The Long and Winding Road:
The FCC Paves the Path with Good Intentions

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Abstract:

This paper shows through several case studies that the Federal Communications Commission is having a difficult time moving toward more reliance on market forces. The case studies highlight the problems with a case-by-case approach to spectrum management rather than a wholesale change in policy. Then the paper proposes a concrete method for moving toward much more market-oriented spectrum policy. It proposes a method of nomination and grant of additional flexibility and then a free entry system without barriers to entry. The gains in consumer welfare from such a move could be substantial.

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Abbreviated Title: The Long and Winding Road.
Introduction

The Federal Communications Commission recently made a move in the right direction on spectrum policy. On September 24th, 2001, the Commission released an order that granted additional flexibility to licensees in the 2500 – 2690 MHz frequency bands. Following this order, Chairman Powell made remarks that indicate a more market-oriented approach to spectrum policy as well. While I am hopeful that the Commission will follow the philosophy of this order, the history of Commission decisions reflects an agency that wants to do the right thing, that talks about understanding and unleashing market forces, but continually retards their advance and is unwilling to make huge steps toward widespread implementation of a market-based framework for spectrum policy.

Much has been written about the benefits of a market-based approach to spectrum policy, including by FCC staff and Commissioners. At the same time, others see the importance of market forces, yet believe there are market failures that the government can ameliorate and that spectrum policy should be used for social priorities. It seems that everyone is in favor of using market forces to put spectrum to its highest and best use in general, but when it comes to specific cases, there is always room for exception.

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1 FCC (2001)


3 See for example, Coase (1959); Hazlett (2001); Hundt and Rosston (1995); Katz (1996); Kwerel and Williams (1992); Litan and Niskanen (1998); Owen (1971); Rosston and Steinberg (1997); Spiller and Cardillo (1999); Shelanski and Huber (1998); Valletti (2001); Webbink (1980); White (2001).

4 See for example, Calabrese (2001).
These exceptions may be costing us dearly as valuable spectrum is locked in inefficient uses as parties fight to position themselves for the battle in front of the Commission. If, instead, all parties knew that the ultimate outcome was that the Commission would expeditiously and without question adopt a plan to grant maximum flexibility and unleash market forces rather than to try to carve out exceptions and to manage the spectrum, needless wastes of time, lobbying effort, and worse, locking up of spectrum, would be eliminated.

The Commission can take several steps immediately to move more towards a market approach. Congress and the Administration can aid in this movement by making more spectrum available. Increasing the supply of spectrum on both the extensive and intensive margins will reduce the price of spectrum and unleash more of its potential to serve consumers. While this may reduce auction revenues (it should reduce the price per MHz-pop, but the overall government take might increase because of additional spectrum and additional flexibility for spectrum), consumer welfare should be increased.

The general key for the Commission is to quickly and completely get spectrum rights into the marketplace. For example, the Commission has been sitting on valuable spectrum for years that could be placed into use in the market. Instead of being exploited, this spectrum has been left idle. While there is nothing wrong with idle spectrum in general because it may be the optimal thing to do while waiting for technology, this is clearly not the reason spectrum has been locked up by the FCC. For example, the Commission allocated spectrum for nationwide PCS in 1993 and began auctioning some of it in 1994. However, more than 1/3 of that spectrum has sat in reserve since then. Possibly more important than some of the slivers of spectrum
locked up by the FCC are the additional rights to currently allocated spectrum that could be used more intensively.

The Commission should grant full flexibility and usage rights for currently licensed spectrum and swiftly get other spectrum out into the market so that it too can be used. At the time it does this, it will have to set up rules for interference standards. Interference has been a central concern of spectrum policy ever since the beginning of radio broadcasts. And it will and should continue to be important, but it should be treated as a concern, not a blockade to new uses.

I. Roadblocks in the way

There are roadblocks to the increasing use of spectrum. Generally, these roadblocks fall into two interrelated categories – incumbent interests and political interests. I have divided what many would lump into a single category (because they would assume that incumbents have the politicians lined up) into two separate categories because there are at least two distinct concerns. The first is the concern that any interference is harmful and needs to be prevented. The second concern is that increasing others’ rights will produce economic harm.

Clearly interference that degrades a service is harmful to the service operator. Current FCC rules, therefore, put a bar on interference. To an economist, such an outright bar is not necessarily an efficient way to manage the spectrum. First, there may be ways to mitigate the interference. For example, it might be possible for the new entrant to pay for better receivers for the incumbent so that the interference is eliminated. If the entrant is given a choice of paying for mitigation rather than an outright bar, then it would enter when its expected private value was higher than the cost of mitigation.

\[ V_E > M \]  

(1)
where $V_E$ is the value of using the spectrum to the entrant and $M$ is the cost of mitigation. Remember that, in this exercise, we do not have to consider the loss in surplus from the existing service because the entire cost of mitigation at this stage is borne by the entrant so that there is no change in the service to the existing consumers – they lose no consumer surplus from the entry.

However, since total social welfare is the sum of producers’ and consumers’ surplus, even this might lead to too little entry. There would be too little entry if

$$V_E < M \quad \text{and} \quad M < CS + V_E$$

(2)

where $CS$ is the additional consumer surplus from the new entry.

One additional factor that could lead to socially inefficient entry is the standard fact that even if equation (1) holds, the profits of existing firms could be reduced so that there is no gain in social welfare from the entry because profits are simply redistributed (and no gain in consumer welfare). In this case, the sufficient social welfare rule for entry could be that equation (1) be reinterpreted to be the sum across all firms rather than for the entrant assuming entry increases consumer welfare.

Entry is socially beneficial if

$$V_E + V_I > M$$

(3)

where $V_I$ is the net benefits (probably negative) to all incumbents of entry.

The divergence of interests between social welfare, the private incentives of entrants and the private incentives of incumbents leads to many of the problems that arise with respect to increasing the intensive and extensive use of the spectrum.

Incumbent users have long expressed concerned with interference to their service. They have been very successful at using the political process to stymie
competition through the use of interference arguments.\textsuperscript{5} Hazlett (2001) describes much of the detail of the fight over low power FM radio and how incumbent broadcasters were able to use interference claims to thwart the entry of perhaps thousands of new low power radio stations.\textsuperscript{6}

In other cases, the Commission has placed restrictions of specific services to prevent interference. Rather than deciding to prevent interference, however, they have mandated or prohibited the use of specific technologies or services as a proxy for interference. In some cases, these restrictions, rather than preventing interference, actually simply serve to prevent competition.

The next part of this section will look at a number of recent cases of spectrum disputes at the FCC. These cases are by no means exhaustive; rather they are the tip of the iceberg. They are meant to illustrate some of the problems inherent in the current way of spectrum management and to set up some of the ideas for spectrum reform in the following section.

\textit{a. The 700 MHz guard band story}

As is well known, broadcast television channels 60-69 are relatively lightly watched and it is quite likely that the majority of their station value as a broadcaster comes from their “must carry” rights.\textsuperscript{7} Television signals on these channels propagate much less far than broadcast stations on VHF channels and lower UHF channels. As a
result of their lesser value in broadcast, there are only about 100 stations licensed to broadcast on these stations across the country.

At the same time, this spectrum is just below the spectrum used for cellular telephony (in the 800 MHz band), specialized mobile radio (in 800 MHz and 900 MHz bands) and other private mobile radio services (800 MHz and 900 MHz bands). The propagation characteristics of transmissions in the 700 MHz band are relatively good for these types of services, especially with cellular configurations where the spectrum can be re-used within a service area. The proximity to these other services also make it likely that equipment for these bands will be relatively easy to make and rapidly available.

Because of these attractive characteristics, the Commission packed the new digital stations that it “loaned” to the incumbent broadcasters into the lower channels. This laid open the possibility of moving the upper UHF television channels into higher value use (or if auction winners decide, to continue using them for broadcasting).

The reallocation of this spectrum created the possibility of having 60 MHz of spectrum for auction. The Commission allocated 24 of the 60 MHz for public safety users and the remaining 36 MHz to commercial uses. Much of this will not be usable until television broadcasters have vacated this spectrum. While that is an interesting and controversial story, it will not be the focus of this paper.

To “protect” the 24 MHz of public safety spectrum from harmful interference, the Commission divided the 36 MHz of commercial spectrum into 4 different bands. Two of the bands are relatively large 20 MHz and 10 MHz blocks and they are separated from the public safety bands by so-called “guard bands” of 2 MHz and 4 MHz. (These are paired slices of 1 MHz and 2 MHz)
The FCC auctioned rights for these encumbered guard bands in September 2000. Before the auction for these rights, there was much debate at the Commission about the characteristics of the allowed transmissions and ownership structure. The lessons from that proceeding show some of the shortcomings of the current process at the FCC and its decision-making.

In its initial order relating to the 700 MHz band, the Commission set forth certain out of band emission (OOBE) limits on the 20 MHz and 10 MHz licensees. These limits were intended to protect the public safety (and guard band licensees) from harmful interference. However, it is clear that allowing any transmission on the 20 MHz and 10 MHz blocks would create some interference (or risk of interference) to other licensees. The question was to understand the acceptable level of interference.

When it came time to determine rules for the guard bands, immediately adjacent to the public safety spectrum, the Commission took a different tack. It had been under much pressure from the private radio community to designate some spectrum for private radio services. The private radio community saw the guard bands as a prime set of spectrum for their uses. A problem arose when other interests came up with ideas that might make those bands usable for commercial services (service for resale to the public) rather than for private uses (internal company use).

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8 I served as a consultant to one of the parties, FreeSpace Communications, active in that proceeding.
Another factor came from the public safety community that was very concerned about the possibility for interference from guard band users. Public safety users in the 800 MHz band had apparently been experiencing interference from Nextel Communications and were wary about other commercial users being adjacent to their assignments.9

Because of the public safety concern and private radio desires, the Commission instituted a number of rules that effectively prevented potentially high-value commercial use, but do not appear to have increased protection from interference.

The Commission rejected the use of OOBE requirements that would effectively have made the potential interference from the guard bands lower than that coming from the 20 MHz and 10 MHz blocks. Instead of focusing on outputs to prevent interference, the Commission adopted a set of input requirements. The most controversial one was to “restrict operation in the Guard Bands to entities that do not use a cellular system architecture. (fn. Similar to the definition of a “Cellular System” found in Section 22.99 of our rules, 47 CFR S 22.99, we define a cellular system architecture as one where large geographic service areas are segmented into many smaller areas or cells, each of which uses its own base station, to enable frequencies to be reused at relatively short distances.)”10

While this decision may in fact prevent interference from cellular systems, it does little to change the level of potential interference to public safety systems.

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9 There is debate about the cause of the interference; several explanations have been put forth. First, is that rather than being adjacent, the 800 MHz band intersperses the commercial and public safety bands. Second, the public safety receivers in the 800 MHz band may be very sensitive to interference (they have weak filters).

Instead of mandating output restrictions, the Commission will instead rely on the goodwill of licensees to coordinate with public safety systems when the public safety systems begin service, presumably several years afterwards.

Essentially what the Commission did in this case was to prevent the technology of a new entrant and ensure that the technology of incumbents would be used in the band. But to further ensure that new entrants would not be able to hijack this band away from private radio users, the Commission instituted two other rules that make little sense if it is indeed moving toward a more market-oriented spectrum policy. There is some degree of hope in that Chairman Powell, in his role as non-chairman Commissioner, dissented from one of these parts of the decision: the decision to put serious restrictions on the character and business plans of guard band licensees that have nothing to do with interference protection at all.¹¹

This problem was to mandate that guard band licensees be “guard band managers.” The Commission put two main requirements on guard band managers: that they not provide commercial service to the public; and that they lease a majority of their spectrum to unaffiliated third parties. Rather than letting the market determine whether band managers would be a good idea and sustainable in a market, the Commission imposed that structure by requiring the leasing of a majority of the spectrum to third parties.

There is a problem with this given the Commission’s history of granting waivers and changing rules. If acting as a band manager leads to lower expected profits than providing service to end users, then a bidder will have an incentive to bid

¹¹ In his dissent, Commissioner Powell noted that the rules were “principally designed to substantially increase the likelihood (if not guaranty) that the spectrum ultimately lands in the hands of private users.” Separate Statement of Commissioner Michael Powell, Dissenting in Part.
in the auction and petition the Commission to change its rules. This is not just hypothetical speculation – in the MMDS service, incumbent providers told people at the Commission not to increase flexibility to provide two-way service in advance of the MMDS overlay auction. The alleged justification was to preserve the nature of the service to compete with cable. The Commission acquiesced. Immediately after the auction, auction winners came back to the Commission claiming they would be unable to compete with outdated one-way services so would need the Commission to change the rules, which the Commission promptly (and correctly, but belatedly) did. I expect the same will occur with the guard band licensees if they cannot make as much money by leasing spectrum to unaffiliated third parties.

Another bizarre restriction in the guard band (to which Commissioner Powell did not dissent) was to limit any party to one of the two licenses available in each geographic area. Essentially this was a spectrum cap of 4 MHz. The Commission just raised the general CMRS spectrum cap from 45 MHz to 55 MHz and has scheduled a complete sunset of that cap, but there is no word that they would remove the 4 MHz cap. It is even more bizarre when in the same band, the 20 MHz and 10 MHz licenses were not even counted against the 45 MHz CMRS spectrum cap. The 4 MHz spectrum cap prevents a firm from employing technology that might take up to 6 MHz in a geographic area when another firm might be licensed to use 85 MHz of CMRS spectrum in the same area.

The stated justification for the spectrum cap and for the requirement to sell services to unaffiliated parties was to provide an opportunity for guard band managers to be tested. Unfortunately, as should be clear, this is testing a concept in a completely artificial environment and a potentially costly one at that. Commissioner Powell apparently saw though some of the effort to protect the interests of private radio users,
but not enough to join Commissioner Furchgott-Roth in dissenting from the cellular provision as well.

The political process of spectrum policy should ameliorate this somewhat. When the guard band licensees finally get access to the spectrum (after the broadcasters have vacated a sufficient amount of the spectrum), if their business plans are inferior to ones with cellular structures (and they cannot claim their systems do not meet the amorphous “cellular” definition) or they require more spectrum to compete efficiently, they have the opportunity to come back to the Commission and get permission to change their service.

But this creates the need to reveal business plans, creates delay and sets up the Commission for fierce political battles. The Commission should not set in place rules that ultimately create a further demand for Commission services to undo them.

The guard band decisions illustrate several problems with the current way of doing business at the FCC that essentially substitute the political process for sound ex ante definition of rights and responsibilities.

**b. Satellites and terrestrial uses**

The Commission has at least three different, but related problems it faces with respect to satellite and terrestrial transmissions. Two are related to the fact that the Commission did not fully define and allocate the transmission rights or set in place a framework for new entrants to begin using spectrum without creating undue interference to existing users.

The first situation involves DBS licensees and terrestrial use of the same spectrum by different parties. Northpoint Technologies claims it has developed a technology that can use the same spectrum as DBS licensees without interfering with DBS transmissions. DBS licensees dispute the non-interference claim. There is also
the issue that because of the Commission’s process, Northpoint has incurred
substantial expense and effort to try to win the right to transmit on this spectrum. If
the Commission determines that there would not be undue interference, other
potential licensees claim the terrestrial rights should be auctioned while Northpoint
argues that it should get the spectrum without an auction because of the effort it
undertook to get the Commission to open the spectrum to additional use.

The second satellite/terrestrial issue facing the Commission is the use of
terrestrial repeaters in the 2 GHz band by LEO satellite companies like Motient and
ICO. They want to install terrestrial towers in urban areas to increase the capacity in
those areas and to improve the quality in those areas. Others are objecting to this
because they claim it would be a giveaway in an era of auctions and would present
unfair competition. Still others object to the use of “satellite spectrum” for terrestrial
use because of international agreements.

The third satellite/terrestrial issue involves XM satellite radio, one of the two
satellite digital audio radio licensees. They want to put terrestrial repeaters in urban
areas to prevent loss of signal in urban canyons where customers may not be able to
“see” the satellites. Adjacent WCS licensees have objected on the grounds that this
would cause interference to their as yet unbuilt systems.

All three of the cases involve some combination of two issues: incomplete
definition of spectrum rights and burdens on entrants to ensure against interference ex
ante.

c. **DBS satellites**

Recently, GM announced that it has agreed to sell its DirectTV subsidiary to
Echostar Communications. Echostar operates the Dish Network, which along with
DirectTV are the two direct-to-home small satellite dish systems in the United
States. While both systems clearly compete with cable, there is concern about the antitrust implications of the deal. The U.S. has control of 3 “full CONUS” slots for DBS service. Two of them are licensed to Echostar and one is licensed to DirectTV.

At the same time, there are also DBS satellite slots controlled by the Mexican government, the government of Argentina, and the Canadian government. There are two Canadian satellite companies providing service in Canada: ExpressVu and Star Choice. Because of Canadian content rules, Canadian residents cannot legally subscribe to DirectTV and Dish Network. Because of the Canadian prohibition on U.S. satellite slot holders providing service in Canada, the U.S. has prohibited Canadian providers from serving U.S. customers.

Canada has a population of 31 million people, slightly more than 10% of the U.S. population. Essentially, the policy of prohibiting competition in DBS service would require that the benefit to U.S. trade policy and overall welfare be increased by the prohibition. This would require that Canada would be more likely to remove its Canadian content rules in response to the U.S. prohibition on DBS service. The expected value of that benefit should be weighed against the cost of the prohibition. The cost is the decline in competition to 90% of the joint population. Essentially, this spectrum is going to waste in both countries as a result of the trade policy at the time that spectrum is extremely valuable.

d. CARS Band

Cable Television (or Antenna) Relay Service (CARS) is one of the FCC acronyms for a block of spectrum in the 12 GHz range. It is used to provide point-to-

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12 There are also larger “C” band systems and the potential for other small dish systems.

13 Technically, most Canadian residents can view these signals and subscribe through U.S. postal addresses, but the receive dishes are illegal in Canada.
point and point-to-multipoint video and audio services. Currently, “Section 78.13 of the Commission’s rules specifies that a license for a CARS station can only be issued to owners and operators of cable television systems and qualified cable network-entities, licensees and conditional licensees of channels in the Multipoint Distribution Service (“MDS”), Multichannel, Multipoint Distribution Service (“MMDS”), and ITFS operators.” The Commission responded to a petition by a private cable operator that was not eligible for these frequencies by issuing an NPRM to loosen the eligibility requirements to include private cable operators and other MVDS providers.\textsuperscript{15}

There is excess demand for spectrum at a price of zero, even for use of crowded 12 GHz spectrum for point-to-point or point-to-multipoint service. The Commission has effectively blocked use of this spectrum from what may be much higher value uses than by MVPD providers. Rather than opening a proceeding to increase very slightly the eligibility requirements for use of the spectrum, the Commission should simply eliminate the rules governing the type of business an operator can be in. There is no reason why a cable operator would necessarily cause any less interference or better be able to coordinate with other users than a local access provider; in some cases it may actually be worse.

\textbf{e. Case study conclusions}

These selected case studies illustrate many of the problems facing spectrum policy makers today. The first instinct for policy makers is to address each situation and make the “right” decision. However, a better solution would be to institute a framework that would obviate the need for case-by-case decisions and would get

\textsuperscript{14} FCC (1999)
more spectrum in the market and increase competition and innovation in spectrum-based services.

II. What should be done

Writing the previous section was the easy part; the current system of spectrum allocation and assignment is inefficient and can be improved. The important unanswered question is how to take concrete steps toward the goal of a more efficient system. Part of that will come from the steps listed below, but a political aspect is required as well – the Commission and Congress need to make a credible commitment to back a market-based system and not to micromanage for special circumstances. This may mean producing results in some circumstances that are suboptimal, but the benefit from preventing much more harmful government interference in other situations should more than outweigh it.

a. Exhaustively license all spectrum—nomination process

Step one should be to exhaustively license all usable spectrum. This means to set out the rights for usage and to auction those rights when there is mutual exclusivity in demand for those spectrum rights. Without mutual exclusivity, the opportunity cost of the spectrum is zero so the auction price should be zero and there should be no need for an auction.16

As evidenced by the case studies above, there are two types of additional spectrum rights that need to be licensed. The first is to simply to make the current spectrum available to the public rather than withholding it from productive use.

15 id.

16 This does not hold when the Commission creates “engineering solutions” or employs other mechanisms (like arm-twisting) to artificially avoid mutual exclusivity. In those cases, the opportunity cost of the spectrum rights is still positive.
second is to provide comprehensive rights for the frequencies that are licensed and in use. For example, the rights to use any technology at 220 MHz rather than to mandate particular spectral efficiency, or to delineate and assign the terrestrial rights within spectrum bands designated for satellite use. These additional rights should be assigned quickly and have set interference criteria based on outputs, not on inputs.

After the initial wave of new spectrum rights are granted, there are sure to be additional requests for usage of previously unused spectrum. These rights should be treated as a land rights model as discussed in Crandall et al (1996). In that model, the incentive for an entrepreneur to find usable spectrum exists because the firm would get the right to use the spectrum it finds. For example, if the rights had been thought to have been completely set before Northpoint Technologies proposed its use, rather than petitioning the Commission to open a rulemaking and go through the extremely public and long delayed route, it should have been able to submit a claim for the right to the Commission and to begin service (subject to the interference discussion below).

It will be important to set up a framework for the grants of additional flexibility and additional spectrum so that they are usable. Where it is clear, the Commission should just set out new licenses or overlay licenses to get the ball rolling. This would be the case with the 1 MHz of narrowband PCS spectrum the Commission is sitting on or possibly for overlay licenses in bands where there are existing site specific licensees or geographic licenses that mandate specific technology like the 220 MHz band.

In other cases, they should take input on the new license grants that should be awarded. Firms may be reluctant to nominate publicly certain new licenses for grant because of the problem that nominating them may set off a competition for the grant.
That would lead a firm to hold back on nominating a particular new grant. As a result, the Commission should consider having a window for grants that would require firms to nominate the spectrum rights they want, but not to reveal those nominations until the window closed. If there were only a single firm making a nomination, those rights would be awarded immediately. If there were more than one firm, the Commission could limit participation in a competitive bidding proceeding to those firms that had expressed interest.

It would be very good to let market participants decide what spectrum rights to nominate and determine what is valuable. With tools like package bidding that the Commission is actively investigating, a comprehensive auction based on the nominations could be undertaken.

After the initial filing window, there would only be small amounts of spectrum rights left and the Commission would not have to hold these “windows” any more – spectrum rights would be on a first come, first served basis. One exception would be when “new” spectrum was turned over from the federal government to the public. In those cases, auctions would be appropriate.

Since there would be full rights available for licensees, the government would necessarily get out of the relocation business and delegate that responsibility to the market. (It does not appear with the resounding success of the relocation of television broadcasters that the government can claim substantial comparative advantage.)

**b. Set up a clear interference framework that promotes entry**

At the same time, the Commission should set up a framework for interference that promotes entry and protects against interference. In all of the cases discussed above with the exception of the Canadian DBS entry, interference was a key concern. Just because the nature of spectrum transmission is best understood by people with
backgrounds in electrical engineering does not mean that transmission rights cannot be sufficiently well defined to be bought and sold in commercial markets. The same degree of certainty is required for buying and selling licenses through the current political process anyway.

All of this is well known and has been well argued by economists for decades. However, virtually no movement has been made to operationalize a method for taking the economic arguments and putting them into action so the market can work. With a set of initial spectral emission rights, parties could trade these rights or modify them so that different or less costly services could be provided.

First, the Commission should set up emission rights rather than any set of input requirements. That would allow firms to implement their visions within the context of a license rather than trying to determine whether their combination of tower height and power met the Commission rules or whether they would have to hire lobbyists, go into the Commission, go to Capitol Hill, and spend years to get a waiver. Instead, if they stayed within, say a specific OOBE limit, they would be presumptively operating within their license and would require no visit to Washington. This would also allow firms to keep proprietary information more confidential.

Under all of the current rules, with the exception of operation on unlicensed spectrum, the path is to get permission, ask for objections, and then approve or disapprove. The process retards entry and innovation and favors incumbents. A better solution would be to presumptively allow transmissions and to put the onus on objecting parties to show harm. Clearly this would require a rapid response system to be able to temporarily shut down harmful broadcasts, but it would require evidence that there was actual harm rather than speculation on the part of incumbents that there
would be harm and speculation on the part of the entrant that there would not be harm.

To protect the integrity of the system, it might make some sense to force new entrants to post a bond for a few months upon beginning broadcasting to ensure that if they do harm a licensed service, they would not simply fold up shop, making testing be like purchasing a low-cost option.

Obviously there are a lot of details to work out to make such a system work. These same was true with the first set of spectrum auctions. Chairman Hundt made spectrum auction implementation a priority and stood up to pressure to implement it in a workable, pro-competitive and efficient way. Implementing a new framework for spectrum policy will require that the FCC Chairman as well as key Congressman and Senators commit to such a policy.

III. Gains and Losses

This movement to a more market-based approach is important because of the increased efficiency and reduction in waste that can be accomplished. Demand for wireless services is growing rapidly and better spectrum policy will allow more, better and cheaper wireless services to be provided. There are some equity objections to a more market-based approach – why should incumbents get more flexibility as a gift? The answer is that in some cases it will be a gift, but the benefits to the public from overall liberalization are more important. In other cases, the increased competition might swamp any individual benefits from additional transmission rights.
a. Budget and Windfalls

It is well known that general tax revenues impose an excess burden that creates inefficiency. Based on this and the idea that an auction for spectrum creates little or no distortion, some people have made the argument that it would be inappropriate to simply grant additional spectrum rights to existing licensees. In the case of previously unlicensed spectrum where there would be contention for the licenses, this is clearly true. In other cases, where the rights are worth something to only one party or contention would cause delay in service for an extremely long period of time, it might be socially optimal to simply grant the rights to that party and allow secondary market trading.

There is a large caveat to this. In the past, many incumbents have come to the Commission making the argument: “Don’t auction this – I am the only one it is worth anything to.” This occurred many times in auctions where incumbents had been licensed for a service on a site-specific basis and the Commission proposed overlay licenses. When it came time for the auction, money spoke and other parties proved that they had some value for the overlay licenses. As a result, the Commission should tread carefully when simply granting rights to incumbents. My proposal of a nomination process should facilitate solving this problem. If an incumbent wants additional rights for a specific piece of spectrum, it will nominate that piece. To avoid mutual exclusivity, there will be an incentive not to overstate the rights desired.

If there is no mutual exclusivity, it may be because the rights are only valuable to a single party. This may cause a windfall gain for that party. It might seem like a good idea to tax that windfall because it would not be distortionary. However, there

17 See, for example, Ballard, Shoven and Whalley (1985)
are serious implementation difficulties that could make it impossible to implement or restrict the amount of spectrum rights artificially.

**b. Calculation of gains from liberalization.**

The social value of increased liberalization is the sum of the licensee value and the increased consumer surplus. The consumer surplus increase may be ten times as high as the private value so that trying to capture some of the windfall gain through withholding or delaying liberalization rights could be very costly. To see an example of the magnitude of consumer welfare compared with producer value, I have looked at the situation of cellular telephony. Hausman (1997) has estimated that the introduction of cellular created consumer surplus on the order of $30 to $50 billion per year. In Rosston (1994), I used sales of cellular systems to estimate that auction revenues for the two cellular licenses would have been $30 billion. Both of these numbers may be subject to criticism, but are used to give an idea of the magnitude of the differential between the value of licenses and consumer surplus generated. With discounting, this gives an order of magnitude more weight to the consumer surplus than to the private license values. With additional competition, the private license values should decrease more as scarcity is lessened.

As a result, while increasing the tax revenues by a small amount, restricting liberalization to increase tax revenues would reduce overall welfare significantly. Creating artificial scarcity is not a good way to allocate spectrum or to remove restrictions on spectrum.

**IV. Conclusion**

The Commission needs to move forward with changes to spectrum policy. The nomination process and interference rights liability approaches described in this paper are complementary programs that should provide a framework for moving forward. If
the Commission does not want to move as aggressively with the nomination process, it would be possible to pick a certain swath of spectrum to use as an experiment. But the Commission should not stand idly by and make speeches about the importance of market forces and then issue one-off orders making exceptions to a well-articulated vision. Instead it should take the giant leap forward.
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