

Breaking Down the Costs of Federal Research at Universities

The historic partnership between the federal government and research universities has produced tremendous return on investment through improvements in human health, transformative technologies, and the development of the world's best research workforce. The federal government has long sponsored research at universities because innovations and new technologies help our country prosper and enhance our national security. The Internet, GPS technology, touch screen phones, and treatments for COVID-19, cancer, and heart disease are just a few examples of the countless technologies that have resulted from federally sponsored university research. University-based research is an investment that benefits all Americans: it serves the dual functions of 1) making the discoveries that are the foundation for technological and medical progress, and 2) training the next generation of scientists, engineers, and entrepreneurs.

Typically, universities are awarded federal research funds through a competitive grant process that helps ensure that the best projects receive support. Federal research grants awarded to a university comprise two essential parts: 1) Direct Costs, and 2) Facilities and Administrative (F&A) Costs, often referred to as Indirect Costs.

1. **Direct Costs** – These solely support research and include costs for:
 - laboratory supplies, such as test tubes and beakers;
 - research equipment, such as microscopes;
 - salary support for the scientists and engineers conducting the research;
 - stipends for graduate students working on the research; and
 - travel that may be necessary for conducting research or for sharing research results.

The bulk of federal investment is spent on direct costs and the government provides funds at the start of the research project.

2. **F&A Costs (Indirect Costs)** – Universities incur significant expenses leading up to and while conducting federal research projects. F&A cost reimbursements cover a portion of the university's infrastructure and operational expenses necessary to conduct federally-funded research. These shared expenses cover a portion of:
 - construction and maintenance of sophisticated, high-tech labs;
 - utilities such as lighting, water, air conditioning, and heat;
 - telecommunications, internet, and data storage;
 - radiation safety and hazardous waste disposal;
 - security for sensitive and dangerous chemicals; and
 - the personnel, paperwork, and other costs needed to comply with federal, state, and local regulations.

Universities pay these expenses as they conduct federally sponsored research, and the government then partially *reimburses* universities for a portion of these necessary research expenses.

How are F&A costs calculated? In theory, the federal government could seek to determine the exact share of F&A expenses required for each individual research grant. However, given that federal agencies issue tens of thousands of grants annually, such a system would be a costly and bureaucratic nightmare. Instead, the government has developed a system that eliminates the need for repeated complex calculations.

Whether it is the cost to maintain a lab, connect to high-speed internet, or light laboratories, what a university pays for items that fall under F&A costs tend to cover a variety of projects, not just one federal research project and not even solely federal research. For example, a university may pay a \$5,000 quarterly fee for hazardous waste disposal. Since

only a portion of that waste is the byproduct of federal research, the government only pays for the share of the waste produced in the conduct of federally sponsored research per strict rules and limits established by the Office of Management and Budget. It would be more costly, time consuming, and inefficient to have two separate hazardous waste disposal contracts – one for all federal research and another for everything else.

To determine the level of F&A costs reimbursement, a university and the government every 2 to 4 years assess these shared costs and determine the appropriate federal portion. The overall figure is ultimately calculated as a percentage of the amount the government pays for direct research costs (not a percentage of the overall funds, which is a common misperception). Some direct research costs (like equipment, capital expenditures, charges for patient care, rental costs, tuition remission, and scholarships and fellowships) are excluded from the direct cost for F&A cost calculation purposes. This remaining amount is known as modified total direct cost (MTDC) and only includes direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first \$50,000 of each subaward (regardless of the period of performance of the subawards under the award). Other items may be excluded when necessary to avoid a serious inequity in the distribution of F&A costs.

For example, after reviewing the costs of a University's research projects during a base year, and considering anticipated changes, such as increases in MTDC, a university and the federal government may determine that an amount equal to 50 percent of research MTDC is appropriate for the federal government to contribute toward F&A costs. In that case, if the federal government awards a university \$445,000 for the direct research portion of a grant, of which \$365,000 is the modified total direct cost¹, then it also awards \$182,500 for F&A costs, for a total of \$627,500. These overall institutional F&A cost rates are applied uniformly to each research grant as its direct funds are spent, avoiding the very tedious, expensive and inefficient process of computing the F&A expenses for individual awards – which would add additional costs for both the government and the university.

Research Budget	NIH R01 (Lab-based)
Direct Costs	
Personnel	
<i>Principal Investigator (MTDC)</i>	60,000
<i>Lab Techs / Scientists (MTDC)</i>	130,000
<i>PostDocs / Grad Students (MTDC)</i>	115,000
Supplies (MTDC)	55,000
Travel (MTDC)	5,000
Grad Student Tuition	20,000
Equipment	60,000
<u>SUB-TOTAL</u>	<u>445,000</u>
<u>MODIFIED TOTAL DIRECT COSTS (MTDC)</u>	<u>365,000¹</u>
Indirect Costs	
NIH R01 F&A (50% applicable to MTDC)	182,500 ¹
<u>F&A AS % OF TOTAL BUDGET</u>	<u>29.08%</u>
<u>TOTAL RESEARCH BUDGET</u>	<u>627,500</u>

¹ An institution's F&A rate is applied to modified total direct costs (MTDC). In this example, personnel (\$305,000), supplies (\$55,000), and travel (\$5,000). Therefore, the 50% F&A rate is applicable to the sum of these cost items (\$365,000), resulting in an F&A amount of \$182,500.

How is accountability built into the F&A reimbursement system? Universities are mindful of the need to appropriately use federal resources and contain costs while getting the most from each research project. In fact, it is worth noting that the F&A portion of costs for research performed by universities is, on average, comparable to if not slightly less than other research performers, such as federal laboratories and private contractors ([RAND, 2000](#)). Moreover, since 1991, the Office of Management and Budget has had in place a cap of 26-percent on the administrative expenses (including costs incurred by the university to comply with federally mandated regulations) the federal government will reimburse. In effect, if a university is spending an average of 30 cents for each dollar of federal research MTDC, it only receives 26 cents per dollar.

The percentage resulting from the F&A cost rate calculation varies from university to university because costs vary based on factors such as: geographic location, the condition of the research facilities, and the amount of renovation and construction needed to house certain types of research. The rate is recalculated, reviewed, and negotiated at the end of each rate agreement executed with the federal government, and adjustments are made to reflect changes since the last calculation.

The Partnership: Universities and the federal government share the total cost of research Performing research to benefit humankind is a fundamental mission of U.S. research universities. The federal government sponsors university-based research because it seeks discoveries that lead to innovations and new technologies that will advance human health, fuel economic prosperity, and enhance national security. Without the federal government's reimbursement of its share of F&A costs, universities would scale back research that might help develop the next vaccine or cure, or the next technological innovation that will create new businesses or help secure our country. Groundbreaking science at universities simply could not happen if they could not recover an equitable portion of the costs of electricity, laboratory space, and other F&A costs necessary to do research.

Universities share a commitment to transparency, to careful stewardship of taxpayer dollars, and to conducting quality research and training. While the current system of F&A cost reimbursement is complex, it is integral to the successful university-government partnership. Universities continue to work with the federal government to identify ways to make this process even clearer and more effective.