

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

The Commission's Consultative Role in the
Broadband Provisions of the Recovery Act)
)
) GN Docket No. 09-40
)
)

COMMENTS OF VIASAT, INC.

Thomas E. Moore
ViaSat, Inc.
Senior Vice President
President - ViaSat Satellite Holdings, LLC
4600 S. Syracuse Street, Ste. 900
Denver, CO 80237
303-256-6656

John P. Janka
Elizabeth R. Park
Latham & Watkins LLP
555 Eleventh Street, NW, Suite 1000
Washington, DC 20004-1304
202-637-2200

April 13, 2009

EXECUTIVE SUMMARY

Properly structured, the broadband funding programs to be established pursuant to the American Recovery and Reinvestment Act of 2009 (“ARRA”) can achieve a number of important policy goals:

- Increase the adoption of broadband Internet access services, particularly by unserved households that otherwise will continue to be left on the wrong side of the digital divide;
- Provide those households with a quality of Internet access that is similar to the service most other Americans currently may enjoy;
- Provide those households with service at pricing that is competitive with the broadband Internet access service available in urban America today; and
- Allow competitive market forces to maintain the momentum created by ARRA funding by promoting the development of open wholesale access platforms.

As the expert agency on broadband matters, the Commission’s recommendations will serve as critical input for the policies and practices that NTIA and RUS will ultimately adopt for distributing ARRA broadband funding. Thus, the Commission’s recommended definitions should reflect a funding policy that best achieves the goals of the ARRA. ViaSat is pleased to provide its views on these definitional issues.

As an initial matter, ViaSat recommends that ARRA broadband funding be prioritized for those areas where it is most needed: the approximately 15 million U.S. households that are (and otherwise will likely remain) outside the reach of existing terrestrial broadband networks. Moreover, ARRA broadband funding should be used to provide consumers with a meaningful and affordable broadband experience — for fixed installations,¹ one comparable to the median cable modem service available today.

This goal is lofty, but it is readily achievable. ViaSat is developing an innovative satellite-based broadband solution that is uniquely suited to meet the needs of these households on a cost-effective basis. This system will be capable of providing about 1 million households with broadband service that is comparable in both speed and price with today’s median cable broadband service. Significantly, the capital cost for this system will be less than \$1,000 per household, even for households located in remote areas. ViaSat would be pleased to provide a demonstration of the capabilities of this system to the Commission, as an assurance that this proposed framework for awarding ARRA funds can yield meaningful and long-term benefits to the unserved in America within the next few years.

¹ ViaSat makes proposals with respect to the provision of broadband in fixed installations, and takes no position regarding definitions for mobile broadband.

With this goal in mind, ARRA-eligible broadband for fixed installations (“Target Broadband”) should be defined with reference to the following characteristics, which are akin to today’s median cable broadband service:

- Download speed: ~ 4 Mbit/s or better;
- Upload speed: ~ 1 Mbit/s or better;
- Provisioned rate at peak busy hour: 50 kbit/s per subscriber; and
- Monthly retail price: \$45 or less.

As noted above, stimulus funds should be awarded for a broadband infrastructure project only if the proposed service meets this definition of Target Broadband, and also should be prioritized for service to “unserved” households--any household that does not have available Internet access service with each of the following characteristics:

- Download: 768 kbit/s or better;
- Upload speed: 256 kbit/s or better;
- Provisioned rate at peak busy hour: 15 kbit/s per subscriber; and
- Monthly retail price: \$45 or less.

Households with broadband availability that falls in between the proposed definition of “Target Broadband” and the proposed definition of “unserved” should be considered “underserved” for purposes of ARRA funding. Because these underserved households already have some level of acceptable broadband service, market forces will serve to improve the quality of their service, and raise it to the level of Target Broadband, over time. Those market forces would be stimulated, however, by allowing ARRA funds to be used for programs that not only provide Target Broadband to the unserved, but also simultaneously serve underserved areas, because doing so will “raise the bar” competitively for broadband services in underserved areas.

Absent the use of ARRA funds, however, *unserved* households will likely continue to be left behind. That is why ViaSat recommends that ARRA funding be prioritized for the needs of the *unserved*.

Many of the broadband-needy households that are located in the vicinity of geographic zones deemed to be “served” will undoubtedly be unaccounted for in the ongoing broadband mapping exercises. Absent conducting a census of every household, there is no reliable way to capture every household that is unable to receive broadband service. To supplement the broadband mapping efforts, consumers should be allowed to identify themselves easily through automated procedures as being within the scope of the ARRA, subject to timely government confirmation.

Allocating ARRA funds in a manner consistent with these proposals will both stimulate the economy and achieve longer-term policy goals. Indeed, spurring the growth of viable and robust broadband solutions with ARRA funds will lay a strong foundation for the development of a national broadband plan over the next few years.

TABLE OF CONTENTS

I.	Introduction	2
II.	Threshold Eligibility For Broadband Funding	3
A.	Programs Should Meet Minimum Speed and Provisioned Bandwidth and Maximum Retail Price Requirements	4
B.	The Definition of “Unserved” Should Capture Those Who Do Not Have Access to Acceptable Internet Access Service Today	8
C.	The Definition of “Underserved” Should Capture Those Who Do Not Have Target Broadband and Are Not Unserved	9
D.	Unserved and Underserved Consumers Should Be Allowed to Self- Identify	9
III.	Conclusion	11

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

))
The Commission’s Consultative Role in the))
Broadband Provisions of the Recovery Act)) GN Docket No. 09-40
))
))

COMMENTS OF VIASAT, INC.

ViaSat responds to the Commission’s Public Notice seeking comment on its consultative role with the National Telecommunications and Information Administration (“NTIA”) and the Rural Utilities Service (“RUS”) in connection with the broadband funding programs to be established pursuant to the American Recovery and Reinvestment Act of 2009 (“ARRA”).² The ARRA will enable some of the largest and most significant public works projects in decades, and the Commission will play a crucial role as the expert agency on issues relating to broadband services and technology. The Commission, in its consultative role, can help bridge the digital divide and, by focusing on the broadband needs of unserved U.S. consumers and institutions, can recommend threshold definitions that will serve as the bases for achieving that goal. The Commission’s input on the definitional issues raised in the Public Notice will provide an important framework for both NTIA and RUS as they develop policies and practices for considering ARRA broadband funding requests.

² *Comment Procedures Established Regarding the Commission’s Consultative Role in the Broadband Provisions of the Recovery Act*, GN Docket No. 09-40, Public Notice, DA 09-668 (rel. Mar. 24, 2009) (“Public Notice”).

I. INTRODUCTION

As a leading provider of communications solutions for both commercial and military applications, ViaSat is pleased to provide its perspective on the key definitional issues on which Congress has directed the Commission to consult with NTIA and RUS. ViaSat is well-qualified to comment on these issues as the provider of the ground network for the broadband satellite system operated by WildBlue, and also as the developer of new and innovative satellite technology that will both revolutionize the broadband industry and advance the important goals of ARRA broadband funding programs.

ViaSat's broadband satellite system is designed to deliver cable-modem-like broadband services at affordable prices. With its ability to serve about 1 million households at a capital cost of less than \$1,000 each, this system is a cost-effective means of extending high-quality broadband service to households who simply do not have that option available today. Government representatives who witnessed ViaSat's recent demonstration of the capabilities of this satellite broadband technology found it enlightening and informative. ViaSat invites the Commission to view this demonstration to illustrate the ways in which satellite technology can meet the Congressional goals expressed in the ARRA.

ARRA funding can be used to achieve a number of important policy goals:

- Increase availability, affordability and ultimately adoption of broadband Internet access services, particularly by the unserved households that otherwise will continue to be left on the wrong side of the digital divide;
- Provide those households with a quality of service that is similar to the broadband service that most other Americans currently enjoy;
- Provide those households with service at pricing that is competitive with the broadband Internet access service available in urban America today; and

- Allow competitive market forces to maintain the momentum created by ARRA funding by promoting the development of open wholesale access platforms.

The Commission’s recommended definitions of “broadband,” “unserved” and “underserved” will have a significant impact on how the ARRA is implemented, and will be an important building block for the future of broadband in the United States.

II. THRESHOLD ELIGIBILITY FOR BROADBAND FUNDING

Establishing appropriate definitions of “broadband,” “unserved” and “underserved” for purposes of ARRA funding is an important threshold matter.³ The definitions that NTIA and RUS establish for these terms will determine which programs are eligible for funding, and which are not. As such, the policy goals for the funding programs will still necessarily inform the definitions. Thus, ViaSat has included in these Comments its views regarding broadband funding policies. ViaSat’s proposed definitions below are for the provision of broadband in fixed installations, and it takes no position with respect to definitions for mobile broadband.

ViaSat recommends that the limited ARRA broadband funding be prioritized for those areas where it is most needed: projects providing a minimum specified level of broadband service (defined below as “Target Broadband”) to the approximately 15 million U.S. households who are (and otherwise will likely remain) outside the reach of existing terrestrial broadband networks. ARRA funding will make it possible to serve those households on a cost-effective basis and also provide them with affordable broadband service that is comparable to the median cable modem service that is available today. While other U.S. households (those who have some acceptable level of Internet access) undoubtedly would benefit from better service and more

³ See H.R. Rep. No. 111-16, at 776 (2009) (Conf. Rep.).

competition, competitive market forces continue to operate to improve the options for those already-served households.

In fact, because served and unserved households often exist in close proximity, broadband systems that cover both served and unserved households provide a unique opportunity to leverage valuable ARRA funds to both bring initial service to unserved households, as well as to “raise the bar” competitively with respect to the quality of broadband service for served households. In this respect, ViaSat notes that almost any technological solution (wireless, wireline, cable, satellite, or other) that is deployed to meet the needs of the unserved also will pass or encompass a number of underserved households. Thus, many programs designed to meet the particular needs of the unserved actually will have a dual purpose, and also will improve the broadband services available for the underserved.

With these goals in mind, and as detailed below, ViaSat recommends the following definitions:

- “Target Broadband”: Internet access service at 4 Mbit/s downstream and 1 Mbit/s upstream (or better), provisioned at a minimum rate of 50 kbit/s per subscriber at peak busy times, at a retail monthly rate of \$45 or less.
- “Unserved”: any household that does not have Internet access service available at 768 kbit/s downstream and 256 kbit/s upstream (or better), provisioned at a minimum rate of 15 kbit/s per subscriber at peak busy times, at a retail monthly rate of \$45 or less.
- “Underserved”: any household whose available Internet access service does not qualify as “Target Broadband,” but which household does not qualify as “Unserved.”

The bases for these proposed definitions are provided below.

A. Programs Should Meet Minimum Speed and Provisioned Bandwidth and Maximum Retail Price Requirements

In order to ensure that government funding for broadband infrastructure programs is used to support a service that can provide the basis for the next generation of broadband

applications and that also is provided at an affordable price, funding for such programs should be limited to those that will meet three important requirements: network speed, provisioning rates (actual minimum allocated bandwidth to end users at peak busy hour) and affordability. The Commission's recommended definitions of "broadband," "unserved," and "underserved" for ARRA purposes should take these requirements into account.

1. Network speed

As an important threshold matter, broadband infrastructure that receives ARRA funding should provide network speeds of approximately 4 Mbit/s downstream and 1 Mbit/s upstream. These data rates approximate the median speeds available through cable broadband service today, and are consistent with current consumer expectations and business requirements for broadband services. Funding networks that support these speeds will allow unserved consumers to truly cross the digital divide and enjoy the quality of service that most of America currently enjoys.

2. Provisioned bandwidth

While network speed is important, it is not the only relevant factor in defining quality of service for an end user. An even more important factor is the rate of service that an end user enjoys during peak busy periods. The way a network is managed determines how congestion during peak traffic times affects the actual speeds experienced by the user. It also affects when broadband users actually are able to receive advertised network speeds, and when they will experience congestion, slow downloads, sluggish page load times and unacceptable performance. Consistent with Congress' direction,⁴ broadband infrastructure programs

⁴ In the Conference Report on the ARRA, Congress directs NTIA to take into consideration, "the actual speeds that broadband networks are able to deliver to consumers under variety of circumstances." H.R. Rep. No. 111-16, at 776.

qualifying for ARRA funding should be required to manage their networks to achieve a minimum level of throughput per subscriber — 50 kbit/s per subscriber in the downstream direction, which approximates the median level of throughput available through a cable broadband service today, and is consistent with current consumer expectations. This measure of service level — the “provisioned bandwidth” — should be accounted for in the Commission’s recommendations, and is included within ViaSat’s proposed definition of Target Broadband.

Any broadband delivery platform with insufficient provisioned bandwidth per subscriber will perform poorly. All networks, regardless of technology (*e.g.*, wireline, terrestrial wireless, cable, satellite), have points where bandwidth is aggregated and shared among multiple end users. Although these “choke points” can result in significantly slower service for end users, particularly during peak busy periods, properly designed and managed networks can minimize the impact of these choke points through appropriate allocation of bandwidth on a per subscriber basis. The amount of necessary bandwidth is most often derived empirically and is a balance between (i) subscribers’ traffic demands and the desire to receive advertised speeds 100% of the time, and (ii) the service provider’s need to deliver an acceptable quality of service in the most economical fashion. The amount of provisioned bandwidth increases every year, but today that amount for a median cable modem service varies between 30 and 50 kbit/s.

The provisioning rate for any system can readily be calculated by dividing the total bandwidth available at the relevant choke point by the total number of subscribers that are assigned to share that bandwidth (*i.e.*, the worst case situation where all subscribers contend for access simultaneously). To illustrate:

- Assume that a cable access network is designed to share 10 Mbit/s among a maximum of 200 subscribers. If at busy hour, 100 active users contend for access to the network, each will get an average 100 kbit/s (10 Mbit/s/100) of allocated bandwidth. This allocated amount would be more than enough,

given the bursty nature of data transmissions, for each to have a high quality of service.⁵ If the maximum number of subscribers assigned to this node on the cable system is 200, then the “provisioned bandwidth” on this system would be 50 kbit/s (10 Mbit/s/200 total subscribers assigned to this network).

- Assume that a 3G wireless cell has a combined bandwidth of 20 Mbit/s. The maximum speed achievable by an individual subscriber at the edge of this cell might be 1.5 Mbit/s. Suppose further that the wireless service provider has 2,000 subscribers in that cell. The provisioned bandwidth would only be 10 kbit/s per subscriber (20 Mbit/s/2,000 subscribers). Even though an individual subscriber could expect to get 1.5 Mbit/s during periods of little congestion, that same subscriber would see greatly reduced speeds at peak hour because the 10 kbit/s of provisioned bandwidth is well below the empirically derived amount of 40-50 kbit/s necessary to deliver a high quality of service in today’s Internet. The service provider would have to shrink the cell size to cover only 400 subscribers, or quadruple the bandwidth in the cell, to provision sufficient bandwidth (50 kbit/s) for an acceptable quality service.
- Assume that the same 3G wireless cell described above, having a combined bandwidth of 20 Mbit/s, was supporting a total of 400 subscribers and thus, the allocated bandwidth per subscriber was 50 kbit/s over the access cell portion of the network. Assume further, however, that because the cell is located in a remote area, the network uses satellite backhaul from that base station, and that satellite link provides only 4 Mbit/s of backhaul capacity. In this case, the choke point would be the satellite backhaul, where the provisioned bandwidth would be 10 kbit/s per subscriber (4 Mbit/s of backhaul/400 total subscribers). The quality of service in this example would suffer, not because of the use of satellite backhaul, but because only 10 kbit/s of bandwidth was allocated to each subscriber over that portion of the network. In order to provide service of acceptable quality using this network architecture, the bandwidth of the satellite backhaul would need to be increased to 20 Mbit/s.

ViaSat’s proposed provisioned bandwidth requirement of 50 kbit/s per household represents the high end of the range for provisioned bandwidth (30-50 kbit/s) offered across the United States by cable systems today. Setting the provisioning rate at the high end of the range provides room for growth as traffic demands increase in the coming years.

⁵ Because most Internet traffic consists of data packets that are sent intermittently, the chances are low that all users on the network are sending or receiving data simultaneously.

3. Retail price

The Commission’s recommended definition of broadband for ARRA purposes should take into account the retail price of the service that will be offered under any funded program. Consistent with the goal of providing a meaningful and affordable broadband experience, recipients of government funding should also be required to offer broadband Internet access service at a maximum monthly retail price of no more than \$45, for at least 5 years from the date service is initiated.⁶ Such a requirement is particularly important for systems serving the previously unserved, who, absent the benefit of an open wholesale access network, would not enjoy the benefits of the competitive forces that historically have forced a decline in the price of communications services. Thus, including a maximum retail price metric in the definition of broadband is critical to maintaining affordable service to this population.

B. The Definition of “Unserved” Should Capture Those Who Do Not Have Access to Acceptable Internet Access Service Today

As the Commission has acknowledged, it is generally accepted in the industry that speeds of roughly 768 kbit/s downstream and 256 kbit/s upstream represent the minimum level of acceptable Internet access today.⁷ The Commission’s current threshold for first generation broadband services — download speeds of 200 kbit/s — does not reflect a service that can realistically satisfy today’s business needs or consumer expectations. Therefore, the definition of an “unserved” household should include those who do not have access to an Internet access service with a minimum downstream network speed of 768 kbit/s and a minimum network

⁶ Recipients would be free, however, to either reduce price over time, or improve the quality of service while maintaining the same price.

⁷ *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriber Data, and Development of Data on Interconnected Voice over Internet*

upstream speed of 256 kbit/s. Consistent with the explanation above regarding the proposed definition of “Target Broadband,” the definition of “unserved” also should take into account provisioned bandwidth and retail pricing. The minimum provisioned bandwidth should be no less than 15 kbit/s per subscriber, based on customer dissatisfaction with current generation wireless and satellite services where the provisioned bandwidth can be as low as 5 to 12 kbit/s. The maximum retail monthly price of \$45 is appropriate because cable subscribers typically pay this amount for median cable broadband services available in urban America today.

C. The Definition of “Underserved” Should Capture Those Who Do Not Have Target Broadband and Are Not Unserved

Underserved consumers are those who have at least the level of service that defines the unserved, but do not yet have access to a service that is comparable in quality and price to median cable broadband services (*i.e.*, Target Broadband). Although the underserved are identified as a population for whom the ARRA aims to provide improved broadband services, stimulus funds are more appropriately aimed at bringing broadband services to the unserved, as discussed above. As the market moves toward faster speeds, demand for high-bandwidth applications will compel competitive enterprises to improve the quality of service provided to underserved consumers. Without stimulus funds, however, unserved consumers are in danger of being left behind. Therefore, stimulus funding should be focused on bringing median cable service quality levels to the unserved.

D. Unserved and Underserved Consumers Should Be Allowed to Self-Identify

ViaSat recommends that the current broadband mapping processes be supplemented with a mechanism that ensures all unserved and underserved consumers are

Protocol (VoIP) Subscribership, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691 ¶ 20 n.66 (2008).

accounted for, and that the needs of all such consumers are taken into account in ARRA funding determinations.

Based on the actual experience over the past several years of the Australian government with its Australian Broadband Guarantee program, any attempt to identify unserved and underserved households based on geographic reporting (whether zip codes, census tracts, or other) inevitably will leave some households unaccounted for. The reason is that these households are everywhere — pockets of unserved and underserved exist throughout America, even in and around areas that are considered to be densely populated.

This phenomenon is confirmed by the fact that the vast majority of the approximately 1 million satellite-based broadband subscribers in North America today are located in and around the more populated portions of America — areas east of the Mississippi and on the west coast. They subscribe to today's satellite broadband service not because of the quality it offers or its affordability — today's satellite broadband providers offer service in the range of 512 kbit/s to 1.5 Mbit/s, with a provisioned bandwidth of about 5 to 12 kbit/s, and at pricing between \$39 and \$79/month — but rather because they have no alternative. As an example, a mapping of the thousands of satellite broadband customers located in the Commonwealth of Kentucky shows that the vast majority of them are located in areas where Connect Kentucky (a public/private partnership renowned for its broadband mapping efforts) indicates that broadband is offered by more than one terrestrial service provider. This example demonstrates that any mapping exercise that does not account for all of the households that subscribe to satellite broadband necessarily would understate the number of unserved households in America.

In order to account for all consumers who are candidates for service over ARRA-funded programs, the current broadband mapping efforts should be supplemented with a self-identification mechanism, similar to that implemented by the Australian government as part of its Australian Broadband Guarantee program, by which consumers can have themselves counted. Households that meet the definition of “unserved” or “underserved” should be allowed to certify their status as such, and following timely government verification, should be eligible to receive services provided pursuant to ARRA-funded programs.

III. CONCLUSION

ViaSat urges the Commission to adopt the definitions of “Target Broadband,” “unserved” and “underserved” for ARRA funding purposes, as the Commission prepares its recommendations to NTIA and RUS. This definitional approach will enable (i) the funding of programs that will stimulate the economy, (ii) the delivery of broadband service where it is most needed, and (iii) the facilitation of longer-term broadband policy goals. Spurring the growth of viable and robust broadband solutions in this manner will lay a strong foundation for the Commission’s development of a national broadband plan.

Respectfully submitted,

_____/s/
Thomas E. Moore
ViaSat, Inc.
Senior Vice President
President - ViaSat Satellite Holdings, LLC
4600 S. Syracuse Street, Ste. 900
Denver, CO 80237
303-256-6656

_____/s/
John P. Janka
Elizabeth R. Park
Latham & Watkins LLP
555 Eleventh Street, NW, Suite 1000
Washington, DC 20004-1304
202-637-2200

April 13, 2009