Goddard Space Flight Center (GSFC)

Agency Introduction: The FY 2012 budget request for NASA is $18.7 billion, the FY 2010 enacted level. The NASA Authorization Act of 2010 has provided a clear direction for NASA, and the skilled workforce at NASA Centers is critical to the success of the Act's important objectives.

Highlights of GSFC's FY 2012 activities*:* The FY 2012 budget proposes $2,819 million in spending at GSFC.

- $2,101 million for Science:
  - Develop and operate missions in astrophysics, heliophysics, Earth science and planetary science, consistent with National Research Council Decadal Surveys.
  - Focus on James Webb Space Telescope (JWST) to continue fabrication, integration, and testing in support of a launch date to be determined. NASA is re-planning the budget phasing and schedule for JWST to minimize the risk and life-cycle cost.
  - Other missions in development include Magnetospheric MultiScale (MMS) for heliophysics; the Mars Atmosphere and Volatile EvolutioN (MAVEN) mission for planetary science; and the Ice, Cloud and land Elevation Satellite (ICESat II), Global Precipitation Measurement (GPM), and Landsat Data Continuity Measurement (LDCM) missions for Earth science.
  - Support the Joint Polar Satellite System, a NASA-NOAA partnership (funded by NOAA) to procure several of the nation's polar orbiting weather satellites, and begin development of Landsat 9 (funded by USGS).
- $128 million in Space Operations to support Space Communications and Navigation.
- $56 million in Space Technology for a strategically-guided project aligned with the Communications and Navigation expertise of the Center, the Goddard Innovation Fund, and disbursement of select SBIR/STTR awards.
- $3 million towards Exploration capitalizing on the core competencies of the Center.
- $2 million to further NASA's Science, Technology, Engineering, and Mathematics (STEM) education efforts.
- $529 million for Institutional requirements for the Center and Wallops Flight Facility operations in support of its mission requirements. This funding includes: $469 million for Cross-Agency Support; $60 million for Construction and Environmental Compliance Restoration for minor revitalization and construction projects to repair and modernize center infrastructure. Also includes designing and constructing a Flight Project Center to consolidate office space for 300 people and permit demolition of the Building 16 complex (222,464 gross square feet).

NASA Goddard Space Flight Center's (GSFC) primary location is located in Greenbelt, Maryland. Additional sites include the Wallops Flight Facility (WFF) in Virginia, the Independent Validation and Verification (IV&V) Facility in West Virginia, the Goddard Institute for Space Studies (GISS) in New York, and facilities at the NASA White Sands Test Facility in New Mexico. GSFC civil servants consist mainly of scientists, engineers and technologists, who build spacecraft, instruments and new technology to study the Earth, sun, solar system and universe.

To understand the changing Earth, Center scientists combine the comprehensive view of Earth enabled by satellites, aircraft, and balloons with advanced models to understand how our planet works and use this

understanding to improve prediction of future trends. Earth Science missions managed by Goddard include the Glory mission (scheduled to launch in February 2011), the Global Precipitation Measurement (GPM) mission, and the Landsat Data Continuity Mission (LDCM).

In the astrophysics discipline, Goddard manages the Hubble Space Telescope (HST), a large, space-based observatory that has revolutionized astronomy and inspired millions of scientists, students, and members of the public with its unprecedented deep and clear images of the Universe. The Center also manages the James Webb Space Telescope (JWST), designed to look even deeper into space than HST to see the earliest stars and galaxies formed in the Universe. The Gravity and Extreme Magnetism SMEX (GEMS) mission will use an x-ray telescope to explore the effects of black holes.

GSFC is advancing solar system exploration through missions such as the Mars Atmosphere and Volatile EvolutioN (MAVEN) mission, which will be the first orbiter to study the Mars upper atmosphere. GSFC also built the Sample Analysis at Mars (SAM) instrument, a major instrument on the Mars Science Laboratory (MSL) to be launched in 2011.

GSFC is a leader in Heliophysics, the study of the Sun's impact on Earth, our Solar System, and space environmental conditions. Goddard is developing the Magnetospheric Multiscale Satellites (MMS) mission, which will use Earth's magnetosphere as a laboratory to study space weather. Data from ongoing missions, such as the Solar Dynamics Observatory (SDO), STEREO, and the Interstellar Boundary Explorer (IBEX), continue to deepen our understanding of how the Sun's effects impact the lives of both Earth's inhabitants and the human explorers we send into space.

Goddard manages the operational Space and Ground Network, as well as low-Earth orbiting satellite communications and data requirements for all operational missions. In addition, Goddard supports Space Communication needs of several other Federal agencies.

Goddard also furthers NASA's commitment to Science Technology, Engineering, and Mathematics (STEM) education through its multifaceted programs to engage students and teachers at the K-12 and university levels.

Goddard is responsible for the development of weather satellites (the Polar Orbiting Environmental Satellite and the Geostationary Operational Environmental Satellite) and for space communications services on a reimbursable basis. GSFC's largest reimbursable program is the Joint Polar Satellite System (JPSS), a partnership between NOAA and NASA to develop a satellite system of national importance to provide weather forecasting, storm tracking and climate monitoring. In FY 2012, GSFC will also begin development of the Landsat 9 satellite on a reimbursable basis with the U.S. Geological Survey.

Economic Impact:

NASA GSFC FY 2012 budget:	$2,819 million
GSFC FY 2012 reimbursable (estimate):	$1,600 million
NASA GSFC FY 2012 civil servant workforce (FTE estimate)	3,393 (includes 224 reimbursable)
NASA Center Contracts/Grants Obligated (FY 2010)	$3,104 million

(Obligation data from the Federal Procurement Data System)

Current impact statement(s) to state, region:

The majority of NASA Goddard's budget enters the economy through funds obligated on contracts with commercial firms, educational and non-profit institutions, and other government agencies. NASA Goddard significantly impacts the local, state, and national economies through employment, contracting opportunities, technology development, community outreach, and public education. Annually, Goddard contributes more than $4 billion in local spending and output to the Maryland economy. The dollars that NASA Goddard spends around the Nation enhance business development, create jobs, and increase the tax base.

GSFC is responsible for identifying and transferring technology to support economic competitiveness. Through its commercial program office, NASA GSFC partners with local businesses, state agencies and national institutions to support and expand economic competitiveness.

Over the past five years, GSFC has reported over 1,100 new technologies. During the same period, 51 patents were granted and 17 licenses were established to transfer technology to various US Government, non-profit, and commercial entities.