ET VIEWS AND NEWS

ECONOMICS AND TECHNOLOGY, INC.

August 2012

IN THIS ISSUE

Redefining "broadband" and constructing a new market reality

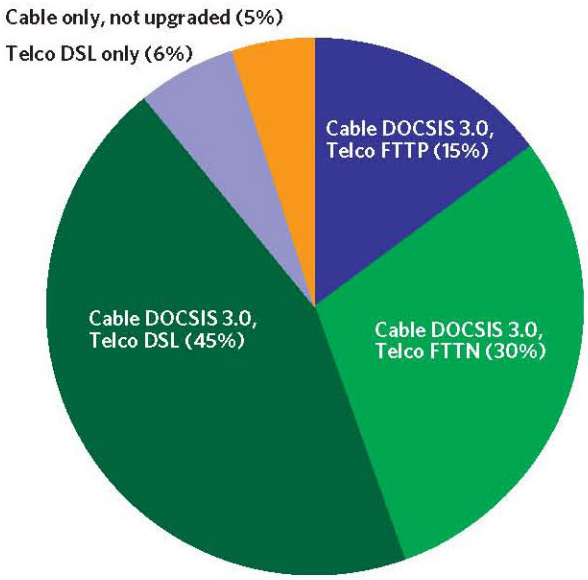
In March 2010, and with considerable fanfare, the FCC released its blueprint for universal broadband – the "National Broadband Plan" ("NBP"). The NBP set out as a national goal to "[e]nsure universal access to broadband network services" by creating "the Connect America Fund (CAF) to support the provision of affordable broadband and voice with at least 4 Mbps actual download speeds and shift up to $15.5 billion over the next decade from the existing Universal Service Fund (USF) program to support broadband." For many years, policymakers had defined "broadband" as a service providing a data rate of at least 200 kpbs in at least one direction. So the notion of a minimum threshold for "broadband" of 4 mpbs was certainly seen as a step in the right direction. But by the standards of 2012 – just two years after the FCC's Plan was published – 4 mbps seems rather pedestrian.

A lot has happened since 2010. Way back then, most video downloads consisted of relatively short low-definition clips from sites such as YouTube; real-time streaming of feature-length high definition movies and other video content was just beginning to emerge. Video chat services were generally confined to low definition, small "webcam" based images such as those provided using Skype and Google chat. Apple had yet to introduce the iPad 2 and iPhone 4, both of which were required for its new FaceTime video chat app.

Fixed – as distinct from mobile – broadband Internet access was being provided mainly by the local cable TV operator and by the incumbent local exchange carrier (ILEC). With the exception of areas falling within Verizon's *FiOS* footprint, cable generally offered higher speed services, but the need for these higher speeds had yet to materialize, so most consumers tended to view the two alternative providers as offering roughly equivalent services. Without defining specifically what constituted "broadband," the FCCs National Broadband Plan reported that "[a]pproximately 4% of housing units are in areas with three wireline providers (either DSL or fiber, the cable incumbent and a cable over-builder), 78% are in areas with two wireline providers, about 13% are in areas with a single wireline provider and 5% have no wireline provider." The FCC's conclusion: For the most part, the US fixed broadband market is *competitive*.

At the same time, the NBP did recognize that over time the need and thus the demand for higher speed broadband access would increase, and that perhaps under those (future) conditions a larger share of the population would be relegated to a single provider. The FCC classified ILEC broadband into three categories – telco DSL,

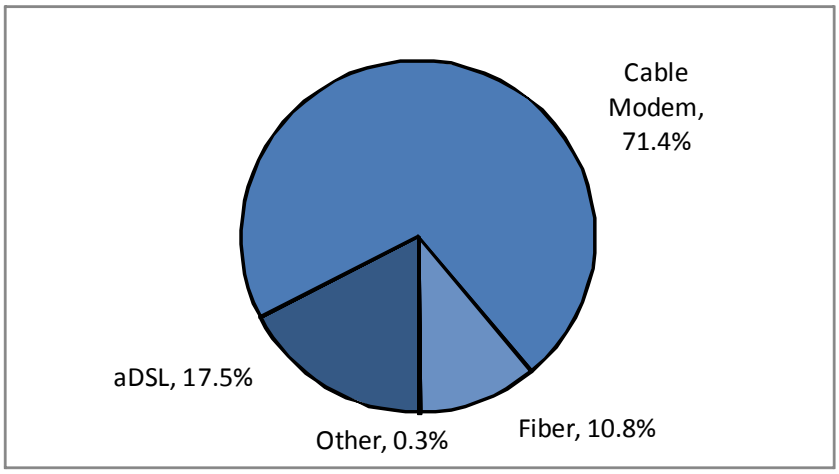
Projected Share of Households with Access to Various Wireline Broadband Technologies in 2012



telco Fiber-to-the-Node (FTTN), and telco Fiber-to-the-Premises (FTTP). DSL technology has been around for nearly twenty years, although it did not become available commercially until the late 1990s. DSL supports download/upload speeds of up to 3 mbps/768 kpbs, but is usually much slower. DSL speeds deteriorate rapidly when the distance between the subscriber and the telco wire center is longer than a mile or so. Telco FTTN is a version of DSL in which the critical length of the copper segment is reduced by extending fiber to "nodes" located in residential neighborhoods. AT&T's *u-Verse* broadband service is based upon an FTTN architecture. Cable broadband also uses an FTTN architecture, but the "last mile" link uses coaxial cable rather than twisted pair copper. Coax is capable of supporting far greater data rates. Verizon's *FiOS* uses an FTTP (sometimes referred to as FTTH – Fiber-to-the-Home) design. Cable broadband using the DOCSIS 3.0 standard is capable of data rates of 25 mbps, 50 mbps or even higher speeds fully comparable to FTTP and leaving FTTN and DSL in the dust. Most of the "competition" that the FCC had identified was between cable and one of the much shower telco "broadband" offerings – DSL or FTTN. As consumer demand for higher-speed services grows, the competitiveness of these slower telco offerings will diminish.

And the winner is ....

Cable has clearly emerged as the winner in the telco/cable broadband competition. Except for the 18-million or so homes passed by *FiOS* infrastructure, telco broadband cannot compete in the speed contest going forward. Verizon discontinued further expansion of its *FiOS* service after 2010 (VIEWS AND NEWS, July 2012) because the investment did not prove successful financially, and in non-*FiOS* areas Verizon's "broadband" service is limited to DSL. AT&T has eschewed FTTP altogether in favor of a far less ambitious investment program in Fiber-to-the-Node, but as a result AT&T cannot offer transmission rates comparable to those available from the cableco.



Market share by technology type – Residential fixed broadband connections of at least 3 mbps, year end 2011.

Data just issued by the FCC shows that cable holds a whopping 71.4% market share of residential fixed broadband connections of at least 3 mbps in the downstream direction, while competition from DSL (which can barely qualify to meet the 3 mbps threshold) holds only 17.5% share. Fiber startups (including Verizon *FiOS*) have only managed to capture 11% of the market. (See figure above.)

Having abandoned its plans for further expansion of *FiOS*, Verizon, so it now seems, has conceded defeat in the contest with cable. In a deal that received Justice Department blessing earlier this month, Verizon will start offering cable-based Internet access wherever it is not providing *FiOS*. As part of a $3.9-billion deal to purchase AWS spectrum from Comcast, Time Warner Cable, Bright House Networks, and Cox, Verizon will market (and presumably rebrand) these companies' broadband Internet access and video services as part of wireline telephone and wireless voice/data bundles. Just as the Betamax/VHS format war ended when Sony threw in the towel and started selling VHS machines, it would seem that the ILECs – and the FCC and the Department of Justice – have now concluded that in the battle for broadband it's time to declare cable the victor. Having acquired the ability to market cable broadband and video, telcos will now have little incentive to invest in their own broadband infrastructure, which means that there will, in the end, be only a single broadband "pipe" into most US homes.

The irony here is that for years the ILECs had argued that requiring them to provide CLECs with access to ILEC network elements would discourage CLEC investment, that the only *real* competition required facilities-based business models. Those arguments prevailed, and led to the DC Circuit Court's 2004 ruling relieving ILECs of the requirement to provide the Unbundled Network Element Platform ("UNE-P") to competing local carriers. It would appear that when it comes to their own strategy for entering new markets, the ILECs seem entirely comfortable with resale. Significantly, several key FCC rulings in the mid-2000s – the *Cable Modem Order* and the *Broadband Wireline Internet Access Order* – relieve both cable MSOs and ILECs of any requirement to offer wholesale broadband access to competing Internet access providers. So while the various cable participants in the Verizon deal will allow Verizon to repackage and resell their services, they are under no obligation to offer similar arrangements to anyone else.

Oh, well ...

What's less clear – and far more disturbing – is that the policymakers still seem to believe that the broadband market is competitive and that it can continue to be treated as an "information service" not subject to traditional common carrier regulation. While effectively bringing further telco broadband investment to an end, the FCC and DoJ remain in denial as to the demise of competition in this sector. If, as now seems to be the case, we end up with a single broadband provider in most parts of the country, the nation can't continue to treat those regional monopolies as if their pricing and conduct are constrained by competition. The FCC's approval last year of the Comcast/NBCU merger, putting the cable/broadband monopoly in control of a major content provider, only compounds the problem and the risks. While ETI continues to believe that DoJ and FCC approval of the Verizon/cable cross-marketing deal is both misguided and premature, if that's where these agencies want to take us, they need also to reconsider their longstanding vision of a deregulated competitive broadband marketplace and adopt regulatory measures consistent with the market reality they have chosen to create.

Do AT&T's plans for the iPhone 5 run afoul of the FCC's Net Neutrality rules?

The iPhone 4, introduced by Apple in 2010, included an app known as FaceTime that enabled users of various Apple products – iPhones, iPads and Macintosh computers – to conduct full-screen, full-motion two-way video chats. However, FaceTime on wireless devices (iPhones, iPads) could only be used over wi-fi, and not over 3G cellular services. Apple recently announced that its next generation of iPhone, expected to be called the iPhone 5, and a new operating system for the iPhone and iPad, IOS 6, both due out in the next month or so, will provide the ability for FaceTime video chats to also be conducted over 3G/4G wireless data services.

Earlier this month, AT&T announced that it would not only support FaceTime connections on its wireless data service plans, but would not even count data usage consumed on FaceTime calls against the customer's total data bandwidth allowance. But there was a catch: These benefits would be available only to those AT&T customers who signed up for family shared data plans. Moreover, not only would AT&T not provide "free" FaceTime calling to its other customers (those not on shared data plans), it would not even allow them to use FaceTime over its network at all!

That announcement, however, did not sit well with those concerned about net neutrality. Here AT&T was tying the use of a specific application – i.e., content – to a specific pricing arrangement. If you want to use FaceTime, you have to purchase the required wireless service plan. AT&T has tried to defend its position. Robert Quinn, AT&T's senior vice president of federal regulatory, stated that:

> The FCC's net neutrality rules do not regulate the availability to customers of applications that are preloaded on phones, Indeed, the rules do not require that providers make available any preloaded apps. Rather, they address whether customers are able to download apps that compete with our voice or video telephony services. AT&T does not restrict customers from downloading any such lawful applications, and there are several video chat apps available in the various app stores serving particular operating systems.

Apparently, AT&T has concluded that as long as the application comes pre-loaded onto the handset by its manufacturer rather than being downloaded by the customer after the device has been purchased, the rules are different. Under this theory, a wireless handset could come preloaded with any number of apps that the carrier would then be free to restrict to specific pricing and service arrangements. AT&T's theory is certainly creative, but cannot withstand scrutiny. If an app developer offers his program directly to customers (e.g., via Apple's "app store" in the case of the iPhone), under AT&T's theory the carrier could not restrict or surcharge its use. But if the same developer made a deal directly with AT&T rather than with the handset manufacturer to have the app preloaded onto the device as sold in an AT&T retail store, then AT&T could confer a unique benefit onto that app, such as by not charging for its use, by giving it priority access to wireless bandwidth, or any other such preferential treatment.

As noted in our review of the AT&T and Verizon shared data pricing plans (VIEWS AND NEWS, June 2012), unlike Verizon which now offers *only* shared data pricing to all new customers, AT&T still provides both individual and shared pricing offerings. Here, however, it has created a marketing device aimed at encouraging adoption of shared data pricing plans by limiting this important and very popular application to only those customers who have selected this pricing arrangement. Integration, either by ownership or by exclusive contract, of the service and content providers opens the door to exclusionary conduct of the type exemplified by AT&T's policy toward FaceTime. What if Comcast were to adopt similar policies with respect to NBC programming? AT&T's FaceTime scheme creates a slippery slope whose anticompetitive implications extend far beyond FaceTime. The Commission needs to prevent this from happening.

Second Tier Wireless Carriers Undercut AT&T/Verizon

The wireless industry has always been characterized by imitative pricing – when one of the major carriers breaks rank and makes a major change to its prices or rate structure, the other carriers will usually follow suit without much delay. Sometimes these imitative pricing plans are rolled out within less than 24 hours, as was the case when AT&T began offering flat rate, unlimited service in February 2008. Verizon and T-Mobile launched nearly identical offerings on the very same day, while Sprint took two weeks to announce its response. Similar follow-the-leader pricing occurred with the introduction of tiered data plans, increasing early termination fees for smartphones, and in numerous other instances dating back to AT&T's launch of the *Digital One Rate* plan that eliminated roaming charges and prompted the change from regional to nationwide pricing industry-wide.

In VIEWS AND NEWS, June 2012, we discussed Verizon's launch of new "Share Everything" plans, which cater to large families with many data-driven devices. Predictably, AT&T launched its own version of these share plans shortly thereafter. Surprisingly, however, the rest of the industry has not followed suit. Chief rivals

Comparison of Total Cost of Ownership
Smart Phone and Two Years of Mobile Service

	AT&T	Verizon	Sprint	Cricket	Virgin
iPhone 4S	$199	$199	$149	$500	$649
Monthly Charges (before taxes, etc.)	$110	$110	$70	$55	$35
2-Year Total Cost	$2,839	$2,839	$1,829	$1,820	$1,489
Number of months to break even on upfront purchase	N/A	N/A	0	6	6

Source: Carrier Websites, as of August 23, 2012.

Sprint and T-Mobile have decried the new plans as bad for consumers, and rather than move towards more restrictive data pricing, T-Mobile is reverting back to unlimited data packages. But there are even more interesting pricing trends percolating up from the second tier of wireless carriers, with offerings that undercut AT&T and Verizon by wide margins.

No contract, no subsidy...

The longstanding paradigm in the wireless industry is that carriers have sold cellphones with a "handset subsidy," providing the devices at a low up-front price, and recovering the carrier's cost of the device in the recurring monthly charge over a two-year contract term. Very frequently, however, the handset subsidy was so small, or customers used their device for more than two years, resulting in increased profits for carriers, who did not reduce the monthly charges after recouping the handset subsidy. Now, several smaller wireless carriers such as Cricket and Virgin Mobile are taking the chance that customers will pay full price for their handset up-front in order to obtain ongoing savings from substantially lower monthly charges.

...and lower prices too

More than just inverting the subsidy business model, Cricket and Virgin (and Sprint for that matter) are offering very aggressive pricing arrangements that cater more towards current usage habits than the new plans being offered by AT&T and Verizon. Over the past few years, cellular voice usage has actually declined as younger users do more communicating via SMS and web-based services. Meanwhile, data usage has been increasing exponentially. The latest plans from AT&T and Verizon exploit this sea change in usage habits. While voice use is on the decline, AT&T and Verizon magnanimously include unlimited voice usage in their plans while users crave more and more data as the price per gigabyte rises relative to what had existed in older plans. Cricket and Virgin have opted for the opposite approach, keeping prices low for unlimited data, while offering limited voice minutes.

Virgin's most aggressive offering includes just 300 anytime voice minutes, but unlimited SMS text messaging and 3G/4G data for only $35 a month without a contract. Virgin provides a $5 credit – bringing the price to only $30 per month – if the customer agrees to an automatic payment arrangement. The Cricket plan is unlimited talk/text/data, but costs more than the Virgin offering – $55/month. The cheapest alternative from Sprint that includes unlimited data and SMS runs to $70 with 450 voice minutes.

Assuming that the unlimited data plans being offered would be most attractive to high volume data users, we have priced out plans from AT&T and Verizon assuming a 4GB data tier. These plans include a $70 usage charge on top of a $40 per smartphone access charge. Data use is capped at 4GB, but texting and voice usage is unlimited. To compare these plans, we have priced out what a consumer would pay for a new iPhone 4S and two years of service from each of the carriers on the plans described above. As shown in the table on page 3, AT&T and Verizon wind up being substantially more expensive over the course of the two years, even taking into account the much higher up-front price of the handset that Cricket and Virgin require.

Will the top tier carriers respond to these alternative pricing arrangements? Probably not. Smaller carriers have the advantage of being able to surgically target specific market niches, whereas the larger firms must necessarily appeal to a broader base of customers. One can get an iPhone 4S from AT&T or Verizon at an up-front payment of about $200, whereas in order to take advantage of Virgin Mobile's much lower monthly price level, the customer would need to fork over $650 to get the handset. Even though the two-year savings (including the higher initial handset payment) from subscribing to the Virgin service is substantial – in the range of $1,400 as shown in the analysis here – having to come up with $650 up front will put this pricing arrangement out of reach for most consumers. It will certainly be interesting to see how all of this plays out over time.

"The purpose of market definition is to provide a context within which competitive effects can be analyzed, and it is frequently a critical and extremely fact-intensive element of antitrust cases."

ETI is pleased to announce its contributions to the recent American Bar Association (ABA) publication, *Market Definition in Antitrust: Theory and Case Studies.* ETI President, Dr. Lee L. Selwyn, along with Helen E. Golding, contributed to the book's chapter on Network Industry Markets and Telecommunications. This chapter covers several critical telecom market definition issues, including: mass market versus enterprise services; product bundles as markets; the conduct of major telecommunications merger reviews since the Telecommunications Act of 1996; and the emergence of online markets.

About ETI. Founded in 1972, Economics and Technology, Inc. is a leading research and consulting firm specializing in telecommunications regulation and policy, litigation support, taxation, service procurement, and negotiation. ETI serves a wide range of telecom industry stakeholders in the US and abroad, including telecommunications carriers, attorneys and their clients, consumer advocates, state and local governments, regulatory agencies, and large corporate, institutional and government purchasers of telecom services.