

Final Report and Recommendations

Identifying Key Characteristics of Bands for Commercial Deployments and Applications Subcommittee

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Overview

- The subcommittee was presented with a request to develop a methodology to help assess federal bands for sharing.
- Three recommendations have been drafted to help inform the NTIA in developing a methodology.

Question

- Develop a methodology to help assess federal bands for potential sharing, using key characteristics identified previously to assess industry desirability of a frequency band. This methodology will be considered and potentially incorporated into the interagency process to identify and prioritize bands for repurposing.
- **Response:** The key factors when industry looks to evaluate particular spectrum bands are divided into several categories:
 - propagation and coverage;
 - capacity;
 - contiguity;
 - international harmonization (scale); and
 - incumbency issues.
- In general, no single spectrum band will meet every requirement for a particular use, given the diversity of industry requirements and use cases. Relative priority for each of these characteristics is likely to vary based on industry and use case.

Recommendation 1

- The subcommittee recommends that NTIA approach the question by using the map of the key characteristics identified previously to assess desirability of a frequency band:
 - **Low frequency bands (below 1 GHz)** – propagation and coverage is the key characteristic of the band. Finding enough bandwidth and contiguity will be challenging. Here NTIA's methodology should start with contiguity – like services or fairly easy relocation of dissimilar services. Note: it is unlikely that the federal government will have much, if anything, to consider in this range of frequencies.
 - **Medium-low (1-3 GHz)** – propagation and coverage are good. Also, propagation characteristics in this range make it well suited for a variety of sharing techniques. There likely is an opportunity for larger bandwidths and greater capacity with contiguity to existing commercial operations. As such, contiguity and incumbency are likely the most important key characteristics, particularly in a sharing environment. Bandwidth will follow in importance.
 - **Medium (3-6 GHz)** – propagation and coverage are better than higher bands, but not as good as low and medium-low bands. There may be opportunities for greater bandwidth. As with medium-low, NTIA's methodology in examining medium spectrum should start with contiguity and incumbency. It should be followed by bandwidth.
 - **Medium-high band and high band (>6 GHz)** – We've combined the medium-high and high band frequencies because propagation and coverage are less of a concern and capacity becomes the most important trait. The NTIA's procedure should ensure that there is adequate bandwidth (including for multiple competitors), followed by contiguity and incumbency. For many services in this band, such as satellite services, international harmonization is very important.

Recommendation 1 (cont.)

- From this map, a decision tree (provided in detail in the subcommittee paper) could be used to inform relocation or sharing options, with a summary as follows:

Table 1. General Guidelines for Assessing Industry Desirability of Federal Bands

	Band			
Key Characteristics	Low (<1 GHz)	Medium low (1-3 GHz)	Medium (3-6 GHz)	High (>6 GHz)
Propagation and coverage	High	Medium	Medium	Low
Capacity	Low	Medium	Medium	High
Contiguity	High	High	High	Medium
International harmonization	Generally band specific			satellite
Incumbency	Medium	High	High	Medium

Relative Importance	Key
High	High
Medium	Medium
Low	Low

Recommendation 2

- The subcommittee recommends that NTIA develop and maintain a written “technology radar” for commercial wireless technologies that are most likely to need access to federal spectrum.
- On a periodic basis, NTIA should conduct a spectrum technology assessment with vendors providing technology to the market.
- The goal of the technology assessment is to inform NTIA with respect to changing or advancing silicon and/or radio capabilities servicing the commercial sector.

Recommendation 3

- The subcommittee recommends that NTIA seek input from the private sector, in accordance with the law, on the characteristics of a band being considered for reallocation for relocation or sharing.
 - As an example, NTIA could obtain input from industry at various critical points of the investigation: (1) at the beginning of the process when considering the types of services that may be interested in this band along with the incumbencies, (2) in the middle of the process when more information is known about the incumbencies and the possibilities of relocation or sharing, and, (3) prior to or upon the release of the final analysis.
- NTIA may desire to target the 3450-3550 MHz band for this process as a test case.