

How Much Did We Spend to Go to the Moon?

By Howard E. McCurdy



Neil Armstrong photographs Edwin Aldrin jumping from the bottom rung of the lunar lander to the surface of the Moon on the flight of Apollo 11.

This analysis identifies the official NASA estimate of how much the United States spent to go to the Moon under Project Apollo and explains what that cost would be in modern dollars. The baseline can be used as a point of reference when we examine the cost of currently planned and potential space missions.

How much did we spend to go to the Moon?

The official NASA estimate set the expenditure at \$21.3 billion through the first landing on the Moon by the Apollo 11 astronauts in 1969 and their return home. The total Apollo moon program cost \$25.4 billion. In other words, the build-up preparation for the 1969 first landing cost \$21.3 billion. Once we had the facilities and equipment in place, the next six Apollo lunar missions cost an average of \$683 million each.

How much is that in today's dollars?

That question can be answered a number of ways. One way adjusts the \$21.3 billion for inflation. Using inflation calculators, the cost in 2012 dollars would be between \$150 and \$190 billion. The low number uses the conventional CPI, or consumer price index, to measure changes in the value of the dollar. The CPI includes all sorts of items like apples and housing that are not directly related to space. The higher number uses the [NASA New Start Inflation Index](#) or NNSI. It measures cost changes in the different types of material and labor that go into space expeditions. Since the salaries of scientists and engineers have grown faster than the price of food, the NNSI enlarges the effects of inflation. So a good equivalent figure would be \$150 to \$190 billion in 2012 dollars. In actuality, we would not need to spend that much today since we have already invested in many of the facilities needed to get to the Moon, like Mission Control and the Kennedy Space Center.

Another way to visualize the expenditure compares it to federal spending in 1961, the year that President Kennedy started the program. Total federal outlays in the fiscal year ending in mid-1961 (President Kennedy made his speech on May 25, 1961) were \$98 billion. The estimates that President Kennedy received for "landing a man on the Moon and returning him safely to the Earth" started at about \$20 billion. So that May, armed with the earliest estimates, President Kennedy asked the nation to commit the equivalent of 20 percent of all federal outlays for FY 1961 to go to the Moon. No wonder he warned in his speech that we should not begin if we did not intend to finish

the job. The spending was spread out over eight years, of course, but the political commitment was huge.

Measured against federal spending, the lunar goal, if restarted in 2012, would elicit a commitment of about \$700 billion. Federal expenditures in FY 2012 were \$3.5 trillion—so 20 percent of \$3.5 trillion would be \$700 billion. Spreading the expenditure burden over eight or more years would create an annual appropriation of approximately \$88 billion or 2.5% of the budget each year. It's a huge number, but it reveals the scale of the commitment that the nation made in the 1960's.

Finally, one can compare the cost of Apollo to the Gross Domestic Product (GDP)—the sum of goods and services produced in the United States. This reveals what the U.S. could afford to spend. Like federal spending, the GDP has grown enormously in the past fifty years. In 1961 it was \$530 billion; in 2012 it topped \$15 trillion. If the United States economy could afford to go to the Moon in 1961 for \$20 billion, which was 3.8% of GDP, we could afford to spend \$600 billion to do something even more ambitious in 2012.

Six to seven hundred billion dollars spread over many years would pay for much more than a first landing on the Moon – a lunar research station or perhaps a human expedition to Mars. As the economy continues to grow, someday we will be able to undertake an even more far-reaching journey for the economic burden we accepted when we started our first steps toward the Moon.

Calculations and references:

The first trip to the Moon paid for spacecraft, rockets, facilities, administrative salaries, and communication. The official breakdown of the expenditures of the \$21.3 billion figure follows.

Type of Expenditure for the Moon	Cost (millions of US dollars)
Apollo spacecraft	6939
Saturn launch vehicles	7940
Engine Development	854
Operations support	1137
Tracking and data acquisition	541
Facilities	1810
Operation of space flight centers	2128
Total	21,349

For more information on the burden of Apollo, read John M. Logsdon, *John F. Kennedy and the Race to the Moon*. New York: Palgrave Macmillan, 2010; and visit John F. Kennedy, "Special Message to the Congress on Urgent National Needs," May 25, 1961.

Federal outlays and GDP (in billions of US dollars):

Year	Total Federal Outlay	Gross Domestic Product
1961	97.723	529.9
2012	3537.127	15,547.4

Source: Historical Tables, U.S. Office of Management and Budget, for FY 2014.

Sources:

T. O. Paine letter to Clinton Anderson, November 21, with attachment (estimated cost through first landing)

House Science and Astronautics Committee, Subcommittee on Manned Space Flight, *1974 NASA Authorization*, 93rd Congress, 1st session, 1973: 1271 (total cost of Apollo lunar missions).

NASA New Start Inflation Index:

<http://www.nasa.gov/offices/ooe/cad/publications/#.U2faKST-L8E>

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