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Statement of

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before the

Subcommittee on Space  
Committee on Science, Space, and Technology  
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Chairman Palazzo, Ranking Member Edwards, and Members of the Subcommittee, thank you for the opportunity to appear today to discuss NASA's infrastructure planning and implementation, and continuing efforts to balance and align the Agency's infrastructure management goals with evolving mission requirements.

To inspire the Nation through its pursuit of ambitious goals for human space exploration, Earth and space science research, and aeronautics research, NASA must steward reliable, cost-effective physical infrastructure capabilities that fully support the requirements of its missions and programs. In order to sustain these capabilities, the Agency is challenged with managing the significant needs of an aging physical capital portfolio, largely constructed during or before the Apollo era, many configured to past needs, and in declining condition. Though NASA facilities are generally well-designed and constructed, age and changing mission requirements have affected the resilience and usefulness of many facilities.

NASA has not ignored these circumstances, and in recent years, has made measurable strides on a path toward a strategic, rather than tactical, approach to achieving a sustainable infrastructure portfolio. As a result, infrastructure management decisions are guided by an Agency Facilities Strategy, defined in 2009, which established that "NASA will renew and modernize its facilities to sustain its capabilities, and to accommodate those capabilities in the most efficient facilities set practicable." (This is often referred to as the Similar Capabilities, Smaller Footprint strategy.) Further, NASA now has a coordinated 20-year Agency Master Plan to inform implementation of the Facilities Strategy. Governance improvements, such as the establishment of an Agency-level council, now known as the Mission Support Council, to afford integrated senior management review of decisions within the mission support portfolio, have strengthened mission alignment and facilities investment effectiveness. Planning partnerships are in place between NASA Centers and Headquarters to develop and implement strategic facilities goals. While specific targets will change in response to evolving budget constructs, NASA believes that

a strategic approach, aligned with mission requirements and guided by well-integrated risk management practices, provides a valid framework for achieving these goals over time.

Additionally, NASA is committed to the maturation of its process to assess Agency-wide technical capabilities in an objective, comprehensive manner, in order to retain and support only those assets necessary to fulfill current and future mission needs. To increase efficiency with existing resources, NASA is assessing critical capabilities and identifying areas of investment, divestment, or duplication throughout the Agency, as well as evaluating and leveraging other Agency and private sector assets, when available. Effective management of NASA technical capabilities is essential to the success of all NASA current and future programs. Under the authority of the NASA Associate Administrator, NASA has assembled the Technical Capabilities Assessment Team. This team has developed a process for a comprehensive technical capability assessment which will identify and evaluate Center technical capabilities against the current and future needs of the Agency. This comprehensive assessment began in July 2012 and evaluates Center capabilities against Agency strategic goals and long-term needs. The outcomes of this ongoing process will inform NASA's master planning activities and support strategic facilities investment decisions.

### **NASA Master Planning:**

Recognizing the need to more closely align real property assets with evolving mission needs, NASA defined its first Agency Facilities Strategy in 2009 and initiated substantial changes to its master planning processes. Agency real property management policies were revised and, by 2010, each NASA Center had updated its 20-year facilities plan. NASA integrated these updates into its first Agency-level master plan in 2011. Issued early in 2012, the Agency Master Plan represents an integrated Agency-level facilities planning framework. In alignment with the "Similar Capabilities, Smaller Footprint" strategy, the revised master planning process enables NASA to set broad real property objectives, to baseline metrics that track key outcomes (i.e., readiness to accomplish NASA's mission and consolidation toward an efficient "footprint"), and to monitor Center and Agency progress against its objectives.

Given that any completed plan is a "snapshot in time" that responds to circumstances that may change, the master planning process is an essential, continuing strategic tool for aligning real property assets with evolving mission requirements and technical capabilities needs. Evolving strategic circumstances, such as resource levels and a growing understanding of the nature and severity of potential climate and extreme weather risks, bear careful consideration in evaluating the suitability of current plans. NASA facilities management policy encourages Centers to update local plans as the delta between plans and forward expectations grows; at present, such updates are currently in progress at NASA's Kennedy Space Center (KSC) and Langley Research Center (LaRC). As such, Agency master plans and master planning processes are well aligned with current needs. For instance, master planning has contributed to the Agency's effective response to emerging Federal mandates such as the Administration's "Freeze the Footprint" policy, established in OMB Memorandum M-12-12, "Promoting Efficient Spending to Support Agency Operations."

## NASA Facilities Planning Implementation

NASA's facilities investments decisions are distilled from the outcomes of Center and Agency master planning, as well as ongoing cross-Agency initiatives to assess and optimize Agency capabilities in the context of current and future requirements. Further, NASA is committed to the alignment of its capital investment plans for new facilities with Federal strategic sustainability goals established in Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance."

NASA endeavors to achieve its goals of sustaining its core capabilities in an affordable way that is consistent with the current budget climate. To this end, NASA uses risk assessments to filter and prioritize critical repairs, balancing critical repair investments against strategic investments that will modernize facilities and reduce operating costs. Additionally, the Agency periodically reassesses master plans and capital investment plans to ensure that they meet NASA's most critical needs within budget constraints.

NASA is consolidating, modernizing, and revitalizing its infrastructure as part of the overall NASA facilities strategy. Projects such as the Central Office Building at the Glenn Research Center (GRC), the Facility Support Center at the Dryden Flight Research Center (DFRC), the Integrated Services Building at the Langley Research Center (LaRC), and the Consolidated Engineering Building at the Marshall Space Flight Center (MSFC) have provided modern, efficient, sustainable facilities. These projects enabled the Centers to consolidate functions into smaller footprints, and facilitated the disposal of many old, costly facilities. NASA's program to replace its system of radar antennas over time will establish a modern space communications and navigation infrastructure that will meet NASA's needs for the foreseeable future. Replacement of distribution systems, such as the high pressure industrial water system at the Stennis Space Center, the East Test Area industrial water system at MSFC, and the replacement of electrical distribution systems at the Jet Propulsion Laboratory, the Kennedy Space Center (KSC) and DFRC will ensure that critical electrical and water systems that directly support research testing and flight operations will be reliable and ensure safe operations.

In 2014, NASA will revitalize and modernize the research aircraft integration facility at DFRC, and revitalize the central compressed air system at GRC, serving all GRC labs and wind tunnels. NASA's near-term planning responds to concerns identified in the National Research Council Report, *Capabilities for the Future – An Assessment of NASA Laboratories for Basic Research* (May 2010). NASA is evaluating the replacement of several laboratories that will support the Agency's future research needs.

NASA's Construction and Environmental Compliance and Restoration (CECR) budget supports the implementation of the Agency's facilities planning efforts. The CECR budget focuses on six major objectives:

Facility repairs and upgrades – These projects make facility repairs needed to mitigate near-term risks to missions and operations by repairing electrical, mechanical, life safety, and utility systems. Requirements are prioritized using risk assessments to identify the most critical repair needs.

Modernization, replacement and consolidation – These are major repair-by-replacement or -refurbishment projects that implement NASA's "Similar Capabilities, Smaller Footprint"

strategy. Using Center master plans as a basis, NASA establishes its capital investment planning, which identifies near-term projects that renew core capabilities in support of the Agency's strategic goals. The projects replace old, obsolete, failing facilities with new, sustainable, flexible, energy-efficient facilities. These new facilities consolidate functions, which increases building density (reduces footprint) and improves work efficiency and collaboration. Analysis of some of NASA's replacement facilities after they had been occupied determined that the Agency is achieving 41-55-percent utility savings in these buildings (97 percent in NASA's net-zero energy building) and 40 percent in operations savings. In addition, complete replacement of water and electrical distribution systems eliminates reliability problems with aging critical infrastructure. NASA has completed 13 consolidation and replacement facilities since 2011.

Energy Savings Investments – Beginning in 2014, NASA will establish an energy savings investment line in the CECR budget. This line will be used to invest in projects that reduce energy consumption, improve energy efficiency, reduce utility bills, and increase renewable energy production. NASA recognizes rising energy costs as a risk to its missions and operations. Although the Agency has been successful in reducing its energy consumption, rising energy prices continue to cut deeper into NASA's Center Management and Operations budget. This program will improve NASA's ability to control the impact of the rising cost of energy.

In addition to the new energy savings investment line in CECR, NASA has been investing 35 percent of its Enhanced Use Lease (EUL) net proceeds in energy-saving projects. NASA has used these funds to retro-commission buildings to reduce energy consumption, install energy-efficient lighting, and replace boilers with energy-efficient/low-emission boilers. As EUL proceeds increase, NASA will expand this program.

Environmental Compliance and Restoration – NASA's Environmental Compliance and Restoration (ECR) program cleans up hazardous materials and wastes that have been released to the surface or into groundwater at NASA installations, NASA-owned industrial plants supporting NASA activities, current or former sites where NASA operations have contributed to environmental problems, and other sites where the Agency is legally obligated to address hazardous pollutants. NASA uses a risk-based approach, assessing safety and health risk, mission impact and compliance requirements to prioritize environmental restoration plans within available resources.

The Environmental Compliance and Restoration program supports NASA's goal of conducting its mission in a sustainable way with reduced impact on the environment. The program supports methodologies for sustainably reducing energy intensity and greenhouse gas emissions, and supporting operational activities by ensuring that advances in chemical risk management are incorporated early in mission design phases. For example, the program supports developing national and international agreements to qualify citric acid for passivation of stainless steel, testing environmentally friendly corrosion coatings for launch structures, and qualifying solvent alternatives for precision-cleaning processes.

Demolition – NASA's demolition program eliminates obsolete, unneeded infrastructure to improve efficiency and eliminate safety and environmental risks. The program began in 2004, and has been an important part of NASA's plans to reduce its infrastructure and operating costs. In 2012, NASA demolished or disposed of 96 facilities. This eliminated \$2.6 million in

operations and maintenance requirements and \$15.8 million in deferred maintenance. NASA has maintained a five-year backlog of demolition projects since the start of the program. NASA reassesses its demolition requirements annually, with approximately a year of new demolition requirements added every year.

In addition to demolition, NASA is eliminating unneeded facilities through transfer to other Agencies or sale through the General Services Administration (GSA). Recently, NASA worked with GSA to successfully sell two large office buildings and land at the Glenn Research Center (GRC). This eliminated the cost and burden to NASA while making serviceable buildings available to industry in a location that has ideal access to the Cleveland airport. NASA will continue to explore the disposition of land and structures through sale when it is economically feasible. NASA is also actively removing leased space from its inventory. In 2012, NASA closed leases that resulted in a savings of just over \$1 million in rent.

Programmatic Construction of Facilities (CoF) – Programmatic CoF provides capabilities in testing and development that directly support NASA’s current missions. These projects modify NASA facilities to provide specific technical requirements to manufacture, test, process, or operate hardware for NASA programs. These projects are identified by NASA flight and research programs as specific changes to NASA technical capabilities essential to the success of NASA programs. Programs must assess and prioritize their facilities requirements against other program requirements to determine the size and timing of their facilities program. A NASA real property management goal is to only construct and operate new real property when existing capabilities cannot be used or modified. Programs are required to conduct trade studies before programming a facility project to determine if existing facilities can be used. Investments above \$20 million are reviewed by a NASA management council to ensure that programs are constructing facilities only when necessary.

### **NASA Real Property Management Authorities:**

NASA has several Federal authorities available to support its real property and infrastructure management goals. The Agency’s use of this complement of authorities depends upon the status of a given property’s utilization within the real property portfolio (i.e., whether the property has been administratively determined to be excess to NASA mission needs, for instance, or is not excess, but underutilized.) Depending on the desired end state for the property, NASA can dispose of excess property through the GSA excess process or demolish excess property through delegated authority from GSA. GSA’s Public Benefit Conveyance and Exchanging Building for Services authorities offer additional avenues for disposing of excess properties.

Opportunities for beneficial reutilization—as well as revitalization—of underutilized properties may be realized through the use of Federal out-grant authorities under the National Aeronautics and Space Act (“Space Act”), the National Historic Preservation Act, the Economy Act, and the Commercial Space Launch Act (CSLA). The Space Act provides NASA the authority to enter into a variety of agreements, both reimbursable and non-reimbursable, including licenses, use permits, memoranda of understanding and concessionaire agreements. Amendments to the Space Act beginning in 2003, with subsequent expansion and amendment, provided NASA authority to enter into Enhanced Use Leases (EULs, thereby enabling the Agency to collect and

retain fair-market value proceeds from utilization of underutilized property by commercial or other entities, which may be used for maintenance, capital revitalization, and/or improvements to real property assets. The CSLA authorizes the Federal government to “facilitate and encourage the acquisition by the private sector...of launch or reentry property of the United States Government that is excess or not otherwise needed for public use...” Under the CSLA, NASA charges only its direct costs, which are those costs that NASA would not otherwise incur absent the partnership activity. By entering into these agreements with public and private sector entities, currently underutilized NASA facilities may be leveraged into more productive properties, maximizing asset utilization and efficiency.

## **NASA Facilities Strategy Results**

In spite of budget challenges, NASA is making progress on its facility strategy. Major replacement facilities are in planning, design, or construction at each NASA Center. Utility system replacement projects have reduced the risk of major utility failures that could impact Agency operations. NASA’s 2012 facility assessment noted that the Agency’s deferred maintenance, which is an estimate of the essential but unfunded maintenance work necessary to bring all facilities up to standards, decreased 5.7 percent from 2011 levels. The survey noted that demolition and replacement of major facilities are dominant factors contributing to this reduction in deferred maintenance. An assessment of NASA’s real property inventory indicates that the inventory has been reduced slightly. NASA estimates that it will reduce administrative space by 256,000 square feet by 2015 through demolition, transfer, and lease termination.

In summary, NASA’s master planning process reflects significant progress toward the responsible stewardship of the Agency’s physical infrastructure through forward-thinking, systemic strategic planning. As NASA works to implement its strategic infrastructure goals, the Agency will continue to construct and operate only those assets required to conduct its programs, maintain core capabilities, and meet national responsibilities. As such, NASA’s real property requirements are evaluated based upon the fulfillment of direct or anticipated program and mission requirements. At the same time, NASA seeks to fully leverage Agency-retained assets to increase their functionality in support of mission success. NASA will continue its effort, through existing processes and initiatives underway, to identify cross-Center consolidation opportunities that contribute to a reduction of duplicative or unneeded infrastructure and ultimately, to a more efficient use of taxpayer resources in the achievement of the Agency’s mission.

NASA is committed to implementing its facilities management plans and achieving strategic infrastructure goals through management, development, and operational strategies that reduce life cycle cost and risk while ensuring safety and mission success. However, like all Federal agencies, NASA is challenged with implementing these goals within a budgetary environment that can be difficult to predict. NASA is carefully prioritizing its efforts to sustain continued progress toward the most efficient and prudent stewardship of its physical infrastructure. We appreciate the continued support of the Space Subcommittee and Congress to ensure stable funding for NASA as it works to maintain, protect, and improve these important national space program assets.