

Department of Energy (DOE) FY 2007 Report to Congress

**Laboratory Directed Research and Development
(LDRD) at the DOE National Laboratories**
(Report also available at <http://www.mbe.doe.gov/cf1-2/ldrdr.htm>)



December 2007

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FY 2007
LDRD Report to Congress
Executive Summary

The Laboratory Directed Research and Development (LDRD) program at the Department of Energy's (DOE's) multi-program national laboratories, as well as analogous programs at the Department's plants and at the Nevada Test Site, are Congressionally authorized programs designed to build capability to maintain the vitality of these nationally important institutions. This document fulfills all Congressionally requested LDRD program reporting requirements.

Overall, the multi-program national laboratories included in this report devoted approximately \$499 million to LDRD, funding projects ranging in size from less than \$5,000 per year to over \$3 million, addressing topics that span the entire range of DOE's broad scientific mandate. Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2007 LDRD funding of \$499 million, \$410 M of FY 2007 LDRD investments were made in projects expected to benefit the defense and national security missions. In addition, FY 2007 investments totaling \$366 million were made in projects expected to benefit non-defense customer mission areas, and \$200 million in projects expected to benefit DHS programs. In addition, the production plants invested approximately \$21 million through the Plant Directed Research and Development (PDRD) program to fund science and technology projects with the potential to enhance the plants' mission-related manufacturing capabilities, operations, and core technical competencies. Also, the Nevada Test Site invested approximately \$6 million through its Site Directed Research and Development (SDRD) Program.

In response to the fiscal year (FY) 2002 Energy and Water Development Appropriations Conference Report, the Secretary issued guidance requiring all LDRD laboratories to notify other Federal agencies concerning LDRD charges. With the creation of the DHS, there are additional provisions for the notification of LDRD charges, as well as requirements for acknowledgements regarding the benefits of LDRD, prior to final approval of all DHS projects (see Section 2.3). Collectively these policies provide the basis for the Secretary's affirmation that all FY 2007 LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports the science and technology development that benefits the programs of the sponsoring agencies and are consistent with the appropriations acts providing funds to those agencies. That requested affirmation is included as Appendix 1.

An important component of the LDRD program's contribution to the laboratories' future is its ability to attract promising young scientists and engineers to the institutions. LDRD-funded post-doctoral appointments, for example, supported about 39 percent of all post-doctoral scientists and engineers at the reporting multi-program national laboratories in FY 2007. In addition, graduate students participate in some LDRD projects, and the LDRD program provides a mechanism for scientists and engineers at the laboratories to keep themselves current in their fields.

The Department has concluded that the LDRD program helps to maintain the vitality of the laboratories that support the Department's missions and national needs (especially at the weapons laboratories). We have and will continue to carefully review the management and administrative procedures and funding levels at each of the relevant laboratories.

FY 2007 LDRD Report to Congress

1. Introduction

1.1 Background

Pursuant to statutory authorizations, the DOE multi-program national laboratories and manufacturing plants, and the Nevada Test Site (NTS), operate research and development programs using a portion of their overall budgets for the purpose of investing in future capabilities. This document reports on these programs for FY 2007.

LDRD, the first of these programs, was implemented at the DOE multi-program national laboratories to formalize what had been a long-standing practice, authorized by legislation, to use a percentage of the laboratory's total budget for critical research and development efforts that the laboratory determined to be important, but were not directly supported by DOE.

Within the overall context of maintaining the vitality of the laboratories, the specific purpose of the LDRD program is to provide the DOE laboratories with the opportunity and flexibility to undertake overhead-funded research and development activities to:

- (1) pursue new and innovative scientific and technological ideas;
- (2) enhance the scientific and technological vitality of the institution;
- (3) manage strategic direction; and
- (4) develop and retain new workforce capabilities.

DOE policy provides guidance to ensure effective management and oversight of the LDRD program while supporting the laboratories' abilities to pursue innovative self-selected projects with the concurrence of the DOE/NNSA. The process is consistent with DOE's management philosophy for all research and development activities, and it includes annual planning and reporting documents as well as program and peer reviews.

1.2 Purpose of the Report

Formally, this report responds to the Conference Report (H.R. Report No. 106-988) accompanying the Energy and Water Development Appropriations Act, 2001, which requested DOE's Chief Financial Officer "to develop and execute a financial accounting report of LDRD expenditures by laboratory and weapons production plant." It also responds to the Conference Report (H.R. Report No. 107-258) accompanying the Energy and Water Development Appropriations Act, 2002, which requested the Secretary of Energy to include in the annual report to Congress an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriation acts that provided funds to those agencies. Such an affirmation is included in Appendix 1 of this report.

Further, this report addresses Section 3136(b)(1) of the National Defense Authorization Act for Fiscal Year 1997 (Public Law 104-201), which requires submission each year of “a report on the funds expended during the preceding fiscal year on activities under [the LDRD Program] to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy.” Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2007 LDRD funding of \$499 million, \$410 M of FY 2007 LDRD investments were made in projects expected to benefit the defense and national security missions.

This report addresses what research and development activities the funding supports, and why the program is important to DOE and the laboratories. The multi-program national laboratories organize their respective programs according to their individual needs; however, the LDRD program does have a common administrative approach consistent with the statutory authorizations and Departmental guidelines.

This report describes the LDRD program and its implementation at the various DOE multi-program national laboratories. Newer, analogous programs implemented at the Nevada Test Site and at the manufacturing plants are summarized in Sections 3.1 and 3.2 of this report. They are authorized under separate legislation. The Plant Directed Research, Development and Demonstration (PDRD) Site-Programs are consistent with the statutory authorizations found as stated in the Energy and Water Development Appropriations Act, 2001 (Section 310) and the Defense Authorization Act for Fiscal Year 2001 (Section 3156) at the following sites:

- The Kansas City Plant, Kansas City, Missouri;
- The Y-12 Plant, Oak Ridge, Tennessee;
- The Pantex Plant, Amarillo, Texas; and
- The Savannah River Plant, Aiken, South Carolina.

The Site Directed Research, Development and Demonstration (SDRD) program is consistent with the statutory authorizations found in Section 310 of Energy and Water Development Appropriations Act, 2002, which authorizes a program for directed research and development at the NTS.

Section 311 of the Energy and Water Development Appropriations Act, 2006, Public Law 109-103, raised the maximum LDRD funding level to 8 percent and the PDRD and SDRD funding level to 3 percent and makes all the DOE labs eligible for LDRD funding. It also applies overhead costs to LDRD, PDRD, and SDRD.

In FY 2007, the Savannah River National Laboratory (SRNL), the National Renewable Energy Laboratory (NREL), and the Princeton Plasma Physics Laboratory (PPPL) initiated LDRD programs based on this legislation.

2. FY 2007 LDRD Program

2.1 Financial Information

2.1.1 LDRD Funding Mechanism

The LDRD program is structured to pursue innovative and creative science and technology, often with an emphasis on projects that will contribute to the needs of multiple programs and Federal agencies. The Department views LDRD as a legitimate cost of doing business for all sponsors at the laboratories and all sponsors are charged the same rate for LDRD at the laboratory.

Therefore, to ensure that all users of the laboratories support their fair share of LDRD, the costs are funded as part of laboratory indirect costs, up to a maximum of 8 percent of operating and capital equipment costs, and are treated as normal costs of doing business. As such, all organizations that fund programs at multi-program laboratories also fund LDRD activities. The capabilities developed and maintained through LDRD, in turn, may benefit all laboratory customers. This combination of equitable treatment of laboratory sponsors and multiple benefits derived from LDRD is achievable through the indirect cost funding mechanism for LDRD.

The pricing policy of DOE is full cost, which includes all direct costs incurred in performing the work, any other allocable costs incurred by the laboratory in performing the work, and a Federal administrative charge of 3 percent, as appropriate, of these costs for non-DOE sponsors. LDRD charges and assessments on Work for Others (WFO) agreements are discussed in more detail in Section 2.3. LDRD is considered an allocable cost in accordance with the terms of the laboratory management and operating contracts and is identified in the laboratory accounting systems. As stated above, LDRD charges are currently treated as indirect costs. As such, they are allocated and reported in the cost of a laboratory's programmatic work (for both DOE programs and Work for Others).

2.1.2 FY 2007 Expenditures

For FY 2007, the multi-program national laboratories devoted approximately \$499 million to LDRD. The following table shows the LDRD costs by site for FY 2007. For more details on the individual projects conducted at each site, see Appendix 2.

Table I. Reported FY 2007 overall laboratory costs and LDRD costs at participating DOE laboratories.

Laboratory	LDRD Costs (\$M)	Total Laboratory Costs (\$M)	LDRD as a % of Total Cost	Laboratory WFO Costs (\$M)
Argonne National Lab	24.1	532.5	4.53%	122.2
Brookhaven National Lab	10.2	448.9	2.27%	66.5
Idaho National Lab	22.6	739.6	3.06%	326.9
Los Alamos National Lab	130.3	1,912.5	6.81%	289.8
Lawrence Berkeley National Lab	16.2	503.8	3.22%	113.0
Lawrence Livermore National Lab	92.7	1,471.5	6.30%	345.7
National Renewable Energy Lab	3.7	197.7	1.87%	10.4
Oak Ridge National Lab	26.4	1,024.7	2.58%	280.8
Pacific Northwest National Lab	25.5	676.9	3.77%	225.1
Princeton Plasma Physics Lab	0.9	76.7	1.17%	1.5
Sandia National Lab	143.7	2,155.7	6.67%	801.0
Savannah River National Lab	2.3	137.5	1.67%	14.9
Total¹	498.6	9,878.0	5.05%	2,597.8

2.1.3 FY 2007 LDRD Allocation Percentages

Departmental policy states that the maximum funding level established for LDRD must not exceed 8 percent of the laboratory’s total operating and capital equipment budgets, including non-DOE funded work, for the year. It is important to note that individual LDRD program estimates at each site are approved based on laboratory estimated budgets for the fiscal year. Initial planning bases are derived from funds anticipated. The final percentage calculation is based on actual LDRD costs and actual operating and capital equipment costs. Table I above includes the FY 2007 end-of-year information. Also shown is the cost of work performed on

¹ Amounts for Total “LDRD Costs” by laboratory in Table 1 may vary slightly from the total LDRD project costs by laboratory included in Appendix 3 due to the inclusion of LDRD program administrative costs in Table 1 amounts.

behalf of other Federal agencies and non-Federal customers' WFO programs. LDRD charges and assessments on WFO agreements are discussed in more detail in Section 2.3.

In addition, an analysis of the FY 2007 LDRD program was conducted as it relates to funding received from both defense and non-defense sources (including DOE and WFO sponsors) and the benefits from the dollars invested by those sources in the LDRD program. This analysis also includes data related to the DHS.

The total FY 2007 funding for the LDRD program conducted at the laboratories was approximately \$499 million, which represents about 5 percent of total laboratory costs at these laboratories. Of this amount, \$337 million was provided by defense customers, \$138 million by non-defense customers, and \$24 million by DHS. A review of the LDRD program funding shows that about \$410 million supports projects that will be expected to benefit the defense and national security missions, \$366 million supports projects that will be expected to benefit non-defense customer mission areas, and \$200 million supports projects that will be expected to benefit DHS programs. This review was based on an assessment of each LDRD project in relation to the likely missions that will be expected to benefit.

In assessing the return on the dollars invested in LDRD, it is essential to understand that the vast majority of research and development activities have application to national needs in defense, non-defense and DHS missions. That is, as the numbers above indicate, many of the LDRD projects are put in more than one category since they support fundamental research and can be expected to benefit defense, non-defense and DHS missions. This leveraging of the research capabilities of the DOE's multi-program laboratories is one of the great benefits of the LDRD program and its focus on the long-term vitality of the laboratories.

2.2 Workforce Development

Maintaining the vitality of the DOE multi-program national laboratories—the overarching theme of the LDRD program—implies a responsibility not only for future-looking research and development but also for the workforce of the future. For the laboratories to be poised to tackle problems confronting DOE and the Nation, they require more than facilities and infrastructure. Scientists and engineers must also be available to implement the capabilities of the laboratories.

Post-doctoral appointments offer the single largest source of new scientific and engineering talent for the DOE laboratories and are therefore deemed to be critical to maintaining institutional vitality. The LDRD program plays a central role in the various post-doctoral programs at all of the laboratories, as shown in Table II, but especially at the weapons laboratories.

Table II. Post-Docs supported by LDRD at the DOE Laboratories in FY 2007.

Laboratory	Total Post-Docs	Post-Docs Supported by LDRD	% Supported By LDRD
Argonne National Lab	231	78	34%
Brookhaven National Lab	184	26	14%
Idaho National Lab	23	16	70%
Los Alamos National Lab	430	313	73%
Lawrence Berkeley National Lab	298	60	20%
Lawrence Livermore National Lab	148	117	79%
National Renewable Energy Lab	101	7	7%
Oak Ridge National Lab	274	66	24%
Pacific Northwest National Lab	137	44	32%
Princeton Plasma Physics Lab	3	0	0%
Sandia National Lab	271	85	31%
Savannah River National Lab	12	6	50%
Total	2,112	818	39%

In addition to this formal participation in post-doctoral programs, the LDRD program also supports a wide range of activities that enhance the laboratories workforce development. These include support for both undergraduate and graduate students working on LDRD projects, reputation building by providing laboratory visibility in a wider range of publication venues than would be the case without the results of LDRD, technical staff retention associated with opportunities to retain and hone scientific skills via LDRD, and a range of university collaborations stimulated via LDRD projects.

2.3 LDRD and the Work for Others Program

One of the features of the DOE multi-program national laboratories is the application of science and technology to a broad range of national security and science missions through the DOE WFO program.

All WFO sponsors appear to benefit from the science and technology innovations provided by LDRD. The Department views LDRD as a legitimate cost of doing business for all programs at the multi-program laboratories. Therefore, to ensure that all users of the laboratories support their fair share of LDRD innovations, the cost is included as an allocable cost.

WFO programs are possible because the laboratories have developed research and development capabilities in a wide range of areas of relevance to organizations other than DOE. WFO customers seek out these capabilities and, in many cases, initiate WFO research and development at the laboratories. WFO research broadens the base of innovation at the DOE laboratories and increases the number of potential solutions to national challenges, including threats to national security. The laboratories' research results are enhanced by the cross-pollination of technologies developed in conjunction with its WFO partners.

In this regard, Congress provided language in the Conference Report accompanying the Energy and Water Development Appropriations Act, 2002, that requested the Department notify other Federal agencies that a portion of the funds collected through the WFO program will be used to fund LDRD projects. In addition, with the creation of the DHS, Congress enacted analogous requirements that LDRD funding associated with DHS programs be used to support DHS missions. As noted earlier, the Conference Report also requested the Secretary affirm that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriations acts that provided funds to those agencies.

In response to the FY 2002 Conference Report, the Secretary issued guidance requiring all LDRD laboratories to notify other Federal agencies concerning LDRD charges prior to funding work at the laboratory. Specifically, each new and/or revised WFO proposal provided to a Federal agency must indicate the amount of LDRD charges that will be collected. Furthermore, the proposal notifies the sponsor that, by providing funding, the agency is acknowledging that LDRD activities are beneficial to their organization and consistent with appropriation acts providing funds to that agency. Subsequently, each WFO funding acceptance document also includes the LDRD estimate acknowledgement.

In February of 2003, the Secretary of Energy and the Secretary of Homeland Security entered into a Memorandum of Agreement to implement key provisions of the Homeland Security Act. In addition, the Deputy Secretary of Energy issued a DOE Notice on *Reimbursable Work for the Department of Homeland Security*. The purpose of that document was to provide information on the process by which the DHS may place orders for reimbursable work activities to be performed at the DOE laboratories. Within that Notice, there are provisions for the notification of LDRD charges in the cost proposal as well as requirements for acknowledgements regarding the benefits of LDRD prior to final approval. On August 17, 2006, the Secretary of Energy issued DOE Order 484.1 to update the DOE Notice.

These policies have been implemented and provide a basis for the Secretary to affirm that the LDRD program is managed in accordance with the Congressional requests cited above. The Secretarial affirmation is included as Appendix 1. In December of 2003, the DOE Acting Chief Financial Officer transmitted applicable guidance and policy to reiterate the process to other Federal agency Chief Financial Officers who are customers and sponsors of work at the Department's laboratories.

3. FY 2007 PDRD and SDRD Programs

3.1 Plant Directed Research and Development

Fiscal Year 2007 PDRD Expenditures

The Energy and Water Development Appropriations Act, 2006, enabled the Secretary of Energy to authorize an amount not to exceed three percent for PDRD. The following table shows FY 2007 PDRD expenditures by site. It should be noted that the table includes all PDRD costs including individual project costs listed in Appendix 2 and any administrative costs not specifically assigned to individual FY 2007 projects, if applicable.

Plant	Total Plant Cost (\$M)	PDRD Costs (\$M)	PDRD as a % of Total Cost*
Kansas City	379.3	2.7	0.71%
Pantex	626.6	1.7	0.27%
Savannah River	130.7	1.8	1.38%
Y-12	668.2	14.7	2.20%
Total	1,804.8	20.9	1.16%

*Percentage calculations based on unrounded numbers.

3.2 Site Directed Research and Development

Fiscal Year 2007 SDRD Program Expenditures

The Energy and Water Development Appropriations Act, 2006, enabled the Secretary of Energy to authorize an amount not to exceed three percent for SDRD. The following table shows FY 2007 SDRD program expenditures. It should be noted that the table includes all SDRD costs including individual project costs and any administrative costs not specifically assigned to individual FY 2007 projects.

Site	Total Site Cost (\$M)	SDRD Costs (\$M)	SDRD as a % of Total Cost*
Nevada Test Site	286.9	5.7	1.98%

* Percentage calculations based on unrounded numbers.

4. Report Conclusions

The DOE LDRD program offers a flexible mechanism by which the multi-program national laboratories maintain their vitality and, in the process, prepare themselves to help address the Nation's future scientific and engineering challenges. In FY 2007, the multi-program national laboratories devoted approximately \$499 million to LDRD, funding projects ranging in size from less than \$5,000 per year to over \$3 million. LDRD projects address topics that span the entire range of DOE's mission areas.

In addition, the production plants invested approximately \$21 million through the Plant Directed Research and Development (PDRD) program to fund projects that emphasized science and technology with the potential to enhance the plants' mission-related manufacturing capabilities, operations, and core technical competencies and the Nevada Test Site invested approximately \$6 million through the Site Directed Research and Development (SDRD) Program.

Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2007 LDRD funding of \$499 million, \$410 M of FY 2007 LDRD investments were made in projects expected to benefit the defense and national security missions. In addition, FY 2007 investments totaling \$366 million were made in projects expected to benefit non-defense customer mission areas, and \$200 million in projects expected to benefit DHS programs. The Department also affirms that all FY 2007 LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriations acts providing funds to those agencies.

An important component of the contribution of the program to the laboratories' future is their ability to attract promising young scientists and engineers to the institutions. LDRD funded post-doctoral appointments, for example, supported about 39 percent of all post-doctoral scientists and engineers at the multi-program national laboratories in FY 2007. In addition, many graduate students participate in LDRD projects, and the programs provide a mechanism for scientists and engineers at the laboratories to keep themselves current in their fields.

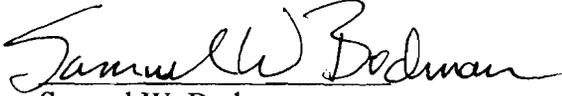
The flexibility inherent in the LDRD program is essential to maintaining the vitality of the laboratories that carry out the Department's missions and national needs. We have carefully reviewed the management and administrative procedures governing the program and monitor LDRD funding levels at each of the laboratories. This oversight is integral to maintaining a strong, credible and effective LDRD program.

Departmental Procedures

The Conference Report accompanying the Energy and Water Development Appropriations Act, 2002, requests the Secretary of Energy to include in the annual report to Congress for all Laboratory Directed Research and Development (LDRD) activities the affirmation included below. In response to and as support for the annual affirmation, the Department revised its procedures for handling LDRD program charges on other Federal agency funded Work for Others projects in fiscal year 2002. These procedures changed the Work for Others process to ensure appropriate notification of other Federal agencies as to the LDRD charges prior to funding work at the laboratory. Specifically, each new and/or revised Work for Others proposal provided to a Federal agency must indicate the amount of LDRD charges that will be collected. Furthermore, the proposal notifies the sponsor that, by providing funding, the agency is acknowledging LDRD activities are beneficial to its organization and consistent with appropriation acts providing funds to that agency. Subsequently, each Work for Others funding acceptance document also includes the LDRD estimate acknowledgement.

FY 2007 Secretarial Affirmation

Based on the information and acknowledgments provided to the Department of Energy and its contractors by other Federal agencies funding LDRD activities at DOE facilities, I affirm that all LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriations acts that provided funds to those agencies.


Samuel W. Bodman

13 Feb 08
Date

This report responds to the following legislated reporting requirements:

**Section 3136(b)(1) of the National Defense Authorization Act for FY 1997
(Public Law 104-201)**

The Secretary of Energy shall annually submit to the congressional defense committees a report on the funds expended during the preceding fiscal year on activities under the Department of Energy Laboratory Directed Research and Development Program. The purpose of the report is to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy.

**106th Congress
House of Representatives Conference Report 106-988**

The conference agreement includes an allowance of six percent for the laboratory directed research and development (LDRD) program and two percent for nuclear weapons production plants. Travel costs for LDRD are exempt from the contractor travel ceiling. The conferees direct the Department's Chief Financial Officer to develop and execute a financial accounting report of LDRD expenditures by laboratory and weapons production plant. This report due to the House and Senate Committees on Appropriations by December 31, 2000, and each year thereafter, should provide costs by personnel salaries, equipment, and travel.² The Department should work with the Committees on the specific information to be included in the report.

**107th Congress
House of Representatives Conference Report 107-258**

The conference agreement does not include bill language proposed by either the House or the Senate regarding the Laboratory Directed Research and Development (LDRD) program. The conferees recognize the benefits of LDRD and expect LDRD activities to continue at previously authorized levels. However, when accepting funds from another federal agency that will be used for LDRD activities, the Department of Energy shall notify that agency in writing how much will be used for LDRD activities. In addition, the conferees direct the Secretary of Energy to include in the annual report to Congress on all LDRD activities an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

²The offer to streamline the LDRD report resulted in the Department and Hill contacts agreeing not to require costs be provided by personnel salaries, equipment and travel.

FY 2006 Energy and Water Development Appropriations Act, Public Law 109-103, Section 311

Of the funds made available by the Department of Energy for activities at government-owned, contractor-operator operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory-directed research and development: *Provided*, That the Secretary may also authorize a specific amount not to exceed 3 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site-directed research and development: *Provided further*, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

**109th Congress
House of Representatives Conference Report 109-275**

The conferees are concerned with the level of overhead charges applied to programs funded in this bill and urge the Department to continue to work to minimize the overhead burden on all program activities. In order to ensure an equitable allocation of overhead costs the Secretary should apply overhead charges to LDRD activities consistent with cost accounting practices applied to program activities that are direct funded. The conference agreement increases the allowable percentage for LDRD, PDRD and SDRD activities to allow this accounting change without harming the underlying discretionary research activities. The change in accounting practices should be implemented with no net reduction in LDRD levels below 6 percent of the funds provided by the Department of Energy to such labs for national security activities and 2 percent for PDRD and SDRD activities at the appropriate plants and sites. Within 90 days after the date of enactment of this Act, the Secretary of Energy shall submit a report to the Committees on Appropriations detailing how the accounting change will be implemented without impacting the basic research and the change shall be implemented within 180 days of enactment.

**Listing of All
FY 2007
LDRD,
PDRD,
& SDRD
Projects**

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2005-024	ALD Stabilization of Nanoparticles Designed on the Atomic Scale	\$148600
P/ANL2005-028	Fundamental and Applied Science of Hybrid Ferroelectric/Piezoelectric-Diamond Heterostructures for High-Performance MEMS/NEMS Devices	\$137300
P/ANL2005-036	Investigating Ultra-Fast Catalysis and Electro-Catalysis Processes using Time-Resolved X-Ray Absorption Techniques	\$157800
P/ANL2005-065	Shock-Wave Desorption of Large Organic Molecules	\$124500
P/ANL2005-092	Enhancement of Battery and Ultracapacitor Performance through Novel Applications of Nanotechnology	\$149400
P/ANL2005-140	Reducing Heavy Duty Vehicle Emissions through Coupling Diesel Reforming to Emissions Catalysts and Engine Control Devices	\$81500
P/ANL2005-147	Manipulation of Biomolecules using Metal Oxide Nanoparticles	\$98100
P/ANL2005-150	Metalloproteomics and Metalloregulation of Signaling	\$176800
P/ANL2005-168	Lateral and Molecular Spintronic Structures	\$149900
P/ANL2005-187	Integrated Simulation Framework for National Security Decision Support	\$195700
P/ANL2005-193	PDQuest: Investigations into Applications, Software and Architectures for Enabling Petascale Science	\$854300
P/ANL2005-204	Universal Phylochip for Environmental Background Characterization and Monitoring	\$198900
P/ANL2005-215	High-Resolution Element-Selective Microscopy Using X-ray Enhanced Scanning Tunneling Microscopy	\$95400
P/ANL2005-216	Quantum Critical Behavior in Nanostructured Materials	\$104000
P/ANL2005-217	Precision Measurement of Hadronic Showers	\$100000
P/ANL2005-221	Advancing Multidisciplinary Condensed Matter Theory	\$145300
P/ANL2005-223	In-Situ Raman Spectroscopy of Catalysts	\$283000
P/ANL2006-015	Development of a New Concept for a Solenoid Spectrometer for Nuclear Structure Studies	\$158600
P/ANL2006-023	Ultra-Fast Phase-Enhanced X-Ray Imaging with Micrometer-Spatial and 150 Picosecond Temporal Resolutions	\$143700
P/ANL2006-033	Quantum Wire Interconnects	\$136900
P/ANL2006-035	Biocompatibility of Ultra-Nanocrystalline Diamond Thin Films	\$144100
P/ANL2006-075	Large-Area Detectors with Pico-Second Time Resolution	\$111000
P/ANL2006-088	Time-Resolved Optical Sensors for Biological Molecules with Ultra-High Sensitivity and Specificity	\$50200

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2006-091	Adopting Photonic Concepts to THz Generation	\$124900
P/ANL2006-096	Nanoscale Engineered Superconducting RF Cavities as Novel Accelerating Elements	\$159500
P/ANL2006-105	Uncharacterized Gene with Putative Function in Bone	\$178200
P/ANL2006-118	Plasmon Scanner for High-Resolution Surface-Enhanced Raman Spectroscopy of Biological Nanosamples	\$138700
P/ANL2006-123	International Linear Collider R&D at Argonne: The Gamma-Ray Based Positron Source and Positron Emulator Study	\$79900
P/ANL2006-126	Institutional Factors Analysis Tool for Energy Projects	\$19900
P/ANL2006-127	Characterization of the Transportation Sector for Input to the ENPEP Model	\$19800
P/ANL2006-128	Stationary Energy Demand: Characterization of Industrial, Residential, and Commercial Energy	\$20000
P/ANL2006-129	Developing a Financial Analysis Tool [previously Technology Assessment Financial Analysis Tool]	\$34700
P/ANL2006-132	Develop Electric Sector Characterization	\$19600
P/ANL2006-134	Enhanced Energy and Emissions Analysis: Linkage of GREET and ENPEP Models	\$29800
P/ANL2006-136	Development of an Integrated Site-Specific Environmental Assessment Tool	\$19900
P/ANL2006-137	Plug-In Hybrid Electric (P-HEV) Vehicle Optimization	\$147600
P/ANL2006-139	Development of Cost Engineering and Technology Verification Tools	\$34700
P/ANL2006-141	Renewable Bio-Fuel Combustion Characteristics in Automotive-Type Diesel Engines	\$99300
P/ANL2006-145	Methodology and Model for Evaluating Advanced Energy and Environmental Technology R&D Options Considering Multiple Criteria and Multiple Perspectives under Conditions of Uncertainty	\$29300
P/ANL2006-146	Advanced Beam Diagnostics Development and RF Photocathode Studies for Low Emittance Electron Beams: An International Linear Collider Study	\$268600
P/ANL2006-147	Natural Gas Sector Characterization	\$19800
P/ANL2006-148	Developing a Conventional Analysis Framework	\$69700
P/ANL2006-149	Novel Nano-Architectures for High-Efficiency Solar Cells	\$272400
P/ANL2006-150	Design and Develop an Advanced Analysis Framework	\$99300
P/ANL2006-151	Fungible Fuels by Bioprocessing	\$326600
P/ANL2006-152	Conversion of Solid Carbon Feedstocks into Liquid Hydrocarbons for Transportation Fuels through Gasification	\$584100

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2006-156	Petroleum Sector Characterization	\$17200
P/ANL2006-165	On-Vehicle Reforming of Ethanol/Water for Hydrogen-Fueled Vehicles and Auxiliary Power Units	\$88200
P/ANL2006-166	Development of Nuclear Energy Sector Characterization	\$20000
P/ANL2006-168	Interparticle Coupling and High Frequency Dynamic Response in Magnetic Nanocrystal Colloids and Assemblies	\$153600
P/ANL2006-169	Nanophotonics Materials and Devices	\$71500
P/ANL2006-170	Functionalization of Polarizable Surfaces for Nanofluidic Control	\$79000
P/ANL2006-171	Biomolecule Directed Assembly of Nanostructures	\$126700
P/ANL2006-180	Development and Spray Characterization of Micro-Orifice Diesel Injector Nozzles Fabricated using Electroless Nickel Coating	\$96100
P/ANL2006-181	Design of a Low-Level RF Control System Utilizing Software Defined Radio and Digital Signal Processing Techniques and Hardware	\$23100
P/ANL2006-183	Development and Demonstration of an Omnivorous Engine	\$179900
P/ANL2006-198	Liquid Metal Simulations for Fusion, Accelerator, and Astrophysical Applications	\$306300
P/ANL2006-199	Theoretical Investigations of Atomic and Molecular Interactions with Ultrafast/Ultraintense X-Ray Radiation	\$336200
P/ANL2006-201	Surface Discharge for ILC Fast Kicker	\$30700
P/ANL2006-205	Advanced Simulation of Nuclear Fuel Cycle	\$896900
P/ANL2006-209	Laser Spark Assisted HCCI	\$89600
P/ANL2006-211	Develop Renewable Energy Sector Characterization (Wind Energy, Bioenergy, and Solar Energy)	\$19700
P/ANL2006-212	Develop A Minimal-Organism Platform for Systems Biology	\$766300
P/ANL2006-213	Energy Conversion at Bio-Hybrid Interfaces	\$201300
P/ANL2006-214	Characterization of the Candidate Damping Ring Designs of the International Linear Collider	\$173000
P/ANL2006-216	Advanced Electron Accelerator Simulation	\$152800
P/ANL2006-219	Large Solid Angle Multielement Fluorescence Detector	\$86700
P/ANL2006-220	Condensed Matter Theory: Nanoscale Superconductivity and Magnetism Studies	\$29700
P/ANL2006-223	Secure Database Access Technologies for Large-Scale Data Management	\$134600

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2006-224	Development of High Intensity/Thermal Energy Positron Source Utilizing the Chemistry Division 20 MeV Electron Linac	\$51700
P/ANL2006-225	Ultimate Limit for Hard X-Ray Focusing	\$186400
P/ANL2006-226	Nanomagnetics	\$50100
P/ANL2006-227	Towards A Model-Driven Accelerator	\$159600
P/ANL2006-228	Gas Cell Development	\$75600
P/ANL2006-232	Demonstration of a Full Power Mass 238, 1+ RFQ for a Radioactive Beam Post-Accelerator	\$141100
P/ANL2006-233	Demonstrate a Heavy Ion Driver Front End	\$117000
P/ANL2006-234	Phase Control of High-Gradient Superconducting Spoke-Loaded Cavities	\$42700
P/ANL2006-235	Develop Electropolishing Techniques for 1.3 GHz 9-Cell Elliptical-Cell Superconducting Cavities	\$52300
P/ANL2006-236	Development of Diagnostics for Lithium Thin Film Strippers	\$94700
P/ANL2006-243	Parallel Computation for Laser Plasma Interactions at Relativistic Intensities	\$111200
P/ANL2006-246	Single-Molecule Interrogation of Photosynthetic Nano-Architectures	\$98300
P/ANL2006-248	Beam Physics Topics for Compact Accelerators	\$88600
P/ANL2006-249	A Novel Hybrid Detection System for National Security to Counter Seaborne Container Terrorism	\$153800
P/ANL2006-256	Coal Sector Characterization	\$20000
P/ANL2006-257	Nanoscale Studies of Metal/Oxide/Metal Tunnel Junction Structures: Development of Novel Characterization Tools	\$186900
P/ANL2006-258	Nanoscience Theory	\$99600
P/ANL2006-260	Advancing Nuclear Theory for a Rare Isotope Accelerator: Nuclear Structure and Reactions by Astrophysics	\$109300
P/ANL2006-262	Nuclear Theory for Supernovas	\$227000
P/ANL2006-263	Synthesis, Characterization, and Electrocatalytic Activity of Bimetallic Nanoclusters	\$186800
P/ANL2006-264	Development and Applications of Theoretical and Computational Approaches for Biomolecular Systems	\$361800
P/ANL2006-266	Undulator for the ILC Positron Source	\$44000
P/ANL2006-267	Beam Dynamics in High-Brightness Photoinjectors	\$40900
P/ANL2006-268	Novel Hybrid Nanomaterials via Uniting Top-Down and Bottom-Up Assembly Methods	\$99800

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2007-001	Electron Encapsulation: Single-Molecule Capacitors	\$75100
P/ANL2007-007	Enzymes for Cellulosic Ethanol Production: Structure-Function Studies	\$197800
P/ANL2007-008	Astrochemical Studies of the Origins of Life using Circularly Polarized Synchrotron Radiation	\$135200
P/ANL2007-013	Anti-Thrombogenic Coatings for Cardiovascular Implants	\$181000
P/ANL2007-027	Whole Cell-Based Biosensors and Bioelectronics	\$133400
P/ANL2007-040	Evaluation of a New Tool for High-Throughput Protein Production and Purification - Elastic-Like Polypeptides	\$160300
P/ANL2007-044	Aligned Carbon Nanotube as Pt-Free Electrode Catalyst for Fuel Cell	\$135200
P/ANL2007-048	Engineered Biodegradable Nanospheres for Targeted Medical Therapy	\$199300
P/ANL2007-053	Catalysis of the Bromine-Water Reaction	\$128700
P/ANL2007-059	Development of In Situ Non-Resonant X-Ray Scattering Technique and Its Application to Redox Reactions in Battery Materials	\$118400
P/ANL2007-060	Microporous Filters for Hydrogen Purification	\$201700
P/ANL2007-064	Optimizing Quantum Efficiency in Solid State Lighting Devices	\$91700
P/ANL2007-066	Mesoscale Simulation of Bloodflow using Kinetic Theory	\$130500
P/ANL2007-068	Sub-Millisecond Measurements of Structural Changes in Materials under Extreme Conditions	\$169900
P/ANL2007-071	Design and Synthesis of New Nanocarbon Composites from Carbon Nanotubes and Ultrananocrystalline Diamond	\$190000
P/ANL2007-075	Magnetically Targeted Thermal Tumor Therapy using Designer Nanospheres	\$225500
P/ANL2007-080	Identification and Characterization of Ovarian Cancer Stem Cells Towards Ultimate Cancer Treatment	\$98500
P/ANL2007-088	Solar Thermoelectric Energy Conversion in Nanocomposites	\$103200
P/ANL2007-091	Super Solar Cell Efficiency using Up- and Down-Conversion in Fluorozirconate Glass Ceramics	\$75800
P/ANL2007-094	Identification of Regulatory Elements in Bioenergy Organisms	\$99100
P/ANL2007-095	Imaging Polymer-Mediated Repair of the Neuronal Plasma Membrane at the Nanoscale Level	\$61200
P/ANL2007-096	Phase-Enhancement Micro-Computed Tomography	\$61100
P/ANL2007-098	Development of a Laser Wakefield Accelerator Operating in the Bubble Regime	\$280200

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2007-099	Development of High Spatial Resolution Area Detector for Protein Powder Diffraction	\$49600
P/ANL2007-100	Transition Edge Sensors (TES)	\$614100
P/ANL2007-104	Demonstration of the High Intensity Light Ion Driver Linac	\$128700
P/ANL2007-105	Development of Concepts for a Super Separator-Spectrometer	\$155800
P/ANL2007-106	Heavy Ion Therapy with Radioactive Beams	\$81700
P/ANL2007-107	Development of Unique Environmental Basic Research Capabilities for Sustainable Bioenergy Research	\$99100
P/ANL2007-108	Studies of Liquid Helium (He-II) Coolability of Cryogenic Moderators	\$29900
P/ANL2007-109	Development of Neutron Scattering Kernels for Deuterated Materials at Cryogenic Temperatures	\$700
P/ANL2007-110	Membrane Analysis and Simulation System (MASS)	\$171800
P/ANL2007-113	Standoff Monitoring of Acoustic Signatures by MMW Modulated Scattering Technique	\$149100
P/ANL2007-114	Highly Selective Catalytic Process for Producing Ethanol from Coal- or Bio-Derived Syn Gas	\$74900
P/ANL2007-126	Synthesis and Characterization of Hybrid Diblock Copolymer Nanocomposites with Ordered Arrays of Inorganic Nanoparticles	\$88900
P/ANL2007-129	Development of Techniques for Neutron Microscopy using Very-Cold Neutrons	\$78900
P/ANL2007-130	Low-Friction, Barrier Coatings for Hydrogen Direct Injection Engines	\$98100
P/ANL2007-132	Collection and Evaluation of Detailed Design Information on Russian Research Reactors	\$36400
P/ANL2007-133	An Ultra-Sensitive Detection Assay Based on DNA-Modulated Enzymatic Visualization	\$118700
P/ANL2007-135	Development of Digital Pixel Array X-Ray Detector Technology	\$50016
P/ANL2007-139	Development of Advanced Earth System Modeling and Science Capability at Argonne	\$58200
P/ANL2007-142	Second-Sound Diagnostic Thermometry for ILC Cavities	\$71500
P/ANL2007-143	High-Performance Low-Velocity Superconducting Accelerating Structure	\$103700
P/ANL2007-145	Characterization of Silicon Photomultiplier Sensors for Scientific Research Applications	\$99900
P/ANL2007-146	A Systems Biology Approach to Directional Pathfinding	\$99200
P/ANL2007-150	Metal and Semiconductor Nanoparticle Assemblies: Controlled Quantum Coupling on the Nanometer Scale	\$95700

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2007-153	Direct Ethanol Fuel Cell with Transition Metal Decorated Carbon Nanotube Electrode Assembly	\$97600
P/ANL2007-154	Solarplasmonics	\$148100
P/ANL2007-156	Rapidly Reconfigurable Simulations to Support Complex Adaptive System Comparative Analysis Dynamic Environment for Emerging Societies	\$124300
P/ANL2007-157	Molecular Machines: The Visualization of Motions	\$93600
P/ANL2007-158	An Integrated X-Ray/Neutron Approach to Magnetic Depth Profiling in Artificial Nanostructures	\$87800
P/ANL2007-160	Fundamental Understanding Breakup Process during Injection of Alternative Fuels	\$149543
P/ANL2007-161	Systems Biology for Enhanced Bioconversions	\$385700
P/ANL2007-162	Metagenomics and Discovery for Biofuels	\$512600
P/ANL2007-164	A Framework for Scalable Statistical Genomics	\$71500
P/ANL2007-165	Real-Time Analysis of Advanced Photon Source Data	\$291500
P/ANL2007-166	Developing Analysis Services for Petascale Computing	\$192500
P/ANL2007-168	Acquisition of Preliminary Data on the Influence of Radiation Fields on Separation Efficacy	\$49800
P/ANL2007-169	Ultrafast Dynamics of Magnetic Nanostructures	\$93900
P/ANL2007-170	Understanding Synthesis of High Efficiency Solid-State Lighting Materials	\$94200
P/ANL2007-171	Accelerator Chamber Optimization through Advanced Wakefield Simulation	\$165200
P/ANL2007-175	Activated Carbon Nanotubes for New Nanoarchitectures	\$98800
P/ANL2007-176	In Situ Synchrotron X-Ray and Density Functional Theory Studies of the Self-Assembly of Metal Nanoparticles	\$36200
P/ANL2007-179	Adaptation of the MISANS (Modulated Intensity Small Angle Neutron Scattering) Instrument to Very Cold Neutrons	\$48600
P/ANL2007-180	Astrophysics	\$330100
P/ANL2007-181	HEIGHTS-3D Integrated Multi-Physics Simulation Package for Future Petascale Supercomputers	\$153100
P/ANL2007-182	Investigation of Continuous Wave (CW) Superconducting Accelerating and Deflecting RF Structures for High Average RF Power Accelerators	\$49300
P/ANL2007-185	Beam Control for Energy Recovery Linacs: Dynamics and Diagnostics	\$82400
P/ANL2007-186	Solid State Chemistry for Advanced Thermoelectric Materials	\$497400
P/ANL2007-187	High Brightness CW Injector for the Energy Recovery Linac	\$50000

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2007-189	Multidisciplinary Theory Investigations	\$701300
P/ANL2007-190	COGENT - Coherent Germanium Neutrino Technology	\$68500
Total # of Projects for ANL:	165	Total Cost for ANL: \$24100559

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
04-038	Complex Thin Films and Nanomaterial Properties	\$193935
05-006	Heavy Ion Physics with the ATLAS Detector	\$64333
05-028	Behavior of Water on Chemically Modified Semiconductor Surfaces: Toward Photochemical Hydrogen Production	\$40089
05-041	Multifunctional Nanomaterials for Biology	\$24867
05-044	Intense THz Source & Application to Magnetization Dynamics	\$63908
05-048	Nano-Imaging of Whole Cells with Hard X-Ray Microscopy	\$75631
05-058	Development of Methodologies for Analyzing Transcription Factor Binding in Whole Genomes	\$71979
05-068	Positron Labeled Stem Cells for Non-Invasive PET Imaging Studies of In-Vivo Trafficking and Biodistribution	\$150857
05-070	Novel Multi-Modality MRI and Transcranial Magnetic Stimulation to Study Brain Connectivity	\$17673
05-072	Feasibility of CZT for Next-Generation PET Performance	\$146903
05-074	Biology on Massively Parallel Computers	\$0
05-104	Giant Proximity Effect in High-Temperature Superconductors	\$253039
05-110	Computational Science	\$58056
05-114	Study of High-Tc Nanostructures	\$257238
06-001	Lattice Studies of QCD Thermodynamics on the QCDOC	\$157655
06-004	Detector Development for Very Long Baseline Neutrino Exp.	\$101110
06-012	Detector for High Quality Images of Electron Microscopy	\$140791
06-017	Transmission Photocathode Development	\$134846
06-021	Synthesis and Characterization of Band-Gap-Narrowed TiO ₂ Thin Films and Nanoparticles for Solar Energy Conversion	\$208731
06-026	Multiscale Analysis of In Vivo Nanoparticle Exposure	\$188164
06-030	Development of Gadolinium-Loaded Liquid-Scintillators with Long-Term Chemical Stability for a New High-Precision Measurement of the Neutrino Mixing Angle, Theta-13	\$190494
06-037	Electronic Properties of Carbon Nanotubes and Novel Multicomponent Nanomaterials	\$179435
06-038	Growth and Characterization of CdZnTe Crystals for Improved Nuclear Radiation Detectors	\$187698

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
06-039	Design, Synthesis and Characterization of a New Class of Hydrocarbon Polymers Containing Zwitter Ions and Nanostructured Composites for High Temperature Membrane in PEM Fuel Cells	\$130812
06-046	Novel Materials for Hard X-Ray Optics	\$157550
06-047	Nano-Crystallography of Individual Nanotubes and Nanoparticles	\$142182
06-052	High-Temperature Superconducting Magnet Development	\$209443
06-056	Epigenetics: Methamphetamine (MAP)-Induced Brain Dysfunction and Methylation of DNA	\$115760
06-060	Molecular Mechanism of Chromosomal Replication Initiation in Eukaryotic System	\$210492
06-061	Diversification of Isoflavonoid Biosynthesis	\$477915
06-065	Metabolic Flux Analysis in Arabidopsis Thaliana	\$469343
06-066	Transformation and Fate of Nanomaterials in the Environment	\$147694
06-071	Development of a Cloud Condensation Nucleus Separator	\$139591
06-074	Aluminum Hydride - An Ideal Hydrogen Source for Small Fuel Cells	\$133579
06-087	Gamma Ray Imager for National Security Applications	\$156670
06-088	Neurogenomics: Collaboration Between the Biology Department and the Brookhaven Center for Translational Neuroimaging to Investigate Complex Disease States	\$152363
06-092	Nanoparticle Labeled Neural Stem Cell Tracking In Vivo by Magnetic Resonance Microscopy	\$69428
06-094	MicroCT Methods of Quantitative Adipose Imaging: Development of a Long-Term Assessment Technique for Studying Obesity in a Rodent Model	\$197924
06-097	Photocatalytic Reduction of CO ₂ in Supercritical CO ₂	\$155011
07-001	QCD Thermodynamics at Non-zero Temperature and Density	\$389374
07-002	Lattice QCD Simulations on BlueGene/L	\$147308
07-004	Proof-of-Principle Laser System for ILC Positron Source	\$30202
07-005	Sensitive Searches for CP-Violation in Hadronic Systems	\$22183
07-006	Feasibility and Design Studies for a Detector for e+p, e+A, p+p, p+A, and A+A Collisions at BNL	\$33626
07-007	A Novel and Compact Muon Telescope Detector for QCD Lab	\$34591
07-010	Design Optimization of a Reactor Neutrino Experiment	\$72262
07-019	Development of Laser beam Shaper for Low Emittance Electron Beams	\$148086

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
07-023	Surface Engineered and Core-Shell Nanowires: Nanoscale Building Blocks for Third Generation Photovoltaics	\$39534
07-025	Precision Assembly of Nano-Objects – Approaching Artificial Photosynthesis	\$40443
07-027	Photocatalytic Carbon Dioxide Reduction to Methanol using Metal Complexes with an NADH Model Ligand	\$78581
07-030	Structure of Mass-Size Selected Nanoparticles by Scanning Transmission Electron Microscopy	\$96768
07-032	Synthesis of Conjugated Polymers for Fundamental Questions in Solar Energy	\$112702
07-035	Ultra-thin Graphite Analog Compounds	\$86876
07-036	Lipid-Coated Nanoparticles and Their Interactions with Lipid Membrane Surfaces	\$26982
07-040	Genome Analysis of Endophytic Bacteria that Promote Growth of Poplar for Biomass Production	\$251949
07-041	Structural Features of the Oxygen Tolerant Hydrogenase from <i>Thermatoga neapolitana</i>	\$268175
07-047	Characterization of Enzymatic O-acylation to Facilitate Biomass and Bioenergy Production	\$8653
07-048	Functional Neurochemistry	\$4185
07-054	Miniaturized RF Coil Arrays for MicroMRI	\$85274
07-055	Neurocomputation at BCTN: Developing Novel Computational Techniques to Study Brain Function in Health and Disease	\$150052
07-059	A Non-Fermentation Route to Convert Biomass to Bioalcohols	\$91924
07-062	Fate and Reactivity of Carbon Nanoparticles (CNPs) Exposed to Aqueous Environmental Conditions	\$93987
07-073	Development of Room-temperature CdMnTe Gamma-ray Detectors	\$93736
07-075	Developing a New Framework for Investigating Earth's Climate and Climate Change	\$98260
07-080	A Novel Approach for Efficient Biofuel Generation	\$79625
07-084	Investigations of Hygroscopic Growth and Phase Transitions of Atmospheric Particles by Noncontact Atomic Force Microscopy	\$26682
07-089	Chemical Imaging of Living Cells in Real Time	\$43643
07-090	Coherent Bragg Rod Analysis of High-Tc Superconducting Epitaxial Films	\$22691
07-091	Development of a Planar Device Technology for Hyperpure Germanium X-ray Detectors.	\$8514

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
07-096	Study of Epigenetic Mechanisms in a Model of Depression	\$321258
07-097	Polarized Electron SRF Gun	\$149879
07-098	New Approach to H Production, Stages and Use	\$384523
07-100	Increasing the Capability and Reliability of Small Diameter Direct Wind Multi-layer Coil Magnets	\$346156
07-101	High End Scientific Computing	\$361016
Total # of Projects for BNL:	74	Total Cost for BNL: \$10222889

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INL - Idaho National Lab

Project ID	Project Name	FY Total
AE108	Advanced Fuel Development	\$246554
AE109	Investigation of Nanofluids for use in Nuclear Reactors	\$402975
AE110	Design of a High-Resolution Reactor Analysis Capability Using a Generic Transport Algorithm	\$468150
AE111	Investigation of Core Flow Behavior During Loss of Coolant Transients for the Generation IV Gas Cooled Reactor Designs	\$239782
AE112	Reactor Physics Methods Development for Idaho National Laboratory Competitiveness in Next Generation Nuclear Plant (NGNP) Design	\$258661
AE114	SESAME: Simulations Enabled Safeguards Assessment Methodology	\$340435
AE115	SINEMA: Simulation Institute for Nuclear Energy Modeling and Analyses	\$239112
AE116	Optimization of Electrorefining of Spent Nuclear Fuel Using Ultrasonic Electrode Agitation	\$245594
AE117	Group Actinide Separation from Spent Nuclear Fuel Using a Modified Universal Solvent Extraction Process	\$202000
AE118	Exploration of Electrolyte Complexation and Pulse Deposition for Production of Dense Uranium Rodlets	\$159134
AE119	Multi-reactor design and analysis platform	\$411718
AE120	Multi-physics Simulation Methods for Advanced Reactor Analysis	\$926762
AF100	Laser Acoustic In-situ Monitoring of Nuclear Reactor Material Mechanical Properties	\$451269
AF101	Influence of Grain Boundary Character on Microstructure and Properties of High Temperature Alloys	\$150576
AF102	Thermal Conductivity in Complex Materials Systems	\$132900
AF103	Environmental Effects on Crack Growth in High-Temperature Alloys for Advanced Energy Systems	\$201643
AS100	Fundamental Thermodynamics of Non-Ideal Systems for Advanced Radionuclide Separations	\$311510
AS101	Synthesis, Characterization and Testing of Dithiophosphinic Acid Derivatives	\$279622
AS102	Utility of Unusual Oxidation States of Americium for Separations	\$234096
AS103	Actinide IR and Raman Spectroscopy	\$200437
CA104	Microstructural Evolution During Spark Plasma Sintering of High-Temperature Fuels and Coatings	\$305656
CA105	Suitability of Layered Basalt as Targets for Industrial Carbon Dioxide Sequestration	\$125016

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INL - Idaho National Lab

Project ID	Project Name	FY Total
CA106	Feasibility of Using Neutron Slowing-Down-Time Spectrometer for Fast Reactor Spent Fuel Assay	\$27005
CA107	Oxygen Permeability of Perovskite Ceramics for Energy Applications	\$10406
CA108	Understanding Apomixis: The Basis for a Robust Trait Delivery and Containment Platform for Bioenergy Crops	\$51877
CA109	Porosity Evolution during In Situ Oil Shale Retorting	\$35754
CA110	Risk Assessment Tools to Evaluate Next Generation Technical System	\$25644
CA111	Fabrication and Radiation Testing of Semiconductor Materials Useful as Photovoltaic and Nuclear Detection Devices	\$13056
CA112	Consolidated Bioprocessing of Agricultural Wastewater Treatment and Bioenergy Production	\$24489
CA113	Development of Microbial Fuel Cell, Fueled by Domestic, Agricultural, and Food Processing Wastewaters	\$21112
CA114	Enhancement of Separation Methods in Nuclear Fuel Recycling	\$174979
CA115	Investigation of Public Discourse Methods in Energy Policy Decision-making	\$33270
CS127	Attack Graph Approach to Control System Vulnerability Analysis	\$98503
CS128	Next-Generation Neutron Generator	\$219688
EI100	Investigation of Integrated Systems for Electrical Generation, Carbon Sequestration, and Miscible Enhanced Oil Recovery	\$25040
EI101	Chemical Separations and Process Research to Enable Biorefinery Systems	\$232363
EI102	Advanced Predictive Condition Monitoring and Control for Modern Energy Systems: Gasification-based Processes	\$316842
EI103	Light Gas Separation Process	\$169639
EI104	CFD-Based Simulation Capability of Fischer-Tropsch Reactors and Process Equipment	\$247806
EI105	Biomass Feedstock Assembly to Gasification Process Computational Interface Development	\$204876
EI106	Attractiveness of Various Carbon and Energy Sources for Synfuels	\$29900
ET132	Modulating Drain Valve for Continuous Processing of High Temperature Molten Materials	\$129365
ET133	Systematic Feasibility Analysis of Power Production from Unconventional Geothermal Resources	\$102317
ET134	Investigation of Passive Film Performance on Hastelloy C22 in Structural Loading	\$148435

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INL - Idaho National Lab

Project ID	Project Name	FY Total
ET135	Dynamic Autonomy for Mobile Manipulation	\$275314
ET137	Development of Integrated Virtual Engineering Tools to Facilitate Unique High-Level Decision Making Capabilities	\$107678
FF100	The Metabolic Capabilities of Acidithiobacillus caldus, a Ubiquitous Moderately Thermophilic Acidophile	\$95082
FF101	Innovative Applications of Dissipative Particle Dynamics	\$112916
FF102	Ion Exchange Coatings for Analysis	\$99977
FF103	Hybrid Welding Process	\$115846
GB100	The Metabolomics of a Naturally Occurring Acidophilic Bacteria System	\$108496
GB101	Development of an Autonomous Geophysical System for Quantitative Monitoring of Redox Zonation and Subsurface Flow	\$116862
GB103	A Systems Biology Approach to Understanding Lignocellulose Derived Carbon Metabolism by Alicyclobacillus acidocaldarius	\$522284
HT106	Renewable Biomass Carbon for Synthetic Fuels to Support the Hydrogen Economy	\$188821
HT107	H2O / CO2 Co-Electrolysis for Syngas Production	\$250091
HT109	Hybrid Heterogeneous Catalysts for Hydrogenation of Carbon Dioxide to Liquid Hydrocarbons	\$149970
HT113	Module-Based Gasification and Synfuels Processes Simulator	\$350511
IC101	Exploration and Development of Automated Differential Equation-Based System Identification	\$164927
IC102	A Toolset for Proximal Human-Robot Interaction	\$200338
NE141	Joint System Prognostics For Increased Efficiency And Risk Mitigation In Advanced Reactor Instrumentation And Control	\$290037
NE144	Design of a High-Resolution Multiphase Reactor Analysis Capability	\$412189
NE145	On-line Symbolic Condition Monitoring of Advanced Energy Systems	\$396365
NN100	Model-based Design and Evaluation of Advanced Safeguards and Proliferation Detection Systems	\$212061
NN102	Ultratrace Plutonium Analysis and Standard Preparation	\$90059
NN103	Realization of FTMS Potential for Accurate Measurement of Extreme Isotope Ratios	\$199022
NN104	Development of In-situ Measurement Technology for On-line Monitoring of Actinide Concentrations in Molten Salt Electrolyte	\$280582

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INL - Idaho National Lab

Project ID	Project Name	FY Total
NN105	Demonstration of a Proliferation Pathway in a Thorium Fuel Cycle Using Pyrochemical Processes	\$198853
NN107	Non-proliferation Issues as Related to Advanced Fuel Cycle and Advanced Fast Reactor Development with Processing of Reactor Fuel	\$109219
NN108	Development of a Bayesian Estimation Method for the Detection of Nuclear Proliferation	\$173512
NN109	Laser Induced Breakdown Spectroscopy: Development and Application of in-situ Elemental Analysis for Process Streams in Spent Fuel Reprocessing Facilities	\$170682
NN110	Chemical Signatures of Nuclear Proliferation on Particles	\$94066
NN111	Isotopically Pure ¹³⁹ La for Lanthanum Halide Scintillators	\$165474
NN112	Technetium Signature Analysis	\$142568
NS144	Proactive Designs of Self-Configuring Dynamic Sensor Networks for Wide Area Persistent Monitoring	\$143192
NS147	Enhanced Explosives Testing Capability	\$210014
NS150	Investigation into the Preservation and Enhancement of Mobile Ad-Hoc Network Quality of Service	\$80108
NS151	Sensor-Assisted Autonomous Precision Landings for Man-Portable UAVs	\$102081
NS152	A Fuzzy Approach for Bluetooth Intrusion Detection on Mobile Devices	\$249230
NS153	TeraHertz Technology Development for Standoff Detection of Explosive Materials	\$187190
NS154	Enhancing Critical Infrastructure Protection (CIP) through the Development of Integrated Testing and Simulation Capability.	\$218342
RP105	NiCrFe Filler Metal for Cracking Resistance	\$178987
RP106	Protective coating Development for Reactor Instrumentation	\$299094
RP109	Analysis and Modernization of Radioanalytical Methods and Equipment used to Support ATR	\$241271
RP110	High Temperature In-Pile Instrumentation Enhancements	\$349474
SC134	In Situ Laser-based Characterization of Fatigue Damage in High Temperature Environments	\$174458
SC137	Microbial Metabolic Systems Approach to the Evaluation of Hydrogenic Activity of Extremophilic Anaerobic Carboxydotrophs	\$219673
SC138	Structure and Reactivity of Actinide Complexes and Clusters under Controlled Solvation Conditions	\$277685
SC139	Optical Eddy Current Techniques for Harsh Environments	\$70668

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INL - Idaho National Lab

Project ID	Project Name	FY Total
SH100	Microstructure and Deformation Physics of Fission-Reactor Model Materials by Atomistically Informed Mesoscale Simulation	\$613405
SH101	Structural and Electronic Properties of Surfaces and Adsorbed Metal Particles: Applications to Catalysis, Corrosion, and Radiation Effects	\$335509
SH102	Novel Topologically Controlled Armor System	\$599642
SH103	Adaptive Modeling of Geometrically Complex Fuel Rods with a posteriori Error Control	\$172480
SH105	Verification and Validation Methodologies Supporting Scientific Software for the Global Nuclear Energy Partnership	\$534422
SH106	Sodium Fast Reactor Design and Safety Analysis using SASSYS-1	\$96536
ST115	Experimental Investigations of Application and Delivery Mechanisms for In Situ Stabilization of Sr-90 in the Alluvium and Interbed Sediments Underlying the INTEC Tank Farm	\$65081
ST120	Reduction of Biomass Sugar Costs through the use of Thermal and Acid Stable Xylanases and Reduced Severity Pretreatments	\$230362
ST123	High- and Multi-Rate Physics Modeling and Simulation	\$219982
ST124	Structure/activity relationships in Multi-functional Nano-scale Catalysts for Synfuel Production	\$114609
ST125	Ultrafast Optical Probing of Nanometer Scale Electronic and Thermal Properties of Novel Solar Energy Materials	\$98145
ST126	Robotic Awareness and Assessment for Meaningful Human-Robot Teaming	\$170422
ST127	Thermally Coupled Processes Affecting Oil Shale Water Quality	\$121028
ST128	Modeling of Environmentally Assisted Intergranular Stress Corrosion Cracking	\$27250
ST129	Enhanced Three-Dimensional X-ray Computed Tomography Imaging Systems and Quantitative Analysis	\$32024
TM100	Computational Modeling of Catalysts for the Reduction of Sulfur Trioxide in the Sulfur-Iodine (S-I) cycle for Hydrogen Production	\$178195
TM101	Mathematical Characterization and Synthetic Generation of Spatial Structures Across Multiple Scales Using Fractal Techniques	\$230753
TM104	Computational Actinide Chemistry	\$198520
TM105	Atomistic and First-Principles Modeling of Materials under Extreme Environments	\$2136
TM106	Development of 3D Multiphase Flow and Reactive Transport Codes and their Applications to Reactive Flow in Porous Media and Fracture Apertures	\$241689
Total # of Projects for INL:	108	Total Cost for INL: \$21953427

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KCP - Kansas City Plant

Project ID	Project Name	FY Total
KC06011-703627	Atmospheric Plasma Deposition of DLC Coatings	\$135876
KC06012-703628	Firing System Modeling	\$115171
KC06013-703629	Magneto-Resistive Detonator Safing Device	\$123250
KC06023-703639	Advanced RF Microelectronic Development	\$166670
KCP07101-703643	Situational Awareness	\$382331
KCP07181-703651	Flexible Networks	\$186208
KCP07242-703649	Confocal Microscopy	\$92521
KCP07243-703655	Optical Transverter	\$35694
KCP07286-703665	Modified Carborane Materials	\$252754
KCP07289-703660	Spherical Lens Beam Splitter	\$100001
KCP07291-703652	Flexible Mobile Communication	\$160980
KCP07292-703668	Non-metallic Passively Aligned Photocell Packaging	\$90474
KCP07294-703661	Flexible Desktops	\$5560
KCP07295-703670	Spline Contour Manipulation	\$45480
KCP07296-703664	Desktop Grid Computing	\$4549
KCP07297-703659	Noisy CT Scan Processing	\$49737
KCP07298-703556	IVD and PVD Process Research	\$131322
KCP07302-703677	Alternate Material for Vehicle Transport	\$121505
KCP07305-703671	Leak Test Sealing Methods	\$29200
KCP07310-703673	Miniature Right Angle Connector	\$91713
KCP07313-703675	CCS HV Switch and Miniaturization	\$106286
KCP07410-703641	FPGA Data Acquisition	\$94670
KCP0761-703645	Integrated Rapid Design Process	\$37600
Total # of Projects for KCP:	23	Total Cost for KCP: \$2559552

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20040040DR	Search for Variation of the Fine Structure Constant with Optical Frequency References	\$1045205
LANL-20040093DR	Understanding Electronic and Magnetic Communication Between f-Electrons in Actinide and Lanthanide Materials	\$1737774
LANL-20040104DR	Testing Time-Reversal Symmetry with Ultracold Neutrons and with Solid State Systems	\$1686345
LANL-20040909PRD1	New Theoretical and Computational Approaches to Ultra-Relativistic Heavy Ion Collisions	\$114902
LANL-20041031PRD3	Dynamics of Quantum Phase Transitions	\$53608
LANL-20041040PRD3	Predictive Stellar Evolution	\$38914
LANL-20041043PRD3	Gamma-Ray Bursts Afterglows in the Swift Era: Perspectives of New Major Discoveries	\$93484
LANL-20041061PRD3	Investigation of the Dynamics of Protein Misfolding and Aggregation	\$37340
LANL-20041078ER	Nano-Scale Physics and Near-Contact Hydrodynamics	\$143705
LANL-20041086ER	Nuclear Materials Detection Algorithm Development for Port-of-Entry Applications	\$105857
LANL-20041105PRD4	Ferroic Films for Multifunctional Devices	\$92243
LANL-20041118PRD4	Intercalated Nanocomposites - Innovative Fuel Cell Catalysts	\$39536
LANL-20041131PRD4	Quantum Simulations in Optical Lattices	\$31650
LANL-20041132PRD4	Ionic Liquids: A New Platform for Sensors	\$3930
LANL-20050014DR	Resolving the Aerosol-Climate-Water Puzzle: Predictive Science for Global Stability and Security	\$1846396
LANL-20050031DR	Coming Out of the Cosmic Dark Ages - The First Stars in the Universe	\$1945193
LANL-20050043DR	Pu-H Interactions: Studies of Plutonium Hydride Phenomena (U)	\$1867724
LANL-20050064DR	Protocell Assembly	\$1933424
LANL-20050066DR	Lagrangian Measurements of Fluid Mixing	\$1933002
LANL-20050076DR	Cold Atom Quantum Simulators	\$1622245
LANL-20050107DR	Material Response During Dynamic Loading at Subpicosecond Time and Nanometer Length Scales	\$2017722
LANL-20050123DR	Metabolome Scale Characterization of the Biothreat Agent, Bacillus Anthracis	\$1758405
LANL-20050127DR	Be-Specific Human Immune Response and Development of Chronic Beryllium Disease	\$1817776
LANL-20050155DR	Rational Vaccine Design: Theory and Experimental Validation	\$1898196

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20050158ER	Salient Anomaly Detection: In Search of the Unknown in Images and Signals	\$361581
LANL-20050161DR	Thinking Telescopes: Pursuing a New Paradigm for Discovery in Observational Science	\$1675829
LANL-20050164DR	Probing New Physics with Ultra-Cold Neutrons	\$1253327
LANL-20050184DR	New Americium Delta-A Metric for Primary Certification (U)	\$2033385
LANL-20050199ER	Processing and Properties of Bulk Nanostructured Alloys	\$351221
LANL-20050246ER	Gamma-Ray-Channeling Optics	\$346911
LANL-20050271ER	A System-Scale Theory for Fast Magnetic Reconnection	\$296347
LANL-20050277ER	Laser-Cooling Molecules to Millikelvins	\$291962
LANL-20050290ER	A Microfabricated Single Molecule Sorter	\$301876
LANL-20050304ER	Redox Interplay Underpinning 4f-Element Metallocene-Based Magnetic Systems	\$340493
LANL-20050306ER	Exploration of the Role in Interfaces in Nanolayered Composites in Creating Radiation Damage Tolerant Materials.	\$338311
LANL-20050307ER	HAWC: The Next Generation VHE All-Sky Gamma Ray Observatory	\$239038
LANL-20050315ER	Implicit Adaptive Mesh Refinement: A Magnetohydrodynamics Application	\$399872
LANL-20050323ER	Testing Embedded Model Assumptions of Stable Isotopic Dynamics with Continuous Sampling: Are Modelers' Assumptions of the Global Carbon Cycle Correct?	\$558848
LANL-20050343ER	Atomistic Studies of Fast Chemical Processes in Nano-Structured Metastable Composites	\$283605
LANL-20050360ER	Low-Threshold, Single-Exciton Nanocrystal Lasing Using Engineered Exciton-Exciton Interactions	\$372949
LANL-20050363ER	Combustion Enhancement Using Plasma	\$375280
LANL-20050377ER	Observing Individual Antibody-Antigen Encounters for Decades of Timescales	\$287420
LANL-20050379ER	Taming and Accelerating Particle-In-Cell	\$347174
LANL-20050388ER	Spatio-temporal Plasmonics: Controlling Plasmon Polaritons at the Nanoscale	\$381677
LANL-20050400ER	Eliminating PCR in Biothreat Detection: Highly Multiplexed Nucleic Acid Dipsticks for Rapid and Sensitive Pathogen Identification	\$368126
LANL-20050402ER	Immune Response to West Nile Virus in Birds	\$402911
LANL-20050411ER	Quantitative Modeling of Living Neuronal Networks in Vitro	\$372543
LANL-20050425ER	Computational Foundations for a New Class of Digital Filter Banks	\$396153
LANL-20050430ER	Fulde-Ferrell-Larkin-Ovchinnikov Inhomogeneous Superconducting State	\$405680

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Project ID	Project Name	FY Total
LANL-20050480ER	The First Complete Classification Algorithm	\$358249
LANL-20050484ER	Novel High-Speed Electro-Optic Switches Based on Domain Microoptics Embedded in a Ferroelectric Chip	\$334509
LANL-20050506ER	Hierarchical Assembly of Porous Materials: Obeying Bio-Inspired Allometric Scaling Laws	\$311459
LANL-20050531ER	Neyman-Pearson Learning	\$316905
LANL-20050540ER	A New Form of Secure Communication: Spatial Encryption Using Superluminal Sources	\$248585
LANL-20050559ER	Plasma Catalyzed Coal Gasification	\$330161
LANL-20050566ER	Ion Beam Synthesis of Ferromagnetic Semiconductors	\$314658
LANL-20050583ER	High Efficiency Carrier Multiplication Using Impact Ionization in Semiconductor Quantum Dots	\$332992
LANL-20050626ER	High-Valent Ruthenium Oxides on TiO ₂ : Toward the Development of Light-Driven Oxidation Catalysts	\$224738
LANL-20050631DR	Nonlinear Behavior in Complex Systems	\$641312
LANL-20050632DR	Cooperative Phenomena in Soft Matter	\$695002
LANL-20050633DR	Exploiting Emergent Materials Behavior on the Nanoscale	\$1480399
LANL-20051087ER	Antineutrino Monitoring of Reactors	\$419107
LANL-20051098PRD2	Metallic Quantum Dot Superlattices	\$61189
LANL-20051102PRD1	Improving the Predictive Capabilities of Complex, Spatially Distributed Environmental Models	\$27839
LANL-20051122PRD1	Photovoltaics of Nanocrystalline TiO ₂	\$44312
LANL-20051124PRD1	Tuning Plutonium Compounds Through the Localized/Itinerant Crossover	\$20578
LANL-20051125PRD1	W-Band Photonic Band Gap Structure Research	\$76321
LANL-20051132PRD1	Exploration of Deformation Physics at Nanometer Scale	\$95691
LANL-20051143PRD1	Hydrogen Storage in Novel Molecular Compounds	\$160215
LANL-20051148PRD2	New Paradigms for Modeling Communicable Diseases	\$67247
LANL-20051149DR	Cross sections for the Isomer of ²³⁵ U	\$418592
LANL-20051164DR	Nanoscale Fluctuations in Multifunctional Materials	\$1132371
LANL-20051169ER	Physics of Astrophysical Jets	\$371776
LANL-20051194PRD2	Statistical Mechanics Approaches to Parallel Computing	\$162998
LANL-20051222PRD3	High Energy Particles in Astrophysical Outflows	\$169089

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20051239PRD3	Computer Simulations of Phase Stability and Microstructure Evolution in Alloys Using Hybrid Molecular Dynamics and Phase-Field Approaches	\$114125
LANL-20051243PRD3	The Neutrino Matrix and Beyond	\$176455
LANL-20051257PRD3	Investigation of Fuel Cell Electrocatalysts for Improved Activity and Durability	\$143266
LANL-20051265PRD3	Three-dimensional Micro Architectures for Neural Interfaces	\$107218
LANL-20051281PRD3	Size Effects in Nanoscale Ferroelectric Thin Films	\$150850
LANL-20051282PRD3	Theory and Trapped Ion Quantum Simulations	\$100211
LANL-20051284PRD3	Interfacial Interactions in Hybrid Semiconductor-Metal Nanostructures	\$97400
LANL-20051286PRD3	A Multiscale Approach to Modeling Continental Rift Tectonics	\$130060
LANL-20051320PRD4	From Actinide Electronic Structure to f-Element Molecular Photomagnets	\$24444
LANL-20051325PRD4	The Formation of the First Stars and Their Feedback Effects on Cosmological Structure	\$140317
LANL-20051330PRD4	Defect- and Fault-Tolerant Nano-computing Architectures	\$124629
LANL-20051336PRD4	Effects of Length Scale on the Fracture Behavior of Ultra High Strength Nano-composite Materials	\$163732
LANL-20051345PRD4	Biological and Chemical Sensor Design Using Linearly-Scaled TD-DFT Methods	\$142759
LANL-20051347PRD4	Ultrafast Dynamics of Novel Magnetic Materials by Time Domain Spectroscopy	\$151257
LANL-20051348PRD4	Quantum Fluctuations of Event Horizons	\$170096
LANL-20060019DR	Structure and Bonding in Actinide Oxides	\$1621828
LANL-20060021DR	Dynamics of the Onset of Damage in Metals under Shock Loading	\$1742969
LANL-20060039DR	New Approaches to Quantum Computing and the Dynamics of Quantum Phase Transitions	\$1374076
LANL-20060040DR	Pathogen Detection Based on Biomodulation	\$1284189
LANL-20060043DR	Strongly Correlated Electrons: Duality and Implications	\$1439976
LANL-20060046DR	Image Reconstruction with Time-Reversal Mirrors	\$881036
LANL-20060049DR	Heavy Quarks as a Probe of a New State of Matter	\$1798875
LANL-20060060DR	DREAM: A Dynamic Radiation Environment Assimilation Model to Understand Acceleration, Transport, and Losses in Natural and HANE-Produced Radiation Belts	\$1399649
LANL-20060079DR	Science-Based Prediction and Control of Complex Manufacturing Processes	\$1349710

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20060081DR	Mix Processes in Inertial Confinement Fusion	\$1632811
LANL-20060088DR	Advanced Actinide Separations in Alkaline Media for Spent Nuclear Fuel and Defense Materials Processing	\$1180277
LANL-20060097DR	Biological Effects of Molecularly Engineered Nanomaterials	\$1150773
LANL-20060136DR	New Classes Of Materials For Gamma-Ray And Neutron Detection	\$1453560
LANL-20060226ER	Development of an Engineering Model for Rubber Elasticity	\$247571
LANL-20060230ER	Nascent Protein Folding Inside the Tunnel of the Ribosome: Cotranslational Folding	\$341595
LANL-20060253ER	Nanobiomaterials: Building New Nanoarchitectures Using Biomolecular Scaffolds	\$277174
LANL-20060268ER	Automatic Video Analysis Integrating Depth, Shape, Texture and Color	\$290533
LANL-20060270ER	Automated Induction of Templates for Extracting Information from Text	\$314852
LANL-20060272ER	Monte Carlo Estimation of Eigenvalues of Ultradimensional Matrices and Continuous Operators	\$239848
LANL-20060302ER	New Method for Complex Contingency Analysis	\$441308
LANL-20060305ER	Energy Distributions in Granular Flows	\$262310
LANL-20060312ER	MRI in Microtesla Magnetic Fields with Simultaneous MEG	\$338930
LANL-20060317ER	Understanding the Process of Intercalation Using Stable Isotope Labeled Polyaromatic Hydrocarbons (PAHs) and Oligomeric DNA; the Quantitation of Weak Bonding in DNA.	\$383300
LANL-20060318ER	Seeing Undetectable Cancers with Time-Reversed Ultrasound	\$355299
LANL-20060321ER	Chemical Thermoacoustics	\$351967
LANL-20060340ER	Multigene Correlations and Their Implications for Cardiovascular Disease	\$267277
LANL-20060346ER	Development of Redox Affinity Materials for the Separation of Carbon Nanotubes into Pure Chiral Fractions	\$465965
LANL-20060350ER	A Faster Multipole Method	\$312798
LANL-20060357ER	The S-Process in the Sm-Eu-Gd Region - A Probe for Stellar Mixing	\$341898
LANL-20060360ER	Quantifying the Role of the Cold Plasmasphere in the Loss of the Electron Radiation Belts	\$125928
LANL-20060386ER	Surface Enhanced Raman (SERS) Based Flow Cytometry Detection	\$376579
LANL-20060392ER	Processing of Ultra-High Strength Electrical Conductors using a Novel Nano-Twinned Structure	\$292918

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Project ID	Project Name	FY Total
LANL-20060395ER	Nanocomposite Thin Films for Surface Assisted Mass Spectrometry	\$321899
LANL-20060399ER	Role of Electrostatic Forces in Space and Astrophysics	\$737680
LANL-20060407ER	Detecting Spinons with the Wiedemann-Franz Law	\$346101
LANL-20060416ER	Stabilization of Hydrogen Clathrates --- Engineering a Solution to Hydrogen Storage	\$292425
LANL-20060437ER	Functional Proteomics Studies of Bacillus anthracis	\$281647
LANL-20060473ER	Novel Physics Inspired Approach to Error-Correction	\$265530
LANL-20060494ER	Amplification of Surface Plasmons by Stimulated Emission from Semiconductor Nanocrystals	\$345851
LANL-20060495ER	Exploring the Darkness: Cosmic Voids	\$673954
LANL-20060497ER	Use of Strain Engineering to Tune the Physical Properties of Nanoscale Metal-Oxide Films	\$261555
LANL-20060518ER	Improved Molecular Catalysts for Water Splitting	\$296434
LANL-20060542ER	Generation, Detection, and Manipulation of a Single Magnetic Spin	\$326275
LANL-20060551ER	Simulation and Modeling of the Quantum Response	\$258748
LANL-20060558ER	Quantum Nondemolition Detection of Photons	\$290712
LANL-20060581ER	Non-blinking and Robust Quantum-Dot Fluorophores for Applications in Biology	\$312397
LANL-20060589ER	Manipulation and Control of Electron Spins in Semiconductors with Strain Engineering	\$320522
LANL-20060593ER	Shedding Light on the Mechanical Unfolding of Individual Proteins	\$306482
LANL-20060607ER	Acoustic Effects on Microscopic and Core-Scale Colloid Interactions and Porous Fluid Transport	\$310863
LANL-20060617ER	Nanoscale Textured Composite Energetic Materials	\$383265
LANL-20060685ER	Structure and Evolution in Cosmology and Astrophysics	\$319709
LANL-20060686ER	Complex Dynamical Climate Systems Analysis	\$536181
LANL-20060687ER	Space Weather Processes and Mechanisms	\$837228
LANL-20060688ER	Solid Earth Geoscience: Transient & Steady-State Earth Processes	\$448162
LANL-20060694ER	Supersymmetry Breaking in Various Dimensions	\$148104
LANL-20060697ER	Statistics for the Engineering and Physical Sciences	\$177448
LANL-20060698ER	Investigating Coherent Flavor Evolution in Dense Neutrino Systems	\$92457
LANL-20060700DR	Computational Methods for Protein Function Inference	\$612511

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Project ID	Project Name	FY Total
LANL-20061378PRD1	High P-T Synthesis of Superhard Carbon Nitride from Graphite-Like Precursors	\$153082
LANL-20061383PRD1	Lifting the Quantum Critical Conundrum	\$171122
LANL-20061387PRD1	Exploring the Membrane Penetration Machinery of Bacterial Toxins	\$153190
LANL-20061388PRD1	Numerical Techniques of Rifting and Passive Margin Formation: The Role of Mantle Plumes	\$153427
LANL-20061395PRD1	Synthesis of Molecular Actinide Nitrides	\$128000
LANL-20061396PRD1	Studies of Sub-Micron Ferromagnetic Particles using Magnetic Resonance Force Microscopy	\$173601
LANL-20061397PRD1	Measurements of Absorption and Scattering by Aerosols: How do they Offset Global Warming?	\$156262
LANL-20061399PRD1	Main Group Hydride Chemistry for Hydrogen Storage	\$34406
LANL-20061402ER	The Secret Life of Quasiparticles	\$109980
LANL-20061423ER	Improved Length Scaling in Accelerated Molecular Dynamics Methods	\$318657
LANL-20061435ER	Experimental Study of Driven Magnetic Relaxation in a Laboratory Plasma	\$366002
LANL-20061438PRD2	Interface-Governed Behavior of Nano-Layered Metallic Composites	\$165815
LANL-20061442PRD2	Ion Synthesis of Novel SiGe Structures	\$148617
LANL-20061449PRD2	Non-Equilibrium Stochastic Processes in Classical and Quantum Systems	\$129345
LANL-20061456PRD2	Searching for New Uranium Based Superconductors	\$168926
LANL-20061468PRD2	Fluorescence Lifetime Spectroscopy by Flow Cytometry	\$136722
LANL-20061471DR	Advancing the Chemistry Material Science and Theoretical Understanding of Actinides	\$1036307
LANL-20061475PRD2	Three-dimensional Magnetic Reconnection Experiments	\$173625
LANL-20061493DR	High-Resolution Physically-Based Model of Semi-Arid River Basin Hydrology	\$710954
LANL-20061494ER	A Strategy for Effective Antibiotic Delivery	\$160576
LANL-20061515ER	Polyazido Precursors for Synthesis of Novel Drugs	\$104100
LANL-20061517ER	Trapping Rare Culture Mutations for Bioweapon Attribution and Forensics	\$219811
LANL-20061522ER	Aligned Crystalline Silicon Films for Solar Cells	\$311791
LANL-20061524PRD3	Accelerated Molecular Dynamics at Complex Interfaces	\$113631
LANL-20061526PRD3	Multiscale Modeling of Irradiation-induced Defect Processes in High-Cr Ferritic Steels	\$147105

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Project ID	Project Name	FY Total
LANL-20061528PRD3	High Efficiency Carbon Nanotube-TiO ₂ Nanostructured Solar Cells	\$135123
LANL-20061558PRD3	Theoretical Studies of Cold Atom Fermi-liquids and Bose-Einstein Condensates on Chips	\$142576
LANL-20061562PRD3	Fundamental Oxygen Reduction Reaction Studies at high pH	\$155594
LANL-20061563PRD3	Search for Temporal Variation of the Fine Structure Constant	\$138585
LANL-20061585ER	Visualization Applied to Electronic Properties of Novel Superconductors	\$287126
LANL-20061600PRD4	Ultrafast Phenomena: Short-Pulse laser Interactions with Atoms and Molecules	\$137057
LANL-20061615PRD4	A Chemical Route to Integrate Carbon Nanotubes into Microelectromechanical Systems	\$64307
LANL-20061624PRD4	Self-Organizing Wireless Ad-Hoc and Sensor Networks with Functional Guarantees	\$156250
LANL-20061630PRD4	Flexible Plastic Electrodes for Cheap Solar Cells	\$164835
LANL-20061633PRD4	Ultrafast Plasmonics for Waveguide Nanophotonics	\$19622
LANL-20061639PRD4	Theoretical Investigations of Plastic Deformation in Energetic Materials	\$172935
LANL-20070003DR	Beyond the Neutrino Matrix	\$1902057
LANL-20070005DR	Dark Energy and the Cosmic Web	\$1545567
LANL-20070008DR	Novel Inclusion Compounds for Hydrogen Storage	\$1518774
LANL-20070010DR	Rapid Iterative Detection Using Smart Pathogen Signatures	\$1490795
LANL-20070013DR	Correlations and Control of Properties of Metallic U and Pu	\$2296897
LANL-20070023DR	High-Current, High-Energy, Laser-Driven Ion Accelerators: An Enabling and Revolutionary Scientific Research Tool	\$1411343
LANL-20070028DR	Cold Atom Surface Imaging	\$1480416
LANL-20070029DR	A Systematic Strategy for Gene Function Discovery	\$1455608
LANL-20070060DR	Metamaterials for Threat Reduction Applications: Imaging, Signal Processing, and Cloaking	\$1590532
LANL-20070063DR	The Physics of Algorithms	\$1470121
LANL-20070064DR	Coexistence of Magnetic and Superconducting Electrons in Strongly Correlated Matter	\$1226507
LANL-20070074DR	Physics of Helium Retention in Palladium/Tritium Systems	\$1498764
LANL-20070077DR	Quantum Control in Condensed Media for Studies of Direct Optical Initiation of Explosives	\$1473537
LANL-20070096DR	Biomimetic Hydrogen Production by Photoinitiated Transition Metal Catalysis	\$1552122

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070099DR	Host-Pathogen Interactions (Pathomics) in Avian Influenza	\$1642801
LANL-20070131ER	Drug Binding and Catalytic Mechanism in DHFR	\$333839
LANL-20070134ER	Cerium-Doped Glass Scintillators	\$354603
LANL-20070148ER	Substrates for the Detection and Differentiation of Influenza Viridae	\$354721
LANL-20070156ER	Coulomb Mechanisms for Ion Damage in Insulators in the Electronic Stopping Regime	\$442298
LANL-20070160ER	Beta Decay of Polarized Radioactive Atoms in an Optical Tweezer	\$383193
LANL-20070163ER	Nano-Engineered Casimir Forces	\$349015
LANL-20070170ER	Magnetic Turbulence and Kinetic Dissipation in Solar Wind and Solar Corona Plasmas	\$309320
LANL-20070171ER	Understanding Dynamical Diversity of Extrasolar Planets	\$143741
LANL-20070172ER	New Approach to Bayesian Inference Under Modeling Uncertainty	\$359114
LANL-20070173ER	Nano-Structured Foams for Hydrogen Storage	\$345815
LANL-20070176ER	Nano-Composite Scintillator for Neutron Capture Measurements	\$333070
LANL-20070180ER	Understanding a Killer: A Predictive Model of Tumor Development	\$310935
LANL-20070187ER	Sharp characterization of minimizers (typically) involving interfaces in images	\$366769
LANL-20070188ER	Probing Correlated Electron Behavior via Direct Uranium-235 Nuclear Magnetic Resonance	\$312489
LANL-20070195ER	Instabilities Driven Turbulence and Mixing in Convergent Geometries	\$296215
LANL-20070202ER	Moment-Based Interface Tracking for Multi-Material Flows	\$338157
LANL-20070204ER	Synthesis of Nanowire Heterostructures for Strain-Controlled Bandgap Engineering	\$292935
LANL-20070234ER	Cold Atom Quantum Liquid Mixtures	\$310958
LANL-20070235ER	Investigation of Energetic Ion Generation and Transport in Ultra-Intense Laser-Matter Interaction	\$413857
LANL-20070243ER	Hyperbolic Polynomials Approach to Approximate Counting and Lower/Upper Bounds in Combinatorics, Statistical Physics and Computational Geometry	\$298226
LANL-20070256ER	Excited States and Optical Response of Nanosized Molecules at Linear Scaling Numerical Cost	\$343367
LANL-20070267ER	An Experimental and Theoretical Framework for Reactive Micromixing	\$256722
LANL-20070270ER	Synthetic Decoys for Biothreat Agents	\$265388
LANL-20070276ER	New States of Matter in Stars, Nuclei and Cold Atoms	\$296682

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070330ER	Magnetic Resonance Force Microscopy Studies of Ferromagnets on a Nanometer Scale.	\$324520
LANL-20070338ER	From Novel Principles to Novel Device Structures for High-Efficiency Generation of Solar Electricity	\$332049
LANL-20070349ER	Ultra-Low Field Resonant Absorption Magnetic Resonance Imaging of Neural Activity	\$348235
LANL-20070367ER	X, Gamma, Alpha : Ultra-High Resolution Spectroscopy	\$341085
LANL-20070368ER	A Novel Approach to Manufacturing Ultra-Tall Carbon Nanotube Forests	\$334744
LANL-20070380ER	Controlling Oxidation-States in Actinide-Oxides through Crystal Lattice Pinning	\$326344
LANL-20070382ER	Unique Observations of Nature's Largest Explosions	\$326961
LANL-20070416ER	Agent-Based Modeling and Simulation of Cellular Signaling Systems	\$311268
LANL-20070421ER	Fast Approximation Algorithms for Systems of Linear Inequalities	\$360404
LANL-20070436ER	Optical, Electronic, and Magnetic Doping of ENABLE Grown Semiconducting Films Using an Electrospray Ionization Dopant Source	\$388271
LANL-20070441ER	Subsurface Transport Parameter Estimation with Multiscale, Multiobjective Optimization	\$239197
LANL-20070445ER	Tunable Infra-Red Chromophores through N-Type Doping of Wide-Gap Semiconductor Nanocrystals	\$326855
LANL-20070451ER	Non-Precious Metal Nanocomposites for Fuel Cell Catalysis	\$326889
LANL-20070483ER	Minimal Description of Complex Shapes with Applications to Experiments and Validation of Large-Scale Codes	\$240662
LANL-20070488ER	Electron-Neutrino Correlation in Neutron Beta Decay	\$273938
LANL-20070497ER	Nanofabrication of Electronic, Photonic, and Magnetic Thin Film Materials	\$66019
LANL-20070498ER	High-Nitrogen Coordination Complexes for Lead Replacement	\$10692
LANL-20070499ER	Edge Basis Functions on Pyramid Elements for Magnetostatic Finite-Element Analysis	\$58595
LANL-20070500ER	Accelerated Scientific Visualization Capabilities in Large-Scale Data Environments Via Application of Advanced Hybrid Computing Technologies	\$57312
LANL-20070501ER	Compiling for Programmable Logic Processors	\$54783
LANL-20070505DR	Multiscale Modeling of Strongly Interacting Systems	\$512459
LANL-20070506ER	Experimental and computational studies of magnetic bubble expansion as a model for extra-galactic radio lobes	\$219606

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070518DR	Development of a Magnetically Driven Target for Thermo-Nuclear Burn Studies (*U)	\$1012925
LANL-20070525PRD1	Molecular Actinide Alkylidene Complexes	\$123047
LANL-20070541PRD1	Superconductivity in Non-Centrosymmetric Materials	\$68162
LANL-20070560PRD1	Creating a Mathematical Foundation for High-Dimensional Search and Optimization Algorithms to Solve Complex Nonlinear Models	\$132946
LANL-20070565PRD1	Structure and Function of Human Mineralised Tissue	\$5157
LANL-20070573PRD1	Quantum Fluctuations in Bose-Einstein Condensates	\$140175
LANL-20070576PRD1	Vibrational Features and Quantum Transport in Molecular Electronics	\$12740
LANL-20070585PRD2	Multifunctional Copper-Carbon Nanotube Nanocomposites	\$28389
LANL-20070592ER	Intelligent Wireless Ad-hoc and Sensor Networks with Functional Guarantees	\$96096
LANL-20070595ER	Controlled Synthesis of Nanostructured Metals for Chemical Detection	\$92288
LANL-20070626PRD2	Theoretical and Experimental Investigation of Relaxation Mechanisms in Ultra-low Field NMR for Magnetic Resonance Imaging	\$93182
LANL-20070629ER	Metagenomics Study of Rumen Microflora	\$63485
LANL-20070640PRD2	Multiscale Simulations for Cascade Overlap in Irradiated Materials	\$24567
LANL-20070649PRD2	Noise in Biochemical Networks: Rigorous Analysis with Field-Theoretic Tools	\$81238
LANL-20070653PRD2	Entanglement and Correlations in Complex Physical Systems	\$28272
LANL-20070654PRD2	Ultrafast Non-equilibrium Physics of the Fractional Quantum Hall System	\$5327
LANL-20070658PRD2	Detecting the Highest Energy Gamma-Rays and Neutrinos to Determine the Origin of Cosmic Rays	\$16723
LANL-20070670ER	Frequency Behavior of Piezoelectric Materials Under Radiation for Sensor Applications	\$29564
LANL-20070676DR	Direct Detection of Dark Matter	\$506866
LANL-20070690PRD3	Time-Dependent Density Functional Theory for Ultrafast Optical Phenomena in Strongly Correlated Electron Materials	\$23898
LANL-20070701PRD3	Anti-Neutrino Oscillation and Cross Section Measurements at MiniBooNE	\$30561
LANL-20070705PRD3	Phase Transitions in Quantum Systems and Quantum Information	\$1243
LANL-20070709PRD3	Lanthanide Main-Group Element Multiple Bonds	\$77727
LANL-20070722PRD3	Sensitization of Lanthanide Ion Fluorescence Using Nanocrystal Quantum Dots	\$36696
LANL-20070741ER	Exploration of New Metal Compounds of High Nitrogen Ligands for the Development of Tunable Energetic Materials	\$83153

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070743ER	Pilot Metagenomics Study of Complex Soil Microbial Communities using Highly Parallel Pyrosequencing	\$75903
LANL-20070744ER	Miniature Widely-Tunable High Power THz Source and Detector for Threat Reduction Applications	\$105661
LANL-20070745ER	Feasibility of Monochromatic Gamma Generation with Electron Channeling in Carbon Nanotubes	\$89732
Total # of Projects for LANL:	273	Total Cost for LANL: \$128695072

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB05002	Advanced Monolithic Silicon Pixel Detectors	\$261380
LB05003	Behavior and Impact of Nanoparticles in the Environment	\$160008
LB05008	Cryptographic Foundation for New Generation Distributed Systems	\$79171
LB05010	Novel Imaging Detectors for Materials and Biology Research	\$437639
LB05011	Micro-characterization and Chemical Micro-dynamics of Atmospheric Mineral Dust	\$138807
LB05020	Development and Application of Quantum Monte Carlo (QMC) Methods to Biological Systems	\$220310
LB05022	Enabling High Energy Density Physics	\$429018
LB05024	Left-Handed Nanoscale Meta-Materials: Towards the Optical Domain	\$202909
LB05027	New Directions for Theoretical Physics at the TeV-Scale	\$367032
LB05029	Enhancing Commodity Processors with Vector Components for Increased Scientific Productivity	\$263546
LB05030	Improved Spectroscopy of Weakly Bound States in Nuclei	\$292676
LB05031	Advanced Computational Tools for Electric Power Systems	\$162251
LB05032	Statistical Feature Modeling for Scientific Data Via Basis Decomposition	\$117945
LB05033	NanoARPES: A New Detector for Nanometer-scale Electronic Structure Measurements	\$291950
LB05036	Biogeochemical Reaction Rates and Pathways in Porous Media	\$88783
LB05037	New Approach for the Catalytic Conversion of Methane and other Inert Hydrocarbons	\$114594
LB05039	Low Energy Spread Electron Source	\$186950
LB05044	Statistical Dynamics of Protein Evolution	\$144984
LB06001	Microarray Technology for Fungal Identification	\$146724
LB06004	Investigation of the Microbial Processes Involved in Electron Transfer onto the Anode of a Biological Fuel Cell	\$278485
LB06005	Tailoring the Self Assembly of Functionalized Biomolecular Building Blocks	\$204938
LB06006	Visible Light-driven Water Oxidation in Mesoporous Solids	\$386573
LB06007	Arsenic ElectroChemistry	\$126055
LB06009	Compositional and Functional Analysis of Cell Walls During Metal-bacterial Interactions	\$173999
LB06010	Metagenomics-Enabled Analysis of Termite Hindgut Microbiota for Biomass Conversion and Cleaner Energy	\$109443

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB06011	Terahertz-Frequency Conductivity and Ultrafast Optical Excitations in Single-Walled Carbon Nanotubes	\$95990
LB06012	Software Application Infrastructure for Efficiently Managing Large-Scale Computational Biology Experiments	\$138242
LB06013	Surface Plasmon-Enhanced Photovoltaic Device	\$107904
LB06014	Measurement of Molecular Shape and Assembly Using X-ray Scattering	\$459849
LB06015	Integrated Microbial Community Genomes Data Management System	\$433666
LB06016	Interrelation of Global Warming and Hydrate Dissociation in Oceanic Accumulations	\$147811
LB06017	New Technology for Permeability Enhancement for Natural Gas Extraction in Tight Reservoirs	\$118286
LB06018	Coupled Modeling of Hydrology, Nutrient Cycling, and Vegetation: Applications to Water Quality and Water Balance	\$124966
LB06019	Development of Cost Effective Sequence-Based Technologies to Identify Genomic Alterations in Cancer	\$213260
LB06020	Aging, Disease and the Mechanical Response of Biological Tissues, Specifically Human Bone	\$147823
LB06021	Photons to Fuels ? The Electrochemical Reduction of Carbon Dioxide to Methanol	\$357269
LB06022	Determining if PIR51 is a Potential Tumor Suppressor Gene Similar to BRCA2	\$116881
LB06023	Electron Glow Generated by Gas Phase Exothermic Catalytic Reactions Using Metal-Semiconductor Nanodiodes	\$147398
LB06024	Versatile Mini-Scanning Transmission X-ray Microscope (mSTXM)	\$151876
LB06025	Conceptual Study for a Novel Nuclear Astrophysics Accelerator Capability to Measure Nuclear Reactions That Power the Stars	\$146000
LB06026	Extended First Order System Least Squares Finite Elements	\$54904
LB06027	Properties of New Ionic Liquids for Electrochemical Applications and for Extraction of Heavy-Metal Cations from Wastewaters	\$80717
LB06031	Fabrication of Photovoltaic Devices Using Nanostructured Biomaterials	\$192359
LB06032	Cellulose Degradation and Cellulosomes	\$342672
LB06033	Computational and Experimental Testing of Methods for Binning Sequences from Metagenomic Data	\$154122
LB06035	Expression Profiling of Radiation and Cancer Susceptibility Genes	\$402996
LB06038	Integration of Synthetic Nano-materials for High Speed, Robust, and Flexible Circuitry	\$122980

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB07002	Development of Fast Switching Superconducting Magnets for Spectroscopy Applications	\$229902
LB07003	Synthetic and Electrochemical Approaches to Metal-Metal Bonds in Actinides	\$69800
LB07004	Soft-collinear Effective Theories Applied to Collider Physics	\$288401
LB07005	Structured, Adaptive Mesh Refinement Method for Multiphase Reactive Transport in Groundwater	\$219636
LB07006	Conversion of Glycerol and Aromatic Compounds from Biomass to Major 3- and 6- Carbon Industrial Organic Compounds	\$127626
LB07007	On-demand Overlays for Scientific Applications	\$130429
LB07008	Applications of Adjoint Field Methods and Time-Reversal Data Processing to Inverse Problems in Electromagnetic, Seismics, and Ultrasonics	\$148050
LB07009	Chemical Reactions at Liquid/Vapor Interfaces Probed by Photoemission Spectroscopy	\$146669
LB07010	Functional Interactomics: Integrating Physical and Functional Interaction Networks	\$352907
LB07012	New Experimental Initiative to Deduce (n,f) Cross Sections for Advanced Fuel Studies	\$147911
LB07013	Transcription CoFactor PC4 Interactions with RNA Polymerase and XPG in Transcription-Coupled Repair	\$291994
LB07014	Understanding the Chemistry of Innovative Air Cleaning Technologies	\$107945
LB07015	FEL Concepts for Multiple Independent X-ray Beamlines	\$291655
LB07016	Building In-Situ Electronic Structure Study Capability with Photon-in/ Photon-out Soft X-ray Spectroscopy	\$251968
LB07017	Ultra-compact Field Desorption Neutron Source for Cancer Research	\$207909
LB07019	Soot in Ice: Does Smoot Enhance the Melting of Ice?	\$162563
LB07020	Physics Detector and Sensor Technologies Applied to Geological and Geophysical Applications at DUSEL	\$442018
LB07021	Integrated Decision Support Tool for Joint Optimal Control of Energy and Water Systems	\$213305
LB07022	Bio-oil Accumulation in Unicellular Green Algae: A Pilot Project	\$139984
LB07024	Cooperation of Biochemical and Mechanical Signals in Regulating Cell Fate Decision During Tissue Morphogenesis	\$235769
LB07025	Baryon Oscillations and Dark Energy: Prototyping Instruments	\$140065
LB07026	Laser-plasma Accelerator Driven Free-Electron Laser with High-Harmonic Seeding	\$146105

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB07027	Hyperons in Polarized Proton Collisions and the Origin of the Nucleon Spin	\$150037
LB07028	Power Efficiency Metrics for High Performance Computing	\$121029
LB07029	Integrated Performance Monitoring of Grid and HPC Workloads	\$138520
LB07030	Studies of Quantum Antiferromagnetism in Two-dimensional Triangular Lattices Using Ultracold Atoms	\$120791
LB07031	High Brightness Cathodes as Electron Sources for FELs	\$289998
LB07032	Hierarchically Nanostructures Systems for Solar Energy Hydrogen Production	\$332215
LB07033	Ultra-high Resolution Optics for Soft X-ray Inelastic Scattering	\$142984
LB07034	Emittance Manipulation and Beam Conditioning for FELs	\$292366
LB07035	Research Tools for the Conversion of Cellulose to Ethanol: Structural Studies of Cellulose Synthesis	\$143816
LB07036	Chinas Energy Future: Changes in Energy Intensity	\$90177
LB07037	Tests of a Multilayer Hybrid Neutron Detector Concept for Nuclear Fuels Monitoring	\$122418
LB07038	New Directions in Radionuclide Materials Characterization Using the ALS	\$50621
LB07039	Lithium Switchable Mirror Prototype Fabrication	\$19967
LB07040	Quantifying the Quantum Backaction of a Non-Linear Dispersive Measurement	\$56046
Total # of Projects for LBNL:	83	Total Cost for LBNL: \$16207737

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
04-ERD-002	Multiprobe Investigation of Proteomic Structure of Pathogens	\$145445
04-ERD-084	Characterizing the Regulatory Genome: Transcription Factor Proteins and Gene Regulation Networks in Living Cells	\$498797
04-ERD-085	New Fragment Separation Technology for Superheavy Element Research	\$154219
04-ERD-086	Electro-Thermal-Mechanical Simulation Capability	\$307442
04-ERD-088	A New "Natural Neighbor" Meshless Method for Modeling Extreme Deformations and Failure	\$203935
04-ERD-093	An Integrated Laboratory for the Study of Interventional Device Dynamics	\$169075
04-ERD-095	Internet Ballistics: Identifying Internet Adversaries Despite Falsified Source Addressing	\$129897
04-ERD-102	Petascale Simulation Initiative	\$549947
04-ERD-104	Time-of-Flight, Secondary Ion Mass Spectrometry Measurement of Metabolites from Single Cells	\$220405
04-ERD-108	Nonequilibrium Phase Transitions	\$295684
05-ERD-003	The Structure and Properties of Nanoporous Materials	\$507968
05-ERD-006	Developing Radiography for Advanced Radiography Capability at Future Large Fusion-Class Lasers	\$266818
05-ERD-007	Physics from the MIPP Experiment	\$291485
05-ERD-008	Emerging Contaminants: Application of Microarray Technology to the Detection of Mixtures of Endocrine-Active Agents	\$256762
05-ERD-011	Neutron Capture Cross Section Measurements at DANCE	\$274196
05-ERD-012	Catalyzing the Adoption of Software Components	\$30127
05-ERD-016	Characterization and Control of Laser-Induced Modifications in KDP and DKDP Crystals	\$286324
05-ERD-018	LOCAL: Locality-Optimizing Caching Algorithms and Layouts	\$352654
05-ERD-021	Heterogeneous Processes at the Intersection of Chemistry and Biology	\$217518
05-ERD-025	Avoiding Surprise: Countering Novel Chem-Bio-Warfare Agent Threats	\$477200
05-ERD-027	Innovative Copolymer Complex to Inhibit the Transport of Biological Aerosols	\$24317
05-ERD-028	CHEMTREAT: Accelerated Remediation of Contaminated Fine-Grained Sediments by a Chemical Clay Cracking and Co-Solvent Flushing Process	\$305926
05-ERD-029	Decontamination of Terrorist-Dispersed Radionuclides from Surfaces in Urban Environments	\$334331

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Project ID	Project Name	FY Total
05-ERD-030	Optical Properties as a Real-Time in-situ Materials Diagnostic at Extreme Conditions	\$392105
05-ERD-036	Advanced Studies of Hydrogen at High Pressures and Temperatures	\$394383
05-ERD-037	Ceramic Laser Materials	\$192374
05-ERD-039	Determination of the High-Pressure Melting Curve of Iron	\$165158
05-ERD-044	Hydrodynamic, Atomic Kinetic, and Monte Carlo Radiation-Transfer Models of the X-Ray Spectra of Compact Binaries	\$201011
05-ERD-045	The Opacity of the Solar Interior	\$544948
05-ERD-049	A Multiplexed Diagnostic Platform for Point-of-Care Pathogen Detection	\$256913
05-ERD-050	Developing a Reactive Chemistry Capability for the NARAC Operational Model (LODI)	\$262536
05-ERD-053	Rapid Screening of Human Effluents with Single-Particle Mass Spectrometry for Early Detection of Respiratory Disease and Cancer	\$510140
05-ERD-055	Probing Other Solar Systems with Current and Future Adaptive Optics	\$594892
05-ERD-060	Split-Beam, Short-Pulse Final Optics and Characterization for High-Energy Short Pulses	\$4780521
05-ERD-061	Precision Split-Beam, Chirped-Pulse, Seed Laser Technology	\$844800
05-ERD-062	Amplifier and Compressor Technology for Split-Beam, High-Energy Short-Pulse Generation	\$3353426
05-ERD-064	Characterizing Hypothetical Proteins	\$300024
05-ERD-065	Comparative Analysis of Genome Composition with Respect to Metabolic Capabilities and Regulatory Mechanisms	\$763983
05-ERD-066	Mitigation of Damage Sites on Ultraviolet Optics	\$2086672
05-ERD-067	A Fracture Mechanics and Tribology Approach to Understanding Subsurface Damage on Fused Silica during Grinding and Polishing	\$1965684
05-ERD-068	Development of Hot, LTE-Tunable Radiation Sources for Material Science Studies and Simulating Radiation Transport in Dense Astrophysical Plasmas	\$551853
05-ERD-071	Characterization of the Effect of Short Pulse Exposure on Laser Damage Size, Morphology, and Conditioning in Wide-Bandgap Materials	\$1833785
05-ERD-073	Leading the Quantum Limit Revolution	\$316723
05-ERD-076	Terascope: THz Spectroscopic Imaging for Standoff Detection of High Explosives	\$119638
05-ERD-078	Discovering the Folding Rules that Proteins Obey	\$357718
05-ERD-079	A New Method for Wave Propagation in Elastic Media	\$567225

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Project ID	Project Name	FY Total
05-ERD-084	Rapid Defense Against the Next-Generation Biothreat	\$1021526
05-ERI-001	Developing the Physics Basis of Fast-Ignition Experiments at Future Large Fusion-Class Lasers	\$416728
05-ERI-002	Efficient and Reliable Data Exploration via Multiscale Morse Analysis and Combinatorial Information Visualization	\$261954
05-ERI-003	Measuring Plasmon Density of States in Warm Dense Matter	\$194666
05-LW-006	Understanding the Nuclear Magnetic Fields	\$136709
05-LW-040	Molecular Transport in One-Dimensional Lipid Bilayers: A Biological "Smoke Alarm"	\$129300
05-SI-003	Biological Imaging with Fourth-Generation Light Sources	\$2693566
05-SI-005	Target Fabrication Science and Technology: An Enabling Strategic Initiative	\$3441032
06-ERD-005	Critical Materials Issues for Generation IV Reactors	\$453873
06-ERD-009	Scalable Data Management for Massive Semantic Graphs	\$356887
06-ERD-010	The Physics of Recombining Plasmas in Celestial Sources	\$349498
06-ERD-012	Conversion of Plutonium and Enriched Uranium	\$462636
06-ERD-013	Biophysical Characterization of Pathogen Invasion	\$212606
06-ERD-014	Separation of Carbon Dioxide from Flue Gas using Ion Pumping	\$194167
06-ERD-017	Laser-Driven Dynamic Hohlräume	\$168187
06-ERD-024	Measurements to Facilitate Advanced Tokamak Science in Burning Plasma Experiments	\$256708
06-ERD-026	Urban Atmospheric Turbulence: Improved Turbulence Closure Models through Observations and Simulations	\$265713
06-ERD-027	Investigating New Regimes of Material Strength at Ultrahigh Strain Rates and Pressures	\$557646
06-ERD-031	Atmospheric ¹⁴ CO ₂ Constraints on and Modeling of Net Carbon Fluxes	\$258948
06-ERD-035	Fundamental Investigation of Laser-Induced Surface Damage in Optical Materials	\$482397
06-ERD-036	A Predictive Model of Fragmentation using Adaptive Mesh Refinement and Hierarchical Material Model	\$589948
06-ERD-037	Long-Time-Scale Shock Dynamics of Reactive Materials	\$131751
06-ERD-038	Decomposition of Large-Scale Semantic Graphs via an Efficient Communities Algorithm	\$341683
06-ERD-039	The Properties of Confined Water and Fluid Flow at the Nanoscale	\$305021

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Project ID	Project Name	FY Total
06-ERD-040	Thermal-Fluidic System for Manipulating Biomolecules and Viruses	\$324054
06-ERD-042	Spheromak Energy Transport Studies via Neutral Beam Injection	\$338825
06-ERD-045	Heavy Quark Jet Tomography of Compressed Nuclear Matter	\$353857
06-ERD-051	Development of Single-Cell Raman Spectroscopy for Cancer Screening and Therapy Monitoring	\$481791
06-ERD-053	Foam-Walled Hohlräume for Increased X-Ray Conversion Efficiency	\$152101
06-ERD-054	Large Aperture Optics Performance	\$1968362
06-ERD-055	Mitigation of Electromagnetic Pulse Effects from Short-Pulse Lasers and Fusion Neutrons	\$201503
06-ERD-056	Laser Beam Propagation in High-Temperature Plasmas	\$103595
06-ERD-057	Francisella Tularensis: Understanding the Host-Pathogen Interaction	\$449562
06-ERD-059	A Novel Structure-Driven Approach to Sequence Pattern Definition for Remote Homology Detection	\$470231
06-ERD-061	Characterization and Quantification of Dynamic Robustness in Biological Systems	\$451095
06-ERD-063	Redox Proteins in Environmentally Relevant Bacteria	\$525837
06-ERD-064	Viral Identification and Characterization (VICI)	\$1050629
06-ERD-065	Compact, High-Intensity Neutron Source Driven By Pyroelectric Crystals	\$557278
06-ERD-066	Regional Climate	\$518904
06-ERD-067	Study of Transport Behavior and Conversion Efficiency in Pillar Structured Neutron Detectors	\$399340
06-ERD-069	A Coupled, Multi-Physics Code for Accurate Modeling of Nuclear Reactors	\$591160
06-ERI-001	Development of Integrated Microanalysis of Nanomaterials	\$807734
06-ERI-002	The Chemistry of Core Formation	\$259214
06-ERI-005	Evidence for Stratospheric Downwelling Associated with High-Elevation Topography	\$246904
06-LW-013	Nuclear Physics the Monte Carlo Way	\$171590
06-LW-023	Developing a New Accelerator Mass Spectrometry Assay for Quantitation of Platinum DNA Adducts for Response to Platinum-Based Chemotherapy	\$122533
06-LW-024	Quantum Monte Carlo Assessment of the Relevance of Electronic Correlations in Defects and Equation of State in Metals	\$213713
06-LW-028	Diffusion Monte Carlo without all the Hops	\$224508

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
06-LW-051	Biologically Driven Fabrication of Complex Nanostructures at Nanoscale Chemical Templates	\$218528
06-LW-063	Observation of Coherent Terahertz Frequency Emission from Shocked Polarizable Materials	\$208225
06-LW-064	Analysis of the Mucin Membrane Protein by Cryo-Electron Microscopy and Computational Image Processing	\$224729
06-LW-090	Understanding Shape Control in Nanoparticle Synthesis	\$225282
06-SI-001	Novel High-Energy-Density Source	\$2068378
06-SI-002	Active Detection and Imaging of Nuclear Materials with High-Brightness Gamma Rays	\$2487530
06-SI-003	Developing and Integrating Novel Technologies for the Production and Characterization of Membrane Proteins	\$2398608
06-SI-004	The Ultrafast Lattice Response of the Shocked Solid	\$1749723
06-SI-005	Transformational Materials Initiative	\$7517826
06-SI-006	Predictive Knowledge Systems for Large Complex Data Sources	\$5508306
07-ERD-004	Multipulse, High-Energy Backlighting for a Compton-Radiography Ignition Diagnostic for High-Power Lasers	\$130119
07-ERD-005	Cladding-Pumped Raman Fiber Lasers	\$192553
07-ERD-007	Kinetics of Phase Evolution: Coupling Microstructure with Deformation	\$726490
07-ERD-008	GaTe Semiconductor Radiation Detector	\$101784
07-ERD-011	Broad-Area Search for Proliferant Infrastructure	\$138812
07-ERD-013	Development of a First Principles Computational Toolkit for Predicting the Structural, Electronic and Transport Properties of Semiconductor Radiation Detection Materials	\$201760
07-ERD-014	Maximizing the Science from Astrophysical, Time-Domain Surveys: Targeted Follow-up	\$251282
07-ERD-015	Discovery of a Light Higgs Boson with b Quarks	\$304793
07-ERD-016	A New Approach to Simulating Inhomogeneous Plasmas for Inertial Fusion Energy and other Applications	\$199822
07-ERD-017	Serrated Light Illumination for Deflection-Encoded Recording (SLIDER)	\$397446
07-ERD-018	A Novel Method for Extracting Signals from Noisy Broadband Data Using Poynting Vector Measurements	\$150813
07-ERD-019	Detection, Classification, and Estimation of Radioactive Contraband from Uncertain, Low-Count Measurements	\$204471
07-ERD-020	Dense Gas Transport in Complex Environments	\$276488

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
07-ERD-023	Techniques for Supernova Cosmology with the Large Synoptic Survey Telescope	\$604178
07-ERD-024	Deformation of Low-Symmetry and Multiphase Materials	\$255213
07-ERD-025	Development of Novel Antimicrobial Proteins and Peptides Based on Bacteriophage Endolysins	\$339637
07-ERD-027	Knowledge-Based Coreference Resolution	\$530004
07-ERD-028	Advanced Computational Techniques for Uncertainty Quantification	\$256858
07-ERD-029	Electronic Anomalies in Ordered and Disordered Cerium at High Pressures and Temperatures	\$379882
07-ERD-032	Exploring Phase Transition Mechanisms using Ramp Compression	\$276742
07-ERD-034	Plasticity at High Pressures and Strain Rates using Oblique-Impact Isentropic-Compression Experiments	\$729280
07-ERD-035	VidCharts: Real-Time Algorithms for Large-Scale Video Analysis, Compression, and Visualization	\$498531
07-ERD-038	The Development of Scaled Astrophysical Experiments for the Current and Future Lasers	\$405167
07-ERD-040	Short Pulse Laser Applications Design	\$481986
07-ERD-041	UV-Vis Resonance Raman Studies of High Explosives, Impurities, and Degradation Products for Enhanced Standoff Detection	\$299986
07-ERD-042	Standing Wave Probes for Micrometer Scale Metrology	\$348376
07-ERD-044	Molecular Dynamics Simulations of Hot, Radiative Plasmas	\$675684
07-ERD-045	Salicylic Acid Derivatives: A New Class of Scintillators for High-Energy Neutron Detection	\$310869
07-ERD-046	Development of Novel Transgenic Technologies to Study Genome Regulation and Architecture	\$497241
07-ERD-047	Investigation of the Double-C Behavior in the Pu-Ga Time-Temperature-Transformation Diagram	\$180808
07-ERD-048	Quantum Properties of Pu and Pu-Compounds	\$632955
07-ERD-049	Controlling the Structure of a Quantum Solid: Hydrogen	\$226114
07-ERD-050	Novel Approach to Investigate the Mechanism of Yersinia Pestis Pathogenicity in Real-Time and at Single-Cell Level	\$301743
07-ERD-053	Microarrays + NanoSIMS: Linking Microbial Identity and Function	\$305657
07-ERD-055	Ultrahigh-Velocity Railgun	\$472917

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
07-ERD-056	Finding and Characterizing Rare Events in Two Next-Generation Particle Astrophysics Experiments	\$306794
07-ERD-057	Software Security Analysis	\$456717
07-ERD-060	Fabrication Science for Thick Beryllium Films	\$638736
07-ERD-061	Verification and Validation of Radiation Hydrodynamics for Astrophysical Applications	\$52539
07-ERD-063	Storage-Intensive Supercomputing	\$984695
07-ERD-064	Fossil Fuel Emission Verification Capability	\$247807
07-ERI-001	Identification of Pathways Critical to Quorum Sensing and Virulence Induction	\$246985
07-ERI-002	Accelerator Mass Spectrometry of ⁹⁰ Sr for Biomonitoring and Human Health	\$222398
07-ERI-004	A Plasma Amplifier toward Zettawatt Laser Powers	\$150262
07-ERI-005	Cosmochemical Forensics	\$271043
07-FS-001	Ultrafast Laser Synthesis of Nanopore Arrays in Silicon for Voltage-Controlled Biomolecule Separation and Detection	\$64824
07-LW-006	Helium Burning in Steady State and Explosive Nucleosynthesis	\$211636
07-LW-037	Uncovering Supersymmetric Leptons at the LHC	\$183651
07-LW-041	Magnetism in Semiconductor Nanocrystals: New Physics at the Nanoscale	\$181975
07-LW-043	Quantification of Radiation-Induced Protein Expression	\$225324
07-LW-049	Molecular to Extended-Solid Transformations in Compressed Carbon Dioxide: Sixfold Coordinated Carbon Dioxide	\$212254
07-LW-056	The Structure and Transport of Water and Hydrated Ions within Hydrophobic, Nanoscale Channels	\$227208
07-LW-062	A Proposal for First-Ever Measurement of Coherent Neutrino-Nucleus Scattering	\$222397
07-LW-086	Fourier Transform Holography with Coded Apertures	\$223911
07-LW-098	Stem Cell Fate Decisions	\$187890
Total # of Projects for LLNL:	159	Total Cost for LLNL: \$92737096

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NREL - National Renewable Energy Lab

Project ID	Project Name	FY Total
06001000	Completed Projects	\$7884
06270701	Design, Synthesis, and Characterization of Plasmonic Structures for Solar Energy Conversion and Solid-State Lighting	\$161298
06270702	Developing Next Generation Concepts for Consolidated Bioprocessing in Microorganisms Using Systems Biology	\$170071
06270703	Two-Electron Catalysis Coupled to Excitonic Semiconductors: Nanostructured PhotoElectroCatalytic Systems	\$154896
06270704	Isolation and Separation of Single-Walled Carbon Nanotubes via Engineered Proteins	\$62157
06270705	Novel in vitro Hydrogenase-Dependent Production of H ₂ Coupled Directly to Light-Induced Charge Separation Using Only Photosystem	\$85951
06270801	Oriented Nanotube Arrays for Advanced Lithium-Ion Batteries	\$0
06270802	Tailoring Carbon Nanotube and Hydrogenase Bio-Hybrids for Design of Novel H ₂ Electrodes	\$0
06270803	Catalyst Improvement for Solar Biohydrogen Production	\$0
06270804	Understanding Plant Cell Wall Deconstruction Process in Biomass Decaying Community Using Proteomics and Bioimaging Approaches	\$0
06510501	Transition Metal Catalysis: Experiment and Theory	\$174389
06510701	Consolidated Bioprocessing (CBP) of Cellulosic Biomass: Physiologically Paired Microbial Hosts and Cellulase Enzymes	\$27816
06510801	Obtaining Cell Wall Composition of a single Cell: Integration of Pulsed Sample Introduction with High Sensitivity Laser Ionization Mass Spectrometry	\$0
06510802	Nanoscale Materials for Thermal Storage	\$0
06510803	Development of Next Generation Biobutanol-Producing Microorganisms Using Systems Biology	\$0
06510804	Meso-Scale Computational Modeling of Polysaccharides in Plant Cell Walls	\$0
06510805	Development of a Comprehensive High-Throughput Technique for Assessing Lipid Producton in Algae	\$0
06520503	Hot-Wire Chemical Vapor Deposition of Metal Oxide Nanorods	\$107993
06520504	Low Band-Gap Materials for Organic 3rd Generation Photovoltaics	\$81802
06520601	Thin-Film Microelectronics for Rapid Gene Expression Analysis	\$190755
06520602	Unconventional Indium-Free Transparent Conductors	\$214660
06520603	A Critical Examination of the Intermediate Band Concepts for Ultra-High Efficiency Quantum Dot Solar Cells	\$220302

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NREL - National Renewable Energy Lab

Project ID	Project Name	FY Total
06520604	Modified Inorganic Nanostructures for Organic Photovoltaics	\$214193
06520605	Photon Emission of Self-Assembled Semiconducting and Quantized Nanostructures by Scanning Tunneling Microscopy: Light from the Nanoworld	\$286392
06520701	Design and Development of Lattice-Matched InGaN	\$221633
06520801	Semiconducting and Metallic Nanowire Networks for Transparent Electrical Contacts	\$0
06520802	Integrated Rectenna Devices for Solar Energy Conversion	\$0
06530501	Study of Fundamental Protein/Protein Interactions Involved in Biological Energy Generation	\$144259
06540801	Development of Vehicle to Grid (V2G) Systems to Support Renewable Technologies	\$0
06550701	Development of Self-Learning Building Controls with Initial Application for Lighting Control	\$70909
06560502	Prototype Renewable Planning Model (RPM)	\$138321
06560801	Solid Oxide Fuel Cells for Combined Tar Reforming and Electricity Production	\$0
06590504	Fundamental Properties and Applications of Novel Crystalline Inorganic-Organic Hybrid Semiconductor	\$249034
06590701	Designing New Materials for Water Splitting from Solid Solutions of Semiconductor Compounds	\$155241
06590802	Development of Novel Thin-Film Solar Energy Conversion Materials	\$0
06640701	Strategic Analysis Market Modeling Capability	\$134096
06RF0701	Properties of Refractory Metal Doped Transparent Conducting Oxides	\$52859
06RF0702	Third Generation Direct Solar Photon Conversion to Fuels and Electricity	\$59219
06RF0703	New Microbial Biohydrogen Research Approaches	\$58037
06RF0704	Exploration of Novel Optimization Techniques for Identifying Materials with Prescribed Physical Properties	\$77631
Total # of Projects for NREL:	40	Total Cost for NREL: \$3521798

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NTS - Nevada Test Site

Project ID	Project Name	FY Total
H1701016	Line VISAR for Curved Surfaces	\$56
H1701026	Coded Aperture Imaging for Location of Nuclear Materials	\$10428
H1701056	Diagnostic Shock Source	\$9986
H1701057	Variable Framing Camera	\$109328
H1701067	Optical Pin Measuring Machine	\$228582
H1701077	Nanosecond Single_photon Detection of Diffracted X-rays	\$171035
H1701086	Mach-Zehnder Velocimeter	\$1755
H1701107	Injector Design for a 10-picosecond Electron Accelerator	\$178016
H1701116	Noval Fiber Array Diagnostic Geometry	\$2058
H1701156	Slapper Simulator	\$293
H1701167	Commercial Sensor-based Digital Framing Camera	\$274733
H1701176	Stereoscopic Borescope	\$5567
H1701187	Stereo Borescope	\$153339
H1701196	Time Frequency Analysis	\$113
H1701237	Exploring Phase Transition/Shock Dynamics by THz Spectroscopy	\$182543
H1702017	Wide Range Sweep Circuit	\$95484
H1702027	THz Time-Domain Spectroscopy (THz-TDS) and Imaging	\$198758
H1702036	Wide Range (20-500 nsec) Streak Sweep Circuits	\$181
H1702057	Applications of semiconducting nanowire to phototube	\$98779
H1702127	High-Speed Transient Waveform Recorder	\$77031
H1702157	RadOptic Sensor Performance Enhancement and Product Development	\$233264
H1703016	Single pulse detection of infrared synchrotron light	\$153
H1703017	Embedded Piezoelectric Microcantilever Array (EPMA)	\$115330
H1703046	Silver Chalcogenides: Unique megagauss field sensors	\$3928
H1703057	Zero Wind Plume Model	\$100601
H170305E	2 Bank DPFA Engineering Support	\$65
H1703077	Single pulse detection of infrared synchrotron light	\$101304
H1703087	Fast Pulsed Assembly	\$113958
H1703106	Neutron Monochrometer	\$819

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NTS - Nevada Test Site

Project ID	Project Name	FY Total
H1703186	Dynamic Plasma Properties via spectrometry	\$137
H1704016	Aerial Neutron Detection	\$10680
H1704037	Aerial Neutron Detection - Phase II	\$139258
H1704087	Concealed High Sensitivity Directional Detector	\$89345
H1704157	Networked UGV Based Data Acquisition	\$177305
H1704166	Quantum Wire Detector	\$34313
H1704197	Fissile Material Detection using Borated Paint	\$117001
H1704246	Tagged Photon Source for Energy-dependent Radiograph	\$3653
H1704247	Active Infrared (AIR) Sensor Investigation	\$136750
H1704287	Quantum Wire II	\$133364
H1704297	Prototyping Portable Detector with Multiple SPRT Options	\$169423
H1704307	Field Testing a Gamma-Ray Telescope for Search and CM Missions	\$133742
H1704467	An Ultra-sensitive Neutron Spectrometer	\$44558
H1705026	Resonance Shadowgraphy	\$4357
H1705047	Pulse Discriminating MCP Beacon / Receiver	\$65129
H1705057	Resonance Shadowgraphy II	\$61838
H1705087	Frequency Modulated Detection of Phosphorescence on Surfaces	\$171796
H1705097	Repetitive Motion Imaging	\$75189
H1705136	Displacement Interferometry System	\$109
H1705167	Uranium Visualization Chemistry	\$122515
H1705207	Conducting Polymers for Neutron Detection	\$201323
H1705227	DNA Capture Materials	\$158672
H1705256	Pyroelectric Crystal Neutron Source	\$2140
H1705267	Zero Delay Velocimeter	\$116562
H1705277	Hybrid Electro-optic Links	\$103825
H1705307	Gel/Liquid Bubble Neutron Detector	\$145894
H1705507	Sintered Optical Materials for Shock Physics Experiments	\$114698
H1705577	Room-Temperature, High-Resolution Spectroscopy on Nanostructures	\$111846
Total # of Projects for NTS:	57	Total Cost for NTS: \$5112909

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32102142	Alzheimer's Disease Detection via Nonlinear Analysis of EEG	\$18136
32102159	Large-Area, Flexible, Heteroepitaxial, Single-Crystal-Like Diamond Films on Low-Cost Substrates for Wide-Ranging Electronic Applications	\$26808
32102174	Scalable Surface-Enhanced Raman Spectroscopy for Single-Molecule Detection and Characterization	\$45514
32102179	Smart Tunneling Barriers: A New Concept for Ferroelectric-Based Nonvolatile Random Access Memory	\$51141
32102181	Identification of Protein-DNA and Protein-Protein Interactions in Single Living Cells Using Optical Nanosensors	\$32445
32102185	Discrete Event-Based Simulation of Electromagnetic Wave Propagation in Highly Cluttered Environments	\$38999
32102187	Generation of Mouse Embryonic Stem Cell Lines to Study MicroRNA Functions through Conditional and Cell Lineage-Specific shRNA Knockdown Approaches	\$51286
32102189	Quasi-Electrostatic Carbon Orientation Processing for Lithium Ion Battery Anodes and Other Applications	\$83664
32102190	Development of ZnO Light-Emitting Diodes Using Pulse Thermal Processing	\$144145
32102191	Novel High-Resolution Micromechanical Gyroscope	\$15045
32102192	Big Bang Cosmology and Online Simulation Suite	\$51514
32102193	Demonstration of Intra-Reactor Diagnostics for Catalytic Fuel Reformers	\$38764
32102194	Optical Monitoring of Delivery Methods for Therapeutic Agents to Neural Tissues	\$93429
32102195	A Genomic Analysis of Microbial-Mediated Metal Transformation	\$55342
32102196	Exploring Layered Materials with Neutron and Photon Spectroscopy to Determine the Depth and Water Content in Subsurface Layers of Planets	\$110640
32102197	Multivariate Statistical Analysis Technique to Locate Ecological Observation Sites within Regional Landscapes	\$11516
32102198	Determining Relative Value of Ecosystem Services	\$109035
32102199	Selective Electrochemical Oxidation of Water for Treatment of Ischemic Diseases and Other Applications	\$51687
32102200	A Novel Radio-Luminescent Glass for Safe User Applications	\$9036
32102201	Effects of Groundwater Chemistry on the Distribution of Soil Microorganisms in Natural Media	\$99694
32102202	In Situ Monitoring of Realistic Catalyst Systems with High-Speed Electron Microscopy using a LaB6 Nanowire-Based Electron Source	\$157621

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Project ID	Project Name	FY Total
32102203	Microstructure and Defects in Energetic Materials and Radioactive Alloys	\$106894
32102204	Establishing a Targeted Mutagenesis System in Clostridium cellulolyticum	\$19736
32102205	Carbonate Thermochemical Cycle for the Production of Hydrogen	\$50523
32102206	Novel, Low-Cost, High-Mn-Containing Austenitic Stainless Steels and Alloys for High-Temperature Structural Applications	\$129257
32102207	Laser-Interference Direct Structuring of Zirconia for Dental Materials	\$17146
32102210	Live-Cell Microarrays for Genotypic Evaluation of Microbial Electron Transport	\$143631
32102211	Synthesis of Polymeric Materials for Blue-Light Emitting Diodes	\$144656
32102212	Land-Use Dynamics and Infectious Diseases: A Systems Approach to Defining the Causal Mechanism of Outbreak and Spread of Eastern equine encephalomyelitis	\$27912
32102213	Taming Photosynthesis Regulation through Genomics for Direct Synthesis of Ethanol from Carbon Dioxide and Water	\$174409
32102214	Development of an Advanced Surface-Enhanced Raman Spectroscopy for the Identification and Characterization of Pollen	\$144503
32102215	Feasibility Study of Fuel-Pellet-Irradiation Capsules for Advanced Reactor Fuel Testing in the High Flux Isotope Reactor	\$167933
32102216	Generalized Perturbation Methods for Transport Computations with Unstructured Meshes	\$172768
32102217	Mapping Carrier Distributions and Photovoltaic Activity in Nanophase Materials by Electrical Dissipation Microscopy	\$79999
32102218	Organic Magnets: Phenomenological and First-Principles Approaches to Layered Bimetallic Oxalates	\$81938
32102219	A Hybrid Diffusion Model Driven by Chemoattractants	\$119993
32102220	Plasma Etching and Simulation of Electron Scattering in Nanoscale Copper Interconnects to Minimize Size Effects	\$151660
32102221	Demonstration of an Electronic Colorimetric Filter Health Monitor	\$23647
32102222	A Proof-of-Concept Implementation for a USA National Phenology Network Cyberinfrastructure	\$48289
32102223	Can the Quantum Confinement Effect Be Exploited for Spin Injection in Organic Spintronics?	\$130080
32102224	In Situ Nanopatterning of Single-Crystal Multiferroics by Strain for Terabit-Scale Data Storage	\$74993
32102225	Probing the Molecular Interface of Cellulose and Lignin in Biomass	\$128499

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Project ID	Project Name	FY Total
32102226	Quantitative Parametric Decay Simulation: A New Tool for Understanding Parasitic Radio-Frequency Power Losses in Heating Fusion Plasmas	\$175249
32102227	Destroying Pathogenic Bacteria using Targeted Nanoparticles	\$98346
32102228	A Compact Chemical-to-Hydraulic Power Source	\$27719
32102229	Photon-Assisted Thermoelectric Devices	\$79420
32102230	Photocatalytic Conversion of CO ₂ : An Alternative to Storage-Based Sequestration	\$130816
32102231	Intensified Continuous Production of Biodiesel	\$27953
32102232	In Situ Studies for Ductility Improvement of Bulk Metallic Glasses	\$134865
32102233	Molecular Engineering of Core-Shell Interfaces? Toward Controllable Production of Brighter, Optically Tunable Quantum Dots	\$90421
32102234	Assessment of Possible Exotic Magnetic Behavior in Anti-Perovskite Nitride	\$26758
32102235	Monte Carlo Simulation of Ion Trajectories in Ion Mobility Spectrometry	\$28837
32102236	Development of a Hybrid Computational Phantom Model	\$94384
32102237	Fundamental Studies of CO ₂ -Coal Interactions using Novel, Neutron Scattering Techniques at Conditions Relevant to Subsurface Sequestration	\$34642
32102238	Nanostructured, Three-Dimensional Electrodes for Enzyme Fuel Cells	\$49920
32102239	High-Strength, Ductile, Crystalline-Amorphous Multilayers	\$27361
32102240	An Innovative Low/High-Temperature, Repetitive Pressure-Pulse Apparatus for Cavitation Damage Research	\$15976
32102241	Computing the Electric Dipole Moment of the Neutron and the Schiff Moment of the Nucleus	\$23725
32102242	Turbopump Concentration of Heavy Atoms and Molecules	\$39701
32102243	Deterministic Growth of Oxide Nanostructures by Pulsed-Laser Deposition	\$19987
32112117	Applications of Ultrafast, Ultra-Intense Lasers to Radioactive Ion Beam Production and Diagnostics	\$258113
32112130	In-Situ, Time-Resolved, Neutron Diffraction Study of Materials Behavior Under Severe Thermomechanical Deformation	\$40027
32112148	High-Resolution Imaging of Biological Samples in a Wet Environment	\$151003
32112154	Infrastructure Development for Neutron Scattering for Biomembranes and Biomimetic Membranes	\$300539
32112155	Synthesis and Neutron-Scattering Characterization of Ordered Self-Assembled Polymer Nanostructures and Bio-Membranes	\$272671

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32112156	Biomass Ethanol from Clostridium thermocellum: Linking Bioprocessing with Systems Biology for Bioenergy	\$401935
32112157	A Model System for Analyzing Whole-Body Toxicity of TICs, TIMs, and Chemical Warfare Agents	\$199780
32112158	Systems Biology of the Mammalian Cilium: A Cellular Organelle Essential for Human Health and Development	\$251760
32112159	Taming Electronic Spins in Conjugated Polymers for Photovoltaic and Solid-State Lighting Applications	\$313661
32112160	Small-Angle Neutron Scattering Investigations and Computational Modeling of Creep Cavitation in Nanoparticle-Strengthened Materials	\$289492
32112161	Accelerated Domestication in Populus: Harnessing the Recently Sequenced Genome for Bioenergy Crop Production	\$354866
32112162	Development of a Global Biogeochemistry Capability for Enhanced Climate Simulation and Earth System Modeling	\$172726
32112163	Terascale Simulation Tools for Next-Generation Nuclear Energy Systems	\$480637
32112164	Novel Carbon Materials for Advanced Energy Storage	\$390245
32112165	Multi-Component Fuel Spray Simulation Tools for Alternative Fuels	\$462714
32112166	Nanocomposite Dielectrics: New Smart Materials for Electric Power Applications and the Advanced Grid	\$328533
32112167	Multiscale Modeling: Application to Hydrogen and Helium in Steel	\$270333
32112168	Exploring Performance Tools for Petascale Systems with Lightweight Compute Node Kernels	\$304984
32112169	Ensuring Dynamic Power Grid Stability: Integrated Electric and Information Grid Modeling	\$463767
32112171	Nanocrystalline/Amorphous Silicon Thin-Film Composite for Stable, High-Efficiency Photovoltaic Application	\$270200
32112172	Large-Scale Exploration of Protein Models for System Biology Applications	\$209277
32112173	Disentangling Soil Respiration Using Genomic Techniques	\$250072
32112174	Detection and Identification of Bacteria and Viruses Including Stealth and Genetically Modified Organisms	\$347771
32112175	Design and Synthesis of Novel Infrared-Active Nanophosphors	\$258181
32112176	Combustion of Nanostructured Metal Fuels: Towards Designing Optimized Combustion Chambers	\$88336
32112177	Time-Resolved Analysis of Microstructure in Advanced Materials Under High Magnetic Fields using Neutrons	\$356566

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32112178	Enhanced Cognizance of Evolving Threat Situations via Knowledge Discovery from Disparate Data	\$421625
32112179	Probing the Boundary Between Imaging Microscopy and Spectroscopy: Toward the Exploration of Single Particles by Nuclear Magnetic Resonance Spectroscopy	\$258674
32112180	Photoregulated Peptide-Protein Interaction Systems for Bionanotechnology Applications	\$450597
32112181	Experimental Optimization of Advanced Stellarator Confinement	\$238098
32112182	Analysis of the Role of MicroRNAs: Profiling MicroRNA Expression Across BXD Recombinant Inbred Mouse Strains in Support of the Mouse Collaborative Cross Program	\$149757
32112183	Exploring Reconfigurable Computing Programming Models to Accelerate High-Performance Computing Applications	\$363616
32112184	Theoretical and Computational Methodologies and Tools for Second-Generation Integrated Fusion Simulation	\$288732
32112185	Novel Approaches for Uncovering Total Environmental Gene Expression Patterns	\$632198
32112186	Use of Small Angle Neutron Scattering to Study Complex Systems	\$112747
32112187	Predictive Simulation and Virtual Design of High-Speed, High-Density Molecular and Nanoscale Sensors and Devices	\$402763
32112188	Storage Virtualization: An Integrated Approach to Machine-Room Storage Management	\$292655
32112189	Virtualized System Environments for Petascale Computing and Beyond	\$425247
32112190	Petascale Computing in Nanoscience on 100,000+ Cores	\$401160
32112191	Modeling Cellular Mechanisms for Efficient Bioethanol Production through Petascale Comparative Analysis of Biological Networks	\$415166
32112192	High-Temperature, High-Pressure Studies of Dynamics of Fluids in Nanopores using the Spallation Neutron Source Backscattering Spectrometer	\$189989
32112193	An Evolutionary Framework for Porting Applications to Petascale Platforms	\$302221
32112194	A Robust Polymer Scaffold System for Bio-Inspired Membranes	\$249485
32112195	Apertureless Near-Field Desorption/Ionization Mass Spectrometry for Nanoscale Chemical Imaging at Atmospheric Pressure	\$291010
32112196	Probing Molecular Interaction Between Microbial-Cell Protein and Mineral Surfaces With Neutrons	\$274053
32112197	Systemic Approaches in Recombinant Zymomonas mobilis to the Regulation of Ethanol Fermentation	\$350022

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Project ID	Project Name	FY Total
32112198	Unraveling the Regulatory and Biosynthetic Genes that Control Cellulose Production in the Model Bioenergy Crop Populus	\$265770
32112199	High-Throughput Neutron Crystallography for Macromolecular Structure, Function, and Design	\$315921
32112200	Magnetic Structure Under Simultaneous Ultrahigh-Pressure and High-Temperature Conditions: 200 kbar and 1500 K	\$214483
32112201	NanoPower - Nanocatalytic Direct-Fuel Thermoelectric Generator	\$363489
32112202	A Helicon Ion Source for the Spallation Neutron Source Power Upgrade	\$231852
32112203	Waveguide Entangled Photon Sources for Quantum Information	\$295850
32112204	Fundamental Mechanisms of Self-Assembly of Ordered Nanostructures in Heterogeneous Ceramic Materials	\$218306
32112205	A Novel Process of Thick Nanocomposite Surfaces for Defense Applications	\$293676
32112206	Imaging Energy Materials in operandi with Atomic Resolution Scanning-Transmission Electron Microscopy	\$272141
32112207	Energy Flow and Conversion on the Molecular Level: A View at Molecular Photoelectromechanical Machines	\$272885
32112208	Three-Dimensional, Aberration-Corrected, Scanning Transmission Electron Microscopy for Studying Microbiological Systems	\$124489
32112209	Advanced Nuclear Fuel Examination and Testing	\$297425
32112210	Cognitive Radio for Transformational Logistics	\$293816
32112211	A Hybrid Hydrogen Storage-Generation System Based on Bi-Functional Nanostructured Photocatalysts	\$300365
32112212	Modular Utility-Scale Power Converters and Controllers for the Next-Generation Grid	\$330571
32112213	Alternative Feedstocks for the Petrochemical Industry from No-Sulfur-Added Biomass Lignins	\$338264
32112214	Developing a Science Base for Fuel Reprocessing Separations in the Global Nuclear Energy Partnership	\$343731
32112215	Electricity and Biohydrogen Production via a Systems-Level Understanding of Microbial Fuel Cells	\$134910
32112216	Smart Materials Toward a New Paradigm of Super-Efficient Separations Using only Energy Input: Conformational Switching Based on Magnetic Nanoparticles	\$265061
32112217	Design of Point-Defect Trapping Centers in Nanostructured Nickel for Advanced Nuclear Applications	\$261669

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32112218	Nanostructured Surfaces from Drawn Materials	\$258173
32112219	Nanoparticle Phase Change Materials: The Nanoscale Science Basis for Gigajoule Energy Storage	\$272480
32112220	Antiferroelectric Thin-Film Capacitors for Ultrafast High-Power Energy Storage	\$263863
32112221	Nanostructured Thermoelectrics for Power Generation: Smaller is Cooler	\$264498
32112222	Microfluidic Platform for Individual Microbe Capture, Cultivation, and Selective Release	\$408237
32112223	Methodological Development of Computer Simulation in Molecular Biophysics	\$96865
32112224	Development of a Global Advanced Nuclear Fuel Rod Model	\$322134
32112225	Temporal Geolocation	\$63895
32112226	Molecular-Fragment Database for De Novo Structure-Based Design	\$149903
32112227	Transfer of Vertically-Aligned Carbon Nanotube Arrays for Sensors and Thermal Management	\$50166
32112228	Structure of Fluids Confined in Nanoporous Materials using Neutron Scattering	\$56702
Total # of Projects for ORNL:	137	Total Cost for ORNL: \$26199601

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN03085/1748	Sonoluminescence Following Acoustically Driven Bubble Collapse	\$90436
PN05004/1832	A Novel Carbon Dioxide Capture Process Using Organometallic Clathrates	\$184471
PN05008/1836	Analysis of Protein Function in Living Cells	\$255823
PN05012/1840	Biophotolytic Production of Hydrogen from Water	\$104162
PN05017/1845	Chemical Printing of Complex Electrode Structures	\$115001
PN05018/1846	Complex Queries	\$99838
PN05019/1847	Computational Biology and Bioinformatics Tools for Understanding the Role of Membrane Proteins in Diurnal and Circadian Processes of Prokaryotes	\$171606
PN05022/1850	Controlled Cultivation, Molecular Biology, and Advanced Imaging of Microbial Biofilms	\$101046
PN05023/1851	Controlled Modification of Surfaces with Peptide Ions	\$65741
PN05024/1852	Crosstalk Between Receptor Signaling Pathways	\$213425
PN05025/1853	Systems Analysis of the Dynamics of Membrane Architecture, Composition, and Function -- Proteomic, Metabolomic, and Metallomic Characterization	\$351021
PN05026/1854	Cytochrome and Whole Cell Interactions With Iron Oxides	\$119044
PN05027/1855	Data Assimilation, Visualization, and Mining	\$124597
PN05028/1856	Data Integration and Pattern Recognition	\$218016
PN05031/1859	Detecting Biomarkers in High-Dimensional Data in the Presence of Unobserved Confounding Variables	\$54661
PN05034/1862	Discovery of a Biomarker Signature in Response to Nanoparticle Exposure	\$170201
PN05035/1863	Discovery of Novel Volatile Organic Metabolic Signatures for Early Immune Response or Inflammatory Conditions	\$128941
PN05037/1865	Early, Validated Biomarkers of Infectious Diseases in Humans	\$168330
PN05038/1866	Ecophysiological Investigation of Cyanobacteria Using Controlled Cultivation	\$129309
PN05043/1871	Experimental Assessment of the Causes of Spectral Peak Broadening	\$94628
PN05045/1873	Fundamental Investigations for Novel Acousto-Optics	\$126271
PN05046/1874	Fundamental Investigations of Heterogeneous Catalysis Using Steady-State Isotopic Transient Kinetic Analysis	\$437249
PN05047/1875	Fundamental Understanding of Catalytic Depolymerization of Cellulose	\$232178
PN05050/1878	High Throughput Screening of Protein Localization	\$345905
PN05058/1886	Low Cost Small-Scale Hydrogen Production from Natural Gas	\$135585

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN05060/1888	Magnetic Resonance Imaging for Understanding Water Management in Proton Exchange Membrane Fuel Cells	\$81070
PN05064/1892	Modeling of Energy Transfer and Associated Variance in Gamma Ray Detector Materials	\$271654
PN05067/1895	Molecular Modeling of Cytochromes, Surfaces, and Organisms	\$87823
PN05068/1896	Morphological, Functional and Redox Studies of Synechocystis 6803 and Cyanoshece 51135 Bacterial Membrane Complexes by Methods of Electron Microscopy	\$111601
PN05071/1899	Mutagenesis and Functional Characterization of Shewanella oneidensis Genes Involved in Fe(III) and Mn(IV) Oxide Reduction	\$92440
PN05075/1903	Non-Invasive Real-Time In Situ Spectroscopic Monitoring of Macrophage-Particulate Matter Interactions to Define Biological Pathways	\$175255
PN05080/1908	Particulate Matter Exposure and Respiratory Effects Biosignature Discovery	\$178606
PN05083/1911	Predictive Proteomics for Biosignature Discovery	\$50564
PN05085/1913	Purification and Biophysical Characterization of MR-1 Redox Proteins	\$90656
PN05087/1915	Raising Computational Efficiencies of Massively Parallel Software	\$163919
PN05088/1916	Rapid Risk Assessment Integration and Feedback Research	\$50503
PN05091/1919	Rfr-Domain Protein Family Characterization in Cyanoshece 51142	\$158614
PN05097/1925	The Dynamic Changes in the Molecular Interactions Along the Circadian Rhythm	\$101227
PN05098/1926	Theoretical Assessment of the Causes of Spectral Peak Broadening	\$139180
PN06001/1930	Accelerating Information Analytics Using High Performance Computing	\$152886
PN06002A/1931	Explosive Detection Using Terahertz Spectroscopy and Millimeter-Wave Imaging	\$102899
PN06002B/1931	Molecularly Imprinted Polymer-Based Detection of Explosives	\$111500
PN06002C/1931	Differential Spectroscopic Imaging of Trace Particulate Explosives Residue	\$112402
PN06003/1932	Advanced Gasifier Modeling	\$99528
PN06004/1933	Advanced Particle Fuel Element Feasibility Study	\$341937
PN06005/1934	Advanced Ultrasonic Methodology for Enhanced Imaging and Material Property Measurements in Challenging Engineering Materials	\$108174
PN06007/1936	Affinity Reagents Based on Novel Molecular Scaffolds	\$281399
PN06010/1939	Biomaterials as Sequestering Agents for Radionuclides and Toxic Metals	\$139631
PN06011/1940	Bringing Water into an Integrated Assessment Framework	\$69966

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN06014/1943	Combinatorial Operando Catalyst Research	\$278355
PN06015/1944	Community-Based Biosignatures of Exposure and Functional Response in the Sediment-Water Interface of the Hyporheic Zone and Periphyton Community in River Systems	\$179406
PN06018/1947	Cooperative Assembly of Active Nanomaterials and Devices	\$167926
PN06019/1948	Data Intensive Machine Learning for Real-Time Decision Analysis	\$159876
PN06022/1951	Development of a Rapid Murine IgG Selection and Production Platform to Generate Reagents for Diagnostic and Detection Assays	\$49578
PN06023/1952	Development of a Scaleable Water Resources Management System	\$79511
PN06026/1955	Development of Novel Measurement and Modeling Capabilities for Secondary Organic Aerosols	\$101160
PN06028/1957	Dynamics and Spatial Expression of Signal Proteins in the <i>Desulfovibrio vulgaris</i> Biofilm and Its Implication to Iron Corrosion	\$160891
PN06029/1958	Effects of Soot Aerosol on Snow and Water Resource in the Western United States	\$44988
PN06032/1961	Evaluating Multithreaded Architectures for Irregular Data Intensive Applications	\$487584
PN06033/1962	Fuel Chemistry Relationship to Fuel System Wear	\$74874
PN06034/1963	Functional Genomic Analysis of the Regulation of Bone Cells by a Bioactive Lipid	\$340518
PN06035/1964	Functional Nanostructured Taggants	\$121452
PN06036/1965	Fundamental Investigations of Heterogeneous Catalysis Using Computational Methods	\$299972
PN06040/1969	Hybrid Algorithms for Networked Systems Analysis	\$160602
PN06042/1971	Identification of Proteomic Profiles and Biosignatures in Complex Microbial Systems Absent of Genomic Sequence Data	\$213249
PN06044/1973	Information Physics Methods and Applications	\$488020
PN06045/1974	Integrated Demonstrations of Biological Workflows to Support Threat Detection and Biomarker Discovery	\$218971
PN06047/1976	Interrogation of Glucose Metabolism by Oral Biofilms Using Combined Nuclear Magnetic Resonance/Optical Spectroscopy and Stable Isotope Labeling	\$311350
PN06049/1978	Liquid Core Optical Waveguide Detection on a Bioassay Column	\$119512
PN06050/1979	Metabolomics Measurement and Validation Development for Renewable Energy Research	\$144246

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN06052/1981	Multiscale Computational Model of the Heart to Predict Airborne Particulate Matter Cardiovascular Disease	\$80051
PN06053/1982	Nanoporous Metal Phosphates as Sorbents for Metals and Radionuclides	\$59839
PN06054/1983	Nanoscale Characterization of Nanomaterial-Cell Membrane Interactions	\$147966
PN06055/1984	Nanostructured Catalyst Synthesis and Applications	\$433568
PN06056/1985	Nanostructured Heterogeneous Photocatalysts	\$277601
PN06057/1986	Near Real-time Situation Awareness from Massive Sensor Data	\$216401
PN06058/1987	Ni-Based Molecular Electrocatalysts for Hydrogen Production/Oxidation	\$105187
PN06062/1991	Power Systems Computational Advancements	\$340306
PN06063/1992	Preparation and Characterization of Peptide Arrays Using Soft Landing	\$130650
PN06064/1993	Probabilistic Design and Optimization of Advanced Thermoelectric/Piezoelectric Systems	\$79047
PN06065/1994	Protein-Protein Interaction Network Prediction	\$104531
PN06066/1995	Quantitative Characterization of Post-Translational Protein Modifications Using Mass Spectrometry	\$353053
PN06067/1996	Radiological Forensics	\$429925
PN06068/1997	Regulation of Cell Surface Ligand Dynamics	\$398784
PN06069/1998	Response of Radiation Detector Materials to Ions	\$126073
PN06070/1999	Secretome Analysis of Nanomaterial Induced Biomarkers	\$169417
PN06071/2000	Selective Heterogeneous Catalysts	\$123404
PN06072/2001	Sensor Platforms for Biomarkers of Response to Biological Agents - Immuno-PCR Bead Assays for Detecting Early Biomarkers	\$72703
PN06073/2002	Sensor Platforms for Biomarkers of Response to Biological Agents - Nanoparticle Immunoassays for Detecting Protein Biomarkers	\$76953
PN06074/2003	Signal Analysis for Nuclear Resonance Fluorescence	\$71647
PN06077/2006	Single Enzyme Nanoparticles for Biofuel Cells	\$93440
PN06078/2007	Synthesis and Characterization of Thin Films for Rapidly Screening Detector Materials	\$317435
PN06080/2009	The Tree-of-Life Chip for Examination of Ecosystem Structure and Function	\$169141
PN06083/2012	Using Subtractive Hybridization to Identify Biosignatures of Perturbed Microbial Communities	\$113320
PN06084/2013	Validation of Biomarkers that Transcend Individual Genetic Polymorphisms: Application to Radio-Protectant Therapies	\$50139

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN06085/2014	Visualizing Heterogeneous Data for Improved Network Security	\$149500
PN07001/2015	A Data Virtualization Architecture	\$273897
PN07002/2016	A Geometric Framework for Multimodal Analysis of Cardiac Tissue Using Magnetic Resonance Imaging, Histopathology, and Proteomics for the Identification of Biomarkers	\$50001
PN07003/2017	A Multidisciplinary Approach to Engineer Xylose and Arabinose Utilization for Ethanol Production by <i>Saccharomyces cerevisiae</i>	\$98949
PN07004/2018	Accelerated Fuel-Cladding Test Methods and Tools	\$158829
PN07005/2019	Adaptive Composite Analysis for Complex Systems	\$224131
PN07006/2020	Adaptive Network Traffic Analysis on Advanced Multi-Core Processors	\$88422
PN07007/2021	Adaptive Workflow in Data Intensive Environments	\$244852
PN07008/2022	Advanced Gas Separations Based on Highly Efficient Microchannel Component Technology	\$116514
PN07009/2023	An Innovative Risk-Based Methodology for Assessing Security Risks of Emerging Technologies: Application to Synthetic Biology Proliferation	\$45887
PN07010/2024	Analysis of Functional Diversity in Microbial Communities for Organic Carbon Transformations	\$154715
PN07011/2025	Aqueous Extraction of Actinides from Spent Nuclear Fuel for Transmutation	\$75154
PN07012/2026	Barrier Coatings for Thin Film Solar Cells	\$74904
PN07013/2027	Benchmark Modeling of the Microphysical Aspects of Cloud-Aerosol Interactions	\$60082
PN07014/2028	Biosignature Discovery in Respiratory Exposure to Model Biological Agent Systems Using H-NMR	\$131075
PN07015/2029	Biosignature Integration for Inference of Biomarkers from Complex Systems	\$130726
PN07016/2030	Carbon Nanotube Materials for Preconcentration	\$113966
PN07017/2031	Catalytic Chemistry of the Weak Links in Lignins and Lingintes	\$96355
PN07018/2032	Cationic Ionic Hydrogenations: Developing Concepts and New Catalytic Processes that Substitute Inexpensive Metals for Precious Metals	\$260216
PN07019/2033	Characterization of the Local Order of Organic Thin Film Material by Combined Atomic Force Microscopy and Optical Microscopy	\$90163
PN07020/2034	Cloud Resolving Model with Size Resolved Microphysics for Aerosol and Cloud Research	\$115809
PN07021/2035	Complex Adaptive Agent Resilient Cores	\$109963
PN07022/2036	Complex Adaptive Sensor Systems	\$208245

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN07023/2037	Counter-Current Solvent Extraction Behavior of Neptunium	\$122158
PN07024/2038	Data Network and Policy Modeling: A Methodology for Modeling and Application of Network Policy	\$106051
PN07025/2039	Deep Desulphurization of Hot-Coal Gas for Production of Liquid Fuels	\$125004
PN07026/2040	Design, Synthesis and Testing of Novel High Temperature Sorbents for Removing Mercury Species from Coal to Liquids Process Streams	\$239691
PN07027/2041	Develop an Expert Elicitation Process for Use in Evaluation of Proliferation Resistance of Nuclear Energy Systems	\$36411
PN07028/2042	Developing a Knowledge-Centric "Simulation Backplane" for Multi-Physics Simulation with Nuclear Energy Applications	\$93592
PN07029/2043	Development and Evaluation of a Benchmark Aerosol Chemistry, Dynamics, and Microphysics Model	\$96520
PN07030/2044	Development of a Novel Cross-Linking Reagent for High-Throughput Global Analysis of Protein Interactions	\$62491
PN07031/2045	Development of a UF6 Cylinder Integrated Portal Monitoring Capability	\$34377
PN07032/2046	Development of Petascale Algorithms for Molecular Modeling	\$296098
PN07033/2047	Direct Coal Liquefaction	\$149692
PN07034/2048	Efficient and Practical Simulation of Transport and Dispersion of Contaminants from Within the Marine Environment	\$69702
PN07035/2049	Electrochemical Separations for Enhanced Safeguards Analysis	\$71432
PN07036/2050	Enhanced Detection of Peroxide Based Explosives	\$119896
PN07037/2051	Enhanced Explosive Signature Capture via Selective Collection and Preconcentration Chemistries	\$75017
PN07038/2052	Enhanced Isotope Ratio Measurement Capability	\$138797
PN07039/2053	Fate and Transport of Titanium Dioxide Through Freshwater Ecosystems	\$59749
PN07040/2054	Field-Deployable Nanoparticle Biosensor	\$98847
PN07041/2055	Forming Prediction of Lightweight Alloys Using an Inverse Approach	\$49974
PN07042/2056	Genetically Engineered Yeast for the Direct Production of Ethanol from Cellulosic Materials	\$105047
PN07043/2057	Human Factors for Situational Awareness in Power Grid Operations	\$119849
PN07044/2058	Image Processing Methods Applied to the Detection of Highly Concealed Explosives	\$94041
PN07045/2059	Improved Selectivity for Explosives Detection by Ion Mobility Spectrometry	\$177812

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN07046/2060	Information-Driven Discovery of Radiation Detection Materials	\$254510
PN07047/2061	Integrated Assessment of the Origins of Scintillator Nonlinearity	\$94425
PN07048/2062	Liquid Carbon Dioxide Coal Slurry Research	\$98925
PN07049/2063	Liquid Fuel Synthesis Modeling	\$99959
PN07050/2064	Mathematical/Computational Modeling of Biofilms	\$30041
PN07051/2065	Measurement and Modeling of Slag Critical Viscosity, Optimization of Slag Chemistry, and Refractory Degradation in Coal Gasifiers	\$327561
PN07052/2066	MeDICI - Middleware for Data Intensive Computing	\$326726
PN07053/2067	Micro-Scale Two-Phase Flow Simulation to Support Carbon Sequestration by Injection Into Deep Aquifers	\$70076
PN07054/2068	Modeling Nonlinearity in Inorganic Scintillators and Semiconductors	\$206929
PN07055/2069	Multiscale Computational Continuum Physics Solver	\$99955
PN07056/2070	Nanoporous Metal Phosphates as Alternative Cathode Materials for Batteries	\$89975
PN07057/2071	New High Performance Thin Film Thermoelectric Devices for Energy Conversion	\$49673
PN07058/2072	Novel Emitter Materials for Organic Thin Film Electroluminescence	\$74963
PN07059/2073	Phase Contrast X-Ray Imaging For Enhanced Explosives Detection	\$112760
PN07060/2074	Predictive Adaptive Classification Model for Analysis and Notification: Internal Threat	\$124937
PN07061/2075	Protein and Peptide Markers of Infection	\$136907
PN07062/2076	Reagent Selection Methodology for a Novel Explosives Detection Immunoassay Approach	\$113922
PN07063/2077	Real-Time In Situ Millimeter Wave Sensors for Gasifiers	\$195769
PN07064/2078	Sensitive and Specific Detection of Explosives Using a Multiplexed Two-Dimensional Field Asymmetric Waveform Ion Mobility Spectrometry (FAIMS)/Ion Mobility Spectrometry System	\$91021
PN07065/2079	Sensitive Detection of Biological Stress Response	\$85472
PN07066/2080	Soil Desiccation for Deep Vadose Zone Remediation	\$51901
PN07067/2081	Tactical Deployment and Management of Adaptive Agents	\$94996
PN07068/2082	Tailoring of Fischer-Tropsch Synthesis Product Distribution Using Monolith Catalysts	\$120622
PN07069/2083	Textual Signatures for Predictive Analytics	\$62402
PN07070/2084	The Aerosol Modeling Testbed	\$190149

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN07071/2085	Ultrapure Organic Materials for Thin Film Energy Conversion	\$100033
PN07072/2086	Ultratrace Uranium Isotopic Analysis without a Mass Spectrometer	\$113777
PN07073/2087	Understanding Adaptation to Sudden Climate Change Impacts	\$69680
PN07074/2088	Using Ionic Liquids to Enable Catalytic Transformations	\$60875
PN07075/2089	Waste Form Development for Global Nuclear Energy Process Streams	\$69949
Total # of Projects for PNNL:	171	Total Cost for PNNL: \$25487034

United States Department of Energy
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PRINCE - Princeton Plasma Physics Lab

Project ID	Project Name	FY Total
PPPL-001	FRC Sustainment and Stability Studies Utilizing an Ohmic Solenoid	\$114412
PPPL-002	Ultrasonic/Infrared Navigation System for Micro Aviation	\$32151
PPPL-003	Theory and Simulations of Auroral Phenomena	\$72728
PPPL-004	Laboratory Study of Magnetorotational Instability in Plasma by Helicon Waves and Electron Cyclotron Resonance	\$125877
PPPL-005	A High Power Density Electron Beam Facility	\$244006
PPPL-006	Exploratory Engineering Assessment of a National High-power advanced Tokamak Experiment (NHTX)	\$214842
PPPL-007	Plasma Cathode with Secondary Emission	\$66357
Total # of Projects for PRINCE:	7	Total Cost for PRINCE: \$870373

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PTX - Pantex Plant

Project ID	Project Name	FY Total
PX03004	Formation and Detection of Pores in Polymeric Materials	\$28078
PX03008	Neutron Non-Destructive Imaging of Weapons Materials	\$15192
PX04003	Characterization of Corrosion Mechanisms	\$4538
PX04005	Advanced Radiation Alarm Monitoring System (ARAMS)	\$17215
PX04029	Supercritical Fluid Extraction of DMF from HNS	\$18625
PX05001	Development of A Method to Melt/Disfigure (Sanitize) Weapon Components Using Microwave Technology	\$317193
PX05006	Measurement of Physical Constants for Various Crystalline High Explosives	\$91597
PX06004	Explosive Component Electrostatic Discharge Response Model	\$139251
PX06005	Spectroscopic and Infrared Imaging Studies of Pressing Effects on Explosives	\$118429
PX06006	Evaluation of Non-Equipotential Floors	\$14869
PX06007	Desktop Virtual Reality Training System	\$42233
PX06010	Mechanical Impact Sensitivity of Uncased HE on Actual Work Area Floor Covering	\$160738
PX06011	Precision Control of Agglomeration and Coating of Explosive Powders	\$33724
PX07001	High Explosives Operations Safety Controls Validation	\$442289
PX07003	Lightning and Power Distribution System Fault Modeling	\$68121
PX07007	Reactions of Hydrofluoroethers	\$91422
PX07009	Seismic Qualification Analytical Solutions	\$14163
Total # of Projects for PTX:	17	Total Cost for PTX: \$1617677

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
100337	Accommodating Complexity and Human Behaviors in Decision Analysis	\$101139
100738	Back-End Verification of SOC Devices	\$400199
102600	Nanoengineering for Solid State Lighting	\$614624
102602	Miniature Vibrational Energy Harvester: Improved Modeling and Simulation Through Experimental Validation	\$312138
102608	Understanding the Materials Physics for an Alternative for PZT 95/5	\$128180
102609	Optical Microswitching Foundations	\$676146
102613	Phase Imprint Lithography for Large Area 3D Nanostructures	\$504774
102615	Mid-Infrared Quantum Dot Emitters Utilizing Planar Photonic Crystal Technology	\$223843
102660	"Bottom-up" Meets "Top-down:" Self-assembly to Direct Manipulation of Nanostructures on Length Scales from Atoms to Microns	\$488060
102737	Creation of Water-Treatment Membrane Technologies with Reduced Biofouling	\$603162
103004	Modeling and Simulation of Spectra Expected from Radiation Sensors Made from Arrays of MEMS Scale Capillaries	\$90520
103005	Ultrafast NanoLaser Device for Detecting Cancer in a Single Live Cell	\$180910
104480	Very-high Repetition Rate High-Power Microwave Source Development	\$31636
104949	Hollow and Other Infrared Waveguides for Instrumentation in Intense Radiation Environments	\$49992
104953	Nanoporous Films for Epitaxial Growth of Single Crystal Semiconductor Materials	\$146092
104955	A MEMS-based Thermoacoustic Engine	\$120045
104973	Development of Sample Preparation Methods for ChIPMA-based Imaging Mass Spectrometry of Tissue Samples	\$15510
105185	Pareto Optimization Techniques	\$0
105187	An Examination into the Chemical Properties of Supercritical Water	\$0
105188	Data Collecting, Analysis, and Modeling to Better Understand Supercritical Water (SCW) Reactor Safety Technologies	\$0
105189	Precise Distributed Control and State/Parameter Estimation for Multi-body Satellites and Satellite Formations	\$21040
105190	Modeling and Design of Microstructures with Tailored Adhesive Properties	\$28368
105191	Fourier Analysis and Synthesis Tomography	\$28147

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105193	Neural Correlates of Attention and Intention in Decision-Making of Macaques and Humans: Selective Lesioning of Posterior Parietal Areas during Electrophysiology and fMRI	\$0
105213	Application of Advanced Laser Diagnostics to Hypersonic Wind Tunnels and Combustion Systems	\$22976
105672	On the Role of Numerical Error in Turbulence Simulations	\$57973
105722	Discovery, Integration, and Interrogation of Biotic/Abiotic Materials and Systems	\$540931
105723	Filtering and Ranking Millions of Terrorist Scenarios using Adversary/Defender Modeling and Risk-Based Linguistic Approximate Reasoning with Belief and Plausibility Measures for Uncertainty	\$93979
105724	Systems Analysis and Futuristic Designs of Advanced Biofuel Factory Concepts	\$95326
105725	High-temperature mid-IR Focal Plane Arrays	\$452633
105726	Radiation Hardened Components for Space Qualified Point-of-Load Power Conversion	\$422096
105727	Modeling and Design of High Speed Networks for Satellite Applications	\$438049
105728	Examination of the Optical Mechanical Interface for Advanced Systems to Improve Performance	\$155803
105729	Thermo-Optic Focal Plane Array (TO-FPA) for High Sensitivity Room Temperature Infrared Imaging	\$447985
105730	Tuned Micro-Cavity Magnetometer / Quantum Computation Device	\$251139
105731	Application Specific Compression	\$477154
105732	MESA ASML Scanner Based Reticle Field-Stitch Capability Enabling Wafer Scale Integration with Direct Impact on Mega-Pixel Focal Plane Array Synthesis	\$367922
105733	Direct Write Nanoscale Methods for Chalcogenide Memory	\$155054
105734	A Novel Method to Construct Software	\$244373
105735	Damage Remediation of Optical Media via Novel Chemical Tagging	\$86560
105736	Ultra-Thin Packaging of Electronic Assemblies	\$301843
105737	Graph-Based Informatics for Nonproliferation and Counterterrorism	\$300303
105738	Advanced Line of Sight Stabilization Experiment	\$355683
105739	Scannerless Range Imaging for Autonomous Rendezvous and Capture	\$275513
105740	Characterizing and Improving Distributed Intrusion Detection Systems	\$26559

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105741	Ultra-Low Phase-Noise Phase-Locked Loop (PLL)	\$96149
105742	Managing Thermal Emission: Subwavelength Diffractive Optics Technology in Support of SOF	\$421369
105743	Enhanced Inverse SAR	\$188118
105744	Heterogeneous Microsystem Integration as Applied to the Practicality of a Small Caliber Guided Bullet	\$294581
105745	Detecting Ideologically-based Global Terrorist Networks	\$82206
105746	Autonomous Intelligent Assembly Systems	\$362238
105747	MEMS Sensors, Telemetry, and Power Generation for Prognostics and Health Monitoring	\$306394
105748	Building a Live/Virtual/Constructive Experimental Testbed	\$409980
105749	Plasmonic Antireflection Coatings (PARC)	\$275380
105750	Data Fusion and Communications for Global Strike Weapon-Deployed Sensor Systems	\$712165
105751	Missile Defense Discrimination	\$397772
105754	Electromagnetic Gun Simulation Tool	\$300067
105756	Reverse Engineering Countermeasures for Hardware and Software	\$366286
105773	Software and Information Systems Analysis Techniques	\$299980
105794	Cyber TTL: Tagging, Tracking, and Locating Network Assets	\$450143
105799	Lightweight Storage and Overlay Networks for Fault Tolerance	\$300988
105800	Microstructure-based Approach for Predicting Crack Initiation and Early Growth in Metals	\$498971
105801	Hybrid Plasma Modeling	\$260390
105804	Advanced Diagnostics for Full-Scale Fire Experiments: Closure of the Radiation Source Term and Spectral Fire Signatures	\$577023
105805	Nanomechanics of Films on Compliant Substrates to Enable New Flexible MEMS and NEMS Devices	\$497249
105806	Crossing the Mesoscale No-Man's Land: Massively Parallel Kinetic Monte Carlo	\$443715
105808	Predictive Modeling of Microenergetics	\$990085
105809	Building More Powerful Less Expensive Supercomputers Using Processing-In-Memory (PIM)	\$318970
105810	Reduced Order Modeling of Fluid-Structure Interaction	\$332093

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Project ID	Project Name	FY Total
105811	Experimental Assessment and Theoretical Stability Analysis of Unvalidated Assumptions in Generalized Plasticity Theory	\$148861
105812	Highly Scalable Linear Solvers for Large Science Simulations on Thousands of Processors	\$347613
105813	Massive Multithreading Applied to National Infrastructure and Informatics	\$329220
105814	Practical Reliability and Uncertainty Quantification for Complex Hierarchical Systems	\$418500
105815	HPC Application Performance Analysis and Prediction	\$384240
105816	Model Reduction of Large Dynamic Systems with Localized Nonlinearities	\$494444
105818	Development of Advanced Continuum Models that Incorporate Nanomechanical Deformation into Engineering Analysis	\$352484
105821	Availability Analysis of Fuel Conversion Technologies	\$229982
105824	Geophysical Remote Sensing of Water Reservoirs Suitable for Desalination	\$293431
105825	Advanced Fuel Chemistry for Advanced Engines	\$332870
105829	Supercritical CO2 Brayton Cycle Test-Loop Development, Controls, Testing, and Model Validation	\$412589
105833	Foundational Development of an Advanced Burner Reactor Integrated Safety Code	\$557571
105850	Development of Direct Energy Conversion Fission Electric Cells	\$467355
105858	Biofilm Biogenesis and Control in Membrane-based Water Treatment Systems	\$411068
105863	Nuclear Facility Counterproliferation	\$388042
105864	Tracking Nuclear Materials Processing: Metabionomics of Indigenous Species	\$308520
105865	Innovative Control of a Flexible, Adaptive Energy Grid	\$369366
105866	Direct Approaches for Recycling Carbon Dioxide into Synthetic Fuel	\$406704
105867	Decision Support for Integrated Water-Energy Planning	\$432395
105868	Creation of a Lab-Wide Total Risk Analysis Capability	\$564994
105869	Border Tunnel Detection	\$517185
105870	Enabling All-Threat Analysis Through Intelligent Filtering of Network Traffic	\$460263
105871	New Methods for Development of Broad Spectrum Drugs Against Biowarfare Agents	\$596083
105872	Enhanced Simulation for Homeland Security Training	\$599361
105873	Research on Micro-sized Acoustic Bandgap Structures	\$494546

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Project ID	Project Name	FY Total
105874	Intelligent Front-end Sample Preparation Tool using Acoustic Streaming	\$481063
105875	Development of a Multivariate Electrochemical Tool (MET)	\$314638
105876	RF/Microwave Properties of Nanotubes and Nanowires	\$385483
105877	Novel Diagnostic for Advanced Measurements of Semiconductor Devices Exposed to Adverse Environments	\$301719
105878	Irradiation for the Novel Radiolytic Formation of Superalloy Nanoparticles	\$373728
105879	MicroKelvin Molecule Production	\$337808
105886	An Accurate Method for Electronic Structure Calculations	\$98330
105893	Compositional Ordering and Stability in Nanostructured, Bulk Thermoelectric Alloys	\$447040
105899	Infrared to Visible Photon Up-conversion using a Compact Semiconductor Device	\$264076
105903	Electrostatically Gated Silicon Qubits formed in Two Dimensional Electron Gasses for Quantum Computing	\$503873
105906	Phonon Engineering for Nanostructures	\$619283
105914	The Many Mechanisms for Strain Relaxation in III-Nitride Heterostructures: How, When and Why?	\$411737
105916	Modeling the Geologic Catastrophe that Caused the Great Dying	\$103232
105917	Enhanced Spontaneous Emission Rates in Visible III-Nitride LEDs Using 3D Photonic Crystal Cavities	\$519234
105922	Advanced Optical Measurements and Novel Microsystems for Characterizing Photophysical Properties of Single Nanoparticles	\$403609
105928	Controlling the Nanoscale Chemistry of Carbon on Surfaces	\$299134
105930	Theory and Exploration of Quantum-dot Optical Nonlinearities and Coherences	\$139722
105931	Science at the Interface: Grain Boundaries in Nanocrystalline Metals	\$512717
105932	Pumping Up CO2 and Its Conversion into Synthetic Fuels and Other Useful Molecules	\$399440
105933	Nanoengineering of Active Interfaces for Organic-Inorganic Optoelectronics	\$681108
105935	The Physics of 1D and 2D Electron Gases in III-Nitride Heterostructure Nanowires	\$449912
105936	Neural Assembly Models Derived through Nano-Scale Measurements	\$436577
105937	Improving Human Effectiveness for Extreme Scale Problem Solving	\$196618

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Project ID	Project Name	FY Total
105938	Modeling Aspects of Human Memory and Reasoning for Scientific Study	\$437468
105939	Psychologically Plausible Learning Mechanisms for Sandia's Cognitive Framework	\$329859
105940	Resolving Dynamics of Cell Signaling via Real-Time Imaging of the Immunological Synapse	\$424164
105941	Societal Evolution Simulations for Long-Term National Security Insight	\$365229
105942	In Vivo Collection of Rare Proteins Using Kinesin-based "Nano-harvesters"	\$414887
105943	Microalgal Biodiesel, Feedstock Improvement by Metabolic Engineering	\$507015
105944	Synthetic Biology of Novel Thermophilic Bacteria For Enhanced Production Of Ethanol From 5-Carbon Sugars	\$424626
105946	Efficient Breakdown of Lignocellulose Using Mixed-microbe Population for Bioethanol Production	\$462564
105948	Nanolaminate Thin Film Heat Sources for Advanced Weapon Components	\$423970
105950	Multifunctional and Hybrid Energetic Components	\$453692
105951	Active Polymer Composites for Detecting Abnormal Thermal and Optical Environments	\$340797
105953	Optical Gaseous Atmosphere Sensing and Monitoring Using Surface Plasmon Resonance Spectroscopy and Custom Optic Coatings	\$368618
105954	Exploration of an Architecture for a Small Dynamically Reconfigurable Responsive Weapon	\$352332
105963	A Mechanical Weak Link for DP Weapon Systems	\$92402
105964	Multilayer Coextrusion Techniques for Developing High Energy Density Organic Devices	\$447634
105966	A Radiation Microscope for SEE Testing Using >10 GeV Ions	\$327714
105967	Exploring the Increase in GaAs Photodiode Responsivity with Increased Neutron Fluence	\$258135
105968	Microfabricated Wire Arrays for Z-Pinch	\$318387
105969	Electromagnetic Properties of Plumes and Plasma Jets for High-Power Microwave Applications	\$405719
105970	High Power Density X-ray Sources	\$461012
105971	Automated Monte Carlo Biasing for Photon-Generated Electrons Near Surfaces	\$415449
105972	Ferroelectric Opening Switches for Large-Scale Pulsed Power Drivers	\$224243
105973	Cryogenic Liquid Spark Gaps	\$199449

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Project ID	Project Name	FY Total
105975	Equation of State and Transport Property Measurements of Warm Dense Matter	\$323063
105976	Low Impedance Z-Pinch Drivers Without Post-Hole Convolute Current Adders	\$224478
105977	Innovative High Pressure Gas MEMS Based Neutron Detector	\$90378
105979	Expansion of QMD Materials Modeling to Surface Phenomena of Importance to Electrical Breakdown in Pulsed Power Systems	\$221812
105985	Evaluation of New Testbeds for Hostile Environment Testing of Micromachines, Optoelectronics, and Electronics	\$215412
105987	Understanding Surface Breakdown in Electronegative Gases	\$460337
106397	Multi-Mode Energy Scavenging from the Environment	\$52600
106399	Atomistic Mechanisms of Semiconductor Nanowire Growth	\$56505
106400	A Nutrient Cycle Model for the Middle Rio Grande, New Mexico	\$29117
106401	Passive and Active Electromagnetic Frequency Selective Surfaces for High-Power Beam Applications	\$245080
106403	Effect of Pressure and Particle Size on Microstructure and Properties of Vacuum-Plasma-Sprayed Yttria-Stabilized-Zirconia Solid Oxide Fuel Cell Electrolytes	\$26300
106405	Active Control of Periodic Disturbances	\$28944
106407	Modeling Non-Market Value of Water	\$29000
106408	Advanced Robot Perception and Localization	\$53275
107009	Volumetric Plasma Source Development and Characterization	\$248788
107441	Creation of a First Principles Simulation of Weapons Generated Electromagnetic Pulse	\$198848
107442	Quasi-spherical Direct Drive Fusion with Single Shells	\$100448
110404	Network Design Optimization of Fuel Cell Systems and Distributed Energy Devices	\$161589
110405	Microrheology of Polymeric Materials at High Strain Rates	\$26300
110406	Diffusion-Based Sensing of Membrane Proteins in Solid Support Platforms	\$26300
110407	Advanced Materials for Water Treatment Membranes: Enhanced Rejection Performance and Surface Properties	\$29006
110408	A Bright, Spectrally-encoded, Microlensed Optical Tag	\$206328
110409	Low-Bandwidth Authentication	\$248966

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Project ID	Project Name	FY Total
112382	Human and Small Vehicle Classification Signature Study for Embedded Unattended Ground Sensors	\$84912
112383	Cooperative Robotic System for At-Sea Detection of Nuclear Materials	\$70041
112384	Systems Studies for Nonproliferation for the 21st Century	\$55081
112385	Internet Mining Toolkit	\$69943
112388	Integrated Modeling of Technology and Economic Factors to Optimize Alternative Fuel Production	\$50977
113083	Liquid Transportation Fuels Futures Simulation Model	\$124280
113197	Architectural Design for a National Scale Decision Support Model	\$82640
113211	Planar Wire Array Performance Scaling at 6 to 10 MA	\$98983
113213	Fusion Yield, Containment, and Repetition Rate for Pulsed Fusion Power Plant Concepts	\$79529
113214	Implantable MEMS Sensor Capsule for Measuring Muscle Contractions	\$86368
113215	Prompt Detonation of Explosive Actuators Using Optical Sources	\$94697
113216	IHE Response in Lightning Environments	\$70578
113217	MEMS Lubrication by In Situ Tribochemical Reactions from the Vapor Phase	\$110069
113218	Catalytic Diodes for Micropower Applications	\$96630
113219	Block-Mediated Control of Flux in Ion Channels	\$86782
113220	Integrated Optical Phase-Locked Loop for Attosecond Timing in Microwave Oscillators	\$102947
113223	Methodologies for Evaluating Neurotechnology for Detection of Emotional States	\$102754
113225	Ultrawideband (UWB) Based Mesh-Network	\$79809
113228	High-Volume Preconcentrator Coatings for Volatile Explosive Species from Homemade Explosives	\$98686
113229	Advanced TRU Fuel Performance Modeling	\$99641
113230	Soluble Polytantalate Clusters	\$99283
113231	Metal Fires and Their Implications for Advanced Reactors	\$90020
113236	Atomically Engineering Cu/Ta Interfaces	\$87068
113237	Behavior-Aware Decision Support System	\$98406
113238	Hermetic Encapsulation of Nanoenabled Batteries for Discrete Microelectronics Sensor Systems	\$93039

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Project ID	Project Name	FY Total
113239	Enhanced Beaming of Light Using Plasmon Optics	\$79104
113240	Advanced Signatures	\$96996
113241	Vista	\$101949
113483	Interfacial Property Control of Elastomeric Nanocomposites	\$456368
113484	Improving Electronic Structure Calculations to Predict Nano-optoelectronics and Nanocatalyst Functions	\$300104
113485	Developing a Thermal Microscopy Platform for In-Situ Thermal/Thermoelectric Structure-Property Studies of Individual Nanotubes and Nanowires	\$300877
113486	Fundamentals of Synthetic Conversion of CO2 to Simple Hydrocarbon Fuels	\$224703
113487	Electrostatic Microvalves Utilizing Conductive Nanoparticles for Improved Speed, Lower Power, and Higher Force Actuation	\$347762
113488	Nanoengineering by Optically Directed Self Assembly	\$423498
113489	Optimized Nanoporous Materials	\$348632
113490	CO2 Reduction Using Biomimetic Photocatalytic Nanodevices	\$205663
113491	Stress-Induced Chemical Detection Using Flexible Coordination Polymers	\$200764
113675	Traumatic Brain Injury	\$94219
114428	Perception via Dynamic Generative Models	\$111132
114975	Information Security Improvement (Chaperone)	\$295927
114976	Discontinuous Galerkin Methods for Generalized Continuum Models for Inelasticity	\$59329
114978	Numerical Characterization of Fundamental Interactions in Electrically-Steerable Parasitic Antenna Arrays	\$0
114979	Robust Analysis of Large-Scale Combinatorial Applications	\$99064
115234	Using Infrared Video to Detect Humans and to Improve Nuisance Alarm Rejection	\$101428
115235	MEMS Solar Energy Harvesting	\$85737
115446	Integrating Safety, Security and Safeguards for GNEP Facilities	\$85509
115447	Nanofluidic Chromatography for Label-free Biomolecule Detection	\$98828
116003	Microstructural Modeling of Piezoceramics	\$89891
116709	Biodiesel Production from Vegetable Oils Using a Microreactor	\$95158
116918	Photophysical Investigations of Interfacial Supramolecular Self-Assembly	\$99136

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Project ID	Project Name	FY Total
117390	UAV Payloads and Interfaces for Surveillance and Reconnaissance	\$73839
118452	Low-Altitude Airbursts and the Impact Threat	\$50368
79738	Adaptable Software for Advanced Human/Computer Systems	\$474893
79742	Development of a Manufacturing Capability for Production of Ceramic Laser Materials	\$384369
79746	Tools for Characterizing Membrane Rafts and Toxin Interactions	\$175998
79747	Integrated Nanosystems for Monitoring Cell-Signaling Proteins	\$631428
79749	DNA-Based Intelligent Microsensors for Genetically Modified Organisms (GMO)	\$355436
79750	Reverse-time Seismic and Acoustic Wave Propagation: High-fidelity Subsurface Imaging and Location of Energy Sources	\$316761
79751	Multi-Spectral Detection of Microfluidic Separation Products	\$281967
79752	A Mathematical Framework for Multiscale Science and Engineering: The Variational Multiscale Method and Interscale Transfer Operators	\$419592
79753	Microprocessor Extensions to Accelerate Scientific Applications	\$187575
79754	Data Mining on Attributed Relationship Graphs	\$444283
79755	Multi-Physics Coupling for Robust Simulation	\$293458
79756	Simulation of Neutron Radiation Damage in Silicon Semiconductor Devices	\$364703
79757	Data Pipelining for Heterogeneous Data Fusion	\$355339
79760	Novel Photonic Crystal Cavities and Related Structures	\$141390
79761	Integrated NEMS and Optoelectronics for Sensor Applications	\$443793
79762	Development of Advanced UV Light Emitters and Biological Agent Detection Strategies	\$492648
79763	SMART Micro-Preconcentrator for Integrated Preconcentration and Detection of Chemical Agents and Explosives	\$505430
79764	Investigation of Liquid Jet Break-up and Dispersion	\$275090
79767	Nano/Micro-Engineered Interfaces for Improved Performance and Reliability	\$393019
79773	Atomic-Scale Modeling of Phonon-Mediated Thermal Transport in Microsystems	\$344426
79774	Multiphase Dynamics of Soft Biological Tissues	\$297187
79778	Use of Composite Materials to Refurbish Our Civil and Military Infrastructure	\$373757
79779	Desalination Utilizing Clathrate Hydrates	\$341042

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Project ID	Project Name	FY Total
79780	Development and Application of the Dynamic System Doctor to Nuclear Reactor Probabilistic Risk Assessments	\$176387
79781	Innovative Solar Thermochemical Water Splitting	\$493094
79801	Novel System for Zero-Emission Electricity and Hydrogen Production from Coal and Biomass	\$406179
79807	Risk-informed, Decision-making Methodologies for Robust Control of Complex Infrastructures	\$506038
79818	Development of Miniaturized Photomultiplier Detectors	\$5977
79820	Portable Medical Diagnostic System for Detection of Presymptomatic Biomarkers of Chem/Bio-agent Exposure	\$473928
79821	Diatoms as Molecular Architects	\$424837
79823	Novel Mechanisms of Nanomechanical and Transmembrane Actuation	\$471152
79824	Carbon Nanotube Sorting via DNA-Directed Self-Assembly	\$405342
79825	Next-Generation Contact Materials for High-Reliability Microsystems Devices	\$454734
79826	Controlled Fabrication of Nanowire Sensors	\$470810
79827	Fundamental Enabling Issues in Nanotechnology: Stress at the Atomic Level	\$364094
79832	Knowledge Discovery via Sensor Fusion in Structures and Ad-Hoc Networks	\$404500
79838	Large-Area Metallic Photonic Lattices for Military Applications	\$399978
79852	Laser-Induced Breakdown Spectroscopy for Remote Explosives Detection	\$242389
79856	Integrated Optical MEMS using Through-Wafer Vias and Bump-Bonding	\$234397
79861	Terahertz Quantum Cascade Lasers for Standoff Molecule Detection	\$496675
79862	Advanced Technologies for National Security Applications	\$805812
79868	Next Generation High-Voltage Switches for Capacitive Discharge Firing Systems	\$216151
79870	A New, Cost-Effective Solution to Provide Radiation-Hardened Materials for Nuclear Weapons	\$465400
79871	Micro- and Mesoscale Detonics of Explosives	\$355722
79876	Advanced Material Applications of Precision-Deposited and Free-Form-Fabricated Energetic Materials	\$406864
79877	Characterizing the Emissivity of Materials Under Dynamic Compression	\$308611
79881	Triggered Low-inductance Gas Switching	\$402618
79883	Achieving a New Paradigm in Software Technology	\$465722

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Project ID	Project Name	FY Total
80568	Development of Design and Simulation Models for Large-Scale Hydrogen Production Plant Using Nuclear Power	\$603402
80591	Mobile Agent Abstractions, Methods, and Infrastructure for Efficient Sensor Network Tasking Over Heterogeneous Networks	\$26300
80592	Ultra-fast Low-voltage MEMS Switches for Optics and RF Applications	\$259754
80595	Reliability of Materials in MEMS: Residual Stress and Adhesion in a Micro Power Generation System	\$26930
80596	Modeling River-Aquifer Interaction with Application to the Rio Grande	\$29230
80598	Kinetics and Mechanisms of Nanowire Synthesis	\$28958
80603	Bayesian Inference for Inverse Problems, Model Structure, and Uncertainties	\$249499
80667	Design, Analysis and Control of MEMS Devices for Micromanipulation Tasks	\$29026
81752	Integrated Fiber Lasers for Efficient High-Power Generation	\$4507091
81753	Advanced Fusion Concepts: Neutrons for Testing and Energy	\$4581218
82854	Developing Novel Scaffolds for Biological Molecules by Solving the I-QSAR Problem Using the Signature Molecular Descriptor	\$57008
84266	Effective Dispersion of Nanoparticles by Polymers	\$311024
84267	Bead-based Multiplexed, Orthogonal, BW/ID (BioWarfare/Infectious Disease) Detection Microsystem and Technologies	\$596423
84271	Terahertz Detectors for Long Wavelength Multi-Spectral Imaging	\$462440
85512	File System Performance Optimization for Supercomputing Applications	\$26300
86362	PCSS/Fiber-Optic Trigger System for Pulsed Power Switches	\$470695
86801	Capture and Utilization of Prosody in Disambiguating Spoken Speech	\$28771
90493	Exploiting Interfacial Water Properties for Desalination and Purification Applications	\$1222922
90497	Development of a Universal Fuel Processor	\$297703
90501	Rapid Updating of Stochastic Models Using Sensor Information	\$196440
90730	Merging Spatially Variant Physical Process Models Under an Optimized Systems Dynamics Framework	\$323212
93361	Fundamentals of Embossing Nanoimprint Lithography in Polymer Substrates	\$60407
93362	Rational Understanding and Control of the Magnetic Behavior of Nanoparticles	\$6663
93364	MEMS Dual Backplate Capacitive Microphone	\$949
93366	Process Science and Engineering for Thermomechanical Nano-manufacturing	\$0

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Project ID	Project Name	FY Total
93369	Fabrication and Device Applications of Aligned Mesoporous Architectures	\$57645
93414	Minimally-Invasive Instrumentation of JTA End-Event	\$400310
93415	A Modern Nuclear Weapon Communications Architecture	\$518290
93416	Improved Power Source for Doubling the Exchange Time Interval of LLC	\$355061
93417	Advanced Optical Trigger Systems for Firing Sets in Nuclear Weapons	\$473162
93418	Increasing the Accuracy of Vision-Based Dimensional Metrology	\$187892
93419	Advanced Surety Concepts	\$514823
93421	High Kinetic Energy Ion Source	\$196068
93422	Mentor/PAL	\$240839
93423	Identification of Threats Using Linguistics-Based Knowledge Extraction	\$356230
93426	Large Scale Manufacturing of Integrated Nanostructures for Sensing	\$448870
93427	Development and Optimization of Thermal Protection Materials for Hypersonic Vehicles	\$990209
93491	Titanium Cholla - Optimized, Lightweight, High Strength Structures for Aerospace Applications	\$292382
93492	In Situ Optical Diagnostics of Neutron Generator Target Films	\$298035
93493	Low Cost, Meso-Scale Parts Fabricated from Nanocrystalline Metals	\$434052
93494	New Low Cost Material Development Technique For Advancing Rapid Prototyping Manufacturing Technology	\$208435
93495	Advanced Manufacturing of a Novel Functional Material	\$367044
93496	Interface Physics in Microporous Media	\$402542
93497	Creating a Discovery Platform for Defined-space Chemistry and Materials: Metal Organic Frameworks	\$483415
93498	Virulence Membrane Protein Organization and Complex Formation in <i>Francisella novicida</i>	\$400939
93499	Cell Modeling with Heterogeneous, Dynamic Cell Membranes	\$393749
93501	Shotgun Protein Sequencing	\$298961
93503	A Numerical And Experimental Characterization Of Decontaminating Water Distribution Networks	\$460101
93505	Distributed Micro-releases of Bioterror Pathogens: Threat Characterization and Epidemiology from Uncertain Patient Observables	\$296817
93506	Large Scale Simulation for Human Behavior Modeling	\$574743

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Project ID	Project Name	FY Total
93507	Network Architecture Design for Next Generation Supercomputers	\$510170
93508	Quantum Computer Architecture, Software, and Applications	\$666898
93510	Robust Tunable Multifunction Amplifiers Using GaN and RF MEMS Technology	\$391590
93511	Bloch Oscillations in Two-Dimensional Nanostructure Arrays for High Frequency Applications	\$408857
93512	Inverted Monolithic Interconnected Module (MIM) Thermophotovoltaics (TPV) for Remote Power Generation	\$373005
93513	A Discovery Platform for Nanowire Electronics and Photonics	\$407159
93515	Miniature Flow Cytometer for Medical Diagnostics and Pathogen Detection	\$428698
93516	Just in Time Jamming of Enemy Detonation Signals	\$455356
93518	Ultrasensitive Directional Microphone Arrays for Military Operations in Urban Terrain and Future Combat Systems	\$350005
93520	Si-rich Silicon Nitride Films for Reliable Low Write Voltage Anti-fuses	\$123695
93521	Rapid Spectroscopy for Gas Cloud Analysis	\$314727
93522	Developing Key Capabilities for Quantum Computing	\$725060
93525	Multi-Length Scale Algorithms for Failure Modeling in Solid Mechanics	\$336861
93528	Nanocrystalline Aluminum Alloys for Structural Applications	\$471951
93529	Nanoparticle Flow, Ordering and Self-Assembly	\$522584
93530	Development of Simulation and Validation Techniques for the Dynamic Behavior of Metals at the Grain Scale	\$220012
93531	Dynamic Compression of Synthetic Diamond Windows	\$236941
93532	Fast High Voltage Spark Gap Switch With a Phase Changing Dielectric	\$505032
93533	Development of a Physics Understanding of Pulsed Power Closing Switches for Multiple LTD Applications	\$372288
93535	Precision Electron Flow Measurements in a Disk Transmission Line	\$212164
93552	Energy Infrastructure Surety for Military Applications - Phase II	\$265144
93554	Hybrid Inorganic-organic Polymer Composites for Improved Performance in Polymer-electrolyte Fuel Cells	\$284272
93555	Enhanced Biomass to Bioenergy Interconversion through Protein and Metabolic Engineering	\$645355
93556	Joint Physical and Numerical Modeling of Water Distribution Networks	\$470217

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Project ID	Project Name	FY Total
93558	Computational and Experimental Study of Nanoporous Membranes for Water Desalination and Decontamination	\$562018
93559	Novel Virus Coagulants for Water Treatment and Biomolecular Structural Science	\$355461
93561	A Demonstration of Advanced Transparency At The Monju Fast Breeder Reactor	\$415352
93562	Reliability of Passive Safety Systems	\$233450
93563	Water-splitting Nanodevices for Solar Hydrogen Production	\$453604
93564	Development of Nanostructured and Surface Modified Semiconductors for Hybrid Organic-Inorganic Solar Cells	\$561464
93565	Cognitive Modeling of Human Behaviors	\$500708
93566	Massive Graph Visualization	\$231600
93567	A Dual Neutron+Gamma Source for the Fissmat Inspection for Nuclear Detection (FIND) System	\$370398
93569	Parallel Computing in Enterprise Modeling: A Hybrid Approach	\$419130
93581	Enhanced NaI Scintillation Detectors	\$300690
93582	Portable Devices for Pen-Side Disease Diagnostics	\$403794
93583	Plastic Neutron Detectors	\$268952
93584	Scintillating Nanomaterials for New Radiation Detection Devices	\$413046
93585	Explosives Detection by Photo-Ionization Ion Mobility Spectrometry	\$391873
93586	Detection of Cell Phone and Wireless Systems	\$150257
93589	Time-Frequency Enhanced Radar Processing for Foliage Penetration	\$83586
93590	Secure Portal	\$235898
93592	Human Perceptory Augmentation	\$741667
93593	Advanced Hard Target Warhead	\$744031
93594	Information System Situational Awareness	\$185548
93595	Human Performance Modeling for System of Systems Analytics	\$378505
93596	Enabling Immersive Simulation for Complex Systems Analysis and Training	\$402127
93597	Pulse Power Integration for Advanced Electric Weapons Platform	\$199196
93600	Void Sensor for Penetrators	\$412964
93601	High Energy Density for Electric Weapons Platforms	\$296463

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Project ID	Project Name	FY Total
93602	Tracking Moving People With Radar Using High-Range-Resolution and Clutter Attenuation	\$231577
93603	Miniature Air-Deliverable Guided Sensor System	\$406667
93605	The Physics of Threat/Target Interaction for Advanced Armor Development	\$402071
93607	Development of Nonproliferation and Assessment Scenarios	\$250009
93608	Photonics for Ultrawideband Intrasatellite Communications	\$518726
93609	Building Trusted Systems from Untrusted Components	\$474770
93611	Micromechanical Resonators Applied to Shock Hardened, Covert Communications	\$462284
93612	Infrared Detection and Power Generation Using Self-Assembled Quantum Dots	\$419314
93613	Ultra-Thin Ultra-High-Efficiency Heterostructure Micro-Cooler for Satellite Sensing Applications	\$411814
93615	Monolithically Integrated, Backside-Illuminated Photo Diode Array	\$400158
93617	Shear Horizontal Surface Acoustic Wave Microsensors for Class A Viral and Bacterial Detection	\$358888
93618	Post-CMOS Compatible Aluminum Nitride Resonant Accelerometers	\$322796
93619	Hand Miniaturized BW Agent Detector for Real-time Detection of Concealed Agent Production	\$390042
93622	Development and Application of Quantitative Proliferation Resistance Methodologies for Reprocessing Scenarios	\$276788
93623	Collaborative Situational Awareness in Network-Centric Warfare	\$280672
93625	Strategic Concepts for Information Superiority	\$575415
93626	Ultra Low Power Management Circuit Design	\$255452
93628	Multispectral Fusion for Beyond the Fence Intruder Detection and Assessment	\$289575
93629	Novel Design for Improved Nuclear EMP Detection	\$178364
93630	Adaptive Antenna Tuning for Miniaturized Tag Transceivers	\$185500
93633	New Hash Function for Data Protection	\$302177
93635	Software Evaluation in Virtualized Environment	\$435162
93636	Borazine Precursors for Boron Nitride anti Friction Coatings for MEMS	\$376759
93637	Multi-Scale Behavioral Analyses of Integrated Surety Designs	\$342498
93639	Remotely Interrogated Passive Polarizing Dosimeter (RIPPeD)	\$331330
93641	New Approaches to Addressing the New Design Basis Threat	\$388830

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

SNL - Sandia National Lab

Project ID	Project Name	FY Total
93652	Atmospheric Aerosols	\$21921
94809	Process and Infrastructure Development for Integrated Three-Dimensional Mesomanufacturing	\$53726
94810	Reliable and Secure Communication in Wireless Sensor Networks	\$52600
94811	Nanostructured Electrocatalyst for Fuel Cells: Silica Templated Synthesis of Pt/C Composites	\$27592
94812	Piezoelectric Properties of Arrayed Nanostructures of Zinc Oxide for Sensor Applications	\$247499
94814	Three-dimensional Analysis for Nanoscale Materials Science	\$248743
94830	Tribological Studies of Microelectromechanical Systems	\$42080
95211	Highly Pixelated Hypertemporal Sensors for Global Awareness	\$3746186
95214	Terahertz Microelectronic Transceiver (T _μ T) System	\$3032101
95215	Microscale Immune Study Laboratory (MISL)	\$5570043
96088	Tunnel Gap Modulation Spectroscopy: An Ultrasensitive Technique for Measuring Small Mass Change	\$28989
96299	Optical Properties of Plasmonic Metal-dielectric Composites	\$26300
98105	Dynamics of Propagating Shock Waves and Phase Fronts	\$26300
Total # of Projects for SNL:	402	Total Cost for SNL: \$141017361

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

SRNL - Savannah River National Lab

Project ID	Project Name	FY Total
LD06-EM02-014	Advanced RNA and protein-based tools that enable use of microbial systems as in situ sensors	\$174467
LD06-EM04-076	Advanced Spent Fuel Recycling Technology: Ionic Liquid Electrochemical Extraction	\$303155
LD06-EM05-092	Low Temperature Waste Forms and Containment: Geopolymers vs. Hydroceramics vs. Steam Reformed Materials	\$151185
LD06-ES01-008	Application of Strategic Glass Formulation and Heat Treatment Effects to Control Pore Size and Pore Size Distribution of HGMs	\$190478
LD06-ES02-054	Systematic Evaluation of Hydrogen Production by Diverse Cyanobacterial and Green Algal Strains	\$162074
LD06-GEN-018	Advanced Titanium-Based Sorbents and Applications for Their Use	\$266766
LD06-NS04-030	Artificial Nose Technology: Fluorescent Labeled DNA Optical Sensor Arrays with Enhanced Sensitivity and Selectivity for Detection of Biological Agents	\$295004
LD06-NS04-052	Detection of viral-size particles and nanomaterials in aerosols as surrogates for biological and chemical weapons.	\$164916
LD06-NS04-080	Development of Nano-Scale, High-Efficiency Proportional Counters	\$188520
LDRD070079	Radiotracer Method for Measuring Hydraulic Conductivity of Cementitious Materials	\$59847
LDRD070081	In situ Generation of Oxygen Releasing Metal Peroxides	\$35632
LDRD070158	Feasibility of Perfluorinated Liquids as Collection Media for Biodetection	\$44317
LDRD070161	Neutron-Capture-Induced Irradiation of Polymers	\$49515
LDRD070177	Evaluation of potential side-effects of sequestering agents used for in-situ remediation of contaminants	\$48751
LDRD070181	Characterization of Volatile Components in Zircalloy Fuel Hulls	\$51713
LDRD070183	Carbon Nanotube Electrodes for Ultracapacitors	\$40673
LDRD070211	Local Structural Environment Analysis of Plutonium and Neutron Absorbers in a Lanthanide Borosilicate Glass	\$36180
LDRD070220	Optical modeling for proof of concept of a high finesse hemispherical lens cavity for use as a portable, hand-held, monolithic cavity ring-down spectrometer	\$33278
Total # of Projects for SRNL:	18	Total Cost for SRNL: \$2296471

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

SRP - Savannah River Plant

Project ID	Project Name	FY Total
SR05020	Electrical Heat Standards for Calorimetry	\$582
SR05023	Modeling of Pressure Swing Adsorption Separation Process	\$38761
SR05027	Low Cost, High Flux Ni-Ti-Nb Hydrogen Purification/Separation Membrane Development	\$95409
SR05029	Synthesis of Metal Hydrides by Mechanical Alloying at Elevated Temperatures in a High Speed Attritor	\$75218
SR05041	Permeation-resistant Coated Gloves for Gloveboxes	\$30317
SR05047	Demonstration of Pressure Swing Adsorption (PSA) Separation Processes	\$197753
SR07002	Compact ExB Mass Spectrometer for Hydroden Isotopic Analysis	\$142748
SR07005	Stainless Steel Surface Treatments for Mass Spectroscopy Systems	\$175081
SR07006	Short Range Wireless Sensor Network for Hot Tritium Cell	\$220933
SR07010	Safe Analysis of Tritiated Water from Glovebox Atmospheres and Solidification of the Tritiated Water for SRS Disposal	\$255097
SR07011	Hydrogen Isotope Recovery Using a Proton Exchange Membrane (PEM) Electrolyzer	\$263604
SR07033	Modeling the IR Transitions of the Isotopologues of Ammonia, Methane, and Water	\$53167
SR07047	Development of Multi-component Isotherms and Thermodynamic Models for Palladium	\$290185
Total # of Projects for SRP:	13	Total Cost for SRP: \$1838855

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1202105	UNCC Hole Plate	\$126396
Y1203014	High Accuracy, High Density	\$5980
Y1203039	Advanced SDOR	\$131780
Y1204006	Cone Beam X-ray CAT scan	\$72810
Y1204037	Process Radiation Detector System	\$22639
Y1204041	Slag Reprocessing	\$106201
Y1204045	Next Generation MW	\$756235
Y1204110	Crucible Materials Thermo Modeling	\$59165
Y1204135	UM - Optimet	\$176745
Y1204138	Machining Uranium and Uranium Alloys	\$214917
Y1204141	Ultrasonic Vibration of Molten Metals	\$99194
Y1205008	Inventory Verification Using Time-of-Flight Measurements with Surface Acoustic Wave Transponders	\$395312
Y1205014	Metallographic Digital Image Control	\$103627
Y1205024	Methyl Chloroform Replacement	\$72327
Y1205032	Microcantilever Transducers: Next Generation of Gas Diagnostics	\$225768
Y1205033	Enhancing Inductively-Coupled Plasma Mass Spectrometry with Ion Mobility	\$30710
Y1205040	Large Alpha-Uranium Single Crystals	\$136254
Y1205047	Purification by Drip Casting	\$51477
Y1205048	Purification of Uranium by Electrowinning	\$338707
Y1205064	Pin Extensions	\$109929
Y1205069	Personal Radiation Detection Instrumentation (PRDI) Alternatives	\$11926
Y1205072	Nanostructured Super Material Machine Tools	\$192789
Y1205086	Mechanical Properties of Uranium at Very High Temperatures	\$278524
Y1205089	Advanced Hydrogen-Getter Analysis	\$10912
Y1205092	Material Cleaning Alternatives	\$126293
Y1205095	Primary Extraction System Improvements	\$180295
Y1205096	Novel Approaches for Be Sample Analysis	\$179062
Y1205099	Bioassay Analysis by ICP-MS	\$90891
Y1206001	High Quality Radiographic Film Digitization	\$67332

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1206003	Light Beam Grid Network Safeguards Surveillance System	\$238407
Y1206004	Advanced Modeling of Microwave Processes	\$348770
Y1206011	Investigation of Welding and Weld Quality Issues of Uranium Components	\$163739
Y1206019	Lithium Technologies	\$777256
Y1206025	Agile Machining Process Development	\$1027039
Y1206027	Be Swipe Analyzer	\$75101
Y1206028	Portable Carbon in Uranium Analyzer	\$204241
Y1206031	Advanced Methods to Nondestructively Sense for Stress Corrosion Cracking Sites on Uranium Parts Using a Thermoelectric Power (Seebeck) Coefficient Surface Contact Probe	\$336364
Y1206032	Physics-Based Systems Integration for Y-12 Modernization	\$41607
Y1206033	Interface UT 3-D Imaging Technology with LC-SEM	\$182910
Y1206035	Agile Machine Chip Monitor	\$24113
Y1206036	Casting Mold Temperature Measurement	\$376951
Y1206038	Improving Beryllium Analysis Through Computational Deconvolution	\$39848
Y1206054	RFID and Automated Barcode Evaluation for NMC&A Modernized Facility	\$96154
Y1206055	In-Process Monitoring for NMC&A Modernized Facility	\$103007
Y1206057	Advanced Infrared (IR) Heating Techniques for Materials Processing	\$516642
Y1206060	Recovery of Materials	\$5931
Y1206075	Total Oxygen Analysis	\$86509
Y1207002	Uranium Laser Welding Protocol for Laser Repair of Parts	\$195292
Y1207003	Time resolved thermal profiling of the machining chip forming process	\$62001
Y1207004	Tantalum-Tungsten (Ta-W) Alloy Spray Form Manufacturing	\$20764
Y1207018	Dry Vacuum Holdup Monitor	\$123327
Y1207019	Agile Machine Accountability System	\$219512
Y1207025	Alternative Forming Methods	\$129391
Y1207028	Uranium Impurity Removal	\$131284
Y1207030	Wrought-like Cast Uranium	\$190259
Y1207037	Dimensional Metrology Process Development	\$336282
Y1207043	Non-Destructive Evaluation (NDE) of Grain Structure	\$117263

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2007

Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1207044	Mercury Free Catalyst for Dissolution	\$110889
Y1207045	Atomic Force Microscopy Study	\$182200
Y1207046	Micro-Kjeldahl Digestion	\$92850
Y1207047	Compatibility Study of Crucible Materials with Uranium	\$312938
Y1207049	Optical Detection of Alpha Radiation	\$32252
Y1207056	Enhancing and Maintaining the Ability to Roll and Form U Metal Alloys	\$64018
Y1207058	Optimization of Welding Through Computer Modeling and Simulation	\$141336
Y1207065	Advanced Registration and Segmentation of Computed Tomographic Data	\$182847
Y1207068	Enhanced Defect Measurement	\$285208
Y1207071	Radioactive Contamination Visual Identification & Control	\$146219
Y1207073	Ion Exchange Resin Selection	\$6916
Y1207075	Science Based Bomb Reduction	\$31767
Y1207076	Dense, Interim Uranium Storage Forms	\$44152
Y1207082	Recovery of Uranium Via Electrosorption & Ionic Exchange	\$191598
Y1207085	Small Volume Calibration Method and Apparatus	\$94633
Y1207101	In-place Surveillance	\$88186
Y1207111	Thermo-Physical Property Measurement	\$202936
Y1207112	Repair of casting defects	\$183936
Y1207114	Intrinsically Safe Moisture Blending System	\$115963
Y1207118	Thermal Conversion of Uranium Oxide	\$115181
Y1207120	Chalcopyrite Radiation Detectors	\$35310
Y1207122	Automatic Part Transfer	\$121797
Total # of Projects for Y-12:	79	Total Cost for Y-12: \$13327293



Department of Energy

Washington, DC 20585

January 31, 2008

The Honorable Robert C. Byrd
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

As requested in the fiscal year (FY) 2001 Energy and Water Development Appropriations Conference Report (H.R. 106-988), enclosed is the Department of Energy's (DOE's) FY 2007 Report on Laboratory Directed Research and Development (LDRD). This report provides a detailed project history of LDRD activities, as well as information on the funding levels and the impact and importance of the program in advancing the diverse missions of the Federal government.

In FY 2007, DOE national laboratories devoted approximately \$499 million to LDRD in 1,637 projects. Also, included is information on DOE's Plant Directed Research, Development and Demonstration and Site Directed Research, Development and Demonstration programs.

Departmental representatives are available to discuss any questions you may have regarding the information included in this report. If you have questions, please contact me on (202) 586-4171 or Mr. Eric Nicoll, Principal Deputy Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Isakowitz".

Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Thad Cochran
Ranking Member





Department of Energy
Washington, DC 20585

January 31, 2008

The Honorable Byron L. Dorgan
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Pete V. Domenici
Ranking Member





Department of Energy

Washington, DC 20585

January 31, 2008

The Honorable Carl Levin
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

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Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable John M. McCain
Ranking Member





Department of Energy
Washington, DC 20585

January 31, 2008

The Honorable Ike Skelton
Chairman, Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Duncan L. Hunter
Ranking Member





Department of Energy
Washington, DC 20585

January 31, 2008

The Honorable David Obey
Chairman, Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Jerry Lewis
Ranking Member





Department of Energy
Washington, DC 20585

January 31, 2008

The Honorable Peter J. Visclosky
Chairman, Subcommittee on Energy
and Water Development, and Related Agencies
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

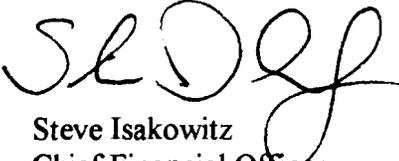
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Sincerely,


Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable David L. Hobson
Ranking Member





Department of Energy

Washington, DC 20585

January 31, 2008

The Honorable Bart Gordon
Chairman, Committee on Science
and Technology
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Ralph M. Hall
Ranking Member





Department of Energy

Washington, DC 20585

January 31, 2008

The Honorable Jeff Bingaman
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

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Sincerely,



Steve Isakowitz
Chief Financial Officer

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Ranking Member

