

**Before the  
RURAL UTILITIES SERVICE  
UNITED STATES DEPARTMENT OF AGRICULTURE  
Washington, D.C. 20250**

In the Matter of	)	
	)	
7 C.F.R. Part 1738	)	RUS-06-Agency-0052
	)	
Rural Broadband Access Loans and Loan Guarantees	)	RIN 0572-AC06
	)	
Proposed Rules	)	

**COMMENTS OF  
MEDIACOM COMMUNICATIONS CORPORATION**

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Dated: July 10, 2007

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EXHIBIT A: *Analysis of Economics of High Speed Internet Access in Rural Areas*

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MEDIACOM COMMUNICATIONS CORPORATION**

Mediacom Communications Corporation (“Mediacom”) respectfully submits these comments in response to the Notice of Proposed Rulemaking (the “NPRM” or “Proposal”) published by the United States Department of Agriculture (“USDA” or the “Department”) and its Rural Utilities Service (“RUS”) (collectively, the “Agency”) in the above-captioned proceeding. *See* Proposed Rule, Rural Broadband Access Loans and Loan Guarantees, RUS, USDA, 72 Fed. Reg. 26,742 (proposed May 11, 2007).

**INTRODUCTION**

The NPRM solicits comments on the Agency’s proposed changes to rules governing the Rural Broadband Access Loan and Loan Guarantee Program (“Broadband Loan Program” or the “Program”). Congress established the Broadband Loan Program in order to equalize economic, educational, and health opportunities between rural and urban areas by promoting broadband connectivity in rural communities that would otherwise be without this crucial communications service.

As the nation's leading multiple cable system operator ("MSO") in small cities and towns, Mediacom is especially well positioned to comment on the Proposal. Mediacom's network is based in rural America, and its business is centered on providing state-of-the-art entertainment, information and telecommunications services to the nation's smaller cities and towns. About 85% of Mediacom's approximately 1,500 franchise communities contain 2,000 or fewer subscribers. Eighty-six percent of Mediacom's customers are located outside the nation's the Top 50 Designated Market Areas ("DMAs") as measured by A.C. Nielsen & Co.<sup>1</sup>

Mediacom's business strategy centers on acquiring and upgrading neglected cable systems in such communities. Having already spent approximately \$3.4 billion in acquisition costs, Mediacom has, over the past five years, spent an additional \$1.2 billion to upgrade those systems into state-of-the-art broadband rivaling that available in large metropolitan markets. Mediacom has built hybrid fiber-coaxial ("HFC") networks spanning over 18,800 fiber route miles and 550,000 fiber miles. Mediacom provides services like digital video, high-speed Internet access, VOD, HDTV and VoIP telephone services in virtually all of the communities it serves, no matter how small. Currently, Mediacom's standard broadband service for residential customers has a download speed of 8 Mbps, and in many markets Mediacom provides a 15 Mbps premium service. Mediacom offers businesses an array of broadband options, including dedicated fiber service with up to 10 Mbps of bidirectional bandwidth.<sup>2</sup> Mediacom's 11 years of

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<sup>1</sup> Mediacom provides service in Alabama, Arizona, California, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Mississippi, Missouri, North Carolina, Ohio, Oklahoma, South Dakota, Tennessee, Virginia, and Wisconsin.

<sup>2</sup> Mediacom currently offers digital cable service and high-speed Internet access to 99% and 98%, respectively, of the homes passed by its cable systems. VOD service is available to approximately 77% of its homes passed. HDTV is an option for about 91% of homes passed. Mediacom's VoIP telephone service, commercially launched in 2005, is available to 87% of the homes its cable plant passes. Moreover, Mediacom also provides free service to more than 3,000 government buildings, libraries, and not-for-profit hospitals in the communities it serves.

bringing broadband to rural markets gives it special insight into RUS' Broadband Program and the Program's goals:

- Because of Mediacom's long experience in rural communities, it has great expertise in analyzing rural market demand for broadband, as well as capital and infrastructure requirements for building in rural areas and the competitive characteristics of multiple-provider rural markets.
- Since its founding in 1996, Mediacom has spent over \$1.8 billion in private-sector money bringing broadband to rural and other small communities that were previously unserved, and upgrading existing systems in communities that were previously underserved. As a result, Mediacom knows the investment decisions that private companies make in entering unserved markets or upgrading facilities in rural markets. Mediacom also understands how commercial banks, institutional investors, and other sources of capital make their decisions about when to provide equity or debt financing for telecommunications ventures. In particular, Mediacom knows how the investment decision of a company (and its financiers) considering a new or additional investment in a rural market may change in response to the threat of future government-subsidized overbuilders.
- Finally, Mediacom owns and operates advanced broadband systems in several rural communities where RUS has approved or is considering loan applications from new entrants. Mediacom therefore knows how the administration of the RUS program operates "on the ground." For instance, Mediacom has experienced firsthand inaccuracies in loan applicants' representations about existing providers; the inadequacy of the notice provided to incumbent providers; and the substantive and procedural shortcomings in how RUS processes and evaluates applications for areas where broadband service is already being provided. Indeed, Mediacom's experience in such matters has led it to join as plaintiff in a currently pending lawsuit challenging RUS's administration of the Broadband Loan Program.<sup>3</sup>

These are issues which the Agency must consider if it wishes to administer the Broadband Loan Program in a rational manner — one which promotes rather than inhibits the congressional goals. Mediacom appreciates the opportunity to comment on the Proposal, and

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<sup>3</sup> See *Iowa Cable & Telecomm. Ass'n v. USDA*, No. 4:06cv256 (S.D. Iowa, filed May 30, 2006). On December 11, 2006, Chief Judge Pratt denied USDA's motion to dismiss, *see* 469 F. Supp. 2d 711 (S.D. Iowa 2006), and the lawsuit is currently pending.

submits these comments in the hope that its experience and expertise will be of value to the Agency as it considers changes in the Program's administration.

### COMMENTS AND SUGGESTIONS

The primary congressional purpose behind the RUS broadband program is one Mediacom supports — expanding broadband service to rural areas where such service would not be otherwise available. Mediacom is concerned that many aspects of the RUS administrative regime as currently constituted actually work *against* that goal. In the process, moreover, RUS administration harms existing providers and risks taxpayer money.

There is no shortage of information on the Broadband Loan Program's serious and pervasive problems. In 2005, USDA's Office of Inspector General issued a careful report. *See* USDA, OIG, Audit Report: Rural Utilities Service Broadband Grant and Loan Programs (Sept. 2005) (hereinafter, the "IG Report"). The IG Report found that the Agency has improperly used Program money to fund broadband service for suburban communities rather than rural communities; has directed money towards new entrants in communities that already had broadband service rather than giving priority to applications in truly unserved communities; has subsidized new entrants in already served areas without determining whether the area could support multiple providers; and has frequently granted loans based on incomplete and inaccurate applications. Numerous stories in the media have also highlighted the wasteful and counterproductive nature of some of the Department's current policies.<sup>4</sup> And congressional hearings have further revealed not only the Program's waste of taxpayer funds and deviation

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<sup>4</sup> *See, e.g.,* Gerry Smith, *Federal Loans for Rural Broadband Often Wind Up in High-Growth Areas*, Atlanta Journal-Constitution, Apr. 22, 2007, at 12F; Gilbert Gaul & Sarah Cohen, *Rural Aid Goes to Urban Areas: USDA Development Program Helps Suburbs, Resort Cities*, Wash. Post, Apr. 6, 2007, at A1; John Borland, *The Texas Broadband Follies*, CNet News, Oct. 19, 2004, available at [http://news.com.com/The+Texas+broadband+follies/2010-1028\\_3-5416297.html?tag=item](http://news.com.com/The+Texas+broadband+follies/2010-1028_3-5416297.html?tag=item).

from congressional purposes, but also the counterproductive effect that an improperly administered Program has on those considering spending *private* money on rural broadband.

The Proposal includes some tentative first steps towards righting a program that has gone awry. But much more is needed. In general, Mediacom supports and adopts the comments made by the National Cable & Telecommunications Association (“NCTA”) (hereinafter, the “NCTA Comments”). Mediacom submits these additional comments as a supplement, welcoming the ways in which the Proposal represents a step forward, but suggesting further steps that are needed as well. Mediacom discusses first the substantive criteria used to evaluate loan applications, then the Agency’s procedural mechanisms, and last the overarching need for RUS to consider the effect its policies have on private sector investment decisions.

#### **I. SUBSTANTIVE REFORMS: RUS Must Change Its Substantive Criteria For Broadband Loans In Order To Focus On The Congressional Priority Of Eliminating The Digital Divide**

Congress intended the RUS broadband program as a way of eliminating the digital divide between urban and rural areas — *i.e.*, to “ensure that Rural America has the same access to broadband service as its urban neighbors.”<sup>5</sup> Accomplishing this requires a number of changes.

##### **A. To Further The Congressional Goal Of *Sustainable* Broadband Service, RUS Must Focus Its Loans On Truly Unserved Communities, Rather Than On Communities Already Served By Existing Providers**

Current RUS regulations permit Program loans in rural communities no matter how many existing entities already provide broadband service there. The NPRM proposes that loans be restricted to communities “which contain[] less than four Existing Broadband Service

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<sup>5</sup> 148 Cong. Rec. S4023, S4037 (daily ed. May 8, 2002) (statement of Sen. Dorgan). This is also RUS’ own description of its mission: to “ensur[e] that rural consumers enjoy the same quality and range of telecommunications services that are available in urban and suburban communities.” Rural Broadband Access Loan & Loan Guarantee Program Application Guide, RUS Bulletin 1738-1, *available at* <http://www.usda.gov/rus/telecom/broadband/rev-broadband-app-guide-6-21-04.pdf>.



Providers.” NPRM, at 26,749.<sup>6</sup> In support, the NPRM says that “where there are four or more existing providers, the market is sufficiently served and does not warrant an additional market entrant subsidized through Federal funding.” *Id.* This observation is correct as far as it goes. (Indeed, it boggles the mind that until now, RUS has apparently felt that the congressional purposes behind the RUS program would be served by introducing a fifth provider — let alone a sixth, seventh, or eighth — to such markets.)<sup>7</sup> The NPRM is surely correct to conclude that no government subsidy is appropriate where there is already such a diverse array of options for consumers to choose from.

The problem is that the Proposal’s restriction does not go far enough. By continuing to allow loans to communities that already have up to *three* providers, the NPRM countenances a continued diversion of funds to well-served communities, at great expense not only to the public fisc and to existing providers, but also at the expense of truly *unserved* communities.

**1. Under No Circumstances Should RUS Loans Be Made In Communities That Already Have Two Or More Broadband Providers**

The NPRM Proposal would still permit RUS to loan money to bring a third or fourth provider into communities where there are already two or three existing providers. But rural communities, with their sparse populations and high cost-of-service, simply cannot support three or more wireline providers. As a result, where there are already at least *two* existing providers, a

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<sup>6</sup> “Existing Broadband Service Providers” is a defined term under the Proposal, and is separately discussed both in the NCTA Comments and below. Because Mediacom does not agree with the NPRM’s proposed definition of Existing Broadband Service Provider, Mediacom’s discussion of existing providers in these comments refers to *any* provider of broadband services — whether or not they meet the take-rate requirement of the NPRM.

<sup>7</sup> *See, e.g.*, IG Report, at 15 (criticizing loan made for a fifth provider in a town that already had four providers for just 15,527 inhabitants).

new entrant is overwhelmingly likely to fail and RUS should not grant loans subsidizing further entrants.

Attached as Exhibit A is a study by John Mansell, Jr. See John Mansell, *Analysis of Economics of High Speed Internet Access in Rural Areas* (July 5, 2007) (hereinafter the “Mansell Study”). Mr. Mansell is a cable and communications specialist with over 35 years’ experience, including extensive experience analyzing and appraising digital media, wireless, DBS, and cable TV systems. The Mansell Study explains that rural markets cannot economically support a third wireline broadband provider. Due to the special characteristics of rural markets, third providers will typically fail — perhaps ruining preexisting providers as well.

The Mansell Study evaluates a variety of scenarios — considering various combinations of data/cable/voice service a newcomer might offer; examining alternative wiring technologies (fiber-to-the-home and hybrid fiber-coaxial); and hypothesizing a variety of consumer take-rates. Mansell Study 2-3, 11-13. In *each* case, the Mansell Study finds that where a third wireline provider enters a rural market that already has two other providers, the new entrant will fail and the USDA loan will not be paid back. *Id.*

A new entrant’s options are more limited than it tends to realize. If it does not lower prices below those of the incumbent, then few new broadband customers will be added to the market, and the newcomer will simply be competing for the same pool of customers as the incumbent. But if the newcomer does lower prices, then the incumbent will presumably follow suit. “Historically, new competitive wireline entrants, or overbuilders, often underestimate the extent to which the markets they choose are already fiercely competitive and erroneously assume they can easily and profitably capture customers from incumbent providers with low prices.”

Mansell Study 10. In the end, the likely outcome is for the newcomer to default on its loan and go out of business.<sup>8</sup>

These findings should not be a surprise. They receive further support from the IG Report, which confirmed that Broadband Loan Program loan recipients have indeed defaulted because of competition, and which warned that “RUS may be issuing loans to companies with little chance of survival.” IG Report, at 16. As the IG Report notes, “[a]pproving loans likely to fail would not appear to be a suitable use of Federal funds.” *Id.*

Even if it were possible for a third or fourth entrant (using any technology) to survive, the ultimate effect of such loans will be counterproductive: the Agency’s willingness to subsidize third and fourth entrants into rural markets will eventually *decrease* competition in such markets by dissuading private investment. Mediacom, for instance, might be interested in entering or upgrading service in certain rural communities that currently have a single broadband provider whose services are below that common in the state’s urban areas. Entering such markets would have a beneficial effect, both by bringing price competition to previously uncompetitive markets and by upgrading technological standards in such markets to be on a par with technology in urban areas. But Mediacom and similarly situated companies will *not* enter if they believe that an additional, subsidized competitor will also be on the way — for, as the Mansell Study shows,

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<sup>8</sup> That, in turn, may have a cascading effect on the market. The newcomer will go into bankruptcy, and either its assets will be sold at a much lower price to a later buyer, or much of its debt will be forgiven (at cost to the taxpayer guarantors). With the debt removed, the eventual owner of that system will have a far smaller capital cost, placing it at a competitive advantage against other providers in the market (who still have their original debts on the books). That could force a cascade of further bankruptcies and readjustments. While this is one way of potentially lowering the price of rural broadband in those markets hit by the successive bankruptcies, it would seem to be an exceptionally inefficient and costly one — and one the Government should not subsidize. Moreover, the destabilizing effect of such booms and busts will completely dissuade private capital from investing their own funds in rural markets in the future — thus harming the very communities the Program was supposed to help.

these are markets that simply cannot support three providers. By holding out the threat that RUS will eventually subsidize a third or fourth provider in such markets, therefore, the Proposal as currently formulated casts a pall over private-sector investment and actually *reduces* competition. To the extent that one of USDA's goals is to promote competition in previously uncompetitive markets, loans for third or fourth providers are therefore entirely counterproductive.<sup>9</sup>

**2. The Touchstone Inquiry Should Be Whether there Is *Any* Existing Provider Already Offering (Or Slated To Offer) Broadband Service To The Public On Terms Comparable To Those In The Same State's Urban Areas**

In contrast, the Mansell Study confirms that new entrants can indeed succeed in rural markets that have *no* preexisting providers<sup>10</sup>—*the precise markets Congress was most concerned with*. In rural markets of 5,000 to 15,000 households, the Mansell Study predicts that RUS loan recipients offering triple-play voice/video/data broadband could be highly successful. These are *precisely* the communities Congress had in mind in passing the Statute — communities isolated because of a *lack* of broadband service. *See, e.g.*, 152 Cong. Rec. S6951 (daily ed. May 25, 2007) (statement of Sen. Roberts) (“In the 2002 farm bill, Congress created a loan and loan guarantee program to help build broadband out to rural areas *that lacked this crucial service.*”) (emphasis added). The problem is that by diverting money to already served communities, RUS has diverted its own and applicants' attention from these viable markets — a situation that must be corrected.

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<sup>9</sup> The same considerations obviously apply where the loan applicant is proposing to use the RUS loan to upgrade previously partial or sub-standard facilities (such as dial-up access Internet). If there are already two existing providers providing high-quality (i.e., urban-level) service, then the upgrading company is likely to fail.

<sup>10</sup> Mansell Study at 3-4, 13-14.

As a result, Mediacom does not believe that RUS should be funding projects in communities where *any* existing provider already offers broadband service on terms comparable to those available in that State’s urban areas. In communities where service is already available on par with normal urban service, the concerns that motivated Congress to enact the Program are not at issue and there is no reason for an RUS loan. Rural communities with ready access to broadband are not isolated or disadvantaged — there is no digital divide that needs to be bridged. *See* IG Report, at 16 (“[Q]uestions asked by the Congressional Rural Caucus’s Committee suggest that—for some lawmakers, at least—this use of Federal funds contradicts the program’s primary purpose.”).

Moreover, directing Broadband Program money towards already served areas risks both the government’s money and the preexisting private providers’ financial health. Indeed, the Proposal already reflects at least a partial recognition that rural markets simply cannot support high numbers of providers and that subsidized providers introduce further economic irrationality — the Proposal would continue to prevent two Broadband Loan Program recipients from competing with each other. *See* NPRM, at 26,753 (proposed 7 C.F.R. § 1738.19). The Agency is evidently unwilling to risk its own money on both sides of such competition, knowing that, as described above, the result would be unsustainable. But it hardly makes any more sense to risk Agency money on one side and private sector money on the other.

This does not mean that Broadband Loan Program funds would go unused. Rather, they would be directed to the communities and purposes Congress intended. One of the most serious failings of the Broadband Loan Program to date has been its almost complete abandonment of the mission of expanding broadband access to communities without it. As the NPRM admits, “in the history of the program, the Agency has certified as complete only *one* application to serve a

rural area completely without broadband service.” NPRM, at 26,748 (emphasis added). That means only one out of the Agency’s 68 loans has gone towards the Program’s primary purpose. In the words of one Senator, the “truly unserved, rural areas for which this program was created continue to be neglected.”<sup>11</sup> The NPRM simply throws up its hands at this abysmal record, proposing effectively to abandon truly unserved communities while continuing to throw money at communities already very well served indeed. But that is not an appropriate response. The Agency’s goal should not be simply to spend money, but rather to spend money on Congress’ *goals*, and in a way that maximizes the chance of repayment. Loans to bring broadband to communities that do not already have it should be quickly processed and approved. Loans to communities that already have broadband service as good as that in urban areas should be denied.

#### **B. Mediacom Adopts the NCTA Comments On Other Substantive Loan Criteria**

In other respects, Mediacom adopts the NCTA’s comments on the substantive criteria governing loan approval.<sup>12</sup>

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<sup>11</sup> 153 Cong. Rec. S6951 (daily ed. May 25, 2007) (statement of Sen. Roberts).

<sup>12</sup> Mediacom adds these additional comments on the NPRM’s take-rate criterion for deeming someone an Existing Broadband Service Provider. Under the Proposal, for purposes of applying its cut-off for loans in communities with more than four Existing Broadband Service Providers, USDA would include only those preexisting providers companies who can count at least 10 percent of the households in a community as customers. NPRM, at 26,749. Mediacom emphatically disagrees with this aspect of the Proposal. As NCTA points out, “a provider’s take-rate is not relevant to whether residents have *access* to broadband, which is the goal of the Broadband Loan Program.” NCTA Comments, at 4. In addition, low take rates may well result from a community’s demographic or economic characteristics — not from any shortcoming of existing providers. Many consumers may find their connectivity needs fully met by dial-up Internet, Internet cafes, or school and library access, combined with broadcast or satellite TV. Moreover, the 10% threshold would lead to truly absurd results: The more competitive the market (*i.e.*, the less concentrated), the more likely USDA would be to find a shortage of existing providers.

## **II. PROCEDURAL REFORMS: RUS Should Revise Its Rules To Verify The Accuracy Of Loan Applicants' Information And The Plausibility Of Applicant Projections And Business Plans**

The Agency's current practices fall overwhelmingly short in the crucial task of verifying applicant submissions. Some of the shortfalls were documented by the IG Report, which found some \$137 million in loans approved based on incomplete or inaccurate information.<sup>13</sup> For instance, RUS's policies have been extremely unsuccessful at identifying application misstatements about the presence and quality of existing broadband providers. Sometimes, RUS has often simply failed to notice applications that wrongly claimed there were no preexisting broadband service providers in a given community.

Mediacom knows about this firsthand, due to the numerous and material falsehoods that loan applicant Local Internet Service Company ("LISCO") included in an application for an RUS loan for Fairfield, Iowa — a town already served both by a high-quality Mediacom broadband system and by telephone company broadband. As Mediacom has explained in its now-pending lawsuit against USDA, even the heavily-redacted version of the LISCO application Mediacom eventually received in answer to its Freedom of Information Act (FOIA) request revealed numerous applicant misstatements about the extent and quality of Mediacom's existing service.

Mediacom's complaints about those inaccuracies have now been confirmed by the Declaration of John E. (Jack) Kane attached to NCTA's Comments on the Notice. See NCTA Comments, Attachment 1 (hereinafter the "Kane Reece Declaration"). The Kane Reece Declaration examined the redacted FOIA copy of LISCO's Fairfield application, and found

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<sup>13</sup> IG Report, at 20. That \$137 million figure has surely increased in the two years since publication of the IG Report.

numerous material omissions and misstatements. *See* Kane Reece Declaration ¶¶ 9-15. The Kane Reece declaration also casts doubt on the applicant's ability to succeed economically, and on its managerial and technical ability to successfully provide service. *Id.* ¶¶ 20-23.<sup>14</sup>

Obviously, USDA can neither fulfill congressional goals nor administer the Program rationally without accurate information on the markets its applicants propose to serve. The IG Report and the Kane Reece Declaration reveal a serious problem in existing methods of acquiring, processing, and verifying such information. The following sections detail several suggestions for improvement.

**A. RUS Cannot Simply Rely On Applicants For Information On Already-Served Markets; The Agency Must Make Effective Use Of Existing Providers' Information And Insight**

As the IG Report and the Kane Reece Declaration confirm, applications are likely to contain serious errors—whether through inexperience, negligence, or conscious malfeasance. To verify application information and evaluate the relevant markets, the Agency should therefore make use of the most knowledgeable parties: existing providers, whose knowledge of their own systems and knowledge of the markets they serve will far exceed either the applicants' knowledge or the Agency's. Making effective use of existing providers' knowledge requires the following changes to Agency procedure.

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<sup>14</sup> In addition to the FOIA answer received by Mediacom itself, Mediacom's attorneys have separately received a less-heavily redacted copy of the LISCO application as part of the administrative record under review in the *ICTA* case. That less-redacted administrative record is subject to a protective order which precludes those attorneys from disclosing it to Mediacom or anyone else. As a result, the Kane Reece Declaration submitted by NCTA is based only on the FOIA version of the LISCO application. For the Department's benefit in evaluating these Comments, however, and without disclosing any confidential information subject to the protective order, Mediacom's attorneys note that the additional information revealed in the protected administrative record fully confirms that LISCO's application was based on (i) misinformation and misrepresentations about Mediacom's existing Fairfield services; and (ii) a wildly implausible business plan.



## **1. RUS Must Improve Notice To Existing Providers When Applications Are Submitted For Those Providers' Service Areas**

First, RUS must improve the notice given to existing providers when loan applicants submit applications for those providers' service areas. The current regulations provide for a plainly inadequate method of notice: Applicants simply publish "legal notice" in "state and local newspapers covering the applicant's proposed service area." 7 C.F.R. § 1738.11(c)(2). That process seems almost designed to insure that incumbent providers are *not* notified — a tiny notice in the legal notice section of a rural community's weekly paper is all too easily missed.

The NPRM proposes a partial improvement: posting the legal notice and proposed service map on the Agency's website for 30 days after the application's receipt. NPRM, at 26,750. While this is indeed an improvement (since it at least puts notices in a centralized place), further improvements are needed. In addition to RUS providing website notice, RUS should *require that the applicant provide actual notice individually targeted to each broadband provider identified in the application as a potential competitor within that community*. Since the application requires applicants to identify any competitors in the service area, it would be simple and almost costless to require actual notice as well. Indeed, existing providers could be encouraged to designate an email address for such notice, further decreasing costs. And actual notice would be the procedure best calculated to actually reach and ensure a response from the most knowledgeable parties — the existing providers who know the market and know their own systems.<sup>15</sup>

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<sup>15</sup> Mediacom recognizes that this suggestion would not solve the problem of applicants who fail to properly list the existing providers within a given service area. Such a problem must be addressed by vigorous RUS efforts to independently evaluate applications (including through rigorous site visits and independent evaluators) and by prosecution of those making false statements on their application forms. Better notice to identified providers, however, would at

## **2. RUS Should Increase Incumbent Providers' Access To Application Information, And Should Provide The Public (Including Incumbent Providers) With A Means Of Commenting On And Objecting To Applications**

Mediacom joins in full NCTA's suggestion that RUS should publicly post *detailed* information on each application. See NCTA Comments, at 15. At present, application information is available only by means of FOIA requests. The information thus received will likely be too incomplete — and will almost certainly be too late — to allow effective fact-checking and comment by the incumbent provider.<sup>16</sup> Mediacom also agrees with NCTA's recommendation that members of the public — including broadband providers — be permitted to comment on applications, and that RUS should be required to take those comments into account in making its loan determinations. Incumbent providers know the market better than outsiders at either the Agency or the applicant. And each incumbent provider is certainly best positioned to comment on whether its own offerings are accurately portrayed in the application. If the Agency truly cares about reasoned decision making, then it will *welcome* incumbent providers' comments.<sup>17</sup>

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least be a first step: If an applicant listed one incumbent provider for an area but failed to list others, the incumbent provider who *was* identified would receive notice; that provider's response could then alert RUS to the presence of other providers whom the applicant had omitted.

<sup>16</sup> Mediacom has first-hand experience with the inadequacies of the FOIA process. In order to find out more about the LISCO application for Fairfield, Iowa, Mediacom filed a FOIA request in early December 2005. Mediacom did not receive a response until April 21, 2006 — some four months later. Since that time, Mediacom has made several other FOIA requests for other applications, and has experienced similar or even greater delays. Moreover, Mediacom observes that the Agency's responses to recent requests have become more heavily redacted. Indeed, in responding to Mediacom's recent FOIA requests, the Agency has even redacted the applicant's description of *Mediacom's* incumbent systems — something that can hardly be considered proprietary information of the applicant. Once again, such a practice is simply indefensible if the Agency truly wishes to be informed of misstatements and inaccuracies in applications.

<sup>17</sup> Mediacom recognizes that the NPRM proposal would request incumbent providers to provide certain kinds of information on service within the relevant area. The Proposal, however, is

Mediacom recognizes that the interest in public notice must be balanced against applicants' interests in guarding proprietary information. Mediacom believes that the NCTA's proposal appropriately balances all of the interests involved and will lead to much more informed decision making by the Agency — something that will benefit taxpayers, incumbent providers, and good-faith applicants alike.

**B. RUS Should Require A Market Survey And An Independent Business Plan Evaluation For Every Application Proposing To Serve An Area With Existing Competitors**

Given the numerous inaccuracies documented in RUS loan applications to date, together with the high default rates identified in the IG Report and the Mansell Study results reported above, the Agency should not relax — but must instead tighten — substantiation requirements to support an applicant's projections. In addition to the problem of objective inaccuracies detailed above, the simple fact is that applicants for federal money are likely to view their business opportunity through unjustifiably rose-tinted glasses. They will overestimate their own advantages and underestimate their competitors' strengths. They may vastly overestimate the public's willingness to embrace their new enterprise, attributing some consumers' decision not to take existing broadband options as the result not of consumer disinterest, but of some failure on

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deficient in two respects. *First*, the incumbent's comments to the Agency should not be limited to describing its own services; the incumbent's experience in the community will also give it valuable insights into the local broadband market and the applicant's viability — information that the Agency should welcome. *Second*, even with respect to comments on its own services, incumbents cannot effectively counter an applicant's misstatements without seeing the misstatements themselves. The variety of misstatements an applicant might make is simply too great for a blunderbuss approach to effectively hit every possible misstatement on technology, speed, pricing, programming, customer satisfaction, and so on. And from the Agency's perspective, too, it would be far more effective to have the incumbent point out specific misstatements in the application than for the incumbent to give a comprehensive description of all aspects of its system and for the Agency to search out contradictions between that and the application. The Agency should welcome the most effective presentation of the relevant information.

the part of the existing providers which they hope magically to avoid. “Historically, new competitive wireline entrants, or overbuilders, often underestimate the extent to which the markets they choose are already fiercely competitive and erroneously assume they can easily and profitably capture customers from incumbent providers with low prices.” Mansell Study 10.

As detailed above, Mediacom does not believe that it is proper to use Broadband Loan Program funds to advance overbuilds in already served communities. If the Agency does issue loans for overbuilds, however, then it must insist that applicants rigorously substantiate their assertions of viability. Rural overbuilds cannot be presumed viable. They are highly risky endeavors, which not only hazard the public’s funds on an unlikely cause, but impose significant costs on preexisting broadband providers. And at best, even in cases where they succeed in spite of these hazards, rural overbuilds achieve something several steps removed from the primary congressional purpose of the Program. That is because overbuilds by definition do not expand broadband to a community that did not previously have it, but rather provide duplicative service in a community with preexisting broadband access. In such circumstances, it is not too much to ask — indeed, the Agency should *require* — that applicants make their case with substantial and precise documentation, and that the Agency obtain an independent view on the applicant’s likelihood of success.

**1. RUS Should Require A Market Survey For *Every* Application Proposing An Overbuild**

First, RUS must continue to require market surveys for any application proposing to build where there are already incumbent providers. The Proposal suggests doing away with the market survey requirement for applications whose business plans include subscriber projections of less than 15%. NPRM, at 26,750. Mediacom submits that this makes no sense. The Proposal

presents two justifications for the change — neither of them convincing. The first reason given by the Proposal is that because “most market surveys submitted support a 15 percent penetration rate,” the Agency “relies more heavily on other means . . . to determine feasibility for areas where 15 percent or less penetration is projected.” *Id.* Of course, the latter part of that statement is a *non-sequitur*: No reason is given why the market survey becomes irrelevant (or why other information becomes more relevant) for surveys projecting below 15%. Indeed, a market survey remains *highly* relevant in such circumstances — at least in markets where there is an existing competitor. There is a vast difference in likely success between a market that would support 14% penetration for the new entrant and one that would only support 3% penetration. One would expect RUS to want to know, therefore, which category a given application falls into.

The second reason the Proposal gives for abolishing the market survey requirement is that such surveys are “onerous” and “cost prohibitive, especially for those seeking to serve areas where no service exists.” NPRM, at 26,750. Mediacom agrees that this reasoning supports abolishing the market survey requirement in “areas where no service exists” — but it provides no support for abolishing the requirement in areas where the applicant would be in competition with other service providers. The Agency should by all means clear obstructions to applications that would extend broadband to communities that have no broadband. For applications proposing merely to add additional competitors in already-served areas, however, any marginal increase in application costs due to the market survey requirement is far outweighed by the added confidence it provides that the loan will be paid back. Moreover, for an applicant who would be the *only* provider in a community, it may be logical to *assume* a high penetration rate. Such an assumption is obviously far less warranted for applicants who would be in competition with other better established providers. The Agency should therefore revise its rules to retain the

market survey requirement in *all* areas where there are existing competitors, but abolish the market survey requirement in areas where there are no current or projected broadband competitors. This would also have the salutary effect of promoting the primary congressional goal — bridging the digital divide by bringing broadband to truly unserved areas — by decreasing costs for applicants attempting to serve those areas.

**2. RUS Should Retain An Independent Expert To Evaluate Market Conditions And The Applicant's Business Plan Before Approving Any Loan In Areas With Existing Providers**

As stated above, applicants frequently misstate existing market conditions, and are overoptimistic in their assessment of likely consumer response. Even under the notice and public comment provision proposed by the NCTA and Mediacom, much of the applicant's assessments and business plan will likely be considered confidential information not shared with incumbents, making it difficult for existing providers to point out all of the inaccuracies. At the same time, there is ample reason — both in this program and in historical comparison to other communications investments — to be skeptical of overbuilding. The 1990s saw large-scale overbuilding of cable and telephone systems. Virtually every one of the cable system overbuilders either failed or wound up in reorganization proceedings under the Bankruptcy Code, with their lenders being forced to accept pennies on the dollar. The same is true of many competitive local exchange carriers (CLECs) formed to compete with incumbent telephone companies, most of whom failed or went through reorganization proceedings when the “telecom bubble” burst about six years ago. The fact that lenders saw most of their loans written off can be traced to business plans that exaggerated market demand, projected ridiculously high “take rates,” and severely underestimated the competitive response of existing providers in the relevant markets. If that was the experience of overbuilders and CLECs allowed to “cherry pick” markets

with optimal demographics, then broadband overbuilders in small, sparsely populated rural markets will likely do even worse.

It is therefore crucial that applications including overbuilds be submitted to independent vetting by experts specially retained by RUS for this purpose. The Agency could use a small amount of its annual appropriation to fund these independent reviews. (Alternatively the Agency could assess the costs of the review on the applicant.) The reviewer would test the reliability of the application's data, the plausibility of its assumptions, and the soundness of its business plan. Such hiring of independent experts to provide objective analysis of applicants for government funding or loans is common elsewhere in the government. There is no reason to settle for anything less here.

**C. If The Goal Of Permitting Community Overbuilds Is To Leverage The Overbuild For Marginal Expansions In Unserved Areas Of The Community, Then The Agency Should Permit Incumbent Providers To Submit Competing Bids**

The NPRM attempts to justify its tolerance for overbuilds on the grounds that “[p]ermitting service in areas with up to three Existing Service Providers addresses the need for applicants to leverage revenues from lower-cost users (typically those in more densely populated areas within a city or town) in order to provide service to rural households in higher cost areas.” NPRM, at 26,749. If leveraging low-cost service as a means of financing high-cost service is point, though, then the Agency should attempt to do so at the lowest cost to taxpayers. Frequently, the party able to provide the most efficient leveraging — with the lowest cost to taxpayers — will be the incumbent provider. Unlike a newcomer, the incumbent provider has no need to spend money duplicating existing infrastructure in already-served areas. The incumbent provider is fully able to spend *all* of the loan money on extending service to new users. To avail

itself of this highly efficient possibility, once an application with overbuild components is received, RUS should permit the incumbent providers in that community to submit alternative applications. RUS should then choose among all the submitted applications on the basis of cost, quality, and overall commitment to expanding service.

### **III. GENERAL COMMENT: In Designing Rules And Procedures For Broadband Loans, RUS Must Consider The Effect Of Its Actions On Private Investment Incentives**

In order to be effective at bringing broadband to rural America, RUS' policies on subsidized government loans cannot be developed in a vacuum. Rather, RUS must be closely attuned to the effects that its policies will have on incentives for private sector investment.

Companies like Mediacom have not abandoned rural communities. To the contrary, private investment is the *primary* engine driving broadband deployment in rural America. Mediacom's systems in Iowa, for instance, pass about 900,000 homes in over 300 communities, including numerous small towns and rural areas such as Pocahontas, Fairbank and Manly. Over 90% of the communities Mediacom serves in Iowa have fewer than 20,000 residents, and about 50% contain fewer than 2,000 residents. Since 1999, Mediacom has invested over \$250 million in the state of Iowa to transform older cable distribution plants into a state-of-the-art broadband network capable of providing advanced products and services to virtually the entire state. In the process, Mediacom has helped to transform Iowa into one of the most "wired" states in the union. Indeed, digital cable service and high-speed Internet access are now available to 100% of the homes Mediacom's systems pass in Iowa, and VOD and HDTV services are available to approximately 98% and 99%, respectively, of homes passed by Mediacom in Iowa. Mediacom launched its VoIP telephone service in 2005, and it is now available to over 859,000 Iowa households, offering real competition to the incumbent telephone companies and giving Iowans



the prospect of significant savings over their existing telephone services. Mediacom expects to continue to roll out VOD, HDTV and telephony services, and its capital expenditures have created the infrastructure needed to provide other interactive services in the future. Mediacom has made advanced broadband services available not only in Iowa's cities, but also in small towns like Red Oak, Eagle Grove and Eddyville. Mediacom is the reason why residents of Fredonia — a town of 251 citizens — not only get exactly the same advanced video and Internet access services as residents of Des Moines, but get it *at the same price*.

Mediacom and companies like it, which use private capital to build and upgrade rural systems, are therefore part of the *solution* to the digital divide. In reforming the Broadband Program Rules and reviewing loan applications, therefore, RUS must be acutely attuned to the effect that its actions will have on these private sector actors. If RUS continues to concentrate its resources on subsidizing duplicative systems in areas where private sector participants have already made state-of-the-art investments, then companies like Mediacom will read the writing on the wall: They (and their backers and financiers) will be unwilling to make future investments in such markets. Mediacom and similar companies do not think the federal government should reward them for making the investments and taking the risks described above. But neither will they wish to throw money away on investments that will become instantly devalued due to unsustainable “bubble” overbuilding. To fully maximize rural connectivity, therefore, RUS cannot continue to turn a blind eye to the health of existing providers. RUS rules and procedures must be altered to ensure that Government money does not

simply create unsustainable bubbles. RUS should fully leverage all sources of public and private funds by directing Program money to communities that need it, and not to those that do not.<sup>18</sup>

## CONCLUSION

Numerous sources, from the IG Report, to congressional hearings, to the *ICTA* lawsuit, to press coverage, have pointed out substantial problems in RUS program administration. Mediacom is grateful that the Agency recognizes the need for reform, and is grateful for the opportunity to comment. As explained above and in the NCTA Comments, many of the Agency's proposed reforms are necessary first steps towards fixing the problems. But further reforms are needed. Mediacom submits these comments in the hope that the reforms suggested will further aid the Agency in fulfilling the Broadband Loan Program's statutory goals, in administering the program in a rational manner, and in serving the purposes of rural communities and taxpayers alike.

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<sup>18</sup> Mediacom believes that its experience and views are shared by many other cable operators that serve rural and small markets. The average American Cable Association member company serves 8,000 subscribers, and about half of ACA's members serve fewer than 1,000 subscribers. Many of these small cable companies face the threat of overbuilding. The same is true for small telephone companies that provide DSL service. Indeed, lacking the financial resources of Mediacom, such companies are probably less able to bear the financial consequences of government-subsidized competition in markets that are too small to support more than one or two providers. If overbuilding continues to be the focus of the Broadband Loan Program, then rural communities will lose the productive force and investment that these small providers bring.

Respectfully submitted,

MEDIACOM COMMUNICATIONS CORPORATION

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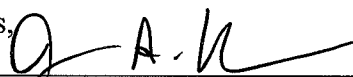
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Dated: July 10, 2007

**EXHIBIT A**

# **SPECIAL REPORT**

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## **ANALYSIS OF ECONOMICS OF HIGH SPEED INTERNET ACCESS IN RURAL AREAS**

**PREPARED BY:**

**John Mansell Associates, Inc.  
1093 Loran Court  
Great Falls, VA 22066  
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**July 5, 2007**

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## QUALIFICATIONS OF THE ANALYST

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**John Mansell, Jr.** is President of John Mansell Associates, Inc. He was previously with Kagan Research, LLC nearly from its inception over 35 years ago. He began his career as a newsletter editor in 1975 and was promoted to senior analyst in 1986. Mr. Mansell was Kagan's lead analyst for cable TV overbuilds and competition, sports media rights and franchise valuations, communications law, and a seasoned appraiser of sports business, digital media, wireless, DBS and communications properties. He was responsible for writing, editing and contributing to several Kagan books, special reports and newsletters, including Kagan's *Wireless Broadband*, *Cable TV Law Reporter* and *Media Sports Business*. Mr. Mansell served as moderator at Kagan events such as the Kagan Digital Media Summit and has been invited to speak at industry association conferences, including the Wireless Communications Assn., National Cable TV & Telecom Assn. and the Western Cable Show.

Mr. Mansell has a B.A. in economics from the University of Michigan, 1974, received his J.D. degree in 1978 from Thomas M. Cooley Law School and is a member of the Michigan Bar, District of Columbia Bar and Federal Communications Bar Association.

# **EXECUTIVE SUMMARY AND CONCLUSION**

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## **ANALYSIS OF ECONOMICS OF HIGH SPEED INTERNET ACCESS IN RURAL AREAS**

We have been asked to analyze the economic feasibility of constructing wireline broadband networks in rural areas of 5,000, 10,000 and 15,000 homes where two or more incumbent wireline providers already provide service. Our report contains a number of discounted cash flow models with varying assumptions to ascertain whether the building of an additional wireline broadband network is sustainable in rural communities.

Washington policymakers have set a goal of bringing broadband to all Americans. To achieve this goal, the U.S. Department of Agriculture's Rural Development Broadband Access and Telecommunications Program grants loans to companies that seek to offer broadband to unserved and underserved communities. John Mansell Associates (JMA) has been asked to assess the government loan repayment by wireline broadband providers in communities where two or more companies already provide service. JMA tested a series of models under varying assumptions to ascertain whether the new entrant would be able to repay its government loan.

The construction and ongoing operation of a broadband network is a very expensive undertaking. The associated costs tend to be even greater in rural communities because of lower population density, remoteness, and rugged terrain. High upfront construction and operating costs, plus existing and future competition, make it highly unlikely that a wireline broadband provider that enters a market where there are two or more incumbent providers will be able to survive for more than a few years.

In order to determine the feasibility of a broadband network, JMA uses the industry standard of discounted cash flow models. Our discounted cash flow models made a range of assumptions concerning the take rates for service, from very conservative to overly optimistic. We analyzed both fiber-to-the-home (FTTH) and hybrid fiber coax (HFC) construction. In some



## EXECUTIVE SUMMARY AND CONCLUSION (Continued)

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of our models, we assumed that the triple play of video, high-speed data and voice services would be provided. In others, we assumed that data/voice or only high-speed data would be offered.

In each of the scenarios we evaluated, in which a third wireline broadband provider enters a rural market, the USDA loans will not be paid back. In the case of a new entrant to a market planning to offer voice, data and video via either a hybrid fiber coax network or a fiber-to-the-home architecture, debt repayment is impossible because of high upfront capital expenditures and a lack of free cash flow. When the new entrant offers only voice and data services, losses declined 3-6% for the 5,000-home systems, but increased for the 10,000 and 15,000-home systems due mainly to higher upfront capital costs. When only data was offered, cash flow losses increased by 2% to 75% across the board.

In our "Triple Play" model (multichannel video + high-speed data + VoIP), we assumed 30% of a new entrant's homes would subscribe to video and high-speed data and 25% would take voice service. Although average revenue per unit (ARPU) climbed from \$105 in Year 1 to \$145 in Year 10, cumulative discounted cash flow was negative for both HFC and FTTH systems using both a 10% and 16% discount rate. Losses were higher when only data and voice service were offered and higher still when only high-speed data was available.

In two other sets of models, we also analyzed the economic feasibility of constructing wireline broadband networks in rural areas of 5,000 homes where there is *no other wireline provider of high-speed Internet access*.

In one of those sets of models, we assumed that the incumbent local exchange carrier would be the provider and would initiate high-speed access and multichannel video while retaining legacy phone service, or would simply offer high-speed access without offering video service. As in earlier models, we analyzed both HFC and FTTH construction. In each scenario,

## **EXECUTIVE SUMMARY AND CONCLUSION** (Continued)

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the positive net present value of the discounted cash flow indicated that a USDA loan *could be* repaid.

In the other set of models - where there is no other wireline broadband provider -- we assumed a new entrant to the market would provide either the "Triple Play" or only VoIP + high-speed data. Under this scenario, in most cases, the new entrant had positive cash flow over 10 years, indicating that a USDA loan would be repayable. Cumulative discounted cash flow was negative, however, when multichannel video service was not offered. As a result, a USDA loan would likely not be paid back by a new entrant providing only high-speed data and VoIP service, but not multichannel video.

## INTRODUCTION (Continued)

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The USDA Rural Development Broadband Access Loan and Loan Guarantee Program is intended to provide loans for the cost of construction, improvement, and acquisition of facilities and equipment for broadband services in eligible rural communities. According to a May 2007 report by the agency, *USDA Rural Development: Bringing Broadband to Rural America* (See <http://www.rurdev.usda.gov/rd/pubs/RDBroadbandRpt.pdf>), since its inception, 70 loans totaling over \$1.22 billion have been approved for 1,263 communities with a total of 582,000 household subscribers. Approximately 40% of those communities were unserved at the time of the loan approval and 15% had only one provider. According to the report, as of April 2007, the USDA said it had received and reviewed nearly 200 applications. The approved applications were for a range of technologies--37% fiber-to-the-home, 22% DSL, 22% unlicensed wireless, 17% hybrid fiber coax, 23% fixed wireless and 1% broadband over power line. In 2006, there were 33 loan applications and the average loan was \$44 million. Pending funding requests total \$981 million.

Any incorporated or unincorporated area in the U.S., its territories, and insular possessions that has no more than 20,000 inhabitants, based on the most recent U.S. Census statistics, is eligible. The broadband service to be made available must enable a subscriber to transmit and receive at a rate of no less than 200 Kbps. Data transmission service must be provided and voice, graphics and video may be provided. Monies may be used for four different purposes:

- New construction and improvements;
- Broadband facilities under a capital lease (limited to 5 years and option of ownership);
- Asset acquisitions (less than 50% of requested loan amount); and
- Refinancing existing Telecom Program debt (up to 40% of requested loan amount).

## **INTRODUCTION (Continued)**

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The program includes several types of loans, including direct cost-of-money, direct 4% loans, and private lender guarantees. Under the loan guarantee program, the interest rate is set by the private lender. It must be fixed and the same for the guaranteed and un-guaranteed portion of the loan. Guarantees are made for no more than 80% of the amount of the principal.

Loans are made for a term equal to the expected useful life of the facilities financed, interest is payable monthly and principal payments are deferred for one year. There is no maximum loan amount except for direct 4% loans (\$7.5 million). Minimum coverage, known as Times Interest Earned Ratio (TIER), is 1.25 at the end of the fifth year of the feasibility study. TIER is the ratio of an applicant's after tax net income plus interest expense, all divided by interest expense.

In order to be eligible, an entity must have 20% of the requested loan amount and cash for one full year of operating expense. For telecom companies with positive cash flow for the previous two years, this requirement can be waived. The 20% requirement may be satisfied by cash, net plant less any outstanding liens, licenses (purchase price less amortization or outstanding liens) or irrevocable letter of credit (LOC). In the case of a LOC, it must be in effect for the shorter of five years or until the borrower achieves an equity level of 20%.

## SECTION 1: HIGH SPEED INTERNET ACCESS IN RURAL AMERICA (Continued)

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### HIGH SPEED INTERNET ACCESS IN RURAL AMERICA

High-speed Internet is being widely deployed in rural areas by a number of different technologies. As of June 30, 2006, the FCC has found that 99% of Americans live in the 99% of zip codes that have at least one broadband provider reporting to be serving at least one subscriber. There were high-speed broadband subscribers in 89% of the lowest populated density zip codes (those with under six persons per square mile) in 2006, up from 84% one year earlier, noted the FCC. (See, *High Speed Services for Internet Access: Status as of June 30, 2006*, Industry Analysis and Technology Division, Wireline Competition Bureau, January 2007, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-270128A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270128A1.pdf)). While the FCC “zip code” data is often maligned, it is a good indicator as to the trend of continued deployment.

The technologies providing broadband service in rural America include:

1) Cable modem service. Cable TV operators first began providing cable modem service in the late 1990s over hybrid-fiber coaxial networks. Cable modem service is now available to approximately 93% of households in America (See Table 14 at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-270128A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270128A1.pdf)). Cable companies like Mediacom, Bresnan, Buford Media and Midcontinent provide residential broadband service in thousands of rural communities all across America.

2) DSL Service. Spurred by cable modem competition, local telephone companies soon followed with digital subscriber line (DSL) service. While most residential customers receive asymmetric DSL service with download speeds of 1.5 Mbps to 3 Mbps, xDSL technology can achieve speeds of up to 8 Mbps over short distances and newer DSL technologies can support higher speeds. DSL is now available to 79% of homes in the United States where incumbent

## **SECTION 1: HIGH SPEED INTERNET ACCESS IN RURAL AMERICA**

**(Continued)**

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local exchange carriers provide local phone service, according to FCC estimates. (See, *High Speed Services for Internet Access: Status as of June 30, 2006*, Industry Analysis and Technology Division, Wireline Competition Bureau, January 2007, [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-270128A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-270128A1.pdf)).

3) Satellite Broadband. This service is mainly targeted at rural customers with no cable or DSL alternatives. HughesNet offers separate monthly service charges for three levels of service, depending upon whether equipment is purchased. After nearly a decade, the service has about 500,000 residential and business customers. WildBlue, a joint venture of the National Rural Telecommunications Cooperative, Intelsat, and Liberty Media launched in June 2005, and offers three service packages. As of June 2007, WildBlue had 200,000 customers (nearly all residential), up from 120,000 at the end of 2006. The FCC's *High Speed Internet* report shows that the number of residential satellite broadband customers receiving at least 200Kbps service in one direction totaled 382,047 as of June 30, 2006, up 44.2% from a year earlier.

In June 2006, DirecTV and EchoStar announced marketing alliances with WildBlue. The deal with WildBlue allows DirecTV and EchoStar to purchase satellite broadband wholesale and resell it to customers at a price set by each company.

In addition to the WildBlue deal, the major telephone companies have DSL marketing alliances with DirecTV and EchoStar. DirecTV has relationships with BellSouth, Verizon, and Qwest. It also has a deal with ISP Earthlink. EchoStar has deals with AT&T, ALLTEL and Frontier Communications. Under EchoStar's partnership with AT&T, in areas where AT&T is not immediately deploying its terrestrial Project Lightspeed network, an integrated satellite/DSL set top is available via a single receiver manufactured by 2Wire.

## SECTION 1: HIGH SPEED INTERNET ACCESS IN RURAL AMERICA

(Continued)

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### TELCO/DBS VIDEO SUBS

	<u>Q1 2007</u>
BellSouth/DirecTV	977,000
Verizon/DirecTV	618,000
Qwest/DirecTV	506,000
AT&T/EchoStar	707,000
Total	2,808,000

Source: DirecTV and AT&T ©  
John Mansell Associates, 2007

As of Q1 2006, Verizon had 618,000 customers for Verizon/DirecTV, up 48.9% from the end of 2006, BellSouth signed up 349,000 new customers for a total of 977,000, and AT&T added 216,000 in its deal with EchoStar. DirecTV reported that Qwest had 506,000 satellite video customers.

4) DBS Terrestrial High Speed Data Services. In mid-2005, DirecTV and EchoStar established a joint venture to develop a high speed access data strategy to counter the quadruple-play (voice/data/video/wireless) strategy of cable operators and phone companies. In June 2005, the venture issued a Request for Information on both the "L" band and the 2.5 GHz band (BRS/EBS). The DirecTV-EchoStar plan is to develop a network that would be partially mobile through 2009 and fully mobile after that, even at 75 miles/hour. On June 14, 2007, DirecTV and EchoStar announced that they will both resell Clearwire's (2.5 GHz) fixed wireless broadband service, and Clearwire will market DBS service.

Other entities, such as Mobile Satellite Ventures, are also developing two-way terrestrial/satellite data networks. MSV plans to launch one satellite in 2009 and another in 2010. Both are being built by Boeing.

5) Broadband Over Power Line. Broadband Over Power Line (BPL) has the potential to bring broadband Internet services to communities that do not have broadband service available today from telephone or cable companies and can provide a third broadband pipe to customers, thereby increasing competition and consumer choice.

Current Communications, operator of the largest commercial BPL network in Cincinnati,

## **SECTION 1: HIGH SPEED INTERNET ACCESS IN RURAL AMERICA**

**(Continued)**

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has deployments covering 50,000 homes and is building a network to reach two million TXU customers near Dallas. Current investors include Duke Energy, EarthLink, EnerTech Capital, General Electric, Google, Goldman Sachs & Co., The Hearst Corp., and TXU Corp. The company has ongoing trials with Southern California Edison, Los Angeles Department of Water and Power, Potomac Electric Power Company and Hawaiian Electric Company.

In addition, BPL is getting much needed support from regulators in an effort to broaden the consumer choices for high-speed data. While the FCC has agreed to conduct an interference study on the technology, states are encouraging trials as an option for rural broadband.

In rural communities, these various broadband providers are either incumbent (established) or potential competitors to any company granted a USDA loan. Historically, new competitive wireline entrants, or overbuilders, often underestimate the extent to which the markets they choose are already fiercely competitive and erroneously assume they can easily and profitably capture customers from incumbent providers with lower prices. Lower promotional prices charged by new entrants are insufficient to cover costs and investment risk and are not sustainable beyond an introductory period. The four largest overbuilders--RCN, Wide Open West, Knology and Grande Communications--have all been in existence for five years or longer. Yet, their average high-speed data penetration is under 25% of homes passed and their video penetration is under 30%. It should also be noted that RCN and Knology both emerged from bankruptcy in late 2004.



## SECTION 2: DISCOUNTED CASH FLOW MODELS

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### DISCOUNTED CASH FLOW MODEL--TWO OR MORE INCUMBENT WIRELINE PROVIDERS

Using a set of reasonable assumptions about market demand, typical construction costs, installation expense, the price of service, subscribership, and customer churn, we created a series of 10-year discounted cash flow business models. In every case, the discounted cash

flow was negative. Our models covered communities of 5,000, 10,000 and 15,000 households based on both fiber-to-the-home and hybrid fiber coax buildouts.

#### HEADEND FIXED COSTS

	-----Homes Passed-----		
	5,000	10,000	15,000
Video	450,000	495,000	544,500
Data	200,000	220,000	242,000
Voice	156,250	171,875	189,063
Total	806,250	886,875	975,563

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We assumed 81 homes per mile and 79% aerial construction. In the Fiber-to-the-Home (FTTH) model, the cost of construction was \$72,900/mile

and in the hybrid fiber coax model, the cost of construction was \$37,584/mile. Headend costs were identical for FTTH and HFC installations, but varied based on homes passed. Total headend costs ranged from \$806,250 (5,000 homes) to \$975,563 (15,000 homes). In the models where video and/or voice were not provided, headend costs were reduced while construction (labor) and outside plant materials costs were not adjusted.

At the customer premises, drop costs were assumed to initially be \$70-\$76. In HFC installations, there were assumed to be 1.6 set-tops/home at a cost of \$276/set-top and in FTTH homes, there were assumed to be the equivalent of two set-tops at a cost of \$268/set top. Cable modems and CMTS capacity was assumed to cost \$30 and \$35 respectively in HFC plant with EMTA and battery backup for voice service costing \$57 and \$60 respectively. In FTTH plant, the Optical Network Terminal (ONT) used for voice and data was estimated to cost \$500 in 2007, though the current cost is about \$650 or more. We did not model IPTV, headend-in-the-sky or wireless options.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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Our discounted cash flow models made a range of assumptions. In some of our models, we assumed that video, data and voice services would be provided. In others, it was assumed that data/voice or only high speed data would be offered.

When video was offered, for the sake of argument, we assumed penetration of the new entrant would rise from 10% to 30% of homes passed over time. That is an optimistic scenario. Historically, a second wireline provider seldom achieves more than 20-25% video penetration. Current overbuilders--Grande Communications, Knology and RCN--which report publicly to the SEC, all have less than 30% penetration of "marketable" homes passed after five or more years of operations. High-speed data subscribership was projected to rise from 58% of basic subscribership in Year 1 to 98% in Year 3, which is far more optimistic than current market penetration. Likewise, voice service penetration was projected to rise from 50% of basic cable subs to 85% by Year 4. This, too, is far more optimistic than current penetration levels of overbuilders.

Using a 16% discount rate, in each case, discounted free cash flow was negative after 10 years. This is so, because of the high cost of construction, headend fixed costs, and customer premises equipment/installation costs. Depending upon the type of construction and services provided, the net present value of losses ranged from \$520,000 to \$11.2 million over 10 years (See Table on Page 15).

Even when we reduced the discount rate to 10%, net present value was only marginally positive for the 10,000 and 15,000-home communities when data and phone service were offered. It was assumed that both services were purchased by all of a community's homes, churn was only 1.5%/mo., and the Optical Network Terminal cost a mere \$50, instead of \$500.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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In some of our models, we assumed that video, data and voice services would be provided. In others, it was assumed that data/voice or only high speed data would be offered. When video was offered, we assumed penetration would rise from 10% to 30% over time. That is in line with the experience of wireline video competitors, both currently and historically. High-speed data subscribership was projected to rise from 58% of basic subs in Year 1 to 98% in Year 3, which is more optimistic than current market penetration. Likewise voice service penetration was expected to rise from 50% of basic cable subs to 85% by Year 4.

Our "Triple Play" model, in which video, high-speed data, and voice service was available resulted in average revenue per unit rising from \$105 in Year 1 to \$145 in Year 10. The cash flow margin, rising from 14% to 30% over 10 years, is consistent with past experience. Although free cash flow generally turned positive within four years, cumulative discounted free cash flow remained negative because of high up-front capital expenditures.

When only data and voice service were offered, losses declined 3-6% for the 5,000-home systems, but increased for the 10,000 and 15,000-home systems. When only data was offered, cash flow losses, increased an additional 9%-47% across the board.

### **DISCOUNTED CASH FLOW MODEL – NO INCUMBENT WIRELINE PROVIDERS**

We also analyzed the economic feasibility of constructing wireline broadband networks in rural areas of 5,000 homes where there is no other provider of broadband data.

In one subset of models, we assumed that the incumbent local exchange carrier (ILEC) would launch broadband and multichannel video while retaining legacy phone service. Alternatively, we assumed the ILEC would offer offer only DSL broadband without offering video.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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In a second subset, we assumed a new entrant to the market would provide multichannel video, VoIP and high-speed data services or only VoIP and data. Our construction cost assumptions for HFC and FTTH models were modified for headend costs depending upon whether VoIP or legacy phone service was provided.

In the absence of competition, we assumed high-speed data subscribership would rise from 53% of homes passed to 62.4% over 10 years. Where legacy voice service was retained, we assumed 90% penetration. Video penetration was projected to rise from 30% to 55% due to bundling. When VoIP was offered by an independent new entrant, we assumed penetration would rise over time from 50% of video subscribers to 85%.

In each scenario in which the incumbent telephone company was the sole wireline provider of broadband and legacy voice service, with or without multichannel video, the net present value of the discounted cash flow indicated that a USDA loan would be repaid. This was so regardless of whether the network was HFC or FTTH architecture and regardless of whether the discount rate was 10% or 16%.

When a new entrant was the sole provider of high-speed Internet access, and also provided VoIP and multichannel video, in most cases the net present value of discounted cash flow was positive, ranging from \$750,000 for FTTH at a 10% discount rate to \$3.36 million for HFC plant and a 10% discount rate. Such a network would be economically viable. When broadband and VoIP service were offered, but not video, however, in most cases a RUS loan would not be repaid. When broadband and voice services are offered, but not video, a rural broadband loan is less likely to be repaid.

## SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)

### DISCOUNTED CASH FLOW MODELS--TWO OR MORE SERVICE PROVIDERS (\$mil.)

	16% Discount Rate			10% Discount Rate		
	5,000	10,000	15,000	5,000	10,000	15,000
Homes Passed	5,000	10,000	15,000	5,000	10,000	15,000
Video/Data/Voice						
HFC	(\$1.87)	(\$2.98)	(\$4.17)	(\$1.50)	(\$2.22)	(\$3.03)
FTTH	(\$4.13)	(\$6.82)	(\$9.27)	(\$3.92)	(\$6.24)	(\$8.29)
Data/Voice						
HFC	(\$1.75)	(\$3.22)	(\$4.68)	(\$1.61)	(\$2.92)	(\$4.24)
FTTH	(\$4.02)	(\$7.74)	(\$11.20)	(\$4.10)	(\$7.82)	(\$11.30)
Data only*						
HFC	(\$1.90)	(\$3.63)	(\$5.35)	(\$1.89)	(\$3.60)	(\$5.30)
FTTH	(\$4.56)	(\$8.94)	(\$12.85)	(\$4.86)	(\$9.51)	(\$13.64)
High Penet. Data						
HFC	(\$0.80)	(\$1.45)	(\$2.10)	(\$0.38)	(\$0.63)	(\$0.87)
FTTH	(\$5.20)	(\$9.46)	(\$13.64)	(\$5.58)	(\$10.12)	(\$14.55)
High Penet. Data with 18%/yr Churn						
HFC	(\$0.52)	(\$0.93)	(\$1.29)	(\$0.02)	\$0.42	\$0.20
FTTH	(\$4.04)	(\$7.19)	(\$10.67)	(\$4.06)	(\$7.12)	(\$10.52)
High Penet. Data with 18%/yr Churn and ONT \$50 Yr. 3						
HFC	(\$0.52)	(\$0.93)	(\$1.29)	(\$0.02)	\$0.04	\$0.20
FTTH	(\$2.68)	(\$4.83)	(\$6.88)	(\$2.25)	(\$3.95)	(\$5.55)

\* Data rises from 58% to 98% penetration of basic subscribers within three years.

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## SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)

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### DISCOUNTED CASH FLOW MODEL INCUMBENT LEC UNSERVED 5,000 HOME MARKET

#### VOICE, DATA, VIDEO

-----NPV (\$mil.)-----

Discount rate	16%	10%
HFC	\$ 5.07	\$ 7.37
FTTH	\$ 2.22	\$ 4.22

#### VOICE & DATA

-----NPV (\$mil.)-----

Discount rate	16%	10%
HFC	\$ 3.06	\$ 4.41
FTTH	\$ 0.67	\$ 1.78

### DISCOUNTED CASH FLOW MODEL NEW ENTRANT TO UNSERVED 5,000 HOME MARKET

#### VOICE, DATA, VIDEO

-----NPV (\$mil.)-----

Discount rate	16%	10%
HFC	\$ 1.85	\$ 3.36
FTTH	\$ (0.66)	\$ 0.75

#### VOICE & DATA

-----NPV (\$mil.)-----

Discount rate	16%	10%
HFC	\$ (0.12)	\$ 0.45
FTTH	\$ (2.21)	\$ (1.68)

### DISCOUNTED CASH FLOW MODEL ASSUMPTIONS (Two or more service providers)

#### Fiber-to-the-Home Model

1. Homes passed—5,000, 10,000 and 15,000. In each case minimal growth of only 50 homes/year was estimated.
2. Video subscribership projected to increase from 10% to 30% over 10 years.
3. Basic cable rate of \$41.18 projected to increase 3.9%/yr.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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4. Pay-to-basic subscribership estimated at 60%
5. Average premium service price \$10.10.
6. 100% digital cable subscribership.
7. Digital cable costs an incremental \$14.37 with 2% annual price increase.
8. Other subscription revenue of \$2.36 includes, converters, FCC charges, right-of-way and maintenance fees.
9. One time charges/Misc. includes late fees, PPV, returned-check fees and reconnect charges.
10. High-speed data subscribership rises from 58% of basic subscribers to 98% of basic subscribers by year three.
11. VoIP telephone subscribership rises from 50% of basic cable subs in Year one to 85% by Year 4.
12. Misc. revenue includes advertising and home shopping commissions.
13. ARPU (average revenue per unit) rises from about \$105 in Year 1 to \$145 in Year 10.
14. Cash flow margin is projected to grow from 14% in Year 1 to 30% by Year 5 where it remains level
15. Discount rate is 16% reflecting risk and debt/equity mix based upon Knology, RCN and two publicly traded SMATV overbuilders.
16. Maintenance capital expenditure is \$25/sub.
17. Digital subscriber churn rate is based on churn rates of overbuilders.
18. 2.0 set-tops/home
19. Digital set-top assumed to cost \$268 with 10%/yr. price decline
20. Video headend is \$450,000, \$495,000 and \$544,500 for 5,000, 10,000 and 15,000 home systems respectively.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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21. High Speed data churn declines from 36%/yr. to 32% over 10 years
22. Optical Network terminals cost \$500/subscriber for HSD/VoIP
23. HSD headend costs \$200,000, \$220,000 and \$242,000 for 5,000, 10,000 and 15,000 home systems respectively.
24. Telephony headend equipment is \$156,250, \$171,875 and \$189,063 for 5,000, 10,000 and 15,000 home systems respectively.
25. The 5,000, 10,000, and 15,000 home models are based upon 61.7, 123.5 and 185.2 miles of construction, of which 79% is aerial plant and 21% underground.
26. Construction costs (labor) for aerial plant is \$41,415/mile and for underground it is \$56,862/mile for an average of \$44,659.
27. Construction materials cost is \$27,610/mile for aerial and \$30,618 for underground plant for an average of \$28,241. Total cost/mile averages \$72,900.

### **Hybrid Fiber-Coax Model**

1. Homes passed—5,000, 10,000 and 15,000. In each case minimal growth of only 50 homes/year was estimated.
2. Video subscribership projected to increase from 10% to 30%.
3. Basic cable rate of \$41.18 projected to increase 3.9%/yr.
4. Pay-to-basic subscribership estimated at 60%
5. Average premium service price \$10.10.
6. 100% digital cable subscribership.
7. Digital cable costs an incremental \$14.37 with 2% annual price increase.
8. Other subscription revenue of \$2.36 includes, converters, FCC charges, right-of-way and maintenance fees.



## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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9. One time charges/Misc. includes late fees, PPV, returned-check fees and reconnect charges.
10. High-speed data subscribership rises from 58% of basic subscribers to 98% of basic subscribers by year three.
11. VoIP telephone subscribership rises from 50% of basic cable subs in Year one to 85% by Year 4.
12. Misc. revenue includes advertising and home shopping commissions.
13. ARPU (average revenue per unit) rises from about \$105 in Year 1 to \$145 in Year 10.
14. Cash flow margin is projected to grow from 14% in Year 1 to 30% by Year 5 where it remains level
15. Discount rate is 16% reflecting risk and debt/equity mix based upon Knology, RCN and two publicly traded SMATV overbuilders.
16. Maintenance capital expenditure is \$50/sub.
17. Digital subscriber churn rate is based on churn rate of overbuilders.
18. 1.6 set-tops/home
19. Digital set-top assumed to cost \$276 with 10%/yr. price decline
20. Headend costs for video, high-speed data and telephony are identical to those for a FTTH network
21. High Speed data churn declines from 36%/yr. to 32% over 10 years
22. Optical Network terminals cost \$500/subscriber for HSD/VoIP
23. The 5,000, 10,000, and 15,000 home models are based upon 61.7, 123.5 and 185.2 miles of construction, of which 79% is aerial plant and 21% underground.
28. Construction costs (labor) for aerial plant is \$20,584/mile and for underground it is \$23,942/mile plus \$2,414/mile for splicing for a total of \$23,702/mile.

## **SECTION 2: DISCOUNTED CASH FLOW MODELS (Continued)**

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29. Construction materials cost is \$11,146/mile for common materials, \$1,528/mile for aerial and \$1,207 for underground plant. Total materials cost is \$13,882/ mile. Total cost averages \$37,584/mile.
30. Capitalized installation cost/gross ad is \$70.
31. High-speed data installation is \$75.
32. Cable modem costs \$30 and declines in price by 4%/yr.
33. CMTS per net new subscriber is \$35 and declines by 3%/yr.
34. Telephone EMTA/subscriber is \$57 and battery backup is \$60 with cost declining 3.5%/yr.

# APPENDIX 1: SAMPLE DISCOUNTED CASH FLOW MODEL

## TRIPLE PLAY 5000 HOME HFC MODEL

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Homes Passed	5,000	5,050	5,100	5,150	5,200	5,250	5,300	5,350	5,400	5,450
Total Basic Cable Subscribers	500	1,010	1,275	1,339	1,352	1,418	1,431	1,498	1,566	1,635
% Penetration	10%	20%	25%	26%	26%	27%	27%	28%	29%	30%
Average basic subscribers	250	755	1,143	1,307	1,346	1,385	1,424	1,465	1,532	1,601
Basic rate	41.18	42.82	44.54	46.32	48.17	50.10	52.10	54.18	56.35	58.61
% Change	3.9%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Basic cable revenue</b>	123,527	387,973	610,582	726,435	777,746	832,451	890,445	952,234	1,035,968	1,125,581
Pay-to-basic ratio	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Avg. Premium Units	150	453	686	784	807	831	855	879	919	960
Avg. monthly rev/sub/mo.	10.10	10.15	10.20	10.25	10.30	10.36	10.41	10.46	10.51	10.56
<b>Premium (pay) revenue</b>	18,180	55,179	83,918	96,480	99,819	103,244	106,720	110,285	115,945	121,735
<b>Premium revenue per basic</b>	6.06	6.09	6.12	6.15	6.18	6.21	6.24	6.28	6.31	6.34
<b>Digital cable households</b>	500	1,010	1,275	1,339	1,352	1,418	1,431	1,498	1,566	1,635
Net new digital cable households	500	510	265	64	13	66	14	67	68	69
Pen. of basic subs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Avg. Digital Set-Top Box Households	250	755	1,143	1,307	1,346	1,385	1,424	1,465	1,532	1,601
Recurring Rev./Sub/Mo.	\$14.37	\$14.65	\$14.95	\$15.25	\$15.55	\$15.86	\$16.18	\$16.50	\$16.83	\$17.17
<b>Revenue from Digital Video Tier</b>	\$43,102.4	\$132,772.7	\$204,936.0	\$239,132.1	\$251,099.7	\$263,593.1	\$276,534.3	\$290,036.3	\$309,472.4	\$329,776.0
<b>Other subscription revenue</b>	7,088	21,834	33,702	39,325	41,293	43,348	45,476	47,696	50,893	54,232
<b>Other sub rev/basic</b>	2.36	2.41	2.46	2.51	2.56	2.61	2.66	2.71	2.77	2.82
<b>Total subscription revenue</b>	191,898	597,759	933,137	1,101,372	1,169,958	1,242,637	1,319,176	1,400,252	1,512,278	1,631,323
<b>One time charges/misc.</b>	4,228	13,022	20,100	23,454	24,628	25,854	27,123	28,447	30,353	32,345
<b>Misc. rev/sub</b>	1.41	1.44	1.47	1.50	1.53	1.56	1.59	1.62	1.65	1.68

**APPENDIX 1: SAMPLE DISCOUNTED CASH FLOW MODEL (Continued)**

**TRIPLE PLAY 5000 HOME HFC MODEL  
(Continued)**

	2007	2008	2009	2010	2010	2012	2013	2014	2015	2016
HSD capable Homes	5,000	5,050	5,100	5,150	5,200	5,250	5,300	5,350	5,400	5,450
<b>HSD Subscribers</b>	290	788	1,250	1,312	1,325	1,389	1,402	1,468	1,535	1,602
Net Adds	290	498	462	63	13	64	13	66	67	68
Data/Video	58%	78%	98%	98%	98%	98%	98%	98%	98%	98%
Average HSD Subscribers Cable HSD residential revenue/sub/mo.	145	539	1,019	1,281	1,319	1,357	1,396	1,435	1,501	1,568
Residential HSD revenue	39.37	38.66	38.04	37.36	36.56	35.61	34.90	34.55	34.21	33.86
	68,502	249,975	472,512	584,648	591,100	595,419	596,483	601,073	622,490	643,820
VoIP capable Homes	5,000	5,050	5,100	5,150	5,200	5,250	5,300	5,350	5,400	5,450
<b>VoIP Subscribers</b>	250	707	1,020	1,138	1,149	1,205	1,216	1,273	1,331	1,390
Net Adds	250	707	313	118	11	56	11	57	58	59
VoIP/Video	50.0%	70.0%	80.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Average VoIP Subscribers	125.0	353.5	863.5	1,079.1	1,143.7	1,177.0	1,210.6	1,244.8	1,302.2	1,360.4
VoIP residential revenue/sub/mo.	34.63	33.69	32.84	32.23	31.56	30.72	29.97	29.70	29.43	29.16
Residential Phone revenue	51,945.0	142,913.0	340,288.1	417,343.0	433,132.6	433,903.1	435,384.7	443,655.6	459,885.0	476,039.9
<b>Total customer revenue</b>	316,573	1,003,670	1,766,038	2,126,817	2,218,818	2,297,813	2,378,167	2,473,428	2,625,006	2,783,527
<i>Total customer ARPU</i>	105.52	110.78	128.81	135.60	137.42	138.28	139.15	140.74	142.79	144.93
Misc.	1,866	5,747	8,871	10,352	10,870	11,410	11,971	12,555	13,396	14,275
Misc. ARPU	0.62	0.63	0.65	0.66	0.67	0.69	0.70	0.71	0.73	0.74
<b>Total Revenue</b>	<b>318,438</b>	<b>1,009,417</b>	<b>1,774,909</b>	<b>2,137,169</b>	<b>2,229,688</b>	<b>2,309,223</b>	<b>2,390,137</b>	<b>2,485,983</b>	<b>2,638,402</b>	<b>2,797,803</b>
ARPU	106.15	111.41	129.46	136.26	138.10	138.97	139.85	141.46	143.52	145.67
<b>Total Costs</b>	<b>273,857</b>	<b>837,816</b>	<b>1,419,927</b>	<b>1,602,876</b>	<b>1,560,782</b>	<b>1,616,456</b>	<b>1,673,096</b>	<b>1,740,188</b>	<b>1,846,882</b>	<b>1,958,462</b>
<b>Total Capex</b>	3,460,355	453,466	342,172	203,286	173,376	199,888	181,291	201,736	206,043	210,075

# APPENDIX 1: SAMPLE DISCOUNTED CASH FLOW MODEL

## TRIPLE PLAY 5000 HOME HFC MODEL (Continued)

	2007	2008	2009	2010	2010	2012	2013	2014	2015	2016
Cash Flow	44,581	171,601	354,982	534,292	668,906	692,767	717,041	745,795	791,521	839,341
C.F. margin	14%	17%	20%	25%	30%	30%	30%	30%	30%	30%
Total Free Cash Flow	(3,415,774)	(281,865)	12,810	331,006	495,531	492,879	535,750	544,059	585,478	629,266
Discount Rate	16.0%									
Discount Factor	1.16	1.35	1.56	1.81	2.10	2.44	2.83	3.28	3.80	4.41
Discounted Free Cash Flow	0.86	0.74	0.64	0.55	0.48	0.41	0.35	0.31	0.26	0.23
CUME Discounted Free Cash Flow	(2,944,633)	(209,472)	8,207	182,811	235,929	202,298	189,564	165,952	153,953	142,644
NPV of DCF	(2,944,633)	(3,154,105)	(3,145,898)	(2,963,087)	(2,727,158)	(2,524,859)	(2,335,295)	(2,169,343)	(2,015,390)	(1,872,746)

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# APPENDIX 1: SAMPLE DISCOUNTED CASH FLOW MODEL

## CAPITAL EXPENDITURES 5000 HOME HFC MODEL

### Maintenance

Avg. number of basic subscribers	250	755	1,143	1,307	1,346	1,385	1,424	1,465	1,532	1,601
Maintenance capital expenditures/ basic sub	50	50	50	50	50	50	50	50	50	50
<b>Maintenance capital expenditures</b>	<b>\$12,500</b>	<b>\$37,750</b>	<b>\$57,125</b>	<b>\$65,350</b>	<b>\$67,275</b>	<b>\$69,238</b>	<b>\$71,213</b>	<b>\$73,225</b>	<b>\$76,600</b>	<b>\$80,025</b>

### Digital

Digital subs	500	1,010	1,275	1,339	1,352	1,418	1,431	1,498	1,566	1,635
Net adds	500	510	265	64	3	66	14	67	68	69
Annual churn rate	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Digital churn	-	200	404	510	536	541	567	572	599	626
Gross connects/reconnects	500	710	669	574	549	606	581	639	667	695
Avg. # of converters/ HH	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7
Digital boxes required	785	1,123	1,077	945	924	1,026	988	1,093	1,146	1,201
Digital disconnects/downgrades	-	200	404	510	536	541	567	572	599	626
Lost box/obsolescence %	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Boxes recovered	-	285	585	755	812	824	868	881	927	973
Net change in digital boxes	785.3	838	492	189	112	202	119	212	220	227
Standard box cost	\$276	\$248	\$224	\$201	\$181	\$163	\$147	\$132	\$119	\$107
<b>Digital set-top capex</b>	<b>\$216,754</b>	<b>\$208,159</b>	<b>\$109,916</b>	<b>\$38,080</b>	<b>\$20,300</b>	<b>\$32,988</b>	<b>\$17,516</b>	<b>\$28,040</b>	<b>\$6,113</b>	<b>\$24,306</b>

Gross digital connects/reconnects	500	710	669	574	549	606	581	639	667	695
Capitalized installation cost/ gross add	70	70	70	70	70	70	70	70	70	70
<b>Digital Install Cost</b>	<b>\$35,000</b>	<b>\$49,700</b>	<b>\$46,830</b>	<b>\$40,180</b>	<b>\$38,402</b>	<b>\$42,441</b>	<b>\$40,635</b>	<b>\$44,758</b>	<b>\$46,704</b>	<b>\$48,678</b>
Video Headend	<b>\$450,000</b>									

<b>Total digital capital expenditures</b>	<b>\$701,754</b>	<b>\$257,859</b>	<b>\$156,746</b>	<b>\$78,260</b>	<b>\$58,702</b>	<b>\$75,429</b>	<b>\$58,151</b>	<b>\$72,798</b>	<b>\$72,817</b>	<b>\$72,984</b>
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### High-Speed Data

HSD Subs	290	780	1,274	1,299	1,323	1,372	1,421	1,470	1,519	1,568
Net adds	290	490	494	25	25	49	49	49	49	49
Annual churn rate	36%	35%	34%	34%	33%	33%	33%	32%	32%	32%
HSD churn	-	101.5	265.2	433.2	428.5	436.6	452.8	454.7	470.4	481.2

# APPENDIX 1: SAMPLE DISCOUNTED CASH FLOW MODEL

## CAPITAL EXPENDITURES 5000 HOME HFC MODEL (Continued)

Gross connects	290.0	591.5	759.2	457.7	453.0	485.6	501.8	503.7	519.4	530.2
Cost per modem	30.00	28.80	27.65	26.54	25.48	24.46	23.48	22.54	21.64	20.78
Modem Capex	<b>\$8,700</b>	<b>\$17,035</b>	<b>\$20,990</b>	<b>\$12,147</b>	<b>\$11,543</b>	<b>\$11,878</b>	<b>\$11,783</b>	<b>\$11,356</b>	<b>\$11,241</b>	<b>\$11,016</b>
Cost/Install	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00
HSD install capex	<b>\$21,750</b>	<b>\$44,363</b>	<b>\$56,940</b>	<b>\$34,325</b>	<b>\$33,975</b>	<b>\$36,419</b>	<b>\$37,632</b>	<b>\$37,779</b>	<b>\$38,955</b>	<b>\$39,766</b>
CMTS/net add	35.00	33.95	32.93	31.94	30.99	30.06	29.15	28.28	27.43	26.61
CMTS cost	<b>\$10,150</b>	<b>\$16,636</b>	<b>\$16,268</b>	<b>\$783</b>	<b>\$759</b>	<b>\$1,473</b>	<b>\$1,429</b>	<b>\$1,386</b>	<b>\$1,344</b>	<b>\$1,304</b>
HSD Headend Costs	<b>\$200,000</b>									
<b>HSD Capital Expenditures</b>	<b>\$240,600</b>	<b>\$78,033</b>	<b>\$94,199</b>	<b>\$47,254</b>	<b>\$46,277</b>	<b>\$49,770</b>	<b>\$50,843</b>	<b>\$50,520</b>	<b>\$51,540</b>	<b>\$52,086</b>
<b>Telephony Capex</b>										
Telephony Net Adds	250	707	313	118	11	56	11	57	58	59
Total Cost per net add	117	113	109	105	101	98	94	91	88	85
Telephony Headend	<b>156,250</b>									
<b>Telephony Capital Expenditures</b>	<b>185,500</b>	<b>79,824</b>	<b>34,102</b>	<b>12,422</b>	<b>1,121</b>	<b>5,451</b>	<b>1,084</b>	<b>5,192</b>	<b>5,085</b>	<b>4,980</b>
<b>Construction Costs</b>										
<b>Aerial Construction</b>	1,003,765									
Underground Construction	310,359									
Fiber Splicing	<u>148,984</u>									
Total Labor	1,463,108									
<b>Outside Plant Materials Cost</b>										
Common Materials	688,039									
Aerial Materials	94,321									
Underground Materials	<u>74,533</u>									
Total Materials	856,893									
<b>Total Construction Cost</b>	<b><u>2,320,001</u></b>									
<b>Total Capital Expenditures</b>	<b>3,460,355</b>	<b>453,466</b>	<b>342,172</b>	<b>203,286</b>	<b>173,376</b>	<b>199,888</b>	<b>181,291</b>	<b>201,736</b>	<b>206,043</b>	<b>210,075</b>

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