



May 10, 2019

The Honorable Jerry Moran
Chairman
Subcommittee on Commerce, Justice,
Science and Related Agencies
Committee on Appropriations
Room S-128, The Capitol
Washington, D.C. 20510

The Honorable José Serrano
Chairman
Subcommittee on Commerce, Justice,
Science and Related Agencies
Committee on Appropriations
H-307, The Capitol
Washington, D.C. 20515

The Honorable Jeanne Shaheen
Ranking Member
Subcommittee on Commerce, Justice,
Science and Related Agencies
Committee on Appropriations
Room S-128, The Capitol
Washington, D.C. 20510

The Honorable Robert Aderholt
Ranking Member
Subcommittee on Commerce, Justice,
Science and Related Agencies
Committee on Appropriations
H-307, The Capitol
Washington, D.C. 20515

Dear Chairman Moran, Ranking Member Shaheen, Chairman Serrano, and Ranking Member Aderholt:

The Coalition for Aerospace and Science (CAS) is an alliance of prominent industry, university, and science organizations united in support for robust national investment in the National Aeronautics and Space Administration (NASA). A sustained federal commitment for NASA will ensure the United States remains the world leader in scientific, commercial, and academic space exploration and discovery.

We support an FY 2020 appropriations level for NASA that would ensure continued growth in funding to balance the continuity of mission needs as well as investments in new capabilities as NASA aims for the Moon and Mars. Any stagnation or reduction in funding would be counterproductive and exacerbate delays in key programs. **To maintain the investment in NASA made by the *Consolidated Appropriations Act 2019*, we urge Congress to provide at least \$22.575 billion for Fiscal Year 2020. This amount represents a 5 percent increase to NASA's overall budget. To achieve and sustain this 5 percent increase, CAS also requests Congress reach a multi-year bipartisan and bicameral agreement to raise the caps on discretionary spending established by the *Budget Control Act of 2011*.**

Additionally, CAS applauds the Administration for the recent announcement of plans to establish an enduring human presence on the Moon by 2024. We stand ready to support an amendment to the president's FY 2020 budget request required for such an ambitious goal, so long as it does not come at the expense of other programs and missions elsewhere in the agency. This includes priorities laid out in this letter and any negative impact on the overall status quo of NASA's directorates.

Each member of CAS works with NASA on critical research, missions, and programs throughout the agency. However, each member of the coalition also understands that healthy growth in funding and

support for NASA overall has a positive impact on individual priorities. Within the topline request, CAS requests Congress give specific attention to the following programs:

SCIENCE

CAS requests at least \$7.5 billion for NASA's Science Mission Directorate (SMD). This request is an 8.6 percent increase over the generous appropriation by Congress for FY 2019 and will provide balanced increases across the SMD portfolio. Importantly, this amount is required to accommodate planned cost growth of missions while maintaining support for individual investigator grant programs and new competitive mission opportunities across all mission sizes. This funding plays a key role in progressing NASA's core capabilities.

CAS is united in its opposition to recurring proposals from the Administration that would cancel, de-scope, or needlessly slow development of major missions prioritized by National Academy of Sciences, Engineering, and Medicine's Decadal Surveys. For FY 2020, this would include the cancellation of WFIRST, PACE, and CLARREO-Pathfinder. The Coalition finds these proposals short-sighted for an agency founded on the value of pathfinding scientific discovery, and a waste of taxpayer dollars given the considerable investment already made on these missions.

Furthermore, the Coalition is disappointed that the Administration has rejected recommendations from the Academies' Earth Science and Applications from Space (ESAS) 2017 Decadal Survey regarding new mission classes. CAS urges Congress to explicitly direct NASA to adhere to recommendations from ESAS 2017 related to the establishment of competitive Explorer and Designated mission lines.

The Coalition requests strong support for the Earth Science Division, recognizing that the space-based perspective of Earth and the insights provided by NASA missions, research, and applications are critical to the success and prosperity of our Nation. Investments in Earth Science at NASA, and the associated insights they produce, position the U.S. to thrive on our planet.

The Coalition appreciates Congress' continued support for the James Webb Space Telescope, including adjusting the mission cost cap, and welcomes congressional oversight of the project to ensure a successful 2021 launch. In addition to rejecting the proposed cancellation of WFIRST, we ask that Congress support the technically-paced funding profile for the mission. The Coalition also requests increased funding for the rest of the Astrophysics Division—research and analysis, competed missions, technology development, and currently operating missions—to ensure that the U.S. continues to lead the world in understanding how the universe works, how we got here, and whether we are alone.

The Coalition requests Congress continue to provide ample funding for the Planetary Science Division to adhere to the priorities set by the Planetary Science Decadal Survey. Strong research and analysis funding for individual scientists is the top priority, followed by a steady cadence of future Discovery and New Frontiers missions within a balanced portfolio. We applaud Congress' past support for exploring Europa, which the scientific community has determined offers one of the most promising extraterrestrial habitable environments in the solar system. Sufficient funding is necessary to ensure the Europa Clipper mission can meet target launch dates in 2023. The Coalition also supports ongoing Mars exploration – including the Mars 2020 rover and development of a sample return architecture. CAS also requests continued and robust support for programs outside Decadal Survey defined priorities to be added above and beyond full support of the rest of the work of the Division. These include the

Lunar Discovery and Exploration Program and Planetary Defense, with the NEOCam mission in particular needed to meet the Near Earth Object discovery mandate set by Congress.

The Coalition requests strong support for the Heliophysics Division. Heliophysics will lead to a greater understanding of our Sun and will help to mitigate the hazards that solar activity poses to the ground- and space-based platforms that strengthen our national security, economic competitiveness, and scientific prowess. Robust support is needed to ensure that the Heliophysics Division can continue to execute on recommendations outlined in the decadal survey, including an accelerated cadence of competitively selected Explorer missions and implementation of the DRIVE initiative, while accommodating continued support for missions under formulation and development. Strong funding will also allow for implementation of key community priorities outlined in the Space Weather Action Plan.

SPACE TECHNOLOGY

CAS requests at least \$973 million for the Space Technology Mission Directorate (STMD). Since its inception, STMD has focused on improving NASA's technological capabilities across a wide array of areas—from propulsion and power generation to materials science and high-performance computing—that help the agency achieve mission requirements across all its directorates.

The Coalition appreciates congressional support for maintaining the **independence of STMD** in FY 2019. CAS requests Congress oppose any current and future efforts to eliminate the Directorate or reorganize it in a way that reduces its independence or erodes its cross-agency mission. We ask that Congress explicitly requires STMD continue to fully fund its contribution to the WFIRST coronagraph technology demonstration project.

HUMAN EXPLORATION AND OPERATIONS

CAS requests Congress ensures that NASA leverage prior taxpayer investments in the agency's exploration architecture to the greatest extent possible. The Coalition requests an appropriation of **at least \$2.15 billion for the Space Launch System (of which \$200 million is required for the Exploration Upper Stage); \$1.5 billion for the Orion spacecraft; \$590 million for Exploration Ground Systems; and \$53 million from NASA's Construction of Facilities account to modify the Kennedy Space Center's Vehicle Assembly Building (VAB) to support future launches.** These amounts are necessary to increase efficiencies of NASA's acquisition strategy, the integration and testing of systems, safety features, and flight hardware beginning in FY 2020.

While CAS understands that NASA and support contractors will be required to accelerate the development of flight hardware and systems for the Nation's return to the moon, we strongly encourage the Administration and Congress work to ensure that safety of astronauts are not jeopardized by pressures on schedule and cost. The proper training of flight crews and mission support personnel in these new systems is paramount, as is the implementation of standards and practices informed by human factors research. This emphasis on the importance of human factors research and the agency's Human Systems Integration Division in human spaceflight builds on congressional direction outlined in the bipartisan *NASA Transition Authorization Act of 2017*.

SPACE OPERATIONS

The Coalition requests that NASA maintain its support for the International Space Station and Commercial Crew and Cargo programs at the amount requested in the FY 2020 budget request level of **\$1.46 billion and \$1.83 billion, respectively**. Additionally, CAS requests Congress mandate NASA only consider launch proposals for domestic cargo and science payloads from domestic launch providers. NASA should be utilizing and benefiting from a competitive U.S. launch landscape and avoid placing any taxpayer funded cargo or exploration missions on foreign launch vehicles.

AERONAUTICS

CAS requests at least \$790 million for the Aeronautics Research Mission Directorate (ARMD). This would provide the much-needed increase in funding for subsonic, supersonic, and hypersonic flight technologies and flight demonstrations. Research from this directorate develops technologies that transform the way we fly by lowering operating costs, increasing flight efficiency, and reducing aviation related environmental impacts. ARMD is critical to the United States' leadership in hypersonic technologies and systems while also advancing research on Unmanned Aircraft Systems for safe integrating into the national airspace system.

Today, civil aviation contributes more than 5 percent of our nation's GDP and supports more than ten million jobs. Air travel remains the safest and most efficient mode of transportation, with more than 2.6 million people flying in and out of U. S. airports each day, and 43 billion pounds of freight transported each year. U. S. manufacturers of aircraft, engines, avionics, and supporting systems maintain a global advantage in an increasingly competitive global marketplace. This advantage is the main contributor to the aerospace and defense industries' positive U.S. trade balance of \$85.9 billion in 2017.

This global manufacturing leadership would not be possible without a vital and sustained federal commitment to aeronautics research. Although comprising only 3 percent of the agency's budget, ARMD a cornerstone of America's aviation competitiveness. Maintaining strong increases for NASA's aeronautics research is vital for the Nation to maintain its advantage in developing aviation technologies in rapidly evolving global markets. These include the emerging sectors for unmanned and autonomous aircraft, supersonic aircraft, urban air mobility, hypersonic vehicles, and the new air traffic management systems needed to incorporate next-generation technologies.

STEM ENGAGEMENT

The Coalition opposes the Administration's proposed elimination of NASA's Office of Education. CAS instead requests **\$115 million for NASA's Office of STEM Engagement**.

Within the Office of STEM Engagement appropriations, CAS requests **at least \$50 million for the National Space Grant Fellowship program**. The Space Grant program funds nearly 4,000 fellowships and scholarships for students in all 50 states and the District of Columbia pursuing STEM careers. This program allows students to participate in aeronautics and space projects by integrating classroom learning with on-the-job training.

MEMBER ORGANIZATIONS

Aerospace Industries Association
American Association of Physics Teachers
American Astronautical Society
American Astronomical Society
American Geophysical Union
American Society of Agronomy
Association of American Universities
Association of Public and Land-grant
Universities
Association of Universities for Research in
Astronomy
Ball Aerospace
Boston University
Consortium for Ocean Leadership
Crop Science Society of America
Geological Society of America
Harvard University
Human Factors and Ergonomics Society
Institute of Electrical and Electronics Engineers
Lockheed Martin Corporation
Massachusetts Institute of Technology
New Mexico State University
Northrop Grumman Corporation
Notre Dame University
OSA-The Optical Society
Planet

Princeton University
Purdue University
Raytheon Company
Soil Science Society of America
SPIE – the international society for optics and
photonics
Texas A&M University
The Ohio State University
The Planetary Society
United Launch Alliance
University Corporation for Atmospheric
Research
University of Arizona
University of Colorado – Boulder
University of California – San Diego
University of Florida
University of Iowa
University of Maryland – Baltimore County
University of Maryland – College Park
University of Michigan
University of New Hampshire
University of Texas at Austin
University of Washington
University of Wisconsin – Madison
Washington State University
Woods Hole Oceanographic Institution