

Ensuring Scientific Integrity at the National Aeronautics and Space Administration
Report to the Office of Science and Technology Policy
April 16, 2011

On December 17, 2010, Dr. John P. Holdren, Director of the Office of Science and Technology Policy and Assistant to the President for Science and Technology, issued a memorandum to the heads of executive departments and agencies. In this memo Dr. Holdren provided further guidance to executive departments and agencies to implement the Administration's policies on scientific integrity detailed in President Obama's memorandum of March 9, 2009, articulating six principles central to the preservation and promotion of scientific integrity. Dr. Holdren's memo also directed all agencies to report the actions they have taken to develop and implement those policies.

This report describes the policies that the National Aeronautics and Space Administration (NASA) currently has in place to ensure scientific and engineering integrity, the actions that NASA has already taken to extend its assurance, and NASA's plan for additional actions in furtherance of implementing the Administration's policies on scientific integrity. This report is organized to respond to the four major areas and 17 sub-areas addressing scientific and engineering integrity that are explicitly addressed in Dr. Holdren's memorandum of December 17, 2010.

Summary of Responsiveness of NASA Policies to the Four Major Areas.

- **Foundations of Scientific Integrity in Government:** NASA's existing policies and practices are fully responsive.
- **Public Communications:** NASA's existing policies and practices are fully responsive.
- **Use of Federal Advisory Committees:** NASA's existing policies and practices are partially responsive. NASA has developed an action plan for implementing fully responsive policies and practices. NASA will evaluate options for and incorporate new policies and practices, and extend its existing policies and practices, through revisions to NASA Policy Directive (NPD) 1150.11, *Federal Advisory Committee Act Committees*, as appropriate, no later than October 31, 2011.
- **Professional Development of Government Scientists and Engineers:** NASA's existing policies and practices are partially responsive. NASA has developed an action plan for implementing fully responsive policies and practices. NASA will extend its existing policies and practices through written clarifications, as appropriate, no later than June 30, 2011.

I. Foundations of Scientific Integrity in Government. Scientific and technological information is often a significant contributor to the development of sound policies. Agencies should develop policies that:

1. Ensure a culture of scientific integrity.

Existing NASA policies and practices sustain an environment of scientific integrity, honest investigation, and freedom from political interference. NASA policies that provide guidance and requirements in this area include the following:

- NASA Policy Directive (NPD) 1080.1, *Policy for the Conduct of NASA Research and Technology*, establishes the policy and responsibilities for the conduct of NASA's research and technology programs and associated projects. This policy is meant to be flexible, adaptable, and conformable to the diverse nature of research and technology programs that NASA conducts and manages.
- NASA Procedural Requirements (NPR) 1080.1, *Requirements for the Conduct of NASA Research and Technology*, establishes the requirements by which NASA will conduct research and technology. This document establishes requirements for research and technology planning, solicitation and selection of proposals, peer review, quality assessment and performance metrics, data protection, and dealing with misconduct. The requirements described in this NPR are used to develop NASA research and technology management processes by the NASA organizational units.
- 14 CFR 1213, *Release of Information to News and Information Media*, sets forth NASA policy governing the release of public information, which is defined as information in any form provided to news and information media, especially information that has the potential to generate significant media or public interest or inquiry.

2. Strengthen the actual and perceived credibility of Government research.

NASA is committed to strengthening the actual and perceived credibility of its research.

(a) *Ensuring that the selection of candidates for scientific positions is based primarily on their scientific and technological knowledge, credentials, experience, and integrity.* Existing NASA policies and practices ensure that NASA's technical workforce is qualified to carry out the Nation's civil space program. NASA policy documents that govern the hiring of both internal and external candidates include the following:

- NASA Procedural Requirements (NPR) 3335.1, *Internal Placement of NASA Employees*, provides the procedures and requirements of NASA's Competitive Placement Plan by establishing minimum Agency procedures for filling positions through competition and on the basis of merit.
- 5 CFR 300.102, *Employment Practices*, governs NASA's competitive practices for external hiring. Following these policies ensures that NASA employment practices are practical in character, relate to matters that fairly test the relative capacity and fitness of candidates for the jobs to be filled, and result in selection from among the best qualified candidates.

(b) *Ensuring that data and research used to support policy decisions undergo independent peer review by qualified experts.* NASA is not a regulatory agency and does not, in itself, make policy decisions. However, NASA data and research is used by the Congress and other Federal and state agencies to support policy decisions. NASA relies on peer review panels of competent and non-conflicted research and technology experts from both internal and external to NASA to conduct quality and performance assessments (NPR 1080.1, *Requirements for the Conduct of NASA Research and Technology*; NPR 7120.8, *NASA Research and Technology Program and Project Management Requirements*). NASA expects all scientific research by NASA investigators and NASA-sponsored investigators to be peer reviewed before publication, whether it is published by NASA or submitted to a scientific journal for publication (NPR 1080.1, *Requirements for the Conduct of NASA Research and Technology*; NPR 2200.2, *Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*).

(c) *Setting clear standards regarding conflicts of interest.* NASA civil servants are bound by statutory requirements regarding financial conflicts of interest. As with civil servants generally, many NASA scientists file financial disclosure reports annually and are provided annual training on the conflict of interest rules. In addition, scientists participating in NASA peer reviews and NASA research, whether NASA civil servants or members of the external scientific community, follow the clearly articulated standards for conflicts of interest in the following documents:

- *Guidebook for Proposers Responding to a NASA Research Announcement or Cooperative Agreement Notice.* This Guidebook describes the policies and procedures of the Broad Agency Announcement known as the NASA Research Announcement (NRA) used by the program offices of NASA that solicit proposals for basic and applied science and technology research and for science, technology, engineering, and mathematics education. The issue of conflicts of interest and confidentiality are of critical importance to the peer review process. This Guidebook contains policies to ensure that all reviewers of NASA proposals avoid not only actual but also any apparent conflicts of interest and maintain confidentiality about all activities involved in the review process.
- Science Mission Directorate (SMD) Policy Document (SPD)-01, *Handling Conflicts-of-Interest for Peer Reviews.* This policy document sets clear conflicts-of-interest policies for peer reviewers in all peer reviews managed by the Science Mission Directorate.
- SMD Policy Document SPD-05, *Preventing Financial Conflicts for IPA Employees.* The Intergovernmental Personnel Act (IPA) permits assignments to and from universities. IPA assignees serve within the SMD in all capacities that civil servant scientists do. An IPA assignee's continuing employment relationship with his/her home institution is a potential conflict of interest. This policy document contains the SMD mitigation plan for using an IPA assignee to help manage a research portfolio.
- SMD Policy Document SPD-16, *Certification against Financial Conflicts-of-Interest for Civil Servants Working on SMD Peer Reviews.* In 2008, the Office of Government Ethics approved the "NASA Conflicts of Interest and Confidentiality Self Certification for NASA Peer Reviewers who are Federal Government Employees" policy document. This policy document describes how SMD will implement the use of the Self Certification Form to certify the absence of financial conflicts of interest for all civil servants participating in peer review.

(d) *Adopting appropriate whistleblower protections.* NASA is fully committed to the Whistleblower Protection Act of 1989, Public Law (P.L.) 101-12, and its expanded protections enacted by P.L. 103-424. Employees are encouraged to raise violations of the Whistleblower Protection Act to the Agency Office of Inspector General located at each NASA Center and also may raise violations of the Whistleblower Protection Act to the Ombudsmen, the Office of Special Counsel or, when appropriate, to the Merit Systems Protection Board. Section 110 of the NASA Authorization Act of 2005 (P.L. 109-155) required the NASA Administrator to transmit to Congress "... a plan describing steps to be taken by NASA to protect from retaliation NASA employees who raise concerns about substantial and specific dangers to public health and safety or about substantial and specific factors that could threaten the success of a mission." In response NASA created a Whistleblower Protection Plan dated March 2007 that provides confidentiality, a single point of contact to make complaints, tracking of the complaint for the whistleblower, education of employees about their rights and protections, education of employees about their obligation to report their concerns, and education to human resources professionals and NASA managers and supervisors regarding personnel laws, rules, and regulations.

3. Facilitate the free flow of scientific and technological information, consistent with privacy and classification standards.

Existing NASA policies and practices facilitate open communication among scientists and engineers, between NASA staff and the technical community, and between NASA employees and the public. NASA requires the results of NASA-funded research, both internal and external, to be made available to the scientific community and to the public.

- NASA Procedural Requirements (NPR) 2200.2, *Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*. This document requires that NASA scientific and technical information be made available to the public either through publication in the open literature or through NASA's Scientific and Technical Information homepage (<http://www.sti.nasa.gov/STI-public-homepage.html>).
- NASA's strategic plan (NPD 1001.0, *NASA Strategic Plan*) and tactical plan for science (*Science Plan for NASA's Science Mission Directorate*) require that the results of NASA research and development be made available for the benefit of the Government, the advancement of research, and the increase in the public's knowledge.

4. Establish principles for conveying scientific and technological information to the public.

In accordance with P.L. 85-568, National Aeronautics and Space Act of 1958, as amended, NASA shall "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof." Unless a determination is made that public dissemination of information must be prohibited or restricted,¹ NASA information is made available to the public. According to a December 2009 report by the Government Accountability Office (GAO Report 10-200), the majority of NASA researchers are familiar with NASA's dissemination policies.

¹ NASA scientific and technical information can be restricted if it includes national-security-classified information, export-controlled information, proprietary information, or discloses an invention (NPR 2200.2, Section 4.5.1).

- NASA Policy Directive (NPD) 2200.2, *Management of NASA Scientific and Technical Information*. This policy document establishes NASA policy for managing the informational results of its research and development efforts. NASA policy is to collect, manage, disseminate, safeguard, and archive its scientific and technical information for use by NASA and NASA contractors and grantees, and unless restricted, the public, to advance NASA's goals in science, exploration, and aeronautics; to strengthen the effectiveness and improve the productivity and cost effectiveness of the NASA research effort; to reduce unnecessary duplication; and to and improve U.S. competitiveness in science and technology.
- NASA Procedural Requirements (NPR) 2200.2, *Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*. This policy document identifies requirements for approving, publishing, and disseminating NASA scientific and technical information.
- NASA has established policies that all scientific data from its robotic space missions shall be placed into publicly accessible data archives for use by the scientific community and the public. These policies are included in all solicitations for space missions and investigations. Examples of these policies are those for Earth Science (<http://science.nasa.gov/earth-science/earth-science-data/data-information-policy/>) and Heliophysics (<http://science.nasa.gov/heliophysics/heliophysics-data-centers/>).

II. Public Communications. Agencies should develop public communications policies that promote and maximize openness with the media and the American people.

NASA has established policies for communicating science to the public. The policy document 14 CFR 1213, *Release of Information to News and Information Media*, includes provisions that:

1. NASA will offer articulate and knowledgeable spokespersons who can best serve the needs of the media and the American public (14 CFR 1213.105(b)).
2. NASA employees may, but are not required to, speak to the media and the public about their work (14 CFR 1213.105(c) and (h)).
3. Set forth an internal dispute resolution process for ensuring scientific and technical accuracy is not compromised (14 CFR 1213.104(e)).
4. Scientific and technical information from or about Agency programs and projects will be accurate and unfiltered (14 CFR 1213.102(a)) and that editing by public affairs staff to ensure that public information products are well written and appropriate for the intended audience shall not change scientific or technical data or the meaning of programmatic content (14 CFR 1213.103(c)).

III. Use of Federal Advisory Committees. Agencies should develop policies for convening Federal advisory committees tasked with giving scientific advice.

NASA's policies for the management of its Federal advisory committees (FACs) is given in NPD 1150.11, *Federal Advisory Committee Act Committees*. Developed in compliance with the statutory provisions of the Federal Advisory Committee Act (FACA, 5 U.S.C. app., as amended)

and the General Services Administration (GSA) Final Rule on Federal Advisory Committee Management (41 CFR Parts 101-6 and 102-3), NPD 1150.11 contains NASA policy and practices for the management of advisory committees subject to the FACA as well as committees which are not subject to FACA. As stated in NPD 1150.11, it is NASA policy that “Subcommittees or task forces that... are not subject to FACA ... will operate under procedures that provide for public meetings and the maintenance of publicly available records.”

NASA currently operates five advisory committees that have been chartered with GSA concurrence and are subject to the FACA: the NASA Advisory Council (NAC), the Aerospace Safety Advisory Panel (ASAP), the International Space Station Advisory Committee, the International Space Station National Laboratory Advisory Committee, and the National Space-Based Positioning, Navigation, and Timing (PNT) Advisory Board (collectively, the “NASA FACs”).

1. The recruitment process for new FAC members should be as transparent as possible.

NASA’s current process relies on nominations from within the Agency followed by a thorough vetting of the nominee for expertise, experience, and conflicts of interest. The nomination process for members of the National Space-Based PNT Advisory Board is coordinated among the nine Federal stakeholder agencies. All members of NASA FACs are appointed by the NASA Administrator, per NPD 1150.11.

NASA will announce NASA FAC vacancies widely, including notice in the Federal Register with an invitation to the public to recommend individuals for consideration and for self-nominations to be submitted. NASA will evaluate options for and incorporate new policies and practices, and extend its existing policies and practices, through revisions to NPD 1150.11, as appropriate, no later than October 31, 2011.

2. Professional biographical information for appointed committee members should be made widely available to the public.

Currently, professional biographical information is available on the Web sites for several of the NASA FACs, including the NAC, the ASAP, and the National Space-Based PNT Advisory Board.

NASA will ensure that professional biographical information is available on its Web site for all of the members of all of its FACs. NASA will revise NPD 1150.11 to include these practices as written policy, as appropriate, no later than October 31, 2011.

3. The selection of members to serve on a scientific or technical Federal advisory committee should be based on expertise, knowledge, and contribution to the relevant subject area.

The members of NASA FACs are selected on the basis of their expertise, knowledge, experience, and contribution to the relevant subject area. Additional factors considered are the availability of the member to serve, diversity among members of the committee, and the ability to work effectively on the committee. NASA is committed to having a fairly balanced

membership with regard to points of view represented and functions to be performed by its FACs. To that end, beginning in 2011, NASA submits a written Membership Balance Plan to the GSA for its review for every new, renewed, or reestablished NASA FAC to ensure this balanced membership requirement is met.

NASA will revise NPD 1150.11 to include these practices as written policy, as appropriate, no later than October 31, 2011.

4. Agencies should make publicly available all Conflict of Interest waivers granted to committee members.

NASA rarely grants such waivers and has none currently. NASA will make publicly available the names of all committee members receiving future Conflict of Interest waivers. NASA will evaluate options for and incorporate new policies and practices, and extend its existing policies and practices, through revisions to NPD 1150.11, as appropriate, no later than October 31, 2011.

5. All reports, recommendations, and products produced by Federal advisory committees should be treated as the findings of such committees rather than the U.S. Government and are thus not subject to revision by NASA.

NPD 1150.11 requires that NASA FACs make such reports, records, and other papers available to the public. NASA practice is that all reports, recommendations, and products produced by NASA FACs are treated as the findings of such committees rather than the U.S. Government and are thus not subject to revision by NASA.

NASA will revise NPD 1150.11 to include these practices as written policy, as appropriate, no later than October 31, 2011.

ACTION: NASA will announce FAC vacancies widely, including notice in the Federal Register. NASA will make publicly available the names of all committee members receiving future Conflict of Interest waivers. NASA will incorporate new policies and practices, and extend its existing policies and practices, through revisions to NPD 1150.11, *Federal Advisory Committee Act Committees*, as appropriate no later than October 31, 2011.

IV. Professional Development of Government Scientists and Engineers. Agencies should establish policies that:

1. Encourage publication of research findings in peer-reviewed, professional, or scholarly journals.

NASA researchers and project staff are required to publish the result of their research and development activities in the peer reviewed literature or in publicly available NASA technical reports (NPR 1080.1A, *Requirements for the Conduct of NASA Research and Technology*). The performance plans of NASA scientists and engineers engaged in research include requirements that research findings be published in peer-reviewed, professional, or scholarly journals, or be

published as NASA technical reports. In support of this policy, NASA has formal practices for clearing publications and presentations for release (NPR 2200.2, *Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*).

2. Encourage presentation of research findings at professional meetings.

NASA researchers and project staff are expected to share their results with their colleagues at professional meetings, science conferences, and other venues (NPR 1080.1A, *Requirements for the Conduct of NASA Research and Technology*). NASA civil servants will attend professional meetings to the extent permitted by available funding and law.²

3. Allow Government scientists and engineers to become editors or editorial board members of professional or scholarly journals.

No policy precludes NASA civil servant scientists and engineers serving as editors or editorial board members of professional or scholarly journals. NASA scientists and engineers regularly take on such responsibilities. This service is generally considered part of a NASA scientist or engineer's official duties and, when approved by his/her supervisor, may be carried out as part of his/her job.

4. Allow full participation in professional societies, including removing barriers for serving as officers or on governing boards of such societies.

There are no NASA-specific barriers to participation as officers or directors of professional societies; to the contrary, NASA encourages its scientists, engineers, and all other NASA employees for whom such participation is an integral part of professional development to serve as officers in professional societies. The Department of Justice Office of Legal Counsel has opined that with the exception of certain standard-setting organizations, 18 USC § 208 prohibits outside board service in an official capacity, and NASA ethics officials work with interested employees to ensure that these activities are performed in compliance with the Office of Legal Counsel's interpretations of Section 208.

ACTION: NASA will issue an Agency-wide memorandum confirming the Agency's support for NASA scientists, engineers, and all other NASA employees for whom such participation is an integral part of professional development to serve as society officers or board members, where appropriate, and summarizing the Agency's processes for them to obtain approval for such service. The memorandum will be issued by NASA's Chief Scientist, Chief Engineer, and Chief Technologist, and other NASA officials as appropriate, with concurrence from the NASA Office of General Counsel, no later than June 30, 2011.

² The Consolidated Appropriations Act, 2010, P.L. 111-117 (the 2010 Appropriations Act), requires that NASA limit travel to any single conference outside of the United States (a "foreign conference") to no more than 50 NASA employees. The NASA Authorization Act of 2008, P.L. 110-422 (the 2008 Authorization Act), limited funding for conferences to "not more than \$5,000,000 for any expenses related to conferences, including conference programs, travel costs, and related expenses."

5. Allow Government scientists and engineers to receive honors and awards for their research and discoveries.

NASA civil servant scientists and engineers are allowed to receive honors and awards for their research and discoveries, consistent with 5 CFR 2635.204(d). NASA is proud that its civil servant staff have received many prestigious honors and awards, including the Rossby Medal of the American Meteorological Society (James Hansen, 2009), the Flinn Award of the American Geophysical Union (Diane Wickland, 2007), the Tinsley Prize of the American Astronomical Society (Drake Deming, 2010), and the Nobel Prize in Physics (John Mather, 2006), as well as recognition as members of the National Academy of Science and Fellows of professional societies.

V. Implementation.

NASA has a culture of scientific and engineering integrity that we work zealously to maintain. This culture is supported by NASA policies, practices, and procedures that embed scientific integrity principles into the conduct of NASA's research and technology development programs.

NASA has identified two areas where its policies, practices, and procedures can be improved to be more fully responsive to the guidance in Dr. Holdren's memorandum of December 17, 2010. NASA will implement these improvements with the following action plan:

1. NASA will announce FAC vacancies widely, including notice in the Federal Register. NASA will make publicly available the names of all committee members receiving future Conflict of Interest waivers. NASA will evaluate options for and incorporate new policies and practices, and extend its existing policies and practices, to meet all FAC-related points of Dr. Holdren's memorandum through revisions to NPD 1150.11, *Federal Advisory Committee Act Committees*, as appropriate, no later than October 31, 2011.
2. NASA will issue an Agency-wide memorandum confirming the Agency's support for NASA scientists, engineers, and all other NASA employees for whom such participation is an integral part of professional development to serve as society officers or board members, where appropriate, and summarizing the Agency's processes for them to obtain approval for such service. The memorandum will be issued by NASA's Chief Scientist, Chief Engineer, and Chief Technologist, and other NASA officials as appropriate, with concurrence from the NASA Office of General Counsel, no later than June 30, 2011.

Appendix – List of Acronyms

ASAP	Aerospace Safety Advisory Panel
CFR	Code of Federal Regulations
FAC	Federal Advisory Committee
FACA	Federal Advisory Committee Act
GAO	Government Accountability Office
GSA	General Services Administration
IPA	Intergovernmental Personnel Act
NAC	NASA Advisory Council
NASA	National Aeronautics and Space Administration
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
P.L.	Public Law
PNT	Positioning, Navigation, and Timing
SMD	Science Mission Directorate
SPD	SMD Policy Document
U.S.C.	United States Code