

A Midterm Assessment of Implementation of the Decadal Survey on Life and Physical Sciences Research at NASA

Statement of Task

The National Academies of Sciences, Engineering and Medicine shall convene an ad hoc committee to review the progress of NASA's Space Life and Physical Sciences Research and Application program in addressing the strategies, goals, and priorities outlined in the 2011 NRC decadal survey report, *Recapturing a Future for Space Exploration, Life and Physical Sciences Research for a New Era*.

1. The committee's assessment will describe:

- a. NASA's approach to and progress on realizing the strategies, goals, and priorities outlined in the 2011 decadal survey and other relevant Academies reports;
- b. Existing and emerging challenges to and opportunities for the implementation of decadal strategies, goals and priorities, including:
 - Plans for the International Space Station and the long-term future for research infrastructure in Low Earth Orbit (LEO)--including the provision of privately-owned and operated infrastructure;
 - Resource and program constraints,
 - The opportunities and challenges of a multi-sponsor (NASA, Center for the Advancement of Science in Space, other government agencies, commercial) science procurement approach using Reference Experiments and Open Databases; and
 - Developments in the research community and its engagement with NASA, CASIS, and other research sponsors.

- c. While considering current and forecasted resources, actions that could be taken to optimize the science value of the program in the context of enabling the expansion of human exploration into deep space. In this regard:
- The committee will identify and rank from among the “highest priority recommendations” in the decadal survey a set of targeted research priorities which are critical for NASA to conduct in order to enable the expansion of human exploration into deep space.
 - To the greatest extent possible, the committee will also identify the platform environment where the priority research should take place in order to be successful—such as: Earth analogs, LEO (on ISS through 2024), LEO (on other platforms), beyond Earth orbit (such as, a cis-lunar habitat).
 - In identifying and ranking its targeted research priorities, the committee will consider the full set of “highest priority recommendations” in the decadal survey in conjunction with relevant exploration technology development priorities identified in the NRC report *NASA Space Technology Roadmaps and Priorities: Restoring NASA's Technological Edge and Paving the Way for a New Era in Space*. The committee will also consider NASA's deep space exploration goals and priorities as presented by the agency.
 - Using the remaining “highest priority recommendations,” from the decadal survey, the committee will identify where possible those that are aligned with ongoing activities in other government agencies and, where feasible, the commercial/private sector.

2. The committee will provide guidance about implementation of the recommended portfolio for the remaining years of the current decadal survey, recognizing likely resource and program constraints.