

A Spectrum Proposal for TV Broadband

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The FCC National Broadband Plan is a massive, comprehensive plan that places broadband accessibility at the cornerstone of economic growth, job creation, global competitiveness and a better way of life. The plan envisions greatly expanded wireless broadband capability as a necessary tool for achieving these goals and seeks to extend broadband inclusiveness to vastly expanded groups of Americans. It makes the case that a key component to expanded broadband is wireless delivery, making one of the principal challenges finding sufficient spectrum with appropriate propagation characteristics to fulfill the need. All of this presents an idyllic view of the future of broadband and the assumed benefits it can bring. The problem, of course, is that the Plan proposes to accomplish this nirvana of communications technology on the backs of, or with a significant spectrum contribution from, television broadcasters. While it proposes to repurpose spectrum allocated to several wireless services, the largest single portion would come from television.

While only 40% of the total repurposed spectrum sought, with 120 MHz coming from broadcast television, it is the largest single portion of spectrum targeted for this purpose. Broadcasters understandably have reacted with shock and indignation. As succinctly put by Jim Goodmon of Capitol Broadcasting, this plan will “. . . prevent broadcasters, who have toiled through a lengthy DTV transition, from fulfilling their highest potential.” “Television is right now at its best.” Goodmon said. “We’ve never before been able to do so much, and I have no idea why they [the FCC] have abandoned us. Of all the spectrum out there, you want to pick the spectrum that provides free local news to people?”

Indeed, from an engineering efficiency perspective, broadcast television and radio reach more viewers and listeners, with less spectrum per capita than any system of electronic communication that has ever been implemented. With just six megahertz of spectrum, a television channel can reach many millions of viewers in the largest of markets. A cellular spectrum reuse system that can create that kind of spectrum use efficiency has not yet been devised. The one-to-many technical capability of television broadcast technology has proven itself over and over. From Katrina to tornados, television broadcasters have demonstrated the ability to get critical communications simultaneously out to hundreds of thousands in a way that would likely bring down a broadband system that required a separate stream to each viewer or listener. Taken to its logical end-game, without broadcast technology, our nation could be subjected to denial of service attacks that could cripple our society in times when critical emergency communications to the populace at-large is most needed.

Yet, with all that said and frequently restated by stalwarts of the industry, as an industry, it may still be wise to develop an alternative approach built on the old adage that the best defense is a good offense.

A first look at the FCC’s Broadband Plan appears to be a plan that envisions broadcasters exiting the industry to make way for the new delivery model. But, a deeper look also reveals that it could offer broadcasters alternatives with potentially attractive new business plans, revenue models and technologies. Possibly, broadcasters could use this plan to become participants in a new generation of technology and wireless delivery.

To become proactive players in the drama, broadcasters should strongly consider the industry's ability to itself adapt to a convergence business model that capitalizes on the Plan's premise that the spectrum could be used for broadband, while allowing broadcasters to continue to deliver the traditional service values only local broadcasters provide. Economically, the Plan argues there is an enormous gap in the value of spectrum between its use, (a) for traditional broadcasting and (b) to deliver mobile broadband; based on the Plan's methodology for spectrum valuation. While broadcasters continue to present a convincing case for the value they contribute to society through public service – and those contributions are clearly respected in the language if not the tone of the Plan, and recognized further in comments of several Commissioners – much of broadcasting's value is difficult to measure in the economic construct set forth by the Plan. Should the nation's policy makers succumb to that construct, it may be difficult for broadcasting to rely on its legacy of public service alone to close the value gap.

This paper proposes that broadcasters proactively explore the possibilities and implications of becoming interactive, wireless broadband service providers on their own initiative. Simply put, if the nation adopts a policy to repurpose broadcast spectrum to broadband, it is broadcasters who are best situated to make that transition and to be entrusted with the responsibility to carry it out. Done by broadcasters, they become the new competitive broadband player called for by the Chairman and many consumer groups, remain positioned to fulfill the public interest requirement for issue responsive programming and emergency communications and avoid the need for special legislation to enable the auctioning of spectrum that would have otherwise been taken from broadcasting. Alternatively, in a partnership with wireless providers, a combined effort could provide the resources and experience needed to fulfill the new business plan.

While the business case and opportunities of such an initiative are not clear at this time, now could be the time seriously to investigate and define them so that broadcasters will have the tools required to make informed decisions, should they be required, and be empowered to control their own destiny.

Background

The growth of broadband and its pivotal ability to change our way of life in personal and commercial ways appears to have been recognized a decade and a half ago when the Internet was just beginning to pick up speed. In a speech earlier this year at Columbia University, Former FCC Chairman Reed Hundt candidly spoke about the decision made during his chairmanship to promote the Internet over broadcasting as the one and only "common medium" for the United States. During that period, Current Chairman Julius Genachowski and former National Broadband Plan Coordinator Blair Levin served as senior staff in Hundt's office. Hundt claimed the FCC National Broadband Plan is the culmination of that policy and the beginning of the end of the broadcasting era. Fortunately, the Plan does not paint so bleak a picture for over-the-air broadcasting, but it does point to major infrastructural changes for it and other wireless services if the Plan's wireless broadband goals are to be realized.

That we must find a way to extend high-speed, efficient broadband to every American, of every age, is clearly set forth as a mandatory goal. Shortly before the Plan was released, in remarks at the National Museum of American History, FCC Chairman Genachowski set out his children's media and Internet agenda – connecting all kids to broadband access. He stated that the

Broadband Plan will establish "[a] clear and non-negotiable goal [that] every child should be connected to broadband."

The Broadband Plan is geared to bring about expanded high speed wireless broadband through the "100 squared" proposal: to bring 100 Mbps bandwidth capabilities to 100 million homes by 2020. To meet this goal and the predicted demand for wireless broadband, the Plan forecasts the need for 500 megahertz of new spectrum for mobile, fixed and unlicensed broadband use over the next 10 years. To keep pace with demand and innovation, it forecasts that 300 megahertz should be made available in the band between 225 MHz and 3.7 GHz for mobile flexible use within five years. While 120 megahertz would come from broadcast, 180 megahertz would come from four other services; Wireless Communications Service (WCS), Advanced Wireless Services (AWS), 700 MHz D-Block and Mobile Satellite Service (MSS). [Note: this 180 MHz involves a bit of double counting. The AWS spectrum is already licensed, although under rules that make it difficult to use. Much of the MSS spectrum is already open to mobile use under the FCC's ATC rules.]

The speeches and comments leading up to the Plan's release created the impression that FCC leaders have written off over-the-air broadcasting, or at least over-the-air broadcasters, for wireless broadband. A close reading of the Plan, however, reveals repeated recognition and deference to the "important functions" that broadcasting serves in our society and the need for consumers to retain access to free, over-the-air television. The Plan recognizes that over-the-air television delivers free access to news, entertainment and local programming, and provides consumers an alternative video service to cable or satellite television, services that would be unavailable to many Americans who cannot afford cable and other paid-for delivery services. The Plan also recognizes the numerous public interests, including children's educational programming, coverage of community news and events, reasonable access for federal political candidates, closed captioning and emergency broadcast information, localism and diversity of views that broadcasting offers to accomplish FCC longstanding policy goals in support of the Communications Act.

Independently, FCC Commissioners have also expressed appreciation and concern for the role of broadcasting. Shortly after the Plan's release, Commissioner Baker stated that the FCC should not intervene in matters best left to the market and expressed concerns that the future of media and journalism are best left to newspapers, websites, TV and radio stations and new entrepreneurs. Commissioner Clyburn commented that the Plan falls short of rigorous analysis of its implications on the public interest, recognizing that the broadcast spectrum is "the lone spectrum through which our nation's public interest goals are effectuated."

All of this is important! Not only because it is right, but because it establishes a record inside the Plan and independently among the Commissioners, of the accomplishments of the broadcasting industry and what would be lost by tinkering with it too much. It is important that broadcasters continue to place a priority on serving these policies and goals as we participate in this evaluation of our nation's communications infrastructure. Broadcasters must maintain their clear record of achievement to build upon for a secure place in the future and particularly during the continued evaluation of the Plan recommendations.

Because of broadcasting's legacy, the Plan authors implicitly recognized that they could not simply "grab" away broadcasting spectrum without offering several alternative approaches in what it attempts to characterize as "win-win" scenarios that seek either to include broadcasters in the future, or pay them out for the past. The alternatives include spectrum auctions that would pay television licensees for the spectrum reclaimed from them while offering the continued ability to broadcast in HD or SD on 6 MHz wide channels, to spectrum re-banding and repacking plans. To accomplish these plans, the plan recommends the following rulemaking dockets:

1. update rules on TV service areas and distance separations and revise the table of allotments to ensure the most efficient allotment of six-megahertz channel assignments as a starting point;
2. establish a licensing framework to permit two or more stations to share a six-megahertz channel;
3. determine rules for auctions of broadcast spectrum reclaimed through repacking and voluntary channel sharing;
4. explore alternatives—including changes in broadcast technical architecture, an overlay license auction, or more extensive channel sharing—in the event the preceding recommendations do not yield a significant amount of spectrum;
5. take additional measures to increase efficiency of spectrum use in the broadcast TV bands.

Through these proposals, the Plan claims to preserve over-the-air television as a healthy, viable medium, while reallocating spectrum from broadcast TV bands to flexible mobile broadband use. The Plan includes as a goal to ". . . protect longstanding policy goals and public interests served by over-the-air television and further support those served by broadband use. In particular, all stations that broadcast a primary video signal would continue to serve existing public interest requirements . . . [although] . . . the reallocation mechanisms could impact the number and diversity of broadcast 'voices' in a community or market." Yet, it also proposes imposing annual spectrum fees on broadcasters, allegedly as an incentive to minimize the cost of carrying spectrum not fully utilized and to offer it up to a broadband auction of wireless bidders.

Broadcasting History

Broadcasters have always adapted to technological change and marketplace demand. While broadcasting, as we know it, began with amplitude modulated, AM radio, for over 90 years, broadcast services have continuously evolved with new delivery systems. Beginning with AM broadcasting, the industry evolved to analog FM in television and radio. Recently, it further evolved to digital transmission and multicast over-the-air television video and audio FM HD radio. Even now, broadcast television is planning its own further transition to a mobile technology.

While these changes were taking place, an expanding broadband internet spawned nationwide networks that now deliver on-demand video and audio, news and entertainment that have diverted some viewers from traditional "appointment" one-way television. In response, nearly every broadcast network and local television station is now providing program or network streams of their product from their website or industry-developed content servers such as Hulu.com, TV.com, On Demand, iN DEMAND and FanCast.

Over the last two decades, the internet-based broadband delivery system has grown to become the major modality for “media convergence,” offering various forms of voice and data as well as entertainment and news distribution. All modalities of electronic communication have merged into cable and telco converged, triple play offerings of voice, data and video. Some have combined with wireless providers to add mobile communications, dubbed the quadruple, or “quad play.” All rely on video entertainment and information offerings from broadcasters.

During this transition/convergence of technologies and services, no player has been shut out! Responding to technology innovation and market forces, they have each evolved into competitive, convergence service providers with the blessings of federal and local regulators. Certainly none has been handicapped by government regulation. The cellular companies have not been required to relinquish spectrum so that cable providers could go wireless. Each has moved forward with the resources it has acquired and developed.

Today’s Predicament

This evolution of convergence has placed broadcasters in a predicament. Their services are still, at least for a while, unique and often extraordinary. However, some industry analysts and broadcasters themselves believe that future broadcaster revenue growth will come primarily from new, mainly interactive, services related to their broadcasting products. While television occupies a large amount of the most attractive spectrum, it relies increasingly on wired technologies for delivery to viewers, by some estimates up to 90 percent of their viewers. Meanwhile, there is increasing recognition that much of the future broadband growth will have to be through wireless technology. The demand for wireless broadband is already considered by many to have outstripped capacity, leading some to believe at least some of the broadcasting spectrum allotment is essential for growth of the wireless broadband services that are enjoying explosive growth. Therefore, for a variety of technical reasons, including the attractive propagation characteristics of the 6-700 MHz UHF spectrum and the inability to use much higher areas of the spectrum for this purpose, the Plan targets over-the-air television spectrum for repurposing to broadband.

One way the FCC’s National Broadband Plan seeks to obtain voluntary television licensee surrender of their spectrum is to provide a share of the auction proceeds to the “retiring” broadcaster. It is anticipated that at least some television broadcasters will find this attractive; they may perceive themselves to be locked into a one-way, non-interactive business model facing increasing competition with a diminishing revenue stream. Many have tried to develop new revenue streams from additional “non-traditional” service offerings, with some degree of success on their web pages.

Nearly all of the proposals contemplate broadcasters either exiting the playing field and taking cash compensation in return, or hanging on with a static but reduced role while paying more spectrum fees for the privilege. Some may see this as a viable exit strategy. Others continue to believe that their local broadcasting content is the prime driver in the video portion of the triple and quad play that retransmits local stations; but they too, need a new business model. Assuming that the Plan gets more traction, the business decision for many broadcasters will involve comparing the present value of the cash received in auction to the present value of the

business that a broadcaster can generate itself in the mobile wireless converged services business.

The Plan's analysis of spectrum auction proceeds signals that the revenue generating value of the spectrum for mobile broadband is \$1.28 per megahertz pop, while the current broadcast use is valued at 15¢ per megahertz-pop, albeit under a theoretical value methodology subject to challenge. That great a differential suggests that a broadcaster must find a way to capitalize better on the use of its spectrum resource. The broadcaster could do that by evolving the business model itself or in partnership with other convergence partners such as the existing mobile service providers. Indeed, the FCC staff acknowledges this possibility.

While the Plan's point 4, above, suggests exploring this option, it reserves it to a back-up plan, to be explored:

If the FCC does not receive authorization to conduct incentive auctions, or if the incentive auctions do not yield significant amount of spectrum, the FCC should pursue other mechanisms. Through a rule-making proceeding, it should consider other approaches, potentially including:

Transition to a cellular architecture on a voluntary or involuntary basis. With a cellular architecture, stations would broadcast television service over many low-powered transmitters that collectively provide similar coverage to the current architecture with one high-powered transmitter. Cellularizing the architecture could reduce or eliminate the need for channel interference protections that result in only a fraction of the total spectrum allocated to broadcast TV being used directly by stations. A cellular architecture could also facilitate broadcasters' offerings of converged broadcast/broadband services.

While the Plan has received favorable nods from the Obama White House and several offices on Capitol Hill, its ultimate success is far from assured. Reflected in the early comments of Commissioners McDowell and Cliburn, many in the communications policy power elite have been skeptical of the broadcaster spectrum provisions from the start. To succeed, there will have to be made many difficult and unpopular choices. The NAB has successfully countered with several appealing arguments of its own. Now would be an excellent time for television broadcasters to bring its own proposal to the forefront, saying in essence, if it's a good idea and it will work, we'll do it ourselves. This solution could be implemented far faster than any other. It would require rulemaking, but no legislation. It would require bringing to a conclusion experiments with variations to the ATSC digital television standard now in use in North America. Although broadcasters, as mobile broadband providers, may present new competitive possibilities to existing mobile providers, they might also present themselves as potential business partners to providers in need of expanded spectrum. This solution also provides an appropriate market mechanism that would signal the best economic use of the spectrum while also preserving basic over-the-air broadcasting services.

The Business Model

The television marketplace is evolving with or without regulatory change. Television is traditionally a “one-sided” market, deriving nearly all of its revenue from advertising. That revenue model is changing as fast as changing technology can move it. Traditional revenue from the advertiser-only business model is shrinking and by the reckoning of most forecasters will continue to do so. While the broadcast advertising market is coming back, studies are surfacing that demonstrate what the broadcaster already suspects: the returning revenue is a smaller piece of the advertising pie. BIA Kelsey predicts that while by 2014 television revenues will return to \$18.3 Billion, it will still be \$2.3 Billion less than the 2008 level. Of that, they predict that online/Interactive will take \$1.2B, up from \$0.5B in 2008.

Moreover, local affiliates are losing network compensation and increasingly, must pay networks for their programs. While the networks are developing multisided markets, including cable distribution, proprietary streaming content sites and reverse compensation, for the most part local affiliates still rely on the one-sided, advertiser supported model.

In an evolving marketplace, legacy local television must evolve. Some stations are doing that already, deriving an increasing percentage of their revenue from their online resources, such as webpage advertising. For the most part, though, even those efforts represent one-sided market revenue models. Faced with the marketplace economic and now possible regulatory changes, this evolutionary process must pick up steam for a prosperous local broadcasting service. In *The End of Advertising as We Know It*, IBM Global Business Services recognized that, in searching for expanded “non-traditional revenue” to replace or expand their revenue base, broadcasters will have to seek new business models that cater to the changes in demand brought about by changes in technology.

Large trends affecting the media and entertainment industry will compel companies to open up access to content in more ways than ever. Successful companies will create leaner, more transparent organizations that cater to more platforms, more devices and more users wanting to edit, compile and share. *Media and entertainment 2010, Open in the inside, open on the outside: The open media company of the future.* IBM Business Consulting Services.

Strikingly, the Plan is not very hopeful. Every one of the models discussed publicly assumes that the broadcaster will exit the business or give up a large block of critically needed spectrum to make room for other convergence services providers, presumed to be the existing wireless broadband providers, AT&T, Verizon, T-Mobile, Sprint, the triple and quad play providers such as cable services, or some new form of service provider. That scenario would lead to more consolidation of service from the same providers. Importantly, none of these studies consider the more innovative, interactive, quad-play broadcast model: not because it has been prohibited, but only because the vision has not been previously articulated.

A Broadcaster Broadband Plan

Perhaps the most significant idea, and the one that would be most beneficial to broadcasters, is the one given the least attention by the Plan. That alternative would be for broadcasters to themselves become the broadband service provider. Broadcasters have been searching for new services to create new revenue streams while allowing for bidirectional services. It has long been a frustration of broadcasting that there was no natural upstream communications link from the viewer. The Broadband Plan now provides that possibility. Utilizing the broadcasting channels already assigned, broadcasters could transition their service into a bidirectional broadband service, continuing their legacy broadcasting role while adding services that would fulfill the goals of the Plan.

Television as the New Broadband Frontiersman

Another view would have the TV broadcaster deeply involved in the conversion to a broadband infrastructure. Transitioning again, in broadcasting's great tradition – to yet another form of over-the-air delivery – the broadcaster would become the converged services provider; offering wireless video, voice and data services. TV's response to the UHF spectrum redefinition would be: Thanks, great idea, we'll do it!

Some local broadcasters might choose to re-band, accept a single channel, or even leave the business and take the buy-out. Others could choose to engage and accept the challenges of moving broadcasting into the next generation and make the transition to broadband themselves or in partnership with other convergence partners. Local broadcasters could develop the repacking plan themselves and build out a broadband, possibly cellular, model infrastructure. To be successful, the repacking plan would need to provide channel reuse within the station's coverage area without shedding viewers.

The Association for Maximum Service Television (MSTV) has commented that repacking alone will not yield the 120 MHz envisioned in the plan, possibly only a little as 6 MHz. It has demonstrated that channel sharing will not work if broadcasters are to be permitted to continue with true HD delivery compatible with today's HD television sets, developed, manufactured and sold to consumers as compatible with post digital conversion high definition 1080p television. These are problems that can only be worked out by the broadcasting industry itself, given sufficient incentive to do so.

One of the weaknesses of the Plan, therefore, is that it does not suggest giving broadcasters technical flexibility and incentive to use it. The Plan does discuss the benefits of flexibility for moving to more efficient spectrum use, but, it fails to take the obvious step of recommending flexibility for broadcasters. Without flexibility, broadcasters will be locked into a DTV technology that was designed over a decade ago and lacks many of the capabilities and efficiencies of today's 4G broadband technologies, and that effectively bars to them the transition envisioned in the Plan. Broadcasters should consider flexibility and how the FCC could authorize it. Rather than trying to mandate another technical transformation of the video delivery system by regulation, incentive buyouts and degradation of existing service, the FCC should provide the means to the player with the natural interest to make the transition when

demanding by its public customer base and when the technical and economic considerations demonstrate the proper path.

In this model, broadcasters would now have the ability to themselves become a player in the converged world. Given the incentive to remain relevant and competitive in the evolving marketplace of electronic delivery systems and economic support models, broadcasters will voluntarily find the way to accomplish the transition at a time when it truly makes sense. There are times when the best regulation is that which opens the doors for the private sector to accomplish a public good because it fits with its own incentives. It makes sense that taking advantage of those natural incentives will result in greater success than regulation which seeks to achieve results through means that are at cross-purposes with the regulated industry. The FCC could pave this path by issuing technical rules that allow the industry itself to move to a broadband, cellularized infrastructure. There are problems, to be sure, but the television industry itself is the party best positioned to solve them.

The challenge is to acquire the resources, or partners, needed to develop business plans that create value commensurate with those that drive broadband auction bidders to \$1.28 per megahertz-pop, while maintaining broadcasting's public service programming.

The business models of the future will be multisided – that is to say revenue will be generated from advertisers and subscribers and content providers. It will take skill and experience in programming, advertising, subscriber pays models, and other distribution to find the right combination of revenue streams to support the new broadband converged services models. That combination might be most readily discovered by a partnership between broadcaster, cable and cellular interests.

Nothing in the plan, or in suggestions for its implementation, forecloses broadcasters from developing – alone or in partnership with others – and providing the kinds of flexible broadband services demanded by the public and likely to be required of spectrum auction winners. The times, Bob Dylan advised: “They are a changin’.” The FCC should provide the means for broadcasters to make this change as well, rather than making the assumption that broadcasters are not up to the task and assigning the task to others.