

**Statement of Mark Dankberg at FCC USF Workshop**  
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- ViaSat/WildBlue offers a unique perspective through its multiple market roles: a leading developer and supplier of satellite technology used for government funded universal broadband access globally; a top 20 broadband ISP in the US with over 400,000 retail and wholesale subscribers; and a leading supplier of satellite WiFi to airlines, including JetBlue.
- Next-generation satellite broadband offers the following significant advantages:
  - High-quality service
  - Cost-effectiveness
  - Timely deployment
- Next-generation satellite broadband networks, launching for the first time this year, will offer 4x1 Mbps speeds at a lower price than terrestrial alternatives for about half of the underserved homes in the US, or conversely, will offer much higher speeds at the same costs.
  - These new satellites – 100x faster than in 2005, and over 10x faster than 2008 – transmit over 1 Gbps into concentrated spot beams.
  - Individual user speeds can reach 20 Mbps on these satellites.
- Satellite can keep up with bandwidth demand and growing user speeds. Historically, bandwidth per satellite has a CAGR of 20% since 1974 - over 37 years. Using the Commission's assumed growth in per connection bandwidth consumption, by 2020, satellite could serve 6.6 million households by launching just one satellite per year, starting in 2014.
- Satellite is well-suited for high speed and high bandwidth provisioning. Past satellite services were constrained by the economics of satellite bandwidth costs which precluded adequate provisioning – not technical capability. But as noted above, those costs are falling exponentially.
- The fastest growing applications, driving broadband adoption, bandwidth consumption and demand for speed, involve video streaming, which is important for telemedicine, distance learning, and video conferencing. Video is much more sensitive to sustained speed and bandwidth provisioning than it is to latency.
  - Having upstream speed fast enough for high quality video calls is more important than having symmetrical speeds. Satellite supports those upstream speeds better than many alternatives.
  - In our experience, users are far more sensitive to speed and jitter artifacts such as pixilation, freezes, buffer under-runs, audio/video sync, image size, image resolution, motion artifacts, and audio quality than they are to incremental path delay.
  - In our experience, the only truly latency sensitive applications are "fast twitch" video games. For those users, even 100 msec latency is unacceptable (a view confirmed by

leading reviews of 4G wireless which exhibits the same effect on those users), and most wireless networks have even more latency than that.

- Geostationary satellite latency is acceptable for virtually all else - including VoIP and video calls - given sufficient provisioning to manage congestion. See our demo for yourself.
- The clear priority of speed and bandwidth over latency is illustrated by airline CIOs and chief marketing officers choosing higher speed, better provisioned, lower cost satellite service over wireless Air To Ground service with lower latency but worse service due to greater congestion.
  - Network congestion is often mis-perceived by users as “latency.”
- Satellite broadband can lead cost-effective, innovative hybrid networks, combining mobile wireless, fixed wireline, WISPs, or other technologies for low bandwidth volume/lower latency applications (such as games), with satellite used for high volume/speed intensive applications including video, distance learning & telemedicine. The first low earth orbit, low latency multi-Gbps Ka band broadband satellite system is now under construction, too. (ViaSat is building the ground network.)
- Five years is too long to wait for full-blown, technology neutral reverse auctions. A significant impediment to the construction of additional broadband satellites would be the exclusion of satellite from Phase I of the CAF or the failure to allow full and direct satellite participation in Phase II.
  - A US CAF policy that limits or prohibits full satellite participation would handicap high technology US industry and jobs, as US companies currently lead a burgeoning global market for broadband satellites and ground networks.
- Allowing full and direct satellite participation in the CAF would:
  - Provide the economies of scale needed to ensure the construction of additional broadband satellites to serve all of America
  - Speed the deployment of broadband services to the unserved
  - Facilitate competition, which will drive improved quality of service across the nation
  - Reduce the size of the CAF