

# Memo

**To:** John Jankowski  
**From:** Ronda Britt and Mike Yamaner  
**Date:** June 6, 2013  
**Re:** An investigation of the differences between Federal agency-reported R&D obligations and FFRDC-reported R&D expenditures: FY 2011

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NSF's Survey of Federal Funds for Research and Development collects data from federal agencies on obligations for R&D for each fiscal year, including a breakout for obligations to federally funded research and development centers (FFRDCs). Respondents are budget and accounting staff at the various federal agencies conducting R&D. Since the respondents on the survey do not actual conduct the R&D, they are limited to the information contained in their agency's accounting system when they complete the survey.

NSF's annual FFRDC R&D Survey collects data from each FFRDC on their R&D expenditures for each fiscal year. The respondents for this survey are budget and accounting staff at the FFRDC itself, or in some cases at the corporate administrative level (e.g. one individual at the MITRE Corporation reports for all five of their FFRDCs). These respondents also rely on the coding in the FFRDC's accounting system and do not usually have firsthand experience with the R&D projects being conducted.

At issue is the fact that the federal obligations data do not correlate well with the FFRDC-reported expenditures data in any given year, and the difference is much greater than would be expected due to the inherent differences between obligations and expenditures.<sup>i</sup> Specifically, the total obligations for R&D are significantly below the expenditures reported each year, and the difference is growing larger each year. In FY 2011 \$10.8 billion was reported by the federal agencies in R&D obligations versus \$17.4 billion in R&D expenditures reported by the FFRDCs, resulting in a difference of \$6.6 billion.

In order to determine the root causes for this difference, we questioned the five FFRDCs that had the largest differences in absolute dollars in FY 2011. These five FFRDCs reported a combined \$8.6 billion in expenditures compared to only \$4.3 billion in obligations reported by the federal agencies for FY 2011. This difference represents 66% of the total difference between the surveys. The table on the next page shows the obligations, expenditures, and differences between the two for each FFRDC in FY 2011. It also shows the FY 2011 operating budget excluding capital construction costs as reported by the FFRDC. This amount is the entire operating budget for the FFRDC regardless of funding purpose. Most FFRDCs report operating budgets that are only slightly more (or even equal to) reported R&D expenditures.

Federal obligations/expenditures for research and development to federally funded research and development centers, by FFRDC for Federal Funds and FFRDC surveys and total FFRDC operating budgets: FY 2011

(Dollars in thousands)

FFRDC	(1) Fed Funds R&D obligations	(2) FFRDC operating budget	(3) FFRDC R&D expenditures	(1) - (3) FFS-FFRDC R&D \$ difference	(3) / (1) FFRDC/FFS R&D % difference
All FFRDCs	10,785,947	19,427,939	17,385,29	-6,599,348	61.2%
Los Alamos National Lab.	1,100,282	2,772,000	2,266,539	-1,166,257	106.0%
Sandia National Labs.	1,230,766	2,410,171	2,237,036	-1,006,270	81.8%
Pacific Northwest National Lab.	278,221	1,095,922	1,072,377	-794,156	285.4%
Oak Ridge National Lab.	786,731	1,558,073	1,513,958	-727,227	92.4%
Jet Propulsion Lab.	863,282	1,600,000	1,543,969	-680,687	78.8%
National Security Engineering Ctr.	511,296	941,187	941,187	-429,891	84.1%
Lincoln Lab.	421,563	NA	819,664	-398,101	94.4%
Argonne National Lab.	460,230	721,600	663,194	-202,964	44.1%
National Renewable Energy Lab.	173,137	387,127	370,538	-197,401	114.0%
Ctr. for Enterprise Modernization	3,985	187,785	187,785	-183,800	4612.3%
Lawrence Berkeley National Lab.	579,253	836,095	732,920	-153,667	26.5%
Brookhaven National Lab.	374,787	526,571	504,491	-129,704	34.6%
Idaho National Lab.	287,928	875,119	415,020	-127,092	44.1%
Savannah River Technology Ctr.	36,441	192,716	134,530	-98,089	269.2%
Ctr. for Advanced Aviation System Development	59,868	165,645	155,254	-95,386	159.3%
Homeland Security Systems Engineering and Development Institute	5,304	85,154	85,154	-79,850	1505.4%
Fermi National Accelerator Lab.	341,236	409,828	419,583	-78,347	23.0%
Ctr. for Communications and Computing	745	72,600	72,600	-71,855	9642.4%
Software Engineering Institute	36,155	107,837	107,348	-71,193	196.9%
Studies and Analyses Ctr.	85,795	156,200	156,200	-70,406	82.1%
Lawrence Livermore National Lab.	1,317,439	1,614,203	1,380,177	-62,738	4.8%
SLAC National Accelerator Lab.	264,192	366,427	320,941	-56,749	21.5%
National Ctr. for Atmospheric Research	131,832	198,231	182,310	-50,479	38.3%
Project Air Force	2,261	44,171	44,171	-41,910	1853.5%
National Biodefense Analysis and Countermeasures Ctr.	0	58,500	41,786	-41,786	
Homeland Security Studies and Analysis Institute	5,264	37,000	36,699	-31,435	597.1%
Ctr. for Naval Analyses	54,230	87,000	84,562	-30,332	55.9%
Princeton Plasma Physics Lab.	60,700	94,903	84,352	-23,652	39.0%
National Defense Research Institute	26,993	46,330	46,330	-19,337	71.6%
Ctr. for Nuclear Waste Regulatory Analyses	1,986	16,377	15,871	-13,886	699.3%
National Radio Astronomy Observatory	67,646	78,982	80,401	-12,755	18.9%
Arroyo Ctr.	20,062	32,180	32,180	-12,118	60.4%
Science and Technology Policy Institute	2,106	8,700	8,700	-6,594	313.1%
National Astronomy & Ionosphere Ctr.	8,967	14,317	13,635	-4,668	52.1%
Judiciary Engineering and Modernization Ctr.	0	4,650	4,650	-4,650	
Ames Lab.	28,782	34,710	31,471	-2,690	9.3%
Thomas Jefferson National Accelerator Facility	95,988	104,380	89,871	6,117	-6.4%
Frederick National Laboratory for Cancer Research	451,668	500,000	431,600	20,068	-4.4%
National Optical Astronomy Observatories	77,938	46,048	42,730	35,208	-45.2%
Aerospace FFRDC	530,892	939,200	13,511	517,381	-97.5%

NOTE: Because of rounding, detail may not add to total.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development: FY 2010-12. National Science Foundation/National Center for Science and Engineering Statistics, FFRDC Research and Development Survey: FY 2011.

Four of the five FFRDCs with the largest differences in absolute dollars are sponsored by the Department of Energy: Los Alamos National Laboratory, Sandia National Laboratories, Oak Ridge National Laboratory, and the Pacific Northwest National Laboratory.

For these four FFRDCs, the primary factor causing the large data differences between the Federal Funds survey and the FFRDC survey is how the respondents interpret what to include as R&D funding. As can be seen by comparing their total operating budget with their reported R&D expenditures, each of the FFRDCs classify most of their expenditures as R&D, including all funding to support the operation of the FFRDC as part of the cost of conducting R&D. The federal agencies responding to the Federal Funds survey interpret R&D more narrowly and do not classify all of the funds obligated to FFRDCs as R&D, instead using other classifications to delineate direct funding for R&D projects from other types of funding for the FFRDC.

Some examples of the work that FFRDCs perform that the Department of Energy does not classify as R&D on the Federal Funds survey include environmental cleanup work done for the Department of Defense, nuclear nonproliferation, readiness in technical bases and facilities, international nuclear energy cooperation, and FFRDC management and security. These programs have large appropriations in each of the FFRDC's budgets. Other programs such as Electricity Delivery and Energy Reliability, Energy Efficiency and Renewable Energy, and Nuclear Energy have parts that the Department of Energy interprets as R&D and others that it does not.

The remaining FFRDC of the top five is the Jet Propulsion Laboratory (JPL) sponsored by NASA. Their respondent also confirmed they consider most of their entire operating budget as R&D. This includes what is known as Center Management and Operation (CMO) funding at NASA and covers a variety of essential operations, including security, environmental management and safety services, facility maintenance, and operations. They also include expenditures for their scientific and technical support provided to other federal agencies. Such support is authorized via a contractual mechanism that operates under the prime contract with NASA. Given this contractual arrangement, other agencies may be reporting it as R&D funding to NASA on the Federal Funds survey rather than funding to JPL, which might explain part of the difference.

Therefore, the differences for each of these FFRDCs do not seem to be caused by any error in coding but instead are the result of a difference in interpretation. From the FFRDC's perspective, it could be argued that as their primary mission is to conduct R&D for the government, much of their entire operating budget is devoted to "activities specifically organized to produce R&D outcomes." The FFRDC survey also allows indirect costs associated with R&D projects to be reported, which could reasonably include funding for facilities management and operations. For the federal agencies, it seems that a much narrower definition of R&D funding is used to classify obligations.

In order to resolve these differences we will need to decide which interpretation is more reasonable and provide clearer guidance to either the FFRDCs or the federal agencies in order to achieve more consistent results across the two surveys.

<sup>i</sup> There is a time lag between when funds are obligated by federal agencies and when research funds are actually spent (and reported) by the FFRDCs. Many federal awards are drawn down in increments over the length of the project and span multiple years.