

The Future of Wireless Band Plans

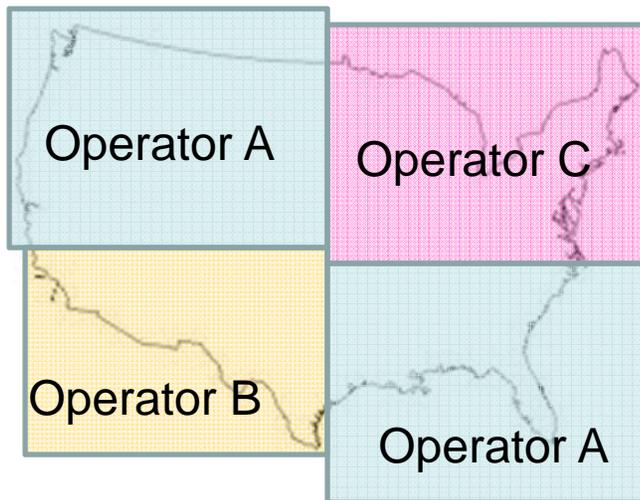
Geographic Contiguity of Spectrum

In the future, spectrum may not be available in nationwide, contiguous blocks. From the operator's perspective, what are the important factors to consider in approaching this problem?

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Geographic Contiguity of Spectrum

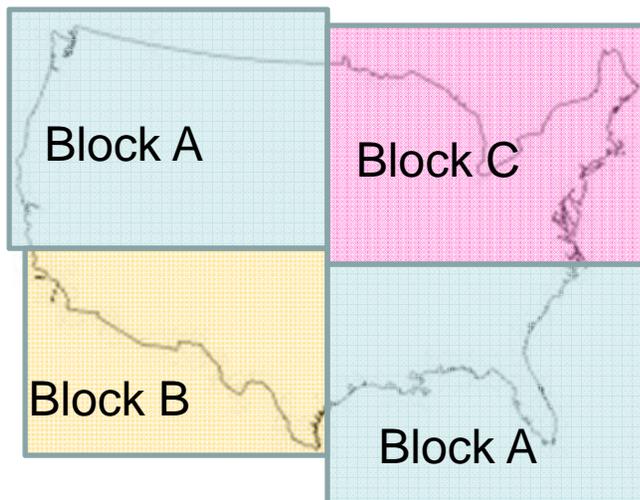
Today: **Ownership** is fragmented, but aggregate spectrum in a band, and thus scale, is nationwide.



- Rarely does one wireless operator own a nationwide block of spectrum.
- Generally, a spectrum block is owned by many operators across the country.
- The equipment ecosystem is driven by the aggregate spectrum ownership of many operators in a given band.
- Example: Ownership of PCS Blocks.

Geographic Contiguity of Spectrum

Future: **Spectrum** may be fragmented. Key issues are maintaining equipment scale and interoperability.



- Attempt to define spectrum blocks within a common Band Class.
- Ensure the Band Class covers a large population to drive scale.
- Require interoperability across all blocks within a Band Class to encourage widespread use of common equipment.

Band Class Planning

- Uplink blocks may be noncontiguous in spectrum
 - Base station receivers may employ tailored receive filters in each geography if necessary (but avoid excessive fragmentation)
 - Device transmit filter may be relatively wide – LTE emissions mask provides significant protection to nearby operations
- Downlink blocks may be noncontiguous to some degree
 - Commercial device receivers are robust and handle strong nearby interfering signals
 - A minimum level of contiguity is preferred to fully use the base station power amplifier bandwidth of 20+ MHz
- Success of noncontiguous spectrum allocations depends on the type of operations which are interleaved
 - Similar transmit directions are generally compatible
 - Dissimilar directions require evaluation of coexistence criteria