



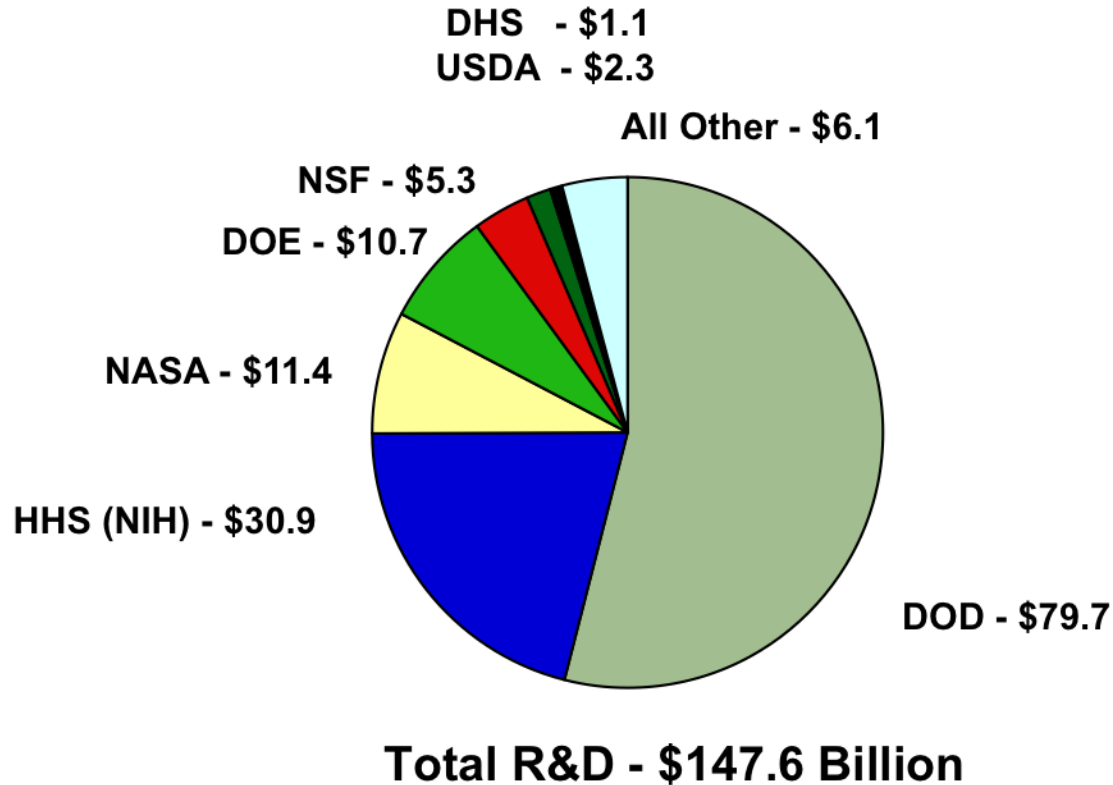
# **NASA FY 2010 Budget Request Overview**

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Acting Administrator  
NASA**

**ASEB-SSB Meeting  
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# Total FY 2010 R&D Funding by Agency





# FY 2010 Budget Request Summary

\$ In millions	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
<b>TOTAL NASA</b>	<b>17,402</b>	<b>17,782</b>	<b>18,686</b>	<b>18,631</b>	<b>18,613</b>	<b>18,607</b>	<b>18,858</b>
<i>Percent change year-to-year</i>		2.2%	5.1%	-0.3%	-0.1%	0.0%	1.3%

**The \$18.686 B request represents a \$904 million (5%) increase above FY 2009**

**With addition of \$1 billion from Recovery Act, FY 2009-11 represents a \$2 B increase above FY 2009**

## Budget Highlights

- Supports Administration’s commitment to deploy global climate change research and monitoring system; accelerates Earth Science Decadal Survey Tier 1 missions, including Venture class, and Tier 2 concept studies
- Establishes a new “green aviation initiative”
- Provides resources to safely fly six Space Shuttle flights and retire STS            in FY 2010, including flight to deliver Alpha Magnetic Spectrometer
- Completes assembly of ISS in 2010
- Continues work to accomplish March 2015 Ares 1/Orion IOC
- Initiates an Executive-level Human Space Flight Review



# FY 2010 Budget Request

	FY 2008	FY 2009	Recovery Act	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Budget Authority (\$M)								
<b>Science</b>	<b>4,733.2</b>	<b>4,503.0</b>	<b>400.0</b>	<b>4,477.2</b>	<b>4,747.4</b>	<b>4,890.9</b>	<b>5,069.0</b>	<b>5,185.4</b>
Earth Science	1,237.4	1,379.6	325.0	1,405.0	1,500.0	1,550.0	1,600.0	1,650.0
Planetary Science	1,312.6	1,325.6		1,346.2	1,500.6	1,577.7	1,600.0	1,633.2
Astrophysics	1,395.6	1,206.2	75.0	1,120.9	1,074.1	1,042.7	1,126.3	1,139.6
Heliophysics	787.6	591.6		605.0	672.6	720.5	742.7	762.6
<b>Aeronautics</b>	<b>511.4</b>	<b>500.0</b>	<b>150.0</b>	<b>507.0</b>	<b>514.0</b>	<b>521.0</b>	<b>529.0</b>	<b>536.0</b>
<b>Exploration</b>	<b>3,299.4</b>	<b>3,505.5</b>	<b>400.0</b>	<b>3,963.1*</b>	<b>6,076.6*</b>	<b>6,028.5*</b>	<b>5,966.5*</b>	<b>6,195.3*</b>
Constellation Systems	2,675.9	3,033.1	400.0	3,505.4	5,543.3	5,472.0	5,407.6	5,602.6
Advanced Capabilities	623.5	472.3		457.7	533.3	556.5	558.9	592.7
<b>Space Operations</b>	<b>5,427.2</b>	<b>5,764.7</b>	<b>0.0</b>	<b>6,175.6</b>	<b>3,663.8</b>	<b>3,485.3</b>	<b>3,318.6</b>	<b>3,154.8</b>
Space Shuttle	3,295.4	2,981.7		3,157.1	382.8	87.8	0.0	0.0
International Space Station	1,685.5	2,060.2		2,267.0	2,548.2	2,651.6	2,568.9	2,405.9
Space and Flight Support (SFS)	446.2	722.8		751.5	732.7	745.9	749.7	748.9
<b>Education</b>	<b>146.8</b>	<b>169.2</b>	<b>0.0</b>	<b>126.1</b>	<b>123.8</b>	<b>123.8</b>	<b>123.8</b>	<b>125.5</b>
<b>Cross-Agency Support</b>	<b>3,251.4</b>	<b>3,306.4</b>	<b>50.0</b>	<b>3,400.6</b>	<b>3,468.4</b>	<b>3,525.7</b>	<b>3,561.4</b>	<b>3,621.4</b>
Center Management and Operations	2,011.7	2,024.0		2,084.0	2,119.2	2,142.5	2,166.1	2,189.9
Agency Management and Operations	834.1	921.2		961.2	956.9	964.5	972.3	981.5
Institutional Investments	325.5	293.7	50.0	355.4	392.3	418.7	423.0	450.0
Congressionally Directed Items	80.0	67.5		0.0	0.0	0.0	0.0	0.0
<b>Inspector General</b>	<b>32.6</b>	<b>33.6</b>	<b>2.0</b>	<b>36.4</b>	<b>37.0</b>	<b>37.8</b>	<b>38.7</b>	<b>39.6</b>
<b>NASA FY 2010</b>	<b>17,401.9</b>	<b>17,782.4</b>	<b>1,002.0</b>	<b>18,686.0</b>	<b>18,631.0</b>	<b>18,613.0</b>	<b>18,607.0</b>	<b>18,858.0</b>
<i>Year to Year Change</i>		2.2%		5.1%	-0.3%	-0.1%	0.0%	1.3%

\*Following the human spaceflight review, the Administration will provide an updated request for Exploration activities reflecting the review's results.



# Science Highlights - \$4.4B Request

## **Earth Science – \$1.4B, plus \$325M from Recovery Act**

- Complete the Foundational missions (Glory, NPP, GPM, LDCM and Aquarius)
- Accelerates four new Tier 1 missions (SMAP, ICESAT-II, DESDynI and CLARREO), including Venture class and Tier 2 concept studies
- Recovery Act funds must be spent within 18 months

## **Planetary Science – \$1.3B**

- Establishes Lunar Quest Program, including LADEE and ILN
- Continues GRAIL – 2011 launch
- Completes the Mars Science Laboratory – 2011 launch
- Continues development of Juno – 2011 launch
- Begins work on a NASA-ESA flagship mission to Europa

## **Astrophysics – \$1.1B, plus \$75M from Recovery Act**

- Supports operations for Kepler, HST, Herschel & Planck, and WISE
- Continues work on SOFIA - early science flights in 2010, NuSTAR – 2011 launch, and the JWST – 2014 launch
- Complete Astrophysics Decadal Survey

## **Heliophysics – \$605M**

- Continues Solar Dynamics Observatory – 2009 launch; Radiation Belt Storm Probes – launch 2012, Magnetospheric Multiscale – 2014, and Solar Probe-Plus – 2018 launch



# Aeronautics - \$507M; \$150 M Recovery Act

## **Fundamental Research**

- Continue cutting-edge research on innovative concepts, tools, and technologies to enable revolutionary changes for vehicles in all speed regimes

## **Integrated Systems Research Program**

- Initiates new Environmentally Responsible Aviation Project to explore and assess new vehicle concepts and enabling technologies through system-level experimentation to simultaneously reduce fuel burn, noise, and emissions

## **Airspace Systems Program**

- Addresses revolutionary concepts for fundamental research needs for NextGen

## **Aviation Safety Program**

- Continue to conduct cutting-edge research to improve safety of current and future aircraft

## **Aeronautics Test Program**

- Ensures strategic availability of a critical suite of test facilities to meet Aeronautics, Agency, and National needs



# Space Operations - \$6.2B

## Space Shuttle - \$3.2B

- Supports 9 Shuttle launches through FY 2010, including mission for Alpha Magnetic Spectrometer
- Retires the Shuttle by the end of FY 2010
- Incorporates transition and retirement costs through FY2012

## International Space Station - \$2.3B

- Completes ISS assembly
- Station is essentially complete and will support crew of 6 later this year
- Funds contracts with Russian Space Agency to provide crew transportation to ISS
- Increase for Crew Cargo Services
- Options to operate beyond 2015 will be evaluated during Human Space Flight Review

## Space and Flight Support - \$751M

- Supports multiple technology demonstrations including Optical Communications, Communication, Navigation and Networking re-Configurable Testbed, and Distribution Tolerant Networking



# Exploration Systems - \$3.9

## **Constellation Systems - \$3.5B; \$400M from Recovery Act**

- Continues work to accomplish Ares I/Orion IOC in March 2015
- Supports funding for commercial crew enabling initiatives
- Constellation systems-level Preliminary Design Review scheduled for March 2010

## **Advanced Capabilities - \$457M**

- Supports operations for Lunar Reconnaissance Orbiter – 2009 Launch
- Initiates Advanced Composite Technology Project for Ares V

## **Review of US Human Spaceflight Plans**

- Budget request includes direction to review planned activities for U.S. human spaceflight program
- Blue Ribbon Panel will be led by Norm Augustine and include 7 to 10 subject matter experts
- Internal NASA Team led by Michael Hawes; will support Review Panel
- An updated budget request will be submitted to Congress upon completion of the Panel's deliberations





# Human Spaceflight Review Committee

**The Committee will conduct review of options for a U.S human space flight architecture to:**

- Expedite a new U.S. capability to support utilization of ISS
- Support missions to the Moon and other destinations beyond LEO
- Stimulate commercial space flight capability
- Fit within the current budget profile for NASA Human Space Flight activities

**In addition to the objectives described above, the review will:**

- Determine the appropriate amount of R&D and complementary robotic activities needed to make human space-flight activities most productive and affordable over the long term
- Determine appropriate opportunities for international collaboration
- Evaluate what capabilities would be enabled by each of the potential architectures considered
- Evaluate options for extending ISS operations beyond 2016
- Potential for inspiring the nation, and motivating young people to pursue careers in STEM subjects

The Committee will seek input from Congress, the White House the public, industry, and international partners



# Challenges Ahead

- **Operate the Space Shuttle safely through its final mission in 2010**
- **Ensure development of new human and cargo spaceflight capabilities to support ISS and exploration**
- **Transition key elements of Shuttle's highly-skilled engineering and technician workforce to support Exploration systems**
- **Work with ULA and the USAF to improve the EELV performance and manifest**
- **Identify viable solution for NPOESS**
- **Securing adequate budget to address aging infrastructure at Centers**
- **Execute affordable, world-class missions**
  - Obtain thorough understanding of technical requirements
  - Establish credible cost estimates and life-cycle budgets
  - Avoid over-commitment to new initiatives
  - Achieve strong program management commitment to controlling costs
- **Achieve budget stability**



# Summary

- **Combined with FY 2009 appropriations, the FY 2010 request provides a \$1.8B increase to NASA's programs in FY 2009 and FY2010, including**
  - \$630M increase to Exploration
  - \$456M increase to Science
  - \$263M increase to Aeronautics
- **Facilitates development of critical Earth science missions and Initiates new Venture class Earth science missions**
- **Continues to develop the next generation of space observatories**
- **Initiates a new Environmentally Responsible Aviation project**
- **Adds Shuttle mission to launch AMS and additional supplies to ISS**
- **Fully supports cargo resupply to the ISS**
- **Supports continued development of Ares I, Orion and associated systems and elements**
- **Directs Agency to undertake Human Spaceflight Review to assess current plans and potential alternatives**

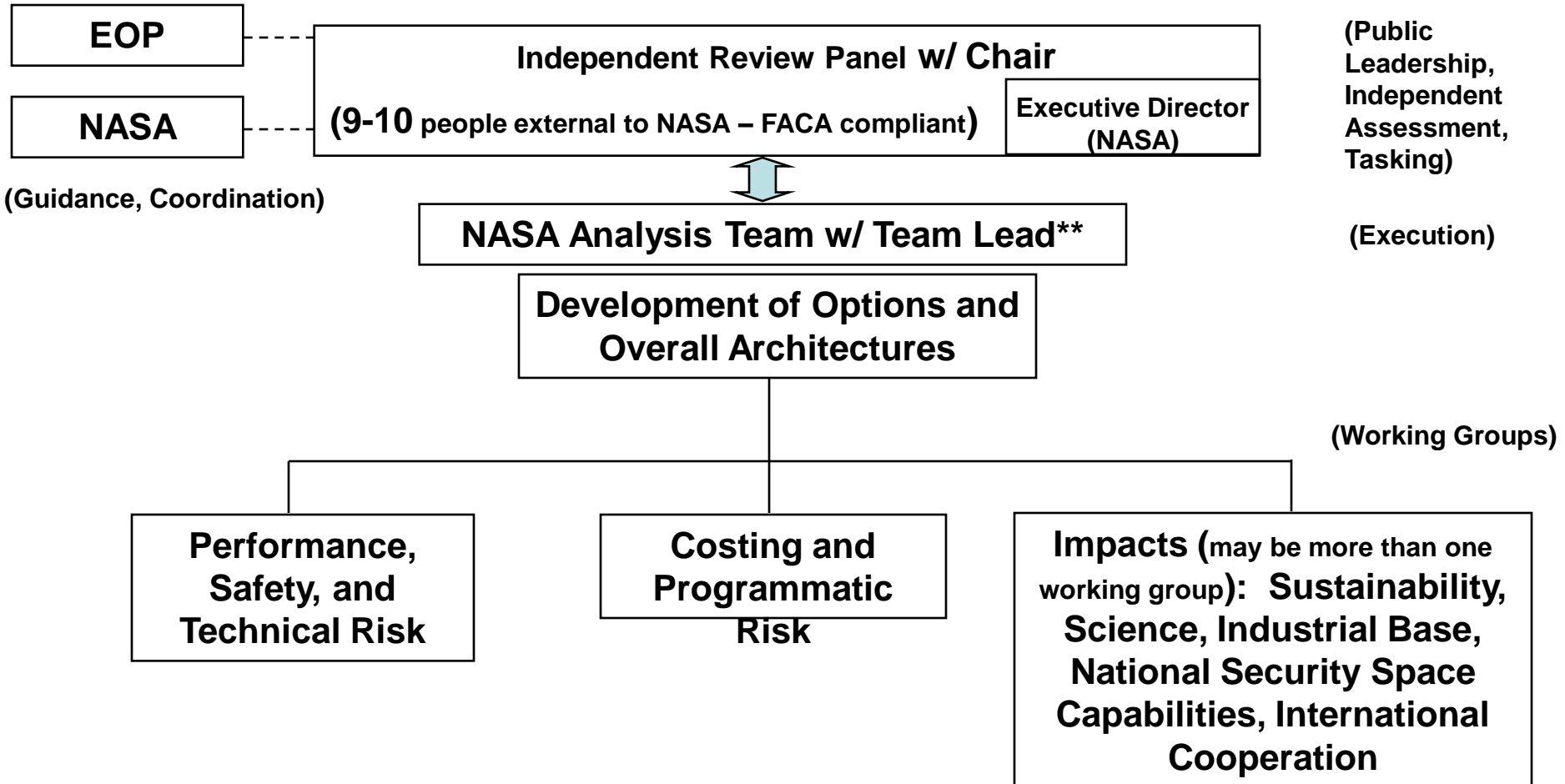


# Back Up Charts



# Human Space Flight Review

## Organizational Structure



\*\*May need external support from other agencies and/or FFRDCs

