

Preserving the Invisible Infrastructure for Video Delivery in the U.S.

- The C-band forms the backbone of the infrastructure for delivering news, sports, entertainment and other video programming to some 120 million households (or over 300 million people) throughout the United States.
 - Whether a consumer gets TV via cable, satellite, or over-the-air television, the C-band is a critical link in getting programming to them.
 - There are no viable, scalable and reliable alternatives to use of the C-band for video delivery.
- Given the importance of the C-band to video delivery, we urge greater focus on how proposals to reallocate C-band spectrum will affect consumers' uninterrupted access to news, sports, entertainment and other video programming.
 - There ought to be at least as much time and thought devoted to protecting video downlinks as there has been to the debate over private clearing vs. public auctions.
 - Any reallocation plan must demonstrate how it would protect video delivery over a repacked C-band, through, among other things:
 - The right technical safeguards;
 - Measures to maintain satellite capacity; and
 - Enforcement and oversight.
- Technical safeguards
 - C-band earth stations are very susceptible to interference. They have to receive a low-power signal from a satellite orbiting the Earth over 22,000 miles above the surface of the equator. Adjacent 5G operations easily could overwhelm reception of video downlinks if the FCC doesn't adopt the right technical protections.
 - First and foremost, maintaining reliable video delivery requires keeping at least 300 MHz available for video downlinks in the repacked C-band. Thus, no more than 200 MHz (inclusive of guard band spectrum) should be repurposed.
 - Protecting C-band downlinks from interference requires attention to multiple additional factors, including: (1) adopting a sufficient guard band between video downlinks and 5G transmissions; (2) setting reasonable power limits for 5G base stations and mobile units, so they don't overwhelm reception of low-power satellite signals; (3) keeping out-of-band emissions to a minimum; and (4) ensuring that any filters to be installed on earth stations meet or exceed any assumed levels of RF rejection.
 - Arriving at the right technical rules will require careful study and real-world testing, including by the FCC.
 - The FCC should abandon the proposal to allow fixed, point-to-multipoint transmissions in the repacked C-band, which would make a difficult spectrum

management task impossible. Adding fixed point-to-multipoint transmissions would put video downlinks at risk and reduce the ability to clear spectrum for 5G mobile use.

- Satellite capacity

- Getting video downlinks to cable headends, broadcast affiliates, and other earth station operators requires capacity on satellites.
- Overall capacity available in the industry depends upon both the amount of spectrum in the band and the number of satellites providing service over that spectrum. So, there is an inverse relationship between the amount of C-band spectrum available for video delivery and the number of C-band satellites necessary to meet video demand.
- To put it simply, the less spectrum that is left for video downlinks, the more satellites we need in the sky.
- With that in mind, the FCC should require any plan it approves to ensure that the necessary additional satellites will be launched and placed into orbit to maintain capacity for video downlinks.

- Oversight and Enforcement

- Any repacking of C-band spectrum will be a risky and difficult task. We agree that there may be a productive role for a third-party administrator in facilitating a repacking. But with what is at stake, the FCC can't afford to delegate ultimate enforcement and oversight of spectrum clearing and use to a private party.
- The FCC should incent the parties that stand to benefit from spectrum clearing to bring about a successful repacking that protects video downlinks.
 - For example, the FCC could provide that companies selling spectrum rights wouldn't receive those profits until after they've finished transitioning incumbents and have provided agreed-upon protections to video downlinks.
 - Likewise, mobile users shouldn't begin operations in a given market until the repacking process is successfully completed. And if new mobile or base station uses create interference, these carriers should have to stop operating unless and until they remedy that interference (e.g., by adjusting power levels).