



Summary of Federal Environmental, Energy and Education Funding in the American Recovery and Reinvestment Act & 2009 Omnibus Bills

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President Obama's economic stimulus plan, approved by Congress as the American Recovery and Reinvestment Act (ARRA), and the Omnibus Appropriations Act for FY 2009 are first steps in a transformation to a new green economy. Energy, environment and education are priorities because of their short- and long-term benefits.

NCSE has identified at least \$100 billion in funding for these priorities. This report shows the allocation of additional funding above the FY 2008 base by department and major independent agencies. There may be programs that we have failed to include.

Significant one-time additions through ARRA include:

- \$4.2B to make Department of Defense facilities more energy-efficient,
- 82% of the \$53.6B State Stabilization Fund that goes directly to states is to be used for education-related expenses,
- \$2.5B to the Department of Energy (DOE) for applied research, development, demonstration and deployment of energy efficiency and renewable energy technologies,
- \$1.25B to DOE for wind, solar, water power, hydrogen, vehicles, industrial and buildings technologies/activities,
- \$1.52B to DOE for competitive solicitation for a range of industrial carbon capture and energy efficiency improvement projects,
- \$4.5B to DOE for developing the smart electricity grid,
- \$6B to EPA for the Clean/Drinking Water State Revolving Funds,
- \$2.9B to NSF for Research & Research Related Activities, and
- \$30B to DOE for investments in applied research, loan guarantees and grants to develop new technologies in partnership with industry, and energy efficiency and conservation activities.

Many of these priorities are also emphasized in the FY 09 appropriations.

Agencies have until May 1 to submit "Agency Recovery Plans" for agency-wide ARRA implementation. Access [agency recovery sites](#), the [conference report](#) and its [summary](#). FY 09 appropriations summaries are found [here](#).

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Department of Defense (DoD)

ARRA

- \$200M for R&D programs
- \$300M to develop energy-efficient weapons technologies
- \$120M for the Energy Conservation Investment Program (ECIP)
- \$4.2B to make DoD facilities more energy-efficient

FY 09 DoD Appropriations legislation was passed in the fall of 2008.

Department of Education (ED)

ARRA

State Stabilization Fund - \$53.6B directly to states

- 82% for education-related expenses; 18% for other government services, including “modernization, renovation, or repair of public school facilities and institutions of higher education,” including those consistent with a recognized green building rating system

College Affordability

- *Pell Grants*: \$17B to close shortfall in program and boost grant amounts by \$500 to \$5350 in the first year
- *Tuition Tax Credits*: \$13.8B to boost tuition tax credit from \$1800 to \$2500

FY 09

College Affordability

- *Student Financial Aid*: \$1.9B for federal supplemental educational opportunity grants, Perkins Loans, and the Leveraging Educational Assistance Partnerships programs

Department of Energy (DOE)

ARRA

Office of Science - \$1.6B for facilities renovation, basic research, and advanced scientific computing

- \$277M for Energy Frontier Research Centers, to be awarded on a competitive basis to universities and national laboratories. EFRCs will accelerate transformational basic science needed to develop plentiful and cost-effective alternative energy sources.
- \$90M for other core research, providing support for graduate students, postdocs, and Ph.D. scientists across the nation
- \$330M for operations & equipment at Office of Science major scientific user facilities, used annually by over 20,000 researchers

Energy Efficiency and Renewable Energy Research & Development

- \$2.5B for applied research, development, demonstration and deployment of energy efficiency and renewable energy technologies
- \$800M for biomass projects
- \$400M for geothermal activities and projects
- \$50M for research to increase the efficiency of information and communications technology and to improve standards
- \$1.25B for wind, solar, water power, hydrogen, vehicles, industrial and buildings technologies/activities

Advanced Research Project Agency – Energy (ARPA-E)

- \$400M to establish ARPA-E as authorized by the America COMPETES Act
 - directed to support novel early-stage energy research, development of technologies, research and development of manufacturing processes, and coordination for technology demonstration & facilitation of tech. transfer

Fossil Energy Research and Development

- \$1B for existing fossil energy research and development programs
- \$1.52B for competitive solicitation for a range of industrial carbon capture and energy efficiency improvement projects, including a small amount for innovative concepts for beneficial CO₂ reuse
- \$50M to further the development of carbon capture and storage technologies; competitive solicitation for site characterization activities in geologic formations
- \$20M for geologic sequestration training and research grants

Smart Grid

- \$4.5B for activities related to developing the smart electricity grid
 - Likely to be focused on collaboration with industry and utilities – but may also provide new opportunities for academic researchers
- \$100M in worker training for the above area

Other Programs: \$30B for investments in applied research, loan guarantees and grants to develop new technologies in partnership with industry, and energy efficiency and conservation activities

DOE (continued)

FY 09

Energy Efficiency and Renewable Energy

- *Solar Energy*: \$175M for research, development, and demonstration projects to make solar energy more affordable
- *Biofuels*: \$217M for grants to improve production of alternative fuels such as cellulosic ethanol and biodiesel
- *Vehicle Technology*: \$273M to collaborate with industry to improve fuel efficiency with better batteries and engines that burn clean fuel
- *Energy Efficient Buildings*: \$140M to research conservation technologies for buildings and industry to reduce energy demand
- *Industrial Technologies*: \$90M to help businesses improve energy efficiency
- *Water Power*: \$40M to research new ways of generating power from flowing water
- *Weatherization Grants*: \$200M for insulation and energy conservation measures to reduce utility bills for low-income families
- *Innovative Technology Loan Guarantees*: Extends loan guarantee authority for Innovative Technology, and includes \$18.5B in loans for energy efficiency and renewable energy technologies

Office of Science - \$4.8B, \$755M greater than 2008, for basic scientific research to address long-term energy needs

- *Advanced Energy Research*: \$765M, \$268M above 2008, for basic research to tackle major barriers to advancing energy generation and storage such as fusion energy and advanced batteries. This includes \$100 million for 20-30 Energy Frontier Research Centers to perform breakthrough energy research, and \$15 million for **Advanced Research Projects Agency – Energy (ARPA-E)**.
- *New Tools and Facilities for Energy Research*: \$2.2B, \$389M above 2008, for labs and equipment necessary to perform the next generation of advanced energy research
- *Climate Change Research*: \$178M, \$41M above 2008, for climate change research including advanced computer modeling

Environmental Cleanup: \$6.5B, \$301M above 2008, to clean up contamination from 60 years of nuclear weapons manufacturing and cancelled projects for handling spent nuclear fuel. DOE has outstanding commitments to clean up 22 sites in 13 states.

Department of the Interior (DOI)

ARRA

- **Bureau of Reclamation:** \$1B to fund water reuse projects, construct rural water projects, promote water conservation, improve energy efficiency, address aging water infrastructure, and meet endangered species requirements through improvements such as fish screens and fish passage projects
- **National Park Service:** \$750M to preserve and protect national icons and historic landscapes, improve energy efficiency and renewable energy use at park units throughout the nation, and remediate abandoned mines sites on park units
- **U.S. Fish & Wildlife Service:** \$280M to improve energy efficiency and renewable use at refuges, resulting in the "greening" of facilities throughout the nation. Funding also will be used to restore wetlands, riparian habitat, endangered species habitat, and other important landscapes.
- **Bureau of Land Management:** \$320M to remediate abandoned mines, which will allow increased access to public lands. Funding will help expand BLM's capacity to authorize renewable energy development on public lands while ensuring environmental protection of these areas and restoration of native plants and animals, including sage grouse habitat. Funding is also included for Interior agencies to eliminate underbrush and other vegetation in fire-prone areas to reduce the threat and potential severity of fire.
- **U.S. Geological Survey:** \$140 million to restore and rehabilitate laboratories and research facilities and improve their energy efficiency and renewable use.

FY 09

- **Bureau of Reclamation:** \$1.1B for dams, canals, water treatment and conservation, and rural water projects
 - *Title XVI, Water Reclamation and Reuse Program:* \$39M, \$15M above 2008, to develop/expand the use of recycled water to increase water supplies; will preserve overdrawn river/groundwater supplies, protect the environment, and improve security/reliability of water supplies
- **National Park Service:** \$2.5B, \$135M above 2008, to continue 10-year initiative to upgrade parks before 100th anniversary of NPS in 2016
- **National Wildlife Refuge System:** \$463M to reverse dramatic loss of staffing on National Wildlife Refuges
- **U.S. Geological Survey:** \$68M for priority climate change research; \$3M for carbon sequestration research

Environmental Protection Agency (EPA)

ARRA

Clean/Drinking Water State Revolving Funds

- \$4B for assistance to help communities with water quality and wastewater infrastructure needs
- \$2B for drinking water infrastructure needs; a portion of funding will be dedicated to green infrastructure, water and energy efficiency, and environmentally innovative projects

Hazardous Waste/Toxic Site Cleanup

- \$100M for competitive grants to evaluate and clean up brownfields
- \$600M for Superfund hazardous waste cleanup

Diesel Emissions Reductions

- \$300M for grants and loans to help regional, state, and local agencies; tribal agencies; and nonprofit organizations with projects that reduce diesel emissions

Superfund Hazardous Waste Cleanup

- \$600M for cleanup of hazardous sites

Leaking Underground Storage Tanks

- \$200M for cleanup of petroleum leaks from underground storage tanks

FY 09

Clean/Drinking Water State Revolving Funds

- \$1.5B for low-interest loans to help local communities to improve drinking water & wastewater systems
 - \$689M for Clean Water State Revolving Fund to ensure compliance with Clean Water Act
 - \$829M for Drinking Water State Revolving Fund to improve drinking water systems
 - \$145M in STAG grants for water infrastructure

Clean Air

- \$224M, \$7.2M above 2008, for grants to states to implement the Clean Air Act
- \$60M, \$11M above 2008, for grants to reduce emissions from diesel engines

Energy Star - \$50M to rate appliance energy efficiency

\$10M in new grants to help local communities cut GHG emissions

National Aeronautics and Space Administration (NASA)

ARRA

- *Science*: \$400M to accelerate the development of the Tier 1 set of Earth Science climate research missions recommended by the National Academies Decadal Survey (earth science, planetary science, heliophysics, and astrophysics research); and to increase the agency's supercomputing capabilities
- *Aeronautics*: \$150M to undertake systems-level research, development and demonstration activities related to aviation safety, environmental impact mitigation, and the Next Generation Air Transportation System (NextGen)

FY 09

- *Science*: \$400M to accelerate the development of the Tier 1 set of Earth Science climate research missions recommended by the National Academies Decadal Survey (earth science, planetary science, heliophysics, and astrophysics research); and to increase the agency's supercomputing capabilities
- *Aeronautics*: \$150M to undertake systems-level research, development and demonstration activities related to: aviation safety, environmental impact mitigation, and the Next Generation Air Transportation System (NextGen)
- *Global Climate Change Research*: \$1.3B, including \$150M to fund Earth science missions and measure climate change as recommended by NAS

National Institute of Environmental Health Sciences (NIEHS/NIH)

ARRA

- NIH received an additional \$10 Billion in ARRA, largely due to the efforts of Senator Arlen Specter (R-PA). The money will be available through several grant opportunities as well as through a lump sum (\$7.2 billion) that will be divided among the various Institutes
- The National Institutes of Environmental Health Sciences (NIEHS) is estimated to receive approximately \$168M

FY 09

- NIEHS \$ 662.82 M, \$20.82 M above FY 08
- NIEHS Superfund Research \$ 49.629 M, no increase above FY 2008

National Institute of Standards and Technology (NIST)

ARRA

- *Science and Technology Research and Services*: \$220M for NIST laboratory research, measurements, and other services supporting economic growth and U.S. innovation through funding of such items as competitive grants, research fellowships, and advanced measurement equipment and supplies
- *Construction of Research Facilities*: \$360M to address NIST's backlog of maintenance and renovation projects and for construction of new facilities and laboratories, including \$180M for a competitive construction grant program for funding research science buildings outside of NIST
- *Transfer funds from DOE*: \$10M to help develop a comprehensive framework for a nationwide, fully interoperable smart grid for the U.S. electric power system

FY 09

- \$819M, \$63.1M above 2008
- **Technology Innovation Program (TIP)**: \$65M to fund high-risk, high-reward research into areas of critical national need done by U.S. businesses, colleges and universities, and national labs

National Oceanic and Atmospheric Administration (NOAA)

ARRA

- \$230M slated for habitat restoration, navigation projects, and vessel maintenance
- \$430M for construction and repair of NOAA facilities, ships and equipment, improvements for weather forecasting and satellite development
- \$170M to be used for climate modeling activities, including supercomputing procurement and research into climate change

FY 09

- \$4.4B total, \$468.7M more than 2008, to increase ocean, weather, and climate research activities and for satellite acquisitions
- \$394M to improve computer models, install climate sensors on satellites, and improve accessibility of climate data

National Science Foundation (NSF)

Stimulus money will only fund a few new solicitations and no continuing awards; most new and continuing awards will be funded through FY 09 regular appropriations.

Exceptions are:

- early/new investigator awards
- CAREER awards - funded for full five years
- Graduate Research Fellowships and other similar scholarship programs – tripled
- academic research infrastructure (for outfitting and renovating research space, not new construction)
- Major Research Instrumentation (\$300M through ARRA).

Supplemental funding of existing awards through ARRA possibly, but discouraged. Stimulus funding will be "sequestered from any other funds," be separately accounted for, and be subject to detailed quarterly status reports. See attached statement by NSF.

NSF has also proposed to bring in more faculty rotating program officers and Intergovernment Personnel Act (IPA) appointees to administer these funds. The agency may take on the rotator and IPA salaries, which could free up faculty positions at universities to enable them to hire new faculty and postdocs, even with current hiring freezes.

ARRA

Research & Research Related – \$2.9B

- *Research Grants*: \$2B
 - Funds to be shared among disciplines and being used to boost success rate of proposals already submitted
- *Construction/Academic Facilities Modernization*: \$200M
 - This funding restarts an old NSF program to repair/renovate science & engineering facilities at institutions of higher education and other research institutions
 - New solicitation expected
- *Major Research Instrumentation (MRI)*: \$300M
 - Existing RFA - Proposals were due 1/22/09 for current competition, which originally had approximately \$115M to allocate. Cost sharing requirements will still apply
- *Major Research Equipment & Facilities Construction*: \$400M to build major research facilities that perform cutting edge science

Education & Human Resources - \$100M

- *Noyce Teacher Scholarship Program*: \$60M – more proposals than usual will be funded for competition that closed 2/24/09
- *Math and Science Programs*: \$25M
- *Professional Science Masters Programs*: \$15M – authorized in 2007 by America COMPETES

NSF (continued)

FY 09

Overall - \$6.49B, a \$393M or 5.9% increase over 2008

Research & Research Related – \$339M in additional funding (7% over 2008 level of \$4.84B)

- Bill language: “provide for a balanced program across all science disciplines”
- \$230M to research impacts of human activities on climate and to study carbon cycles, land use, and impacts on ecosystems

Education & Human Resources - \$120M increase (16.5% over FY 08)

- \$10M for climate change education

U.S. Department of Agriculture (USDA)

ARRA

- *Natural Resources Conservation Service*: \$340M for watershed and flood prevention operations and watershed rehabilitation
- *Forest Service*: \$1.15B for capital improvements and maintenance (\$650M) and wildlands fire management (\$500M)

FY 09

- *Rural Development*: \$2.79B for USDA programs important to rural communities including rural housing, water projects, community facilities and economic development efforts
- *Agricultural Research*: \$1.1B for the Agricultural Research Service and \$1.2B for the Cooperative State Research, Education, and Extension Service
- *Natural Resources Conservation Service*: \$968M to improve service in the field and increase conservation efforts

**National Science Foundation
Office of the Director
Arlington, VA 22230**

March 18, 2009

Notice No. 131

**IMPORTANT NOTICE TO
PRESIDENTS OF UNIVERSITIES AND COLLEGES
AND HEADS OF OTHER NATIONAL SCIENCE FOUNDATION
AWARDEE ORGANIZATIONS**

Subject: American Recovery and Reinvestment Act of 2009

On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act of 2009 (Recovery Act) into law. One of the principal purposes of the law is to “provide investments needed to increase economic efficiency by spurring technological advances in science and health”.¹ During the signing ceremony President Obama stated,

"Even beyond energy, from the National Institutes of Health to the National Science Foundation, this recovery act represents the biggest increase in basic research funding in the long history of America's noble endeavor to better understand our world. Just as President Kennedy sparked an explosion of innovation when he set America's sights on the moon, I hope this investment will ignite our imagination once more, spurring new discoveries and breakthroughs that will make our economy stronger, our nation more secure, and our planet safer for our children."²

In response to this landmark legislation, NSF has developed policies, procedures, and Frequently Asked Questions for use by the awardee community. These documents provide up-to-date information regarding NSF's implementation of the Recovery Act, and are available at www.nsf.gov/recovery. The key elements of NSF's implementation of the Recovery Act are highlighted below.

NSF Programs Receiving Recovery Act Funding

The Recovery Act supplements NSF fiscal year 2009 funding by \$3.0 billion. NSF currently has many highly rated proposals that it has not been able to fund. For this reason, NSF is planning to use the majority of the \$2 billion available in Research and Related Activities for proposals that are already in house and will be reviewed and/or awarded prior to September 30, 2009.

¹ P.L. 111-5, Section 3 (a) (3). The full text of the American Recovery and Reinvestment Act of 2009 is available electronically at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h1enr.pdf

² The full text of President Obama's remarks at the signing ceremony is available at: http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-and-Vice-President-at-Signing-of-the-American-Recovery-and-Reinvestment-Act/

The Foundation also expects to expeditiously award funds as specified in the Recovery Act for: the Math and Science Partnership program (funded at \$25 million); the Robert Noyce Teacher Scholarship Program (funded at \$60 million); the Major Research Equipment and Facilities Construction Account (funded at \$400 million); the Academic Research Infrastructure (ARI) program (funded at \$200 million); and the Science Masters program, (funded at \$15 million). Solicitations for these latter two programs will be posted this spring.

NSF will post a solicitation this spring for the Major Research Instrumentation Program (MRI) in order to make a sufficient number of awards to utilize the \$300 million provided in the legislation. The Foundation currently anticipates that no other solicitations will be posted that are solely in response to the Recovery Act.

Funding Prioritization

NSF will ensure that Recovery Act funds are awarded in a timely manner while maintaining its commitment to its established merit review processes.

In keeping with this, NSF's overall framework for Recovery Act investments emphasizes the following:

- All grants issued with Recovery Act funds will be standard grants with durations of up to 5 years. This approach will allow NSF to structure a sustainable portfolio.
- Funding of new Principal Investigators and high-risk, high-return research will be top priorities.

With the exception of the MRI, ARI and Science Masters programs, the majority of proposals eligible for Recovery Act funding include those that are already in house and will be reviewed and/or awarded prior to September 30, 2009.

NSF also will consider proposals declined on or after October 1, 2008. The reversal of the decision to decline must be based on both the high quality of the reviews received on the initial submission and the lack of available funding at the time the original decision was made. The cognizant program officer will contact the institution when a reversal is being considered by NSF. Specific procedural information regarding this new process is available on the NSF Recovery website.

Special Award Conditions

The Recovery Act mandates a significant level of transparency and accountability. The law and implementing guidance identify specific award conditions for awards made with Recovery Act funding. Therefore, award notices will include special award conditions identifying the funding as coming from the Recovery Act, and indicate the specific awardee reporting responsibilities mandated by Section 1512 of the Recovery Act.

Given the goals of the Recovery Act, awardees will be informed that they are expected to expend funds in a timely manner on allowable award costs and that NSF will be monitoring awards for expenditures. If, after 12 months, no allowable expenditures have taken place, NSF may consider reducing or terminating the award and reallocating the funds.

Working in Partnership

NSF is honored by the recognition of the Foundation's role in stimulating the American economy with its inclusion in the Recovery Act. The law and implementing guidance issued by the Office of Management and Budget (OMB) set clear expectations for accountability and transparency from both Federal agencies and from recipients of Recovery Act funding.

The high expectations embodied in the Recovery Act acknowledge the contributions that NSF and its partners in the research and education community have made to the economy and welfare of the nation over the past six decades. This partnership is one of the nation's greatest strengths, and we look forward to working with you as we continue to pursue the promise of science and engineering and meet the goals of the Recovery Act for securing the nation's future.

Arden L. Bement, Jr.
Director