Response to Written Questions Submitted by the Hon. Marco Rubio to the Hon. Penny Pritzker

*Question 1*. The world is going wireless, which is leading to incredible benefits for our economy and consumers. I plan to reintroduce the Wireless Innovation Act this Congress and work to pass it, but in the meantime, can you tell me what you are doing to ensure this valuable public resource is being put to its best and most efficient use on behalf of the taxpayer?

Answer. The Department and the National Telecommunications and Information Administration (NTIA) continue to play a leading role towards meeting the President's directive to identify 500 megahertz of new spectrum for wireless broadband use by 2020. The recent AWS-3 auction of spectrum that was freed up through the joint efforts of NTIA, the federal agencies and the Federal Communications Commission (FCC) is an important milestone in the Administration's efforts to meet this goal. The success of the AWS-3 auction, which raised more than $40 billion, was made possible in part by an unprecedented level of collaboration between NTIA, affected federal agencies, wireless industry representatives, the FCC, and Congress.

As part of the Administration's efforts to make more spectrum available for wireless broadband, the Department has been working to identify other federal bands that could be designated for commercial use. We are collaborating with the FCC on making 100 megahertz of spectrum available for small cell mobile broadband use in the 3.5 GHz band on a shared basis with military radar systems. Meanwhile we also are evaluating the feasibility of increased sharing for unlicensed devices in the 5 GHz band while protecting incumbent federal government systems. NTIA is also working with federal agencies to quantify their use of 960 megahertz of spectrum, spanning several key bands. The results of this quantification assessment are one factor that will be used to prioritize bands for more detailed study focused on expanding shared access. We are also beginning a dialogue with federal agencies on best approaches to begin enabling expanded bi-directional federal access to non-federal bands.

We are also working to improve the efficient management of federal spectrum through increased transparency of federal operations, collaboration with industry, and incentives for federal users to update their systems to improve sharing spectrum with the private sector.

*Question 2*. The Commerce Department has a long history in the identification and reallocation of under-utilized federal spectrum. In fact, the Commerce Department's report pursuant to the Omnibus Budget Reconciliation Act of 1993 led to the reallocation of spectrum occupied by federal agencies that facilitated the migration of mobile services in the United States from 1G to 2G. Do you believe that the Commerce Department should continue to play a central role in the evaluation of what under-utilized federal spectrum can be reallocated for commercial use?

Answer. Yes. As described above, the Department plays an integral role in working with federal agencies to maximize spectrum efficiency. NTIA is working towards meeting the President's directive to identify 500 megahertz of new spectrum for wireless broadband use by 2020. The recent AWS-3 auction of spectrum that was freed up through the joint efforts of NTIA, the federal agencies and the FCC is an important milestone in the Administration's efforts to meet this goal. The success of the AWS-3 auction, which raised more than $40 billion, was made

possible in part by an unprecedented level of collaboration between NTIA, affected federal agencies, wireless industry representatives, the FCC, and Congress.

The auction also represents a paradigm shift in our approach to making spectrum available for commercial wireless providers. In many instances, the bands that were auctioned will require the clearing of incumbent federal users from these bands; while in other instances, non-federal entrants will be required to share spectrum with incumbent federal agencies indefinitely. As NTIA continues to review spectrum bands for reallocation, spectrum sharing is becoming the new reality. Out of necessity where it is cost prohibitive, takes too long to relocate incumbent users, or where spectrum offering comparable operational capability is not available to ensure continuity of critical federal government functions, we must move beyond the traditional approach of clearing federal users from spectrum in order to auction it to the private sector for its exclusive use.

We continue to work to identify other federal bands that could be designated for commercial use. In the near term, we are evaluating the feasibility of increased sharing for unlicensed devices in the 5 GHz band. We have also worked with the FCC and federal agencies to enable innovative spectrum sharing approaches in the 3.5 GHz band, and just recently the FCC adopted new rules for the 3.5 GHz band creating a three-tiered sharing scheme that authorizes advanced spectrum sharing among commercial and federal operators. Looking ahead, NTIA is also working with federal agencies to quantify their use of 960 megahertz of spectrum, spanning several key bands.

We are also working to improve the efficient management of federal spectrum by increasing transparency of federal operations, collaboration with industry, and incentives for federal users to update their systems to improve sharing spectrum with the private sector.

*Question 3.* The AWS-3 auction demonstrated that there is strong commercial demand for spectrum. What efforts will the Commerce Department take to evaluate whether there are other federal bands that are being under-utilized and can be reallocated for commercial mobile use?

Answer. Identifying additional spectrum to keep up with unprecedented demand for both federal and non-federal uses is a top priority for NTIA, which manages federal spectrum usage. NTIA is collaborating with the FCC on making 100 megahertz of spectrum available for shared small cell use in the 3.5 GHz band currently used primarily for military radar systems. The 3.5 GHz band is well suited to exploring the next generation of shared spectrum technologies, driving greater productivity and efficiency in spectrum use and could be an important pivot point toward a new sharing paradigm. Recently, the FCC adopted new rules for the 3.5 GHz band creating a three-tiered sharing scheme that authorizes advanced spectrum sharing among commercial and federal operators. We are also evaluating the feasibility of increased sharing with unlicensed devices in the 5 GHz band. NTIA is also working with federal agencies to quantify their use of 960 megahertz of spectrum, spanning several key bands.

NTIA recognizes that spectrum is the lifeblood of the mobile broadband revolution. We are committed to ensuring the industry has the bandwidth it needs to continue to innovate and thrive. But we face an important balancing act since federal agencies also rely on this precious and finite resource to perform all sorts of mission-critical functions – from communicating with weather

satellites (National Oceanic and Atmospheric Administration) to navigating passenger planes (Federal Aviation Administration) to operating weapons systems (Defense Department).

To achieve the President's goal of identifying 500 MHz of spectrum for commercial use by 2020, we need to move beyond the traditional approach of clearing government-held spectrum of federal users in order to auction it off to the private sector for exclusive use. Too often, relocating incumbent operations is too costly, too time-consuming and too disruptive to federal missions. The future lies in sharing spectrum – across government agencies and commercial services, and across time, geography and other dimensions.

To support these efforts, NTIA is seeking to increase transparency into existing federal spectrum use. Last year, NTIA unveiled Spectrum.gov, a new online tool that provides band-by-band descriptions of federal spectrum uses between 225 MHz and 5 GHz, including a summary of frequency assignments authorized by NTIA. We will continue to improve that tool to make it more easily searchable and user-friendly, and to provide as much helpful data as we can without disclosing sensitive information.

If spectrum sharing is to become reality, though, we need to build trust on multiple levels. First, we need to build trust in dynamic sharing technology, including spectrum databases and smart radios that can track which frequencies are available for use. Our new Center for Advanced Communications in Boulder, a partnership with the National Institute of Standards and Technology (NIST), will conduct vital research and testing to drive development of dynamic sharing technology.

Second, we must build trust between the public and private sectors so that we can partner to identify more sharing opportunities and collaborate to make sharing work. With the help of our Commerce Spectrum Management Advisory Committee, NTIA will increase industry engagement to enhance this trust moving forward.

Finally, we need to build trust in policies and processes to ensure that everyone – public and private sector alike - plays by the rules. Our proposed model city initiative, a collaboration with the FCC which will serve as a test bed to evaluate spectrum-sharing technology in a real-world environment, will provide a good opportunity to develop these policies and processes.

The Department shares your commitment to maximizing the efficiency of federal spectrum use and is working at all levels to ensure that we achieve this outcome.

*Question 4.* On March 13, 2015, Florida, Alabama, Louisiana, Mississippi and Texas announced a state-based Gulf red snapper management agreement that would transfer authority away from the Gulf of Mexico Fishery Management Council.

What are the Department's views of this agreement and management structure?

Answer. The Department supports regional management in concept as a way to resolve the current challenges created by inconsistent state jurisdictions and regulations, stabilize management of the recreational sector, and better manage the expectations of for-hire fishermen and private anglers.

It is difficult to judge the merits of the states' red snapper management agreement because it lacks sufficient detail regarding what we believe to be the hallmark elements of a successful regional management strategy. These include: fair and equitable allocations among all of the states and user groups; sound, science-based decision-making that accounts for all sources of fishing mortality; coordinated data collection systems, which provide consistent, reliable data; and, catch accountability, including mechanisms to prevent and respond to quota overages.

The Department is concerned the states' agreement proposes to regionalize management of the commercial red snapper sector after an initial three year grace period. The individual fishing quota program implemented in 2007 addressed many long-standing challenges faced by the commercial sector by better aligning fleet capacity with the commercial catch limit, mitigating short fishing seasons, improving safety at sea, and increasing economic profitability. The Department believes strongly that any management program adopted for red snapper should recognize and continue those hard-earned achievements.

While the Department appreciates the states coming together on this difficult issue, the Department continues to believe the best way to develop an effective regional management strategy is through the regional fishery management council process. The Magnuson-Stevens Act established that process to ensure fishery management decisions are developed from the bottom up and are stakeholder-based, transparent, and consistent with all applicable law. Although sometimes cumbersome, it is a good process for working through the types of difficult decisions that regional management requires. Gulf of Mexico fishermen and fishing communities sacrificed a great deal to get here. It is critical that all involved remain engaged and work together to find a way forward in the cooperative spirit that the regional fishery management council process promotes.

The Gulf of Mexico Fishery Management Council continues to actively develop a regional management proposal and the Department will continue to support the state representatives on the Council in reaching agreement on a regional management strategy that works for all. Such a program could be finalized before the end of 2015 for implementation in the 2016 fishing season.

*Question 5.* Please provide details on how much the Department plans to spend for stock assessments and data collection for the red snapper fisheries in the Gulf of Mexico and South Atlantic Ocean.

Answer. The Southeast Fisheries Science Center expects to provide new assessments for both the South Atlantic and Gulf of Mexico red snapper stocks this year. However, the data collection that supports red snapper stock assessments is not conducted just for red snapper, but includes a broad range of species.

Our fish surveys are designed to sample all species that occur in a given habitat in a way that reflects their relative densities within that habitat. Trawl surveys collect data on shrimp and juvenile fish of the several species that inhabit muddy bottom habitat. Our video trap surveys collect data on reef-associated species that include multiple snapper and grouper species plus

amberjack and gray triggerfish.

Similarly, our sampling of catches from commercial and recreational vessels is not carried out by species. For example, commercial port samplers collect data from commercial vessels across the wide variety of species harvested.

As a result of this blending of data collection efforts, it is not possible to provide an estimate of how much is spent to assess any one species.

*Question 6*. NOAA recently announced a recovery plan for the elkhorn and staghorn corals and listed them as threatened under the Endangered Species Act. How will the designation impact research and development of U.S. coastline, waterways and ports?

Answer. The final recovery plan for elkhorn and staghorn corals provides a blueprint for recovering these species. It identifies recovery criteria, strategies and actions that are needed for recovery. It doesn't change any of the regulations governing the take of corals or modify any of the regulatory requirements of an Endangered Species Act (ESA) listing. In 2008, the National Marine Fisheries Service (NMFS) issued a protective regulation for these corals under section 4(d) of the ESA. That regulation did not prohibit take associated with scientific research provided other necessary permits were issued to the researcher (such as those from the State of Florida or the National Marine Sanctuary). The recovery plan will not affect research activities in terms of permit requirements, but we do hope that it will spur additional research on these species as identified in the recovery plan. Likewise, the recovery plan will not affect development of the U.S. coastline, waterways or ports.

*Question 7*. In your testimony, you state that the President's NOAA budget calls for $2.4 billion to fund the next generation of weather satellites "to reduce the risk of a potential gap in weather data in 2017 and beyond." The current satellite, Suomi NPP, is estimated to reach the end of its lifespan in 2016. For Floridians, this potential gap could mean delayed weather reporting or even worse, loss of data during the afternoon orbit, resulting in catastrophic circumstances.

What are the Department's estimates for the actual life span of Suomi NPP?

Answer. The Suomi National Polar-orbiting Partnership (Suomi NPP) satellite is functioning well with observations and data availability meeting or exceeding expectations. The satellite is not showing any signs of degradation or anomalies indicating life limits. The satellite has a design life of five years; however current predictions indicate sufficient propellant for operations to the mid-2020s.

*Question 8.* How did the Department come to this estimate?

Answer. These lifetime probability estimates are updated annually. The 2014 Polar Constellation Weather Data Reliability Report provides a detailed explanation of the process of reliability modelling. The 2014 Suomi NPP satellite probability of success model is based on a specialized model to determine failure rates called "Military Handbook, Reliability Prediction of Electronic

Equipment", MIL-HDBK-217. This model was applied at the system level (e.g., spacecraft and instruments) and modelled degradation of system components.

The model output suggests that around the year 2020, the Probability of Success for the system components that are required to produce key data products to be below 60 percent with continued degradation until the satellite has to be de-orbited due to propellant depletion, which is currently predicted to be no later than 2026.

NOAA assumes a satellite will not be available if its predicted reliability is below 50-60 percent. These analyses are repeated annually as part of our continuous process to understand and manage our overall program risk.

*Question 9.* Does NOAA currently have a contingency plan should the monies not be appropriated? If so, what is that plan?

Answer. NOAA has submitted a balanced FY 2016 budget request to support NOAA's satellite portfolio, including sufficient funds to achieve a robust Joint Polar Satellite System (JPSS) system architecture that will continue operations of Suomi NPP, continue development of the JPSS-1 and JPSS-2 satellites, complete the block 2 upgrades for the JPSS ground system, and develop two additional satellites beyond JPSS-2 in the proposed Polar Follow On (PFO). NOAA's polar-orbiting weather satellites are aging and must be replaced in order to maintain weather forecast accuracy and reliability. Federal, state and local governments, U.S. citizens and businesses are reliant on timely and accurate weather forecasts to protect life, property and economic competitiveness. A loss of coverage by NOAA's polar satellites would severely degrade the National Weather Service's early detection and forecast prediction ability, setting them back years in terms of weather forecasting improvements. Diminishing this capability will negatively impact millions of people and cost U.S. business billions of dollars in revenue.

NOAA has developed an extensive mitigation plan to reduce the impact of a gap, in the event one occurs; however, mitigation activities cannot replace the performance of the JPSS system. If NOAA is not appropriated funds at the requested level for the JPSS program in FY 2016, NOAA's ability to operate the Suomi NPP satellite and maintain development of the JPSS-1 and JPSS-2 missions will be impacted – resulting in a gap in observations in the late 2020s in the afternoon polar-orbit.

If NOAA is not appropriated funds at the requested level for the PFO in FY 2016, the risk of a gap in polar observations following the launch of JPSS-2 will be increased. The follow on satellites, PFO/JPSS-3 and PFO/JPSS-4, ensure NOAA's ability to provide accurate and timely weather forecasts and warnings through 2038. Full funding of the request allows NOAA to achieve polar weather constellation robustness as early as FY 2023.

*Question 10.* Within the President's requested budget, how much do you estimate NOAA to expend on weather forecasting research? What, if any, projects are currently being studied, or are planned? How much do you estimate to expend on seal level research?

Answer.

## NOAA Weather Forecasting Research

In FY 2016 NOAA requests a total of $102.7 million across the Office of Oceanic Research, the National Weather Service, and National Environmental Satellite, Data and Information Service for weather forecasting research and development. In fiscal 2016, weather forecasting research efforts are detailed as follows:

### Office of Oceanic and Atmospheric Research (OAR)

OAR requests $78.6 million for weather forecasting research and development. Under its Weather and Air Chemistry Research sub-program, OAR will support:

• Research and development that provides the Nation with accurate and timely warnings and forecasts of high-impact weather events and their broader impact on issues of societal concern such as weather and air quality;
• Research that provides the scientific basis for informed management decisions about weather, water, and air quality; and
• An increase in the pace, scope, and efficiency of exploration and research through the development of new, innovative and emerging technologies.

### National Weather Service (NWS)

NWS requests $22.1 million for weather forecasting research and development. The research efforts are focused on improving tsunami warnings, air quality forecasting, and science enhancement for Next Generation Aviation forecast services. Major development efforts include the development for the next generation global and hurricane weather prediction model, and demonstration of centralized water forecasting.

### National Environmental Satellite, Data and Information Service (NESDIS)

NESDIS requests $2.0 million for weather forecasting research under its Joint Center for Satellite Data Assimilation and Satellite Altimetry Laboratory.

## NOAA Sea Level Research

NOAA conducts sea level-related research through OAR's Climate Program Office and the National Ocean Service. OAR's Climate Program Office manages research to incorporate ice sheet dynamics, ocean-ice shelf and ocean-iceberg interactions, ice shelf cavity circulations and processes driving regional variations in sea level rise and inundation into NOAA's Earth System Models. Model development goals will include routine global ocean data assimilation capabilities linked to Global Ocean Observing System observations and innovative approaches to achieving high resolution in regions of interest including coasts, shelves and marginal seas, shelves, coasts and estuaries. OAR will spend approximately $4.7 million on sea level rise related research and development in FY 2016. This total includes high performance computing related to regional sea level rise work.

The National Ocean Service has operational water level programs that support sea level research and applied research programs that focus on sea level-related issues (such as risks and vulnerabilities related to changes in sea level, associated impacts to the coastal built and natural environment, and the development of tools, resources, and methodologies to inform adaptation and planning decisions), but no programs specific to sea level research.

*Question 11*. The Trade Promotion Authority (TPA) is imperative to passing meaningful trade agreements that will in turn expand our exports and create jobs in America. Realizing there are some in the President's party who are serving as roadblocks in the Administration's efforts to garner an up or down vote on this critical measure, it is my hope the Senate can resolve the discord. What is the Department currently doing to ease the concerns of members opposed to TPA?

Answer. Congress has enacted Trade Promotion Authority laws to guide both Democratic and Republican Administrations in pursuing trade agreements that eliminate barriers in foreign markets, establish rules to stop unfair trade, and thereby create and support jobs in the United States. That is why, at the President's direction, there is a whole-of-Administration effort to have conversations about trade all over the country and make sure the American people have the full facts about the benefits of our trade agreements.

Senior officials from the Department have played a key role in delivering this message, meeting with businesses and workers to make clear that trade agreements help open new markets and level the playing field for our goods and services; advance American values and strengthen the competitiveness of U.S. companies; and reinforce the United States as a global leader setting fair rules of the road for a next generation of U.S. jobs and economic growth. The Department, through its trained professionals in U.S. Export Assistance Centers and the implementation of the National Export Initiative /NEXT strategy, is also pursuing a number of initiatives specifically designed to better help our businesses know about and take advantage of opportunities available under our trade agreements. Successes associated with helping U.S. firms enter new markets, grow their bottom lines, and develop local workforces reinforce the value of trade agreements for all stakeholders.