Decadal Surveys

- **Scientific community** sets priorities, recommending **balanced portfolios** including:
  - **Flagship** missions and large facilities
  - **Competed mid-scale** projects & **New Frontiers** missions
  - **Competed small** research grants, technology development projects, and **Discovery- & Explorer-class** missions

**Revolutionary Facilities**

The Large Synoptic Survey Telescope (LSST) will revolutionize our understanding of the cosmos, from asteroids to the largest structures in the universe, and drive technological innovations with potential commercial applications.

**Small & Mid-Scale Missions**

*Discovery | Explorer New Frontiers*

- Most led by researchers at private institutions
- Cost-capped & competitive
- Broaden participation in space sciences
- Encourage innovation
- Deliver high return on federal investment.
- Develop & maintain technical workforce

Kepler has opened our eyes to the billions of potentially habitable planets in our Milky Way galaxy.

IBEX is helping us to better understand our sun and the boundaries of our solar system.

New Horizons is set to fly by Pluto and its moons July 2015, and on to nearby objects identified with Hubble.

**Competed Grants**

- Astronomical sciences funded at NASA, National Science Foundation (NSF) & Dept. of Energy (DOE) Office of Science
- Awarded based on the **merit and breadth of impact** of the proposed scientific research
- Research dollars go to **scientists and students throughout the country**.

Astronomical Sciences in FY 2016 President’s Budget Request

- **Cuts or holds flat** federal astronomical science programs
- **Forces harmful tradeoffs** between facilities and competitive research grants

### Table: Fiscal Year 2016 Budget Request

<table>
<thead>
<tr>
<th></th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>Change FY 16-15</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total R&amp;D</strong></td>
<td>$136,249</td>
<td>$136,449</td>
<td>$145,223</td>
<td>$8,774</td>
</tr>
<tr>
<td><strong>NASA</strong></td>
<td>$17,647</td>
<td>$18,010</td>
<td>$18,529</td>
<td>$518.9 (2.9%)</td>
</tr>
<tr>
<td><strong>Science (SMD)</strong></td>
<td>$5,148</td>
<td>$5,245</td>
<td>$5,289</td>
<td>$43.9 (0.8%)</td>
</tr>
<tr>
<td><strong>Planetary Science</strong></td>
<td>$1,343</td>
<td>$1,438</td>
<td>$1,361</td>
<td>-$76.5 (-5.3%)</td>
</tr>
<tr>
<td><strong>Astrophysics</strong></td>
<td>$678</td>
<td>$727</td>
<td>$709</td>
<td>-$17.7 (-2.4%)</td>
</tr>
<tr>
<td><strong>Heliophysics</strong></td>
<td>$643</td>
<td>$662</td>
<td>$651</td>
<td>-$11.0 (-1.7%)</td>
</tr>
<tr>
<td><strong>NSF</strong></td>
<td>$7,172</td>
<td>$7,344</td>
<td>$7,724</td>
<td>$379.4 (5.2%)</td>
</tr>
<tr>
<td><strong>Math, Phys Sci (MPS)</strong></td>
<td>$1,268</td>
<td>$1,337</td>
<td>$1,367</td>
<td>$30.0 (2.2%)</td>
</tr>
<tr>
<td><strong>Astro. Sci (AST)</strong></td>
<td>$238</td>
<td>$244</td>
<td>$247</td>
<td>$2.4 (1.0%)</td>
</tr>
<tr>
<td><strong>DOE-Science</strong></td>
<td>$5,071</td>
<td>$5,068</td>
<td>$5,340</td>
<td>$272.1 (5.4%)</td>
</tr>
<tr>
<td><strong>Cosmic Frontier</strong></td>
<td>$99</td>
<td>$107</td>
<td>$119</td>
<td>$12.5 (12%)</td>
</tr>
</tbody>
</table>

Source: FY 2016 President's Budget Request, FY 2015 Omnibus; millions USD. James Webb Space Telescope fully funded on baseline.

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**Small/mid-scale Projects**

- We **applaud efforts to increase the cadence** for small-scale **Discovery** and **Explorer** and mid-scale **New Frontiers** missions.

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**Education & Collaboration**

- **Left.** We are **concerned** that the request would **reduce funding for SMD STEM Education activities** by more than 50% ($42M → $20M).

- **Right.** Restrictions on **conference participation** by NASA scientists, engineers, and program officers **harm the scientific enterprise** and limit public-private collaborations.

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**Funding Research**

The FY 2016 Request would underinvest in core competitive research programs at NASA and NSF, which enable the research community to maximize the scientific return on taxpayer investment in missions and facilities.

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**Expanding the Frontier**

- **Left.** Encouraged by Administration’s proposal to move a **Europa flyby mission officially into formulation**. A mission to Europa, one of the most promising extraterrestrial habitable environments, is one of the top priorities in the most recent planetary science decadal survey.

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