

Perspectives on Radio Operating Rights

On 12 November 2010, 23 policy makers, practitioners and academics met over lunch to discuss how radio operating rights might be defined, assigned and enforced in order to obtain the maximum benefit from wireless operations. This conversation followed, and built on, a conference held earlier that day on the same topic, “The Unfinished Radio Revolution: New Approaches to Handling Wireless Interference” (<http://bit.ly/9N2hDn>). The discussants comprised the conference presenters and invited guests.

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Takeaways

- There is no clear sense of how large of a problem these interference issues are. What are the best ways to measure it?
- Spectrum debates are not intelligible to non-technologists, notably Congress, and there needs to be an effort to create a common language that will allow non-technologists to make policy decisions in this highly technical area.
- Federal Government is one of the major users of spectrum and is not part of this discussion. Its input is necessary as what it decides may have significant influence on commercial operations.
- Incentive auctions are one way to help move operations from low value to high value uses, but there are concerns with windfall payments. Spectrum fees could create a very similar incentive structure without the windfall payment concern.
- A large number of complex interference disputes are regularly being solved outside of the FCC through private agreements among operators, and often between engineers in the field.
- When disputes involve similar services in the same band, operators have similar incentives that facilitates private dispute resolution. This may not be the case when licensees with different services or in adjacent bands are involved.
- The FCC, in its current form, may not be the best institution to resolve these types of disputes, for a variety of reasons. The U.K. regulator Ofcom may serve as a useful model.
- Dispute resolution may need to follow an incremental common law type model with case-by-case resolution

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Discussion

Policy maker – There has been a lot of emphasis on the importance of trying to define or regulate interference, or property rights definitions. But maybe property rights definition does something else; it may not be necessary to control actual interference by property rights. For example, the FCC does not have a definition of interference, but does put limits on operating parameters such as power limits and out-of-band limits, in frequency and space.

Practitioner – There is no clear sense of how big the problem is: is it big, is it small, is it getting better? There may be some ways to go about scoping this problem, from an engineering point of view, it could be found from the licensees themselves. For example, by asking them: (1) are you experiencing more interference; (2) is it harder to negotiate the rights with other licensees; (3) is it harder or easier for the FCC to fix these; and (4) is the FCC called in more or less often? In the end there are likely costs to the system that are not seen.

Policy maker – There is great complexity in these issues and there are multiple definitions of harmful interference. There is also growing demand for federal and non-federal frequencies. No one is making more spectrum though, so the main way to feed this demand is through significantly more aggressive sharing and reuse. A key issue is the lack of trust; nobody wants to take the first step. There is an acknowledgement of the increased intensity, and a need for better technology to manage it, but what's lacking is a consensus on how to do this.

Practitioner – Real world interference problems are being handled daily by engineers in the field, and not by the FCC. In essence, the property rights are being designed in the field.

Policy maker – It is a very concentrated community that thinks about, writes about, and works on spectrum issues. Often they use impenetrable language as well, so it is difficult for average folks to understand the dialogue. There are also widely divergent views and this makes it hard for Congress to know how to take action in this area. Congress is grappling with the most appropriate role for the FCC. There needs to be: (1) a common language that Congress can understand and (2) common agreed upon views of the FCC's roles. In terms of the latter, what are the roles for the FCC under modern conditions and technologies? As non-technologists, Congress needs to be able to understand enough about this area to make decisions.

Practitioner – We need to understand how much of a problem this really is. Very difficult interference disputes get solved every day, and we cannot lose sight of that. I am concerned with the length of time and difficulties that would need to be overcome (technical as well as political, since various stakeholders will likely disagree over these issues) in order to clearly define the rights across all bands as suggested in the conference. Is there a place for incrementalism? For example, could we develop a common law of probabilistic interference and thus create the seemingly necessary certainty around the rights in a radio license?

Practitioner – How does the government use its spectrum? No representative of government users is at the table and that perspective should be involved.

Practitioner - No one really talked about enforcement, which is the third leg of the framework for the conference: defining, assigning and enforcing radio-operating rights. The problem is not one of interference, but of institutions. There are no interference dispute backlogs yet, but in the future there might be. Wouldn't it be good to have the institution, or an alternative institution to the FCC, or maybe multiple institutions, ready for an increase in instances of interference disputes? Along these lines, what if spectrum leases increase in popularity? Importantly, what if the lease refers to the FCC as the dispute resolution body and, as it stands today, how long would that kind of dispute take to work its way through the FCC? There is a concern that the FCC might not handle disputes and dispute resolutions of this nature

in an expeditious manner, as it currently relies on the rulemaking process and not case-by-case adjudication.

The dispute resolution issue needs to be teed up. There is an unreleased paper at the FCC about the “train wreck” that could come out of the WCS/PCS rules if the harmony and agreement between licensees in that band stopped. This paper should be published. Further, Ellen Goodman’s paper “Spectrum Rights in the Telecosm to Come” could be used as the base to build up an enforcement framework. The FCC likely needs the authority to create and enforce interference standards, but this authority should be conditioned. For example, use CALEA as the model: it put in place standards for wiretapping, but only if the industry failed to create the standard. This could serve as a baseline, but shift the burden to the parties.

Practitioner – Common law rights exist only because courts enforce them. There is some concern that there is too much micromanagement in creating those rules, but that may be necessary in the beginning. Enforcement is key. The problem with spectrum is that we cannot just make it private property. The problem with Coase is that we are not in a Coasian world and so we need to make some decisions based on transaction costs that would not have to be made otherwise. Efficiency says nothing about equity – the equities involved in setting that initial entitlement is a political question.

Policy maker – Failures in this area include such things as disputes that last too long and prevent allocation, or deploying technology that does not make sense. From the proposals at the conference: (1) it is better to define default rules and there are lots of failures for the FCC to look at and (2) those rules should be full rights – but there are cases where full rights would have been successful and others where it would not. One major question is whether the default rights or rules should be the same across *all* frequencies and in *all* bands. There also seem to be differences between nationwide licensees and a multitude of local licensees.

Academic – There are differences between *intra*-service or -band conflicts and *inter*-service or -band conflicts. Licensees that are in the same service or band often use the same technologies – which tends to cause less interference – and generally have the same incentives. In contrast, licensees in distinct bands often use very different technologies, which can cause significant interference, and many times they offer entirely different services so their incentives can be very different. Thus, adjacent band interference is a much bigger problem.

When it comes to the problems, the examples we went through during the conference cover a whole heck of a lot of spectrum in the most valuable part of the range. These systems are beginning to look more and more like “noise,” because that is the way you capture more capacity. But, when you have a broadband system that looks like noise adjacent to another system, the intermodulation looks a lot like *more* noise. This can be death by a thousand cuts and it is very difficult to point to a particular source in these cases.

Academic – As a regulatory body, Ofcom in the United Kingdom is “younger” than the FCC, but it arguably does a better job. Ofcom seems to be able to look at a multitude of different types of proceedings at once, but the FCC seems like it cannot. There are other regulatory agencies in the US, what role could they play in spectrum regulation?

What is the difference between Ofcom and FCC? There is a CEO of Ofcom with more delegated authority and his department heads do not leave. In contrast to the FCC, those with decision-making power are not political appointees and are not replaced often. In an effort to be more like Ofcom, maybe non-controversial spectrum decisions should be given to the staffers and not decided at the Commission

level. Possibly there should be a separate flow of work and issues for senior staffers, who can act on non-controversial items under Sec. 7.

Interest in spectrum at the FCC comes and goes. It is good that the FCC is looking at spectrum now, but this ebb and flow is a real problem – should the FCC go back to subcommittees? Maybe a spectrum Czar would be helpful, then that person and their department could work on interference disputes when the rest of the Commission is busy. The FCC could reorganize itself to have more continuity in spectrum policy and not have these mood swings.

Capital markets are hobbled by the length of time it takes for the FCC to make decisions, not necessarily the content of the decisions themselves and Silicon Valley investors do not view the FCC in a favorable light because of this.

Policy maker – Some might think there is a lack of consensus in the spectrum community, but there is consensus on incentive auctions. There needs to be legislation that gives the FCC authority to share auction revenues with licensees that give up spectrum. This should apply to all spectrum; it is a general mechanism to deal with the fact that the world changes. This would allow the new licensees to compensate the incumbents and provides incentives/mechanisms to move spectrum from low value to high value.

Academic – We should be using the term “stochastic” instead of “probabilistic.” On Coase, it is wrong to say that Coase demanded a zero transactions world. Let’s look at the costs when it comes to spectrum and licensees. There are places where the costs are very low – *intra*-band places. Here, the carriers operate under certain rules and put together vast spectrum swaps and deals in order to create licenses with fewer boundaries. There can be issues when neighbors have differing incentives, for example with federal government users. There are also places where costs are very high, for example broadcast television. And finally, places where the FCC thought it would be really tough, such as relocation of microwave incumbents in PCS, and it was not.

What we need is a case-by-case dispute resolution process where the applicants have to prove something is in the public interest, and the default should be no action. Rules should be put in place that enables the FCC to get spectrum out into the market and enable dispute resolution. Along these lines, what about dispute resolution through binding arbitration? The actual dispute resolution mechanisms exist, but we should focus on getting those in place and usable by licensees.

Policy maker – Incentive auctions are a great opportunity, but the details are important. Here, we are talking about sharing revenue with an entity initially received the license for free. There has perhaps been too much focus on incentive auctions as the primary tool to free up spectrum to move from low value to high value uses. Spectrum fees are another way of doing this and they will incentivize the turnover of licenses without giving away windfalls. We need a comprehensive bill, and incentive auctions are only a part of a full solution. What about the impact of incentive auctions on unlicensed spectrum? To receive money, the license needs to be in a licensed spectrum.

Practitioner – The concern around institutional issues with dispute resolution should be clarified. The current institutional environment is vulnerable to capture and rent seeking and this is because of the tendency towards rulemaking. We need to understand “Chapter Zero” in all of these disputes, because that is where the dispute starts. In the 800 MHz it was Portland: Portland decided the issue without going to the FCC, so Nextel went to the FCC to start a rulemaking. We do not want the licensees to be able to run to the body that will bog things down.

Practitioner – The biggest party to this discussion – the federal government – is not part of this discussion. They have a lot of spectrum and what they say about interference may end up being the law of the land

Academic – What is the probability that any of this legislation will pass?

Practitioner – There is a budget problem and thus the legislation should pass, because that is one of the few ways to get the broadcasters off the spectrum. There is a lot of spectrum that is not being used and could be used with an auction.

Policy maker – Or this can be addressed with fees. There is not a single absolute here, but there has been an over-reliance on incentive auctions as the only solution.