

The Spectrum Policy Task Force has taken several different directions in its conclusions and recommendations. Most respondents who operate on a licensed basis identified significant difficulties should their use be converted to or mixed with market approaches or unlicensed use. Those parties generally also supported the SPTF Report, but importantly, not in their bands. Full supporters usually consisted of entrants who on the whole have less experience in, or responsibility for the reliable operation of radiocommunication devices.

### Disciplined Use of the Spectrum

The primary concern of current users might be characterized as that of leaving a disciplined<sup>1</sup> radio interference environment for one that is undisciplined. In a disciplined environment, users are able to identify other spectrum users to preemptively avoid interference from a new entrant and to resolve interference should it occur. Several respondents suggested registries of unlicensed systems to achieve this. This may not resolve the issue of opportunistic users who come up on new frequencies as the environment changes; making interference resolution a moving target. In addition, unlicensed systems are by their nature an open cohort, with new users coming up unpredictably and without a finite limit in number, particularly as more robust systems are designed. This means Noise Floor allocations are a moving target.

Some of this might be mitigated through discipline by means of firm enforcement for unlicensed systems, beginning with equipment approvals which include frequency management protocols.<sup>2</sup> Use of unapproved equipment should be subject to stiff penalties to discourage such use.

The Commission should ensure that new forms of spectrum management replicate the discipline that has amply demonstrated an ability to maintain reliable radiocommunication for all parties. The Commission recently approved the use of MSS frequencies by ATC, where the two modes of operation (Mobile Satellite and Mobile) share a band through a common frequency assignment process. The Mobile operation uses frequencies released by the MSS because they are not momentarily needed by the MSS. This symbiotic use of spectrum by two otherwise incompatible services is a good model of spectrum discipline. One might foresee this model applied elsewhere - the use of cellular spectrum in off-peak periods for WLAN, broadcast spectrum for home networking, and non-government use of government spectrum, as examples.

### White Space and Secondary Markets

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<sup>1</sup> This discipline consists of due processes for the allocation and assignment/coordination of frequencies.

<sup>2</sup> In addition to finding an unused frequency, the station should be aware of the number of other unlicensed devices operating in the area, and reduce transmitter power and duty cycle to maintain a given interference environment in that area. A dial-in registration system could help accomplish this and also localize “must-avoid” frequencies.

The last thing the Commission should want is checkerboard allocations. This will make the spectrum even more fragmented, working against flexibility rather than for it. Nation-wide systems will become a thing of the past.

### Regulatory Models

The Task Force has explored the economic and legal aspects of spectrum attribution, but has given relatively little attention to its essentially technical nature. Radio spectrum is useful only because of radio technology, and then it is only useful if technology and the spectrum (frequency, bandwidth, propagation and noise) are carefully matched by system designers. Treatment of the spectrum as an economic phenomena or a legal field of practice can solve only matters that are peripheral to actual spectrum use. The Commission's prime objective appears to be the de-bureaucratization of spectrum, but must ensure it does not sacrifice technical integrity to do so.

### Continental Drift

The Commission should take extreme care that its spectrum policies do not take it further away from uses of spectrum found on other continents and even within this continent. It is much easier to make an allocation or policy than to get rid of it once large investments become involved. As often mentioned, the internationalization of telecommunications requires global allocation decisions. It has been amply demonstrated that when the U.S. spectrum becomes unique, it loses international support, and international frequency allocations become difficult or impossible to implement here. Otherwise, U.S. industry is succumbing to an unstated policy of isolationism in spectrum. In general, use of spectrum must remain in line with international allocations.

### Conclusion

The SPTF Report has identified innovative approaches to spectrum policy. The implementation of the recommendations should embrace the caveat that disciplined spectrum techniques, such as automated frequency management protocols in unlicensed devices will be implemented so as to fully satisfy the concerns of shared spectrum users.

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