

The Commerce Spectrum Management Advisory Committee (CSMAC) is examining both technical and operational aspects of spectrum efficiency. One proposal that has garnered much public attention and debate is potential increased use of “unlicensed” or “lite-licensed” spectrum. Below is one possible framing, along with questions, meant to inform further CSMAC discussion.

- Review of unlicensed technologies
 - Identify types of government applications where unlicensed technology has been more or less successful
 - Study the level of compliance of unlicensed users. What are the challenges of enforcement?
 - Examine strictly unlicensed bands
 - Consider “opportunistic sharing” (white spaces, spectrum sensing, etc.)
- Spectrum sensing approaches v. “Database” approaches
 - The white spaces “database” was a proposal designed in part to produce “exclusion zones” where unlicensed devices cannot operate. Is it possible for such a database to be kept up to date without producing too broad exclusions?
 - What is the state of unlicensed devices/electronics? Are robust “spectrum sensing/smart radio” technologies yet available? When are they likely to be available/commercially scalable?
 - What is the status of the DARPA XG project? Could they provide a technical briefing?
 - Are there mesh network technology providers that could provide technical briefings?
 - Other interesting spectrum sensing technologies?
- Spectrum Allocations
 - How much spectrum should be made available for unlicensed technology? If the FCC is going to make 500 MHz available by 2015, how much of the identified spectrum should be allocated for unlicensed use?
 - Identify services best suited for unlicensed spectrum
- Technology Requirements
 - What are appropriate power levels for unlicensed devices?
 - Current FCC rules say 40 milliwatts, but critics have suggested that doesn’t allow for a robust device ecosystem. Would power levels more in line with commercial mobile technology be more appropriate, e.g. 200-400 milliwatts?
 - Could power levels be increased in rural areas, possibly up to and above 4 watts?
 - Could power levels be increased for highly directional antennae?

- Case Studies
 - Examine unlicensed case studies from abroad – reports indicate that there are a number of significant unlicensed/mesh network deployments internationally (Germany, Greece, Denmark, etc.), would these provide interesting case studies for exploration?

- Issues/questions
 - Has the use of “semi-unlicensed” allocations been a success? For example, see wireless backhaul, etc.
 - Are unlicensed networks potentially good solutions for applications to foster technological advancement in health care, energy and other critical industries?
 - Are unlicensed networks being used successfully on tribal lands?
 - Consider uses of unlicensed spectrum that are short range, with a low possibility of causing interference due to short range signal propagation? See for example the “Wireless Gigabit Alliance”, or “WiGig” which is using spectrum at/above 60 MHz to network devices wirelessly at a distance of a few feet (within a typical room).