

Re: DA 02-1311

Spectrum Policy Comments ET Docket No. 02-135

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1. To migrate from current spectrum allocations to more market-oriented allocations, the FCC should provision more license-exempt spectrum that results in a fertile environment for thousands of new Wireless Internet Service Providers (WISP's) to operate in. This contrasts and actually complements current forms of broadband deployment owned by a handful of large licensed incumbent providers.

2(a). "Incumbents" are seen by many as huge "dinosaurs" that are not very flexible or adaptive. In addition, many operate as "technology monopolies" in many of their markets and despite this advantage, many fail while leaving large consumer bases "dark" and unhappy. Only with thousands of local area providers will Broadband Internet be available to the vast majority of US residents any time soon. Releasing license exempt spectrum spurs billions in new investment and sales into wireless broadband deployment and the resulting commerce.

2b. Whether selling site-based or geographic-based licenses, the purchaser should be required to use the license or lose it. This includes not only hanging some minimal radios and antennas and calling that "use" as is often done to skirt around the issue, but rather to actually deploy services to the public and not just "sit" on the spectrum while 100's or 1000's of unlicensed providers starve for more spectrum to grow the Internet within.

2c. Unused spectrum is not doing our nation or economy any good at all. The issue for many is how to use an otherwise wasted resource to increase Internet related investments and spur our sagging economy.

2d. Licensed models offer a lot of bandwidth to single organizations who can only service a limited portion of the populace. In contrast license-exempt models offer less bandwidth to many organizations due to the shared nature of the model. This brings about more competition and diverse service offerings to the public.

2e. By promoting more license-exempt spectrum allocation, interference rights are eliminated so the issue solves itself from a regulatory perspective.

2f. A report should be conducted to see how much of the licensed spectrum is actually being used to deliver Internet service throughout the country. Those who are wasting bandwidth should be required to sell their license to someone who is committed to actually using it while at the same time, allotting more license-exempt spectrum that benefits the overall economy much more. Nobody believes the license-exempt spectrums are being unused or wasted in any way. Nor are they the subject of strategic holdouts.

3a. Absolutely. The less congested spectrums should be used to deliver Internet access cheaply and competitively by a large number of service providers. Sometime should be done to help the thousands of independent local and regional ISP's compete against a shrinking number of national conglomerates. If it were not for these diligent ISP's nurturing and growing the early Internet access market over the past 8 years, there would likely be no broadband market to follow. Independent ISP's who often serve more rural markets should not be shut out of what they helped create while being stuck in the ISM and UNII bands.

3b. Speaking of unlicensed bands of which I'm the most familiar with, the answer is both yes and no. The policies would not necessarily have to be different between rural and urban areas if they promoted good RF engineering and wise and efficient use of spectrum to begin with. Currently they do not. The current policies try to remove as much decision making as possible on the part of the ISP while requiring "canned" certified systems in a "one size fits all" package. ISP's should be allowed to make decisions to help protect their very rare valuable resource; the unlicensed spectrum.

4. With license-exempt spectrum, there are no market failures that would need to be addressed by the Commission. And we are already sharing the unlicensed spectrum with public safety and public service entities. In some cases we provide service to these entities through license-exempt spectrum already.

5. Absolutely more license-exempt spectrum should be set aside for rapid expansion of the Internet into every portion of the country. Changes are needed for the rules to help accomplish this. Any concern that as congestion rises, the spectrum may not be put to its highest valued use is not logical. Due to the nature of unlicensed spectrum, the concern is really that as congestion rises, the spectrum may not be put to its highest value by each entity. That is what sharing is all about. It is congested spectrum that is being used to its fullest potential. That point is when more unlicensed spectrum should be allotted.

Spectrum is a limited National resource. License-exempt spectrum is analogous to a federal, state, or local park where all are free to share a national treasure and experience. And that is what the Internet is all about; sharing in information, experiences, and commerce. Local and regional ISP's can succeed where large conglomerates have failed in bringing quality, affordable broadband Internet access.

6. Every time the FCC provides license-exempt spectrum, whole new industries develop new spectrum-based technologies into products to best utilize the spectrum. Then service providers invest in those products. In turn, the service providers' users utilize their service to invest further in the overall economy. Contrast this to licensed based allocations where there is often no affordable gear on the market to even utilize the band in such a way as to benefit the nation or economy, or even the license owner as they spiral towards bankruptcy rather than rollout. One doesn't have to look far for cases such as the failures of Advanced Radio Telecomm (ART) and Sprint Wireless Broadband. Who is benefiting from the use of this spectrum today? The answer is nobody which does not help our nation or economy.

7-8. I cannot comment on this item other than to say that it is much easier for the commission to allow ISP's to police themselves under license-exempt rules in contrast to the commission having to police licensed band on behalf of the license holders.

9. It would be beneficial to ISP's who are rolling out broadband Internet access via license-exempt spectrum to have some form of protection from incumbent users by not sharing the band with cordless telephones, Ham operators, etc. There is no doubt that those uses are legitimate and important. But there is also little doubt that the deployment of affordable broadband Internet access is important to our country, people, and economy as well. Local and regional ISP's can do for the Internet what Ham operators have done for emergency communications. And that is to connect with a very wide scope of users in an economically feasible way that is not possible with a limited number of providers dependent solely on the mood of Wall Street investors or strong government regulation.

10. In the case of license-exempt spectrum, not only are power limits important but also transmission modulation and protocols are designed to share the spectrum among unrelated users. I think the FCC is doing well in maintaining fair balance the rules of usage of differing technologies; Frequency Hopping verses Direct Sequence Spread Spectrum for example. There is a danger that even within set power rules, that new technology needs to be fair-handed in the use of unlicensed spectrum. For example 10MHz wide FH channels would improve performance but is not allowed under current part 15 rules.

11. Yes when the rules cater to one special interest over another. For example, proposal to allow 5Mhz wide FHSS channels within the 2.4GHz ISM band was voted down due to

pressure from rival DSSS manufacturers who wish to offer a much faster 11Mbps product compared to the slower 2Mbps FHSS product under 1MHz wide channel rules.

12. A way to minimize the issue is to define fewer non-interference rights to spectrum users who would share in more license exempt spectrum. Innovation of license-except radio gear is increasing at a very rapid rate. This would not be possible if users did not have to be able to accept some harmful interference. Current license-exempt allocations are working surprising well as evident by the proliferation of Wireless ISP's across the nation. I think this is a case where "more of a good thing" is needed. And even targeted more toward the Wireless ISP's with specific rules for this new class of providers.

13. There are those who would think that incumbents should take precedence. However if global broadband communication is going to ever happen, incumbents should have some responsibility and some incentive to innovate as well. That is improving their quality of communications while dealing with less than perfect situations. Meanwhile there is much trend toward moving private networks to virtual networks residing on the Internet.

14-16. Certainly the newly created economies resulting from current technical rules were never anticipated by the commission during their adoption. Which is testimony to how well the current system operates in bringing about a whole new unanticipated industry of Wireless Internet Service providers to help boost our economy. Imagine if every single license-exempt allocation created whole new industries, what that would mean from an economic perspective

However, generally nobody should broadcast outside without having some RF design and implementation knowledge. Under part-15 rules we operate under, this is not covered in the way that is good for providers or good for the spectrum. I am for some plan for some form of certification for the privilege of hanging an antenna outside in lieu of current system certification procedures, which are abused by users, vendors, and even manufacturers in the form of leveraging the antenna markets to their economic advantage.

17. Competition within a healthy marketplace will create an environment that is fertile for giant leaps in performance and efficiency. Only within the last 24 months, bitrates achieved within the 2.4 ISM spectrum have increased from 2 to 22 Mbps and higher. That is a 10X increase in efficiency or 5X per year and still growing fast. This rapid growth of technology and innovation is unprecedented in a licensed allocation. This is due to the convergence of local networking with Internet access in a very competitive marketplace.

18. The best example of this that I can think of is the "system certification" rules within Part 15 that only allow for specified and licensed combinations of radios and antennas to be marketed, sold, or utilized. So very often more power is used to establish a particular link than is needed because only 1 or 2 models of antennas are included in the system certification. The use of the right amount of antenna gain and transmitter power should

be encouraged by allowing Wireless ISP's to obtain a status and operate within that status as a professional installer.

19.

OFDM and wide-channel FHSS would allow better use of current ISM spectrum. The 3 limiting factors are a) changing current FCC rules to allow OFDM and wider channel FHSS hopping within ISM spectrum. b) Having more spectrum to operate within, such as an newly allocated "ISP band". c) Having products sold at economies of scale needed to make them affordable for providers to purchase and deploy for end-user services.

20.

I don't believe the commission should benchmark spectral efficiencies and use that to formulate new policy. But rather the commission should help create a fertile environment by establishing rules that promote fierce competition and rapid innovation such as has occurred in the personal computing and networking industries. The best way to achieve the goal of greater spectral efficiency is to allow consumer demand for broadband communication services to be the driving force, as there is no greater incentive for innovation than market demand being filled by a large number of competing companies.

21.

How can the commission provide incentives for operators to increase spectrum efficiency if operators don't have a real need, or the market doesn't demand it from them? The incentive should come from the desire to earn capital in a free market rather than the desire to follow arbitrary rule sets. By allow free enterprise and growing markets to accomplish the commission's goals of increased spectral efficiency, the best results can be had with the least amount of government resources.

22-24.

Public service and critical infrastructure industries do not have the same free market incentives that other competitive industries have to keep costs low and efficiencies high. Therefore they must use much of the technology that is developed for the private industry sector just like has occurred in other areas such as the computing and local networking industries. Imagine if special laptop computers had to be developed and manufactured just for one specific group of people. What would those cost? And would they be able to keep up with the ever-increasing efficiency and performance of what anyone can purchase at any time from Office Depot or Wal-Mart stores? That is why it is so critical for the public sector has a corresponding healthy private sector to make great strides in advances. One only has to look under the past few decades at the Regional Bells verses the Compaq's, Dell's, and Gateway Computer companies of this world to see the difference in performance, cost, and increased efficiency and innovation.

25-28. My only comment here is that International governments that support free markets will have the interest and incentive to boost innovation to meet the ever-increasing demands on the spectrum new solutions. Those that are not interesting in having the demand for services by their citizens develop into a market will not create any innovative

solutions. Clearly the FCC is seeking such interest as is evident by this request for public comment. I thank you for your time and interest in doing so.

Best Regards,

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