, in our sole discretion, is unacceptable, undesirable or in violation of this Agreement.**

Personal Web Page and File Storage

As part of the Service, Comcast provides you with access to personal Web pages and storage space through the Personal Web Pages and Online Storage features

(collectively, the "Personal Web Features"). You are solely responsible for any information that you or others publish or store on the Personal Web Features. You must ensure that the intended recipient of any content made available through the Personal Web Features is appropriate. For example, you must take appropriate precautions to prevent minors from receiving or accessing inappropriate content. **Comcast reserves the right to remove, block, or refuse to post or store any information or materials, in whole or in part, that it, in its sole discretion, deems to be offensive, indecent, or otherwise inappropriate regardless of whether this material or its dissemination is unlawful.** This includes, but is not limited to: obscene material; defamatory, fraudulent or deceptive statements; threatening, intimidating or harassing statements, or material that violates the privacy rights or property rights of others (copyrights or trademarks, for example). **For purposes of this Policy, "material" refers to all forms of communications including narrative descriptions, graphics (including photographs, illustrations, images, drawings, logos), executable programs and scripts, video recordings, and audio recordings. Comcast may remove or block content contained on your Personal Web Features and terminate your Personal Web Features and/or your use of the Service if we determine that you have violated the terms of this Policy.**

Network, Bandwidth, Data Storage and Other Limitations

Comcast may provide versions of the Service with different speeds and bandwidth usage limitations, among other characteristics, subject to applicable Service plans. You shall ensure that your use of the Service does not restrict, inhibit, interfere with, or degrade any other user's use of the Service**, nor represent (in the sole judgment of Comcast) an overly large burden on the network.** In addition, you shall ensure that your use of the Service does not restrict, inhibit, interfere with, disrupt, degrade, or impede Comcast's ability to deliver and provide the Service and monitor the Service, backbone, network nodes, and/or other network services.

You further agree to comply with all Comcast network, bandwidth, and data storage and usage limitations. **You shall ensure that your bandwidth consumption using the Service does not exceed the limitations that are now in effect or may be established in the future.** If your use of the Service results in the consumption of bandwidth in excess of the applicable limitations, that is a violation of this Policy. In such cases, Comcast may, in its sole discretion, terminate or suspend your Service account or request that you subscribe to a version of the Service with higher bandwidth usage limitations if you wish to continue to use the Service at higher bandwidth consumption levels.

In addition, you may only access and use the Service with a dynamic Internet Protocol ("IP") address that adheres to the dynamic host configuration protocol ("DHCP"). You may not configure the Service or any related equipment to access or use a static IP address or use any protocol other than DHCP unless you are subject to a Service plan that expressly permits otherwise.

Violation of Acceptable Use Policy

Comcast does not routinely monitor the activity of Service accounts for violation of this AUP. However, in our efforts to promote good citizenship within the Internet community, we will respond appropriately if we become aware of inappropriate use of our Service. Although Comcast has no obligation to monitor the Service and/or the network, **Comcast and its suppliers reserve the right at any time to monitor bandwidth, usage, transmissions, and content** from time to time to operate the Service; to identify violations of this Policy; and/or to protect the network, the Service and Comcast users.

The following is an excerpt of Time Warner Cable's Subscriber Agreement [*emphasis added*], available at: http://help.twcable.com/html/twc_sub_agreement2.html

3. Installation; Equipment and Cabling

(e) TWC shall have the right to upgrade, modify and enhance TWC Equipment and Software from time to time through "downloads" from TWC's network or otherwise. **Without limiting the foregoing, TWC may, at any time, employ such means to limit or increase the throughput available through individual cable modems whether or not provided by TWC.**

4. Use of Services; TWC Equipment and Software

(a) I agree that TWC has the right to add to, modify, or delete any aspect, feature or requirement of the Services (including content, price, equipment and system requirements). **I further agree that my ISP (and, if applicable, OLP) has the right to add to, modify, or delete any aspect, feature or requirement of the HSD Service (including content, price and system requirements).** If TWC changes its equipment requirements with respect to any Services, I acknowledge that I may not be able to receive such Services utilizing my then-current equipment. Upon any such change, my continued use of Services will constitute my consent to such change and my agreement to continue to receive the relevant Services, as so changed, pursuant to this Agreement, the Terms of Use and the Tariff(s). If I participate in a promotional offer for any Service(s) that covers a specified period of time, I agree that I am assured only that I will be charged the promotional price for such Service(s) during the time specified. I agree that TWC shall have the right to add to, modify, or delete any aspect, feature or requirement of the relevant Service(s), other than the price I am charged, during such promotional period.

(iii) **If I receive HSD Service, I agree not to use the HSD Service for operation as an Internet service provider, for the hosting of websites (other than as expressly permitted as part of the HSD Service) or for any enterprise purpose whether or not the enterprise is directed toward making a profit.** I agree that, among other things, my use of any form of transmitter or wide area network that enables persons or entities outside the location identified in the Work Order to use my Services, whether or not a fee is sought, will constitute an enterprise purpose. Furthermore, if I use a wireless network within my residence, I will limit wireless access to the HSD Service (by establishing and using a secure password or similar means) to the members of my household.

(h) **I agree that TWC has no liability for the completeness, accuracy or truth of the programs or information it transmits.**

6. Special Provisions Regarding HSD Service

(a) Speeds and Network Management. I acknowledge that each tier or level of the HSD Service has limits on the maximum speed at which I may send and receive data at any time, as set forth in the price list or Terms of Use. I understand that the actual speeds I may experience at any time will vary based on a number of factors, including the capabilities of my equipment, Internet congestion, the technical properties of the websites, content and applications that I access, and network management tools and techniques employed by TWC**. I agree that TWC or ISP may change the speed of any tier by amending the price list or Terms of Use. My continued use of the HSD Service following such a change will constitute my acceptance of any new speed. I also agree that TWC may use technical means, including but not limited to suspending or reducing the speed of my HSD Service, to ensure compliance with its Terms of Use and to ensure that its service operates efficiently. I further agree that TWC and ISP have the right to monitor my usage patterns to facilitate the provision of the HSD Service and to ensure my compliance with the Terms of Use and to efficiently manage its network and the provision of services. TWC or ISP may take such steps as it determines appropriate in the event my usage of the HSD Service does not comply with the Terms of Use.** Additionally, TWC may use such tools and techniques as it determines appropriate in order to efficiently manage its network and to ensure a quality user experience for its subscribers ("Network Management Tools"). These Network Management Tools are described in the Terms of Use, which include the Acceptable Use Policy,

(i) I acknowledge that **material posted or transmitted through the HSD Service may be copied, republished or distributed by third parties, and that the TWC Parties will not be responsible for any harm resulting from such actions.**

(ii) I grant to TWC, and I represent, warrant and covenant that I have all necessary rights to so grant, the non-exclusive, worldwide, royalty-free, perpetual, irrevocable, right and license to use, reproduce, modify, adapt, publish, translate, distribute, perform and display in any media all material posted on the public areas of the HSD Service via my account and/or to incorporate the same in other works, but only for purposes consistent with operation and promotion of the HSD Service.

(e) Use of ISP and OLP Service. **I agree that TWC and/or my ISP and/or OLP has the right, but not the obligation, to edit, refuse to post or transmit, request removal of, or remove or block any material transmitted through, submitted to or posted on the HSD Service, if it determines in its discretion that the material is unacceptable** or violates the terms of this Agreement, any TWC consumption limits or any other Terms of Use. Such material might include personal home pages and links to other sites. In addition, I agree that,

under such circumstances, TWC may suspend my account, take other action to prevent me from utilizing certain account privileges (e.g., home pages) or cancel my account without prior notification. I also agree that TWC and/or ISP and/or OLP may suspend or cancel my account for using all or part of the HSD Service to post content to the Internet or to engage in "peer to peer" file exchanges or other forms of file exchanges that violate this Agreement or the Terms of Use.

9. Review and Enforcement

(a) **TWC may suspend or terminate all or a portion of my Services without prior notification if TWC determines in its discretion that I have violated this Agreement, any of the Terms of Use or any Tariff(s), even if the violation was a one-time event**. If all or a portion of my Services are suspended, I will not be charged for the relevant Services during the suspension. If my account is terminated, I will be refunded any pre-paid fees minus any amounts due TWC.

(b) If I receive HSD Service, I acknowledge that TWC has the right, but not the obligation, to **review content on public areas of the HSD Service**, **including chat rooms, bulletin boards and forums**, **in order to determine compliance with this Agreement and the Terms of Use.**

(c) I agree that **TWC shall have the right to take any action that TWC deems appropriate** to protect the Services, TWC's facilities or TWC Equipment.

10. Termination of Service

(a) Either TWC or I **may terminate all or any portion of my Services at any time for any or no reason**, in its sole discretion, in accordance with applicable law.

The following is an excerpt from HughesNet's Subscriber Agreement [*emphasis added*], available at:
http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/layoutInitial?Container=com.webridge.entity.Entity[OID[9D329AFE12DA7C42A6367F89C61ED51F]]

> 2.2. MODIFICATION OF THE SERVICE. HNS may discontinue, add to or revise any or all aspects of the Service in HNS' sole discretion, with or without notice, including without limitation access to support services, publications and any other products or services ancillary to the Service. For purposes of illustration and not limitation, **HNS may: (a) establish and enforce limitations concerning use of the Service, e.g., the maximum number and/or size of email messages that may be sent from or received by an account on the Service, and the maximum amount of bandwidth that may be used by a single user or a single account**; (b) take any action that HNS deems appropriate to prevent and/or delete bulk email; (c) delete old email messages from any account; (d) quarantine or delete messages or content suspected of containing viruses or other malware; (e) refuse to process email or instant messages that fit criteria defined by us; or (f) modify any user setting. In the event that HNS makes any changes to the Service or its availability, HNS may, but is not required to, notify you.

The following is an excerpt from HughesNet's Acceptable Use Policy [*emphasis added*], available at: http://help.twcable.com/html/twc_misp_aup.html

> **The ISP Service may not be used to upload, post, transmit or otherwise make available any materials or content that violate or infringe on the rights or dignity of others.** These include, but are not limited to, materials infringing or compromising intellectual property rights or the ability to maintain trade secrets and other personal information as private; the ability to avoid hate speech; threats of physical violence; harassing conduct; sexually oriented material that is offensive or inappropriate; and unsolicited bulk e-mail.

The following is the HughesNet Fair Access Policy [*emphasis added*], available at:
http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/layoutInitial?Container=com.webridge.entity.Entity[OID[BD8BE0839F414B4FB7CDDCA10EFA5369]]

> To ensure fair Internet access for all HughesNet® subscribers, HUGHES® maintains a Fair Access Policy (FAP). This policy establishes an equitable balance in Internet access for HughesNet subscribers. **Hughes assigns a download threshold to each service plan that limits the amount of data that may be downloaded during a typical day. A small percentage of subscribers who exceed this limit will experience a temporary reduction of speed.**

Explanation: The Fair Access Policy is straightforward. Based on an analysis of customer usage data, Hughes has established a download threshold for each of the HughesNet service plans that is well above the typical usage rates. **Subscribers who exceed that threshold will experience reduced download speeds for approximately 24 hours.**

During this recovery period, the HughesNet service may still be used, but speeds will be slower. **Web browsing, for example, will be significantly slower than subscribers' normal browsing experience.** Subscribers will return to normal download speeds after the recovery period as long as they minimize their bandwidth-intensive activities. If they continue these activities during this recovery period, reduced download speeds may continue beyond 24 hours.

	Threshold
Home	200 MB
Pro	375 MB
ProPlus	425 MB
Small Office	500 MB
Business Internet	1250 MB

The following is an excerpt of HughesNet's Acceptable Use Policy [*emphasis added*], available at:
http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/layoutInitial?Container=com.webridge.entity.Entity[OID[495C47F0021DB84DAFCE2C8F9C99D2D9]]

2.2 OTHER PROHIBITED CONDUCT.

You agree not to use the Service as follows: (a) for any unlawful, improper or criminal purpose or activity; (b) to post or transmit information or communications that, whether explicitly stated, implied, or suggested through use of symbols, are libelous, defamatory, invasive of another person's privacy, obscene, indecent, pornographic, sadistic, cruel, or racist in content, or of a sexually explicit or graphic nature; or which espouses, promotes or incites bigotry, hatred or racism, or might be legally actionable for any reason, or hurts minors in any way; (c) to forge headers or otherwise manipulate identifiers in order to disguise the origin of any content transmitted through the Service; (d) to intentionally or unintentionally violate any applicable local, provincial, state,

national or international law, including, but not limited to, rules, orders and regulations having the force of law; (e) to attempt to access or access the accounts of others, to spoof or attempt to spoof the URL or DNS address, or to attempt to penetrate or penetrate our security measures or other entities' systems ("hacking") whether or not the intrusion results in corruption or loss of data; (f) to bombard individuals or newsgroups with uninvited communications, data or information, or other similar activities, including but not limited to "spamming," "flaming" or denial or distributed denial of service attacks; (g) to transmit unsolicited voluminous emails (for example, spamming) or to intercept, interfere with or redirect email intended for third parties using the Service; (h) to introduce viruses, worms, harmful code and/or Trojan horses on the Internet; (i) to post information on newsgroups which is not in the topic area of the newsgroup; (j) **to interfere with another person's usage or enjoyment of the Internet or this Service;** (k**) to post or transmit information or communications that are defamatory, fraudulent, obscene or deceptive, including** but not limited to scams such as "make-money-fast" schemes or "pyramid/chain" letters; (l**) to damage the name or reputation of HughesNet, Hughes Network Systems, or its affiliates and subsidiaries, or any third parties;** (m) to transmit confidential or proprietary information, except solely at your own risk; (n) to violate our or any third party's copyright, trademark, proprietary or other intellectual property rights, including trade secret rights; (o) **to generate excessive amounts (as determined in our sole discretion) of Internet traffic, or to disrupt net user groups or email use by others**; (p) to engage in activities designed to or having the effect of degrading or denying Service to HughesNet users or others (including activities that compromise a server, router, circuit or software); (q**) to use any name or mark of HughesNet, Hughes Network Systems, or its parent, affiliates or subsidiaries, as a hypertext link to any Website or in any advertising publicity or other commercial manner; (r) to use your HughesNet account for the purpose of operating a server of any type;** (s) to use the Service or the Internet in a manner intended to threaten, harass, or intimidate others; (t) to cause the screen to "scroll" faster than other subscribers or users are able to type to it, or any action that has a similar disruptive effect, on or through the Service; (u) **to use the Service to disrupt the normal flow of online dialogue,** (v) to use the Service to violate any operating rule, policy or guideline of any other online services provider or interactive service; (w) to attempt to subvert, or to aid third parties to subvert, the security of any computer facility or system connected to the Internet; (x) to impersonate any person or using a false name while using the Service; (y) to install "auto-responders," "cancel-bots" or similar automated or manual routines which generate excessive amounts of net traffic, or disrupt net user groups or email use by others; (z) to make false or unverified complaints against any HughesNet subscriber, or otherwise abusing any of our complaint response procedures; (aa) to export software or any information in violation of US export laws; or (bb) to use the Service in contravention of the limitations of the pricing plan you have chosen.