

**SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION:  
QUESTIONS FOR THE RECORD**

**HEARING ON REOPENING THE AMERICAN FRONTIER: PROMOTING  
PARTNERSHIPS BETWEEN COMMERCIAL SPACE AND THE U.S.  
GOVERNMENT TO ADVANCE EXPLORATION AND SETTLEMENT  
JULY 13, 2017**

**Written Questions Submitted to Mr. Robert Cabana, Director, NASA Kennedy  
Space Center**

*Submitted by Senator Dan Sullivan*

Challenges Hindering DOD-Commercial Partnerships

*Question 1:* Earlier this year, in response to a provision that I included in the FY2017 National Defense Authorization Act (NDAA), the Department of Defense (DOD) released an Arctic strategy that among other points, highlights severe challenges caused by the limited satellite and terrestrial communications above 65 degrees north. When the DOD needs to quickly address gaps in capabilities, commercial partnerships can—where appropriate—play a key role in filling these needs.

What are the primary challenges that have hindered or prevented you from working with the U.S. government to fill critical gaps in U.S. space capabilities, like the domain awareness and communications gaps in the Arctic?

Answer. NASA employs several kinds of commercial partnership mechanisms to address U.S. space capabilities, including – but not limited to – Federal Acquisition Regulation (FAR)-based contracts to fulfill Agency requirements, as well as funded and unfunded Space Act Agreements (SAAs), which support and encourage commercial innovation. The Commercial Resupply Service (CRS) contracts, under which Space Exploration Technologies (SpaceX) and Orbital ATK have been providing cargo resupply to the International Space Station (ISS), are examples of the former. NASA's Lunar Cargo Transportation and Landing by Soft Touchdown (Lunar CATALYST) initiative, which has established multiple no-funds-exchanged SAA partnerships with U.S. private sector entities, is an example of the latter. The purpose of these SAAs is to encourage the development of robotic lunar landers that can be integrated with U.S. commercial launch capabilities to deliver payloads to the lunar surface. NASA looks forward to continuing commercial partnerships to address Agency requirements and to support commercial innovation in the future.

As to addressing U.S. space capabilities such as domain awareness and military communications in the Arctic, the Committee may wish to contact the Department of Defense for details on their efforts in these areas.

## Internet Access in Rural Areas

*Question 2:* In Alaska, many places do not have any connectivity and many times are not even connected by road. It is costly to deploy telecommunications infrastructure, and while these communities are extremely innovative, a lack of connectivity hinders business growth and increased economic activity.

Commercial space provides the possibility of increased communications, including satellite- based broadband internet, at a reduced cost. Especially if the cost of launches continues to decline, this could provide real benefits to consumers in extremely rural places like Alaska.

How can recent advances in commercial space help provide broadband-level internet to the most rural areas?

*Answer.* While NASA defers to private industry to articulate the business case supporting the provision of services to specific customers, a number of companies currently offer launch services and satellite-based communications services that could potentially increase broadband Internet access in rural areas.

*Question 3.* Is latency still an issue?

*Answer.* Please see response to Question #2, above. NASA defers to private industry on the specifics for their ability to provide broadband Internet service to rural areas.