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The National Broadband Plan: Understanding the Proposed Reallocation of Broadcast Spectrum and What It Means for All Users of Spectrum

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Businesses dependent on spectrum should be alert to FCC trend toward greater frequency sharing and incumbent dislocation.

Introduction

The FCC's staff has released its long-awaited National Broadband Plan ("NBP"). As expected, the NBP includes controversial proposals to reclaim 120 MHz of spectrum from television broadcasters. Another spectrum reallocation, involving microwave spectrum that would impact broadcasters in their use of Broadcast Auxiliary Service spectrum, has received less attention. So too has the NBP's overall approach to spectrum reallocations, which represents a sea change in the way the FCC manages spectrum. This new approach focuses on unlicensed and flexible uses of spectrum, placing all spectrum allocations on a three-year cycle for scrutiny and possible reallocation to "more valuable" uses.

The NBP, then, serves as a roadmap for future reallocations. Careful review of the mechanics of the specific reallocations the NBP proposes for the immediate future reveal the extent to which its authors seek to change long-established service rules for each spectrum band in order to free spectrum for other uses. This Advisory provides that review so that spectrum users, both those who are immediately affected by the NBP and those whose spectrum has not yet been surveyed by the FCC, can better understand the likely impact of such changes.

Background

The American Recovery and Reinvestment Act of 2009 required the FCC to deliver a national broadband plan within a year. Congress instructed the FCC to develop the NBP with the goal of ensuring that every American can access broadband service, while advancing the use of broadband to further a wide range of stated governmental priorities, including consumer welfare, civic participation, safety, healthcare, energy independence, and education.

The NBP estimates that the United States must make an additional 500 MHz of spectrum available for broadband use over the next 10 years. The NBP bases this estimate on a review of the recent growth in the use of broadband services in the United States, as well as the experiences of other countries that have implemented unified national broadband plans. The FCC asserts that the growth in broadband use is driven by the maturation of third generation (3G) wireless service; the development of mobile computing devices and smartphones that drive higher data usage per subscriber; expected increases in machine-based wireless broadband use, such as remote meter-reading devices; and the rollout of fourth generation (4G) technology, which may require larger blocks of spectrum and wider channels. The NBP states that increases in additional wireless services, such as point-to-point microwave and unlicensed networks that can serve as backhaul and which can enhance the overall quality of wireless broadband service, are needed as well to support the growth of broadband.

The NBP asserts that if the government does not make sufficient spectrum available, growth of wireless broadband will be constrained. Wireless broadband operators then will be forced to turn to alternatives, such as cell-splitting, that could cost more or provide a lower quality of service. As a result, the NBP states, consumers will experience higher prices and poorer quality, and the United States will not be able compete internationally across wide economic sectors, as innovation is hampered.

New Approach to Spectrum Reallocations

While the NBP identifies certain spectrum reallocations to be made in the near term, these allocations alone do not provide the full 500 MHz it is seeking. Accordingly, the NBP states that the FCC and the National Telecommunications and Information Administration ("NTIA"), which manages spectrum used by the federal government, should review every current federal and non-federal use of spectrum with an eye to determining whether it can be made available for mobile and fixed wireless broadband use.

The NBP states that greater transparency is needed in the process of reallocating spectrum than has been the case in the past. To that end, the FCC has released its "spectrum dashboard," which can be found at the FCC's Reboot.FCC.gov website. The spectrum dashboard currently allows the public to search for licensed operations between 225 MHz and 3.7 Ghz using a location or a licensee name. The NBP calls for the FCC to continually update and improve the dashboard, adding more frequencies and search criteria within one year of launch, so that it is easy to search for and identify available spectrum, which in turn could lead to more efficient use of unused or underutilized spectrum. The NBP recommends that the NTIA develop similar information regarding federal spectrum use.

The NBP also suggests that the FCC and NTIA develop and continually improve methods of measuring actual use of allocated spectrum, such as outfitting postal service trucks or other fleet vehicles with inexpensive frequency scanners. Using this information, the FCC would maintain and review every three years a strategic spectrum plan, published for public review, and include in it an analysis of the potential for reallocation to another use of any spectrum identified as underutilized.

Emphasis on Flexible Spectrum Use

A major theme throughout the NBP's discussion of spectrum is that the FCC should take more flexible approaches to spectrum allocations to allow for more efficient use of spectrum. Specifically, the NBP promotes the development and use of "cognitive" or "opportunistic" devices. Such devices are intended to allow multiple users of the same spectrum bands to co-exist by searching for frequencies that no other user is operating on at the moment, either by sensing or by consulting a database to obtain that information, and then utilizing those frequencies only when available. Such devices have been proposed for use

in the TV band in the FCC's TV White Spaces proceeding, which broadcasters have opposed based on concerns that the devices will not function as intended and cause interference to their operations. The NBP first urges the FCC to quickly resolve the TV White Spaces proceeding. Next, the NBP urges the FCC to expand on the White Spaces approach by freeing up spectrum in a variety of bands that it currently controls, such as spectrum that did not receive a bid in an auction. The FCC would turn this spectrum into an innovation "sandbox" in which innovators would experiment with such opportunistic or cognitive technologies. To facilitate those operations, the FCC would extend to additional frequency bands the database of utilized frequencies that was created in connection with the TV White Spaces proceeding. The NBP also recommends that the FCC take a more flexible approach to experimental licensing in general, while suggesting that the National Science Foundation fund wireless research and development.

In addition, the NBP recommends that the FCC, within the next 10 years, free up a new, contiguous nationwide band of spectrum specifically designated for unlicensed use. While the FCC has authorized unlicensed uses before, those uses have been subordinate to the primary services allocated to that band. The purpose of the nationwide band would be to allow innovators to operate and experiment in the band free from the usual constraints that require them to protect licensed incumbents in the band. The NBP states that new unlicensed uses developed in this way could complement licensed wireless broadband networks. For example, they could operate on Wi-Fi networks, taking data traffic off the licensed broadband network, resulting in less congestion and better quality service on the network.

Specific Reallocation Proposals

Even taking into account technological advancements that might reduce demand for spectrum, the NBP states that the FCC should make 500 MHz of spectrum newly available for mobile, fixed and unlicensed broadband use over the next 10 years, and 300 MHz of that should be made available specifically for mobile flexible use within 5 years. The NBP identifies the initial 300 MHz it recommends be reallocated and sets forth a fast track timetable for that reallocation. As a result, these reallocations would begin before the FCC has completely updated its spectrum dashboard to identify all available spectrum.

Harvest of Television Broadcast Spectrum

The largest source of spectrum for the broadband plan would come from the rapid reallocation of 120 MHz of broadcast television spectrum. The NBP provides that the FCC conclude a rulemaking to reallocate that spectrum in 2011, auction the reclaimed spectrum in 2012, and clear the band by 2015. If Congress grants the FCC authority to conduct "incentive" auctions in which broadcasters share in the proceeds of the auction in exchange for voluntarily relinquishing spectrum, the auction could be delayed until 2013. Once authorized, incentive auctions could be used to move other incumbents off their spectrum so that it can be reallocated as well.

The NBP argues that reallocation of the TV band spectrum to broadband should be made because the broadcast television spectrum is well-suited for mobile broadband, broadcasters do not use much of the spectrum because of the distance separations required to prevent interference between stations, and the economic value of the spectrum is greater when put to use for broadband, rather than broadcast, service. The NBP describes a "gap" in market value between the two uses. While the authors note that at least part of this gap is the result of the far greater restrictions the FCC places on broadcast use of the spectrum, the NBP makes no effort to determine whether changes in those rules would diminish that "gap" or to analyze the public interest value of the spectrum's current use. The NBP states that in the 2008 FCC auction of a portion of the television spectrum broadcasters surrendered in the DTV transition, bidders paid $1.28 per megahertz pop (MHz of spectrum x population served), while it claims that television use of the spec-

trum is currently worth about $0.11 to $0.15 per megahertz pop. The NBP states that this gap reflects that broadband demand is rapidly growing, and is expected to drive innovation, job growth and investment into the next decade, whereas television station revenues have declined 26% since 2005, industry employment has declined, and the percentage of over the air only households assertedly declined to approximately 10% in 2010.

The NBP acknowledges that, as a result of the repacking and channel sharing plans described below, some over the air television consumers may lose service and consumers may need to reorient their antennae to pick up stations that have physically moved. Nevertheless, the NBP claims that consumers will not suffer because television broadcast service of some sort will be preserved. It notes that the need to reclaim spectrum is greatest in urban areas, and in those same areas, consumers have the greatest number of outlets available to them. The NBP asserts that losses of service area or picture quality or damage to station business models that might occur would be the result of voluntary choices made by the individual broadcaster in response to the “incentive” auctions outlined below. In this way, the NBP presents itself as empowering broadcasters to consider whether they wish to pursue new business models, such as multicast and mobile, or pursue the opportunity to receive auction proceeds in exchange for their spectrum.

The NBP acknowledges that the FCC should study the impact that its actions could have on minority and female ownership of TV stations and consider whether to "create a public interest media trust fund to fortify public media across platforms, further bolstering viewpoint diversity and localism in communities throughout the country."

The specific methods the NBP contemplates for freeing up broadcast spectrum include:

1. Repacking: The NBP suggests that the FCC “update” its technical rules in the current television Table of Allocations, although that Table is not long out of date having just been fully implemented in June 2009 with the completion of the nationwide transition to digital television. The NBP calls this update a “starting point” and suggests that upon such a review, it may be possible for co-channel and first adjacent channel stations to operate interference-free at distances that would violate the current distance separation and service area requirements. While the NBP does not specify how the FCC should revise its technical rules, it suggests that doing so may also allow the FCC to “repack” existing stations to free up at least 36 MHz of spectrum. Although the repacking is presented as merely a possibility that might arise upon an FCC review, the NBP proceeds on the assumption that the repacking will occur and that 36 MHz will be made available as a result of it. This repacking is not “voluntary” and does not carry with it the possibility of sharing in auction proceeds beyond reimbursement for expenses incurred in the repacking.

2. Voluntary Spectrum Relinquishment and Incentive Auctions: The NBP next suggests that Congress provide the FCC with authority to conduct “incentive” auctions in which broadcasters voluntarily relinquish some or all of their 6 MHz channel in exchange for a share of the auction proceeds attributable to the amount of spectrum that each station directly contributes to the auction. The NBP suggests that a station’s direct contribution could be measured by multiplying the number of megahertz it relinquishes by the station's population coverage. After the auction, stations that relinquished spectrum would receive a portion of the proceeds, the US Treasury would retain the proceeds from all adjoining channels, and licensees remaining in operation would receive new channel assignments according to the repacked Table of Allotments, reimbursement from the auction proceeds for their expenses incurred in the repacking, and a modified license if the station relinquished some but not all of its spectrum. The NBP calls for the FCC to act as a check on broadcasters’ voluntary decisions to surrender spectrum to avoid an adverse impact on any particular community.

3. Channel Sharing: To facilitate voluntary or involuntary relinquishment of spectrum, the NBP calls for the FCC to revise its licensing rules to allow stations to share a single 6 MHz channel. As revised, the rule would allow each of two stations to broadcast one HD stream simultaneously with the other. In addition, the users could have "dynamic" agreements to share capacity based on "market-driven" choices. Must-carry rights would be preserved for each stream, although the FCC's ability to ensure that is subject to the outcome of the pending Supreme Court case brought by the cable industry challenging those rights.

4. Additional Means of Reclaiming Television Broadcast Spectrum: If repacking and voluntary actions do not yield enough spectrum, the NBP states that the FCC would consider a number of additional technical rule changes to free up spectrum. Under none of these would the broadcaster be entitled to a share of auction proceeds from the freed spectrum. First, the Commission could voluntarily or involuntarily transition broadcasters to a "cellular architecture," where they would serve their coverage areas with multiple smaller facilities, rather than one large transmission facility. The NBP claims this would allow stations to be packed more tightly without causing interference to the reuse of channels in neighboring markets. Second, the Commission could auction the spectrum, then require the auction winners to separately negotiate with stations to actually clear the band. However, it notes that this approach would likely lead to delays and depressed bids in the auction. Third, the FCC could force sharing of channels by more than two stations. Finally, the FCC could pursue other innovative solutions that might emerge. The NBP does not suggest what solutions these might be, but it reiterates that broadcasters would not be able to share in auction proceeds at this stage of the process, presumably even if they are the ones to propose the innovative solution that frees spectrum.

5. Spectrum Fees to Promote Spectrum Efficiency: The NBP recommends that the FCC seek authority from Congress to impose fees on full power television stations "as part of a broader review of broadcast ownership rules and public interest obligations." The fee appears intended to discourage television stations' continued use of spectrum after the NBP is implemented. However, in a footnote, the NBP states that the FCC could consider loosening multiple ownership and public interest obligations on broadcasters in exchange for imposition of the fee. The fee would be in addition to the annual regulatory fee and numerous application fees that stations already pay to the FCC. As noted above, the NBP also proposes that Congress establish a trust fund for public media from the proceeds of the spectrum auction. This fund might be seen as a way to "make up for" the public service broadcasters would no longer provide.

6. Impact on Other Users of the Spectrum: Low power television stations would not be subject to repacking and reclamation of spectrum, although it is unclear how this would actually work when the spectrum is sold to wireless operators. The NBP does recommend that the FCC establish a deadline for these stations to convert to digital operation and that it permit them to return their spectrum to participate in the incentive auction. Land mobile radio system operators, wireless microphone users, and TV White Spaces devices would allegedly not be affected by the proposed reallocation. The NBP recommends that the FCC resolve lingering high VHF television reception issues remaining from the DTV transition by allowing for the use of higher power levels or adopting enhanced antenna and receiver standards so that these broadcasters, and others packed into that spectrum, do not seek to move onto channels the NBP is trying to clear.

Unanswered Questions Concerning Voluntary Relinquishment of Spectrum

While the NBP acknowledges that the FCC must seek congressional approval to conduct incentive auctions and share the proceeds with broadcasters, it does not suggest that congressional approval is neces-

sary for any other part of the proposed spectrum reallocation. If that is the case, the FCC on its own initiative could conduct involuntary spectrum repacking, forced sharing of channels by two or more stations, and forced construction of cellular-like facilities for television stations.

Even assuming grant of incentive auction authority, the extent of the benefit to any particular station is not clear. The NBP does not indicate precisely how the FCC will perform the megahertz/population calculation that is to be used to determine the share of auction proceeds due a station that voluntarily relinquishes spectrum. Specifically, it is not clear whether that calculation would use the population of the station's current coverage area, or the population of the station's coverage area following repacking, which could be significantly reduced.

The NBP also does not provide any of the engineering data its authors relied upon in designing its proposals. Thus, it is not possible for broadcasters to know at this point how many stations would have to change channels or the extent of coverage area losses necessary to accommodate repacking, even for stations on low frequency channels or in rural areas. The NBP states in a number of places that the need for spectrum is greatest in urban areas, suggesting that rural broadcast service will be less affected. However, stations in rural areas may have to clear certain channels to permit the FCC to reclaim the nationwide band the NBP seeks. In addition, an interesting question arises if all the stations in a particular market elect to relinquish their spectrum. The NBP suggests that the FCC could prevent that result, but does not discuss how it would decide which elections to accept.

The spectrum fee must also be considered as a station reviews its options. The NBP states:

> Television stations will need to consider their desire to multicast additional video streams, such as digital side channels and mobile DTV streams, relative to the possible sharing of channels. Multicasting mobile DTV streams and digital side channels requires additional bandwidth to ensure reception quality. Stations are just now beginning to deploy such services, and it is not yet clear whether they will be widely accepted or how they might affect the ability of stations to share channels.

Thus, while the NBP authors state that broadcasters should weigh the value of their spectrum against the share of the auction proceeds they would possibly receive for relinquishing that spectrum, the addition of new spectrum fees would effectively place the government's thumb on the scale while licensees are making that decision.

Increased Sharing of Broadcast Auxiliary and Microwave Spectrum

The NBP also proposes revising Parts 74, 78, and 101 of the Commission's Rules so that spectrum used for broadcasters' Broadcast Auxiliary Service stations, as well as for Cable TV Relay Service stations, can be shared with other microwave uses. This proposal is designed to increase the supply of spectrum available for broadband backhaul. The NBP also recommends reserving white spaces spectrum that is below 1 GHz for that use. Further, the NBP proposes to revise the Part 101 microwave rules to permit backhaul operators to use smaller antennae so that they can secure cheaper tower rents. Other possible Part 101 rule changes would include: allowing the use of higher frequencies, greater spatial reuse of microwave frequencies, and liberalization of data throughput rates so that operators can use adaptive modulation to "dynamically" adjust the data rate based on channel conditions.

Other Sources of Spectrum:

1. The NBP recommends that the FCC make 20 MHz available for mobile broadband use in the 2.3 GHz Wireless Communications Service band. The NBP notes that South Korea uses this band for mobile broadband, indicating that it is a good candidate to provide high quality broadband service. To accommodate broadband use in this band, the NBP states the FCC should relax out of band emissions limits for the service and require protection of neighboring allocations to Aeronautical Mobile Telemetry and satellite radio operations.

2. The NBP recommends auctioning 10 MHz from the Upper 700 MHz D Block, which was slated for use as part of a public-private partnership to build a public safety broadband network, but which received no bids at auction. The NBP proposal would remove the requirement that the winner enter into a public-private partnership, although it would permit it to do so, and would require that services in this band be compatible with neighboring public safety broadband operations.

3. The NBP recommends auctioning up to 60 MHz from two Advanced Wireless Service ("AWS") bands, whose service rules have not yet been adopted. The NBP notes that other countries use the AWS-3 frequencies for broadband service. As a result, devices are already available on the international market to connect to it. In addition, the NBP asks that by October 1, 2010, NTIA determine whether federal allocations in a portion of the 1755-1850 MHz band can be reallocated so that they can be paired with the 20 MHz that make up the AWS-3 spectrum and be auctioned with them for broadband use. The NBP additionally suggests that the FCC look to the AWS-2 J block to bundle with either the AWS-3 frequencies or with Mobile Satellite Service S-block frequencies and auction them as well.

4. Finally, the NBP recommends that the FCC provide greater flexibility to Mobile Satellite Service ("MSS") operators. This flexibility is intended to accelerate terrestrial deployment in 90 MHz of MSS spectrum for broadband use, while taking care to ensure that the MSS market continues to provide public safety and government users with mission-critical satellite capabilities.

Conclusion

The NBP clearly represents a wide-ranging effort to provide universal high-speed broadband service throughout the United States. While some of the proposals are very specific, the NBP remains an outline to which many details must be added over time. Whether or not any of the proposals contained in the massive 376 page document are ultimately enacted, the NBP proposes a major shift in the government's approach to spectrum allocation issues.

Going forward, the FCC is likely to audit at least triennially the actual use made of spectrum it has allocated to particular services and assess whether the allotted use is then considered to be the best use of that spectrum. Businesses dependent on spectrum may not be able to rely on the continued availability of their spectrum if the FCC later deems their spectrum use inefficient. If spectrum use is an essential component of their business, such uncertainty could also impact their ability to obtain financing. The same is true of device manufacturers whose products could later be deemed inefficient users of spectrum.

The lawyers in the firm's Communications Section have much experience in spectrum allocation and management issues. Please feel free to call on them for assistance with any spectrum-related issues.

If you have any questions about the content of this advisory, please contact the Pillsbury attorney with whom you regularly work or any of the authors below.

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