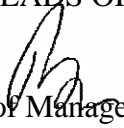August 4, 2009

M-09-27

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: Peter R. Orszag
           Director, Office of Management and Budget

           John P. Holdren
           Director, Office of Science and Technology Policy

SUBJECT: Science and Technology Priorities for the FY 2011 Budget

        Scientific discovery and technological innovation are major engines of increasing productivity and are indispensable for promoting economic growth, safeguarding the environment, improving the health of the population and safeguarding our national security in the technologically-driven 21st century. To this end, the Administration is already investing in: high-risk, high-payoff research; making permanent the Research and Experimentation tax credit; targeting investment in promising clean energy technologies research; improving health outcomes while lowering costs; and nurturing a scientifically literate population as well as a world-class, diverse science, technology, engineering, and mathematics workforce.

        In preparing FY 2011 Budget submissions to the Office of Management and Budget, agencies should build on the science and technology priorities already reflected in the American Recovery and Reinvestment Act and the FY 2010 Budget. This memorandum also provides general guidance for the conduct of science and technology activities in Executive Departments and Agencies.

Prioritizing key science and technology activities

        Agencies should explain in their budget submissions how they will redirect available resources, as appropriate, from lower-priority areas to science and technology activities that address four practical challenges and strengthen four cross-cutting areas that underlie success in addressing all of them.

    The four practical challenges are:

- Applying science and technology strategies to drive economic recovery, job creation, and economic growth;
- Promoting innovative energy technologies to reduce dependence on energy imports and mitigate the impact of climate-change while creating green jobs and new businesses;

- Applying biomedical science and information technology to help Americans live longer, healthier lives while reducing health care costs; and
- Assuring we have the technologies needed to protect our troops, citizens, and national interests, including those needed to verify arms control and nonproliferation agreements essential to our security.

Addressing these challenges will require:

- Increasing the productivity of our research institutions, including our research universities and major public and private laboratories and research centers;
- Strengthening science, technology, engineering, and mathematics education at every level, from pre-college to post-graduate to lifelong learning;
- Improving and protecting our information, communication, and transportation infrastructure, which is essential to our commerce, science, and security alike; and
- Enhancing our capabilities in space, which are essential for communications, geopositioning, intelligence gathering, Earth observation, and national defense, as well for increasing our understanding of the universe and our place in it.

General Science and Technology Program Guidance

In their budget submissions, agencies should describe the expected outcomes from their research in relation to these four practical challenges and cross-cutting areas, providing quantitative metrics where possible, and describe how they plan to evaluate the success of various techniques to increase support for high-risk research.

Budget submissions should also describe how agencies are strengthening their capacity to rigorously evaluate their programs to determine what has been demonstrated to work and what has not. Budget submissions should show how such assessments allowed agencies to eliminate or reduce funding for less-effective, lower-quality, or lower-priority programs in 2011, and how they will be applied in the future.

Agency budget submissions should also explain how the agency plans to take advantage of today's open innovation model—in which the whole chain from research to application does not have to take place within a single lab, agency or firm—and become highly open to ideas from many players, at all stages. Agencies should empower their scientists to have ongoing contact with people who know what's involved in making and using things, from cost and competitive factors to the many practical constraints and opportunities that can arise when turning ideas into reality. Agencies should pursue transformational solutions to the Nation's practical challenges, and budget submissions should therefore explain how agencies will provide support for long-term, visionary thinkers proposing high-risk, high-payoff research.

Building on the unprecedented transparency and openness required for Recovery Act spending, agencies have a responsibility to explain how Federal science and technology investments contribute to increased economic productivity and progress, new energy technologies, improved health outcomes and other national goals. In order to facilitate these efforts, Federal agencies, in cooperation with the Office and Science and Technology Policy and the Office of Management and

Budget, should develop datasets to better document Federal science and technology investments and to make these data open to the public in accessible, useful formats.

Agencies should develop outcome-oriented goals for their science and technology activities, establish procedures and timelines for evaluating the performance of these activities, and target investments toward high-performing programs. Agencies should develop "science of science policy" tools that can improve management of their research and development portfolios and better assess the impact of their science and technology investments. Sound science should inform policy decisions, and agencies should invest in relevant science and technology as appropriate.

Finally, agencies are expected to conduct programs in accordance with the highest standards of ethical and scientific integrity and to have clear principles, guidelines, and policies on issues such as scientific openness, scientific misconduct, conflicts of interest, protection of privacy, and the appropriate treatment of human subjects.