



Highlights of [GAO-07-1099T](#), a testimony before the Senate Committee on Commerce, Science, and Transportation

ENVIRONMENTAL SATELLITE ACQUISITIONS

Progress and Challenges

Why GAO Did This Study

Environmental satellites provide data and imagery that are used by weather forecasters, climatologists, and the military to map and monitor changes in weather (including severe weather such as hurricanes), climate, the oceans, and the environment. Two current acquisitions are the \$12.5 billion National Polar-orbiting Operational Environmental Satellite System (NPOESS) program—which is to replace two existing polar-orbiting environmental satellite systems—and the planned \$7 billion Geostationary Operational Environmental Satellites-R (GOES-R) program, which is to replace the current series of satellites due to reach end of their useful lives in approximately 2012. GAO was asked to summarize its past work on the progress and challenges facing these key environmental satellite acquisitions.

What GAO Recommends

In April 2007, GAO made recommendations to the NPOESS program to complete important tasks and mitigate significant risks to the program. In September 2006, GAO made recommendations to the GOES-R program to improve its management capabilities. Implementation of these recommendations should reduce risks for these critical acquisitions.

www.gao.gov/cgi-bin/getrpt?GAO-07-1099T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact David A. Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

Both the NPOESS and GOES-R satellite acquisitions are costly, technically complex, and critically important to weather forecasting and climate monitoring. NPOESS was originally estimated to cost about \$6.5 billion over the 24-year life of the program, with its first satellite launch planned for April 2009. Over the last few years, NPOESS experienced escalating costs, schedule delays, and technical difficulties. These factors led to a June 2006 decision to restructure the program thereby decreasing the program's complexity by reducing the number of sensors and satellites, increasing its estimated cost to \$12.5 billion, and delaying the launches of the first two satellites to 2013 and 2016 (see table below). Since that time, the program office has made progress in restructuring the satellite acquisition and establishing an effective management structure; however, important tasks remain to be done and significant risks remain.

The GOES-R acquisition, originally estimated to cost \$6.2 billion and scheduled to have the first satellite ready for launch in 2012, is at a much earlier stage in its life cycle than NPOESS. In September 2006, GAO reported that the National Oceanic and Atmospheric Administration (NOAA) had issued contracts for the preliminary design of the overall GOES-R system to three vendors and expected to award a contract to one of these vendors in August 2007 to develop the satellites. However, analyses of GOES-R cost—which in May 2006 was estimated to reach \$11.4 billion—led the agency, in September 2006, to reduce the program's scope from four to two satellites and to discontinue one of the critical sensors. Program officials now report that they are reevaluating that decision and may further revise the scope and requirements of the program in coming months. GAO also reported that NOAA had taken steps to implement lessons learned from past satellite programs, but more remained to be done to ensure sound cost estimates and adequate system engineering capabilities. GAO currently has work under way to evaluate GOES-R risks and challenges.

Summary of Changes to NPOESS Program

Key area	Program before restructuring	Program after restructuring
Life cycle range	1995-2020	1995-2026
Estimated life cycle cost	\$8.4 billion	\$12.5 billion
Launch schedule	First satellite by November 2009 Second satellite by June 2011	First satellite by January 2013 Second satellite by January 2016
Number of satellites	6 (in addition to NPP)	4 (in addition to NPP)
Number of orbits	3 (early morning, midmorning, and afternoon)	2 (early morning and afternoon; will rely on European satellites for midmorning orbit data)
Number and complement of instruments	13 instruments (10 sensors and 3 subsystems)	9 instruments (7 sensors and 2 subsystems); 4 of the sensors are to provide fewer capabilities
Number of data records	55	39 (6 are to be degraded products)

Source: GAO analysis of NPOESS program office data.