National Aeronautics and Space Administration

NASA Education Budget Overview

presented by

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Topics of Discussion

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    - Key Stakeholders
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Education…a National and Agency priority

The nation that out-educates us today will out-compete us tomorrow.

President Barack Obama
Speech to the National Academy of Science
April 27, 2009

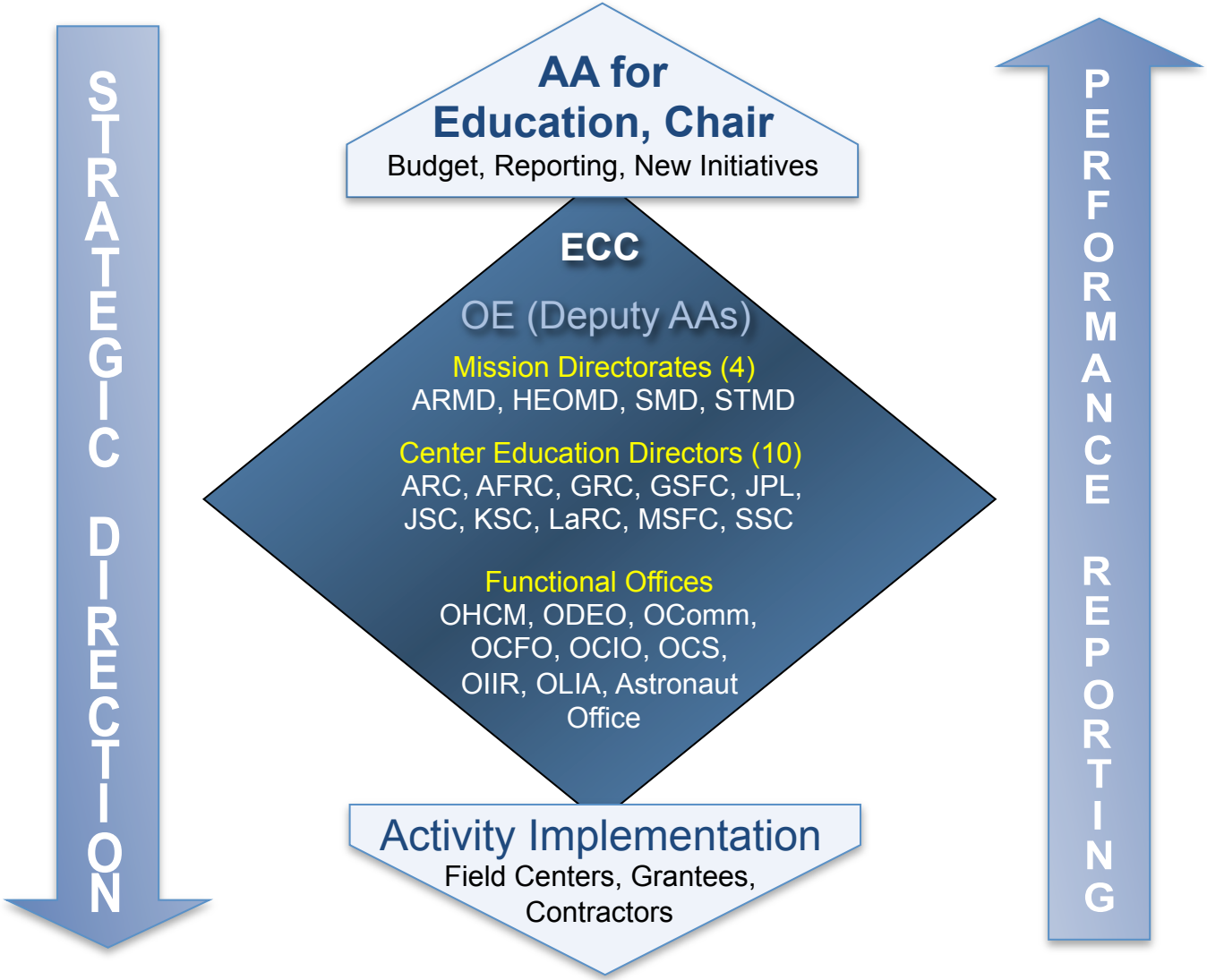
*We are **committed to inspiring** the next generation…who will keep America in the forefront of technology, innovation and space exploration.*

Charlie Bolden
White House Science Fair
May 14, 2011

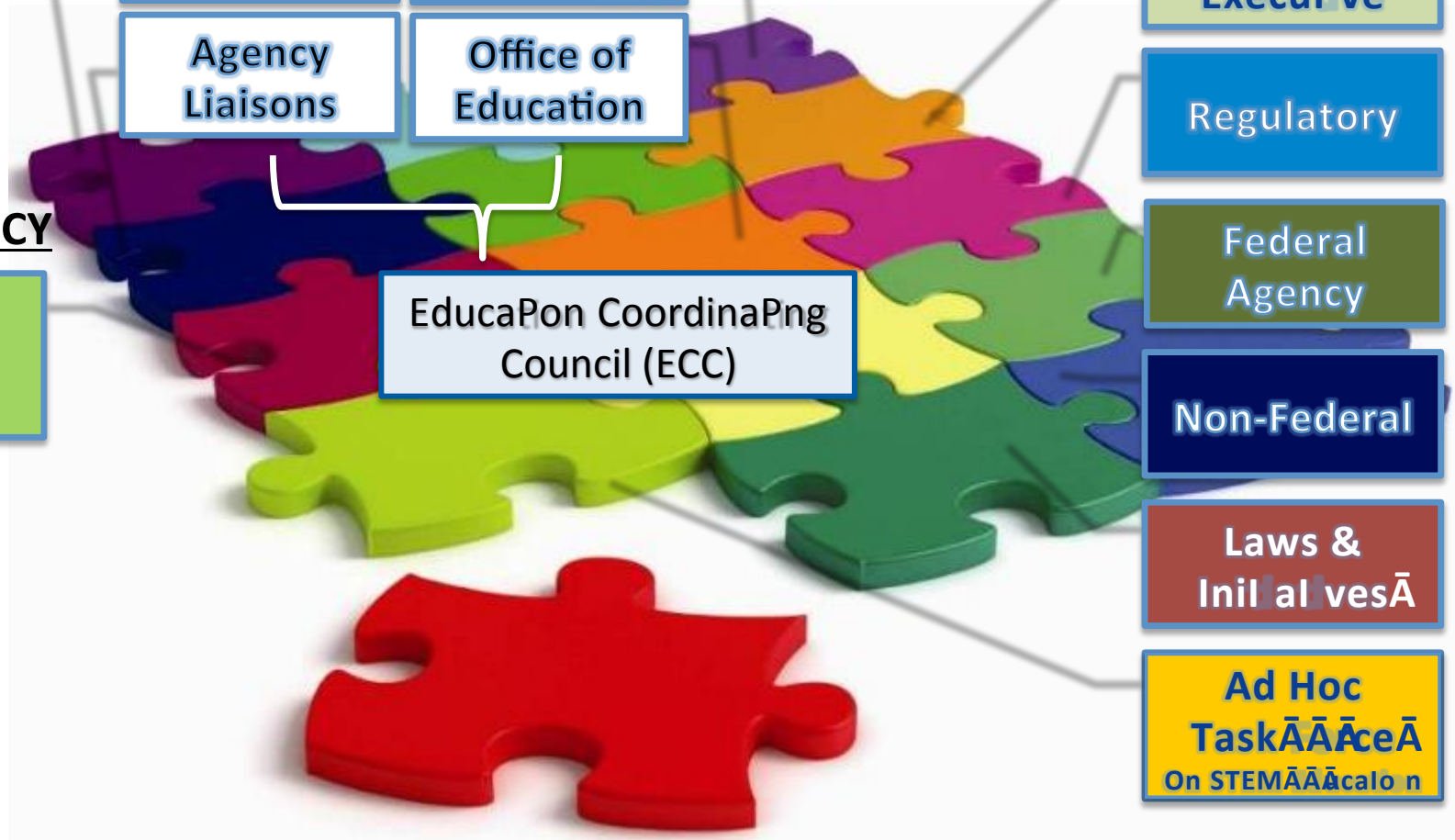
Historical Context

- In the past 10 years, the Office of Education has undergone several transformations in its organizational landscape and senior leadership.
- In FY 2005, an Education Coordinating Committee (ECC) was established to provide strategic direction & planning related to education.
- The America COMPETES Reauthorization Act of 2010 required the Office of Science and Technology Policy (OSTP) to establish, maintain, and periodically update an inventory of Federal investments in STEM education as part of a 5-year Federal STEM education strategic plan.
- The Committee on STEM Education (CoSTEM) was established in 2011, as called for by the America COMPETES Act, to coordinate Federal programs and activities in support of STEM education.
- Since 2011, there has been Program/Activity consolidation in an effort to gain efficiencies and reduce fragmentation.

Education Coordinating Council (ECC)



Key Stakeholders and Influencers



Office of Education Consolidation Timeline

FY 2011

Higher Education STEM

- Space Grant
- EPSCoR
- MUREP
  - ✓ GCCE
- STEM Opportunities in Higher Education
  - ✓ Innovations in STEM Higher Education
  - ✓ GSRP
  - ✓ USRP

K12 STEM Education

- K12 STEM Student Opportunities
- K12 STEM Teacher Development
- K12 Competitive Grants

Informal STEM Education

FY 2012 – FY 2013

Aerospace Research and Career Development (ARCD)

- Space Grant
- EPSCoR

STEM Education and Accountability (SEA)

- MUREP
- STEM Education & Accountability Projects (SEAP)
  - ✓ Formal and Informal Education
  - ✓ Innovation in Education
  - ✓ Evaluation Performance Monitoring & Accountability
  - ✓ Informal STEM Education

FY 2014

Aerospace Research and Career Development (ARCD)

- Space Grant
- EPSCoR

STEM Education and Accountability (SEA)

- MUREP
- STEM Education and Accountability Projects (SEAP)
  - ✓ STEM Facilitation
  - ✓ STEM Interagency Coordination

Continued Consolidation of an OE-focused Portfolio and CoSTEM Alignment effort

Office of Education Consolidation Timeline (Cont'd)

FY 2014

Aerospace Research and Career Development (ARCD)

- Space Grant
- EPSCoR

STEM Education and Accountability (SEA)

- MUREP
- STEM Education and Accountability Projects (SEAP)
  - ✓ STEM Facilitation
  - ✓ STEM Interagency CoordinaPon

Con7nued Consolida7on of an OE-focused Por6olio and CoSTEM Alignment effort.

FY 2015

Aerospace Research and Career Development (ARCD)

- Space Grant
- EPSCoR

STEM Education and Accountability (SEA)

- MUREP
- STEM Education and Accountability Projects (SEAP)
  - ➢ SUNSETTING — leSng grants and cooperaPve agreements expire naturally and not running new compePPon
  - ➢ CONSOLIDATING — redesigning, mergingĀĀĀ integraPng legacy acPviPes in MUREP
  - ➢ INTERNAL-TO-NASA COMPETITIVE CONSOLIDATIONS — StarPng in FY 2015, compePPon to idenPfy and blend the educaPon funcPons, assets and efforts of HEOMD and ARMD into SEAP along with Office of EducaPon acPviPes not picked up by MUREP.

NASA Education Mission

Advance high-quality STEM Education using NASA's unique capabilities.

Aligning with Agency Strategy…

NASA Strategic Objective 2.4 on Education

Advance the Nation's STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers, and faculty in NASA's missions and unique assets.

Reference: NASA Strategic Plan 2014

Planned Education Strategy

- **Use the Education Coordinating Council (ECC)** to make Agency's decisions for strategic direction and planning related to STEM education.

- **Broaden participation in STEM plan for the Agency** by supporting Historical Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), Hispanic Serving Institutions (HSIs), Asian American and Native American Pacific Islander-Serving Institutions (AANAPISIs), American Indian Alaskan Native Serving Institutions (AIANSIs), Predominantly Black Institutions (PBI), and other Minority Serving Institutions (MSIs) through multi-year STEM grants to enhance their research capabilities and STEM curricula.

- **Use NASA's workforce, unique missions and facilities, discoveries, and assets** to inspire student achievement and enhance educator teaching ability in support of the federal CoSTEM efforts.

Planned Education Strategy (Cont'd)

- **Strengthen partnerships with other Federal agencies, academia, industry, and entrepreneurial and international communities** to leverage NASA's investments in STEM to reach a greater number of students and educators.

- **Expand government-wide effort to improve the delivery and effectiveness** of STEM education programs. Support a more cohesive infrastructure for delivering STEM education and leveraging existing resources to improve the reach of agency assets.

- **Use competitive processes to fund the best education programs** within NASA and to coordinate closely with the CoSTEM agencies to broaden the reach of NASA's capability to engage and educate.

- **Provide evidence-based approaches and results** to support the NASA Education activities.

Office of Education Programs

Aerospace Research & Career Development (ARCD) Program

Strengthens the research capabilities of the Nation's colleges and universities and provides opportunities that attract and prepare an increasing number of students for NASA-related careers.

- students contributes to NASA's Mission Directorate research needs.
- furthers the Nation's scientific and technology innovation agendas.
- supports programs as a major link in the pipeline for addressing NASA's human capital strategies.

STEM Education and Accountability (SEA) Program

Provides unique NASA assets, including its people, resources and facilities to support the Nation's STEM education priorities.

- enhances education and research capabilities of Minority Serving higher-education and non-profit informal education institutions.
- funds competitive grants and cooperative agreements with third parties and uses competition to support meritorious education functions, assets, and efforts at NASA Centers and JPL.

Office of Education Projects

Aerospace Research & Career Development (ARCD) Program

- **Space Grant** enables the active involvement of the entire country in NASA activities through its national network comprised of 52 consortia in 50 states, the District of Columbia (DC), and the Commonwealth of Puerto Rico.

- **Space Grant** also supports and enhances science and engineering education and research efforts for educators and learners by leveraging the resource capabilities and technologies of over 900 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies**.**

Experimental Program to Stimulate Competitive Research (EPSCoR)

- **EPSCoR** awards grants and cooperative agreements to establish partnerships between government, higher education, and industry and promotes lasting improvements in the R&D capacity of that state or region.

- **EPSCoR** also develops academic research projects to establish long-term, self-sustaining, and nationally competitive activities in jurisdictions with modest research infrastructure.

Office of Education Projects (Cont'd)

STEM Education and Accountability (SEA) Program

- **Minority University Research and Education (MUREP)** supports recruitment and retention of underrepresented and underserved students, including women and girls, and persons with disabilities, into the STEM fields.

- **MUREP** also provides financial assistance (grants and cooperative agreements) to the Nation's Historically Black Colleges and Universities (HBCU), Hispanic Serving Institutions (HSI), Asian American and Native American Pacific Islander-Serving Institutions (AANAPISI), Tribal Colleges and Universities (TCU) and eligible community colleges.

STEM Education and Accountability Projects (SEAP)

- **SEAP** through internal and external competitive processes, investments are made in activities demonstrating evidence-based strategies, contributing to NASA's performance goals and Administration's education initiatives, and supporting the Federal STEM education priority investment areas and coordination objectives.

- **SEAP** also provides funding for competitive STEM education opportunities, including student internships at NASA Centers and JPL, student launch initiatives, and grants to higher education institutions, youth serving organizations, NASA Visitor Centers, museums, planetariums, and other types of organizations.

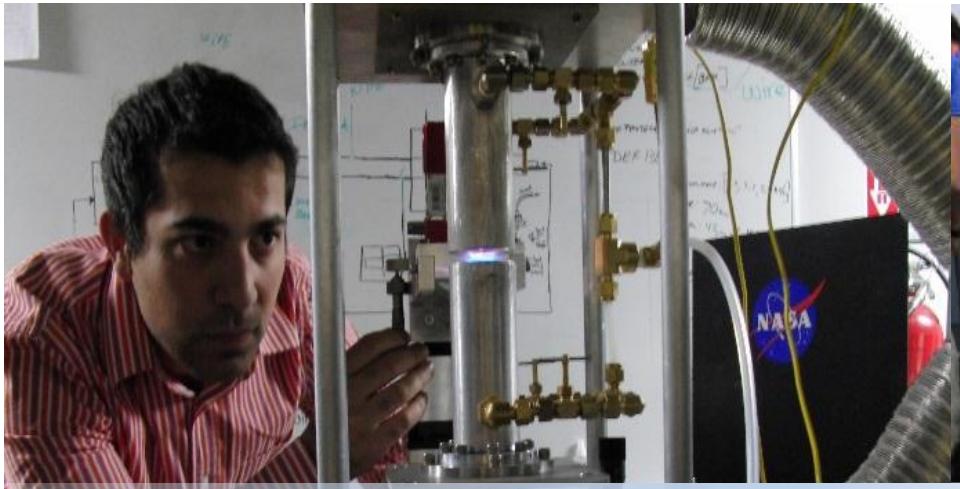
Programmatic Structure – Lines of Business

PROGRAMS	Aerospace Research & Career Development (ARCD)		STEM Education & Accountability (SEA)	
PROJECTS	**Space Grant**	**EPSCoRĀ**	**MUREP**	**SEAP**
DescripPonĀ	Enhances science & engineering educaPon/ research for educators & learners through Univ./ ConsorPaĀĀ50 States DistrictĀĀĀColumbia and the Commonwealth of Puerto Rico.Ā	Strengthens research capability of jurisdicPons thatĀ haven't participated equitably in compePPve aero research acPviPes.	Enhances research and academic capabiliPes at MSIs to improve quality of STEMĀ programs for underrepresented and underservedĀ populaPons.	Provides compePPveĀ opportuniPes to support innovative educaPon efforts by third parPes and at NASA Centers/JPL
Funding Examples	SPpends and scholarships, hands-on experience on variety of authenPc plaOorms.	Fund faculty research, post-docs and Univ. capability; travel to NASA Centers/JPL work w/ SMEs.	Funds internships and multi-year cooperaPve agreements research at minorityĀ serving insPtuPons.Ā	Funds new commitments with third parPes and NASA Centers/JPL as resultĀĀĀ internal and external compePPons.
Educator ProfessionalĀĀevelopmentĀ (EPD)Ā	X		X	X
STEM Engagement (SE)	X		X	X
NASA Internships, Fellowships, & Scholarships (NIFS)	X		X	X
Insl tul onalĀngagementĀIE)	X	X	X	X

How Do We Do It …

EDUCATOR PROFESSIONAL DEVELOPMENT

INSTITUTIONAL ENGAGEMENT



INTERNSHIPS, FELLOWSHIPS, AND SCHOLARSHIPS

STEM ENGAGEMENT

How Do We Do It …(Cont'd)

EDUCATOR PROFESSIONAL DEVELOPMENT

Using NASA's missions, education resources, and unique facilities to provide high-quality STEM content and hands-on learning experiences to K-12, informal, and pre-service educators.

- *Professional development*
- *In-person and online*

INSTITUTIONAL ENGAGEMENT

Awards grants and cooperative agreements to institutions to conduct research and/or deliver STEM content.

- *Minority University Research & Education Project (MUREP)*
- *Experimental Program to Stimulate Competitive Research (EPSCoR)*

INTERNSHIPS, FELLOWSHIPS, AND SCHOLARSHIPS

Leverage NASA's unique mission activities to enhance and increase the capabilities, diversity, and size of the nation's next generation workforce.

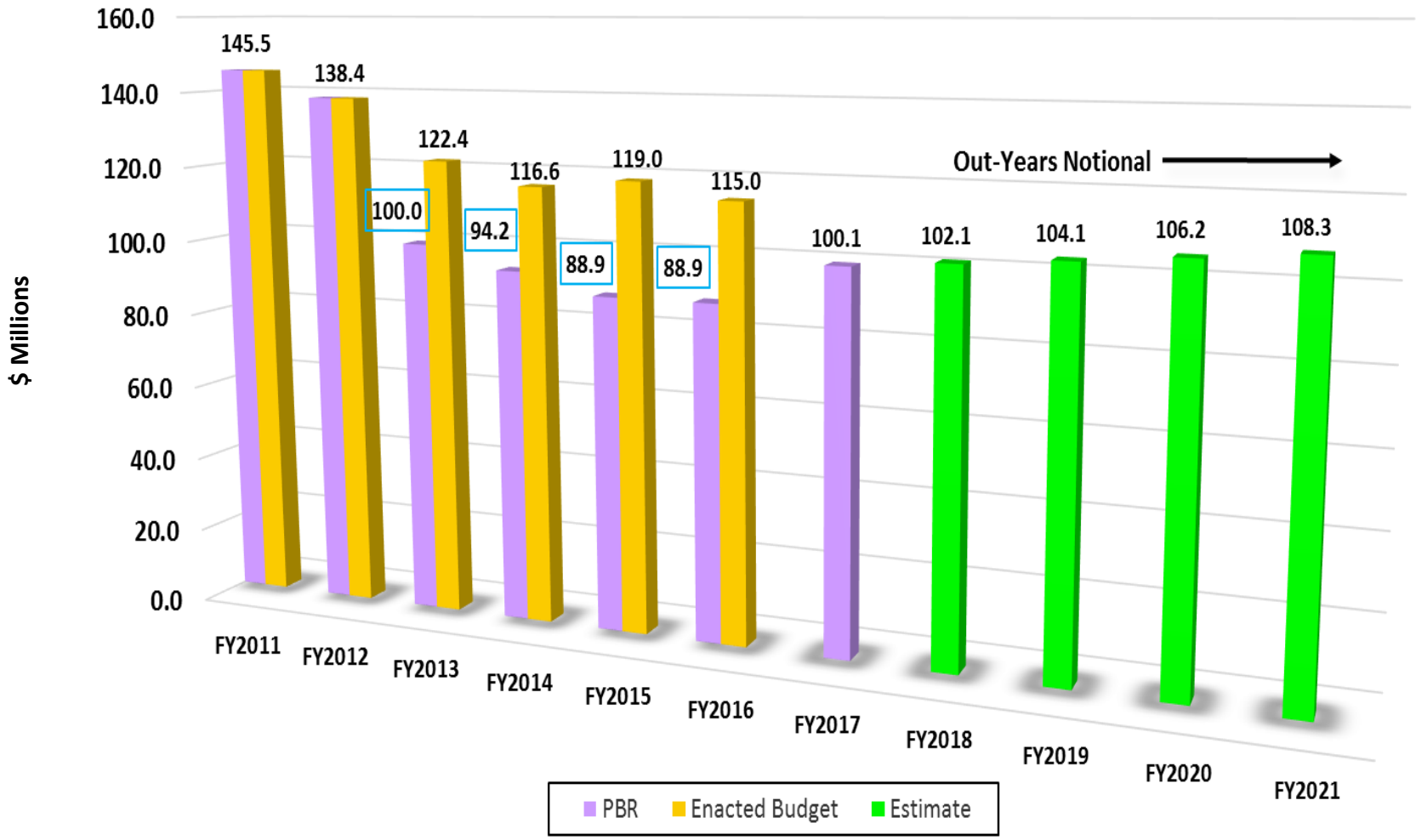
- *One Stop Shopping Initiative (OSSI): Recruitment, application, selection, and career development.*
- *USRA Agreement – Provides infrastructure to manage internships across agency.*

STEM ENGAGEMENT

Provides opportunities for participatory and experiential learning activities in formal and informal settings to connect learners to NASA-unique resources.

- *Student design challenges and opportunities tied to NASA content*
- *Center Collaborations with local communities and audiences*

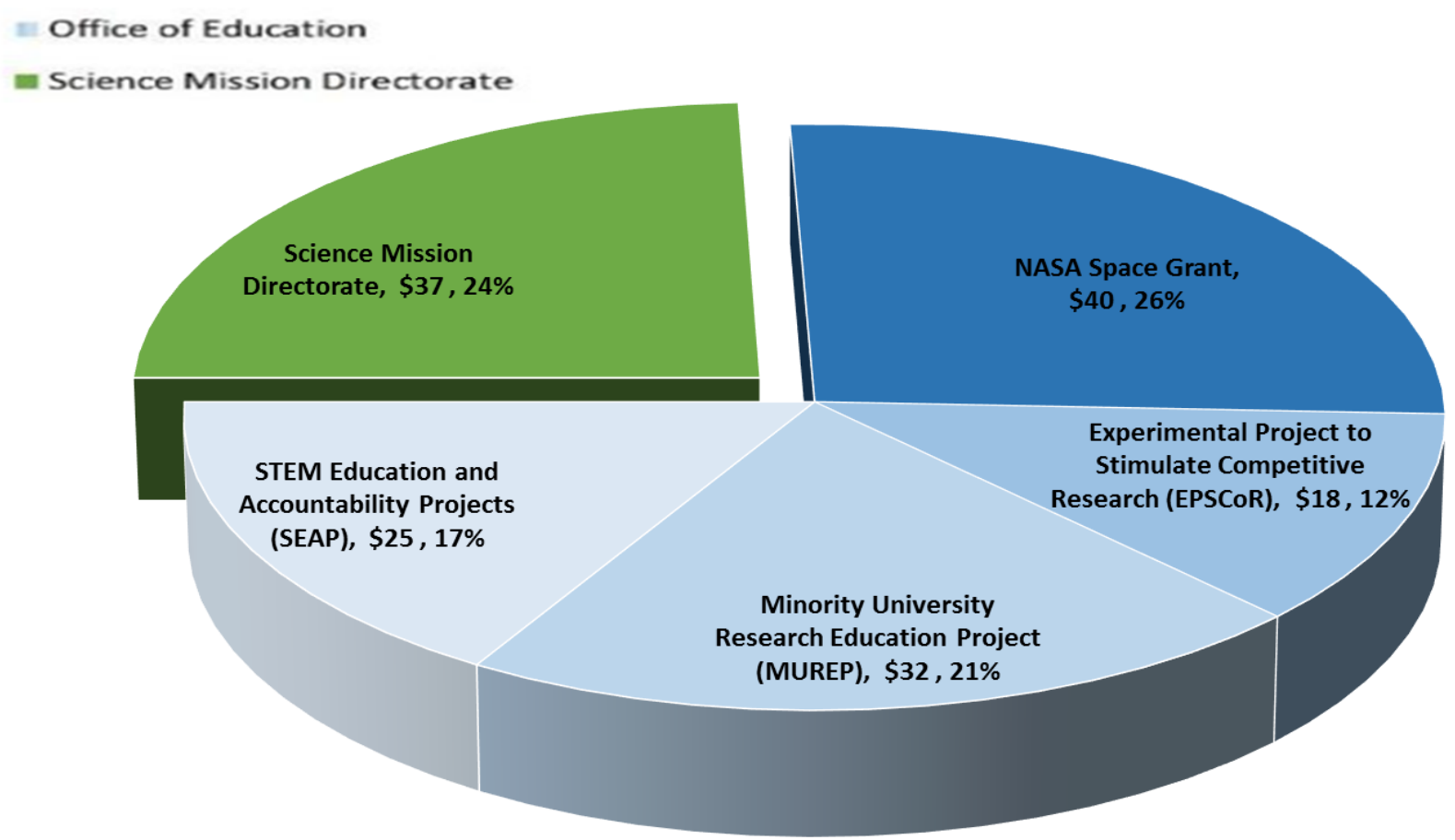
FY 2011 – 2021 NASA Education Office Budget Overview



Agency FY16 Total Appropriations - Education

Budget Authority in Millions	FY 2016 Enacted Budget
NASA Education	**152.0**
Office of Education	**115.0**
Aerospace Research and Career Development (ARCD) Program	**58.0**
NASA Space Grant	40.0
Experimental Program to Stimulate Competitive Research (EPSCoR)	18.0
STEM Education and Accountability (SEA) Program	**57.0**
Minority University Research Education Project (MUREP)	32.0
STEM Education and Accountability Projects (SEAP)	25.0
Science Mission Directorate	**37.0**
NASA Science Mission Directorate STEM Projects	37.0

Agency FY16 Total Appropriations - Education



Total Budget = $152M

2017 House Report 114-605
Commerce, Justice, Science, Appropriations Report

- **The Committee recommends $115,000,000 for Education, which is the same as fiscal year 2016 and $14,900,000 above the request.**
  - The Committee is concerned that despite direction in Public Law 114–113, overhead costs remain excessive.
  - To ensure that the program is operating efficiently with minimum overhead, NASA shall provide a report to the Committee within 180 days of enactment that analyzes how funds have been spent over the last three fiscal years, to include:
    - 1) A list of cooperative agreements, Space Act Agreements, and grantees, including the amount and purpose of grant or funding allocation; and
    - 2) A complete description, including amounts and purposes, of how remaining funds have been spent. This analysis shall also include a plan to ensure that ***no more than five percent overhead is charged within the Education account by fiscal year 2018***

2017 House Report 114-605
Commerce, Justice, Science, Appropriations Report (Cont'd)

- ***National Space Grant College and Fellowship Program -*** The recommendation includes $40,000,000 for the Space Grant program, which is the same as fiscal year 2016. These funds shall be allocated to the consortia lead institutions in all 52 participating jurisdictions according to the percentage allocation provided to States in the current five year grant award period.

- ***Experimental Program to Stimulate Competitive Research (EPSCoR) -*** The recommendation includes $18,000,000 for EPSCoR, which is the same as fiscal year 2016.

- ***STEM Education and Accountability Programs (SEAP) -*** NASA shall brief the Committee on the intended distribution of fiscal year 2017 SEAP resources to individual activities; how that distribution compares to the fiscal year 2016 distribution; how that distribution supports the priorities contained in the government-wide STEM education strategic plan; and what partnerships NASA has formed through its various SEAP programs with Hispanic Serving Institutions and Historically Black Colleges and Universities.

2017 Senate Report 114-239
Commerce, Justice, Science, Appropriations Report

- The Committee provides $108,000,000 for Education, which is $7,000,000 below the fiscal year 2016 enacted level and $7,900,000 above the budget request.

  – The Education account funds science, technology, engineering, and mathematics [STEM] education activities to educate and inspire our next generation of explorers and innovators.

  – Space Grant -The Committee provides $40,000,000 for Space Grant, and directs NASA to support an extension of the current Space Grant program, and to allocate the entire funding amount for consortia-led institutions in all 52 participating jurisdictions according to the percentage allocation provided to States in the current 5-year grant award.

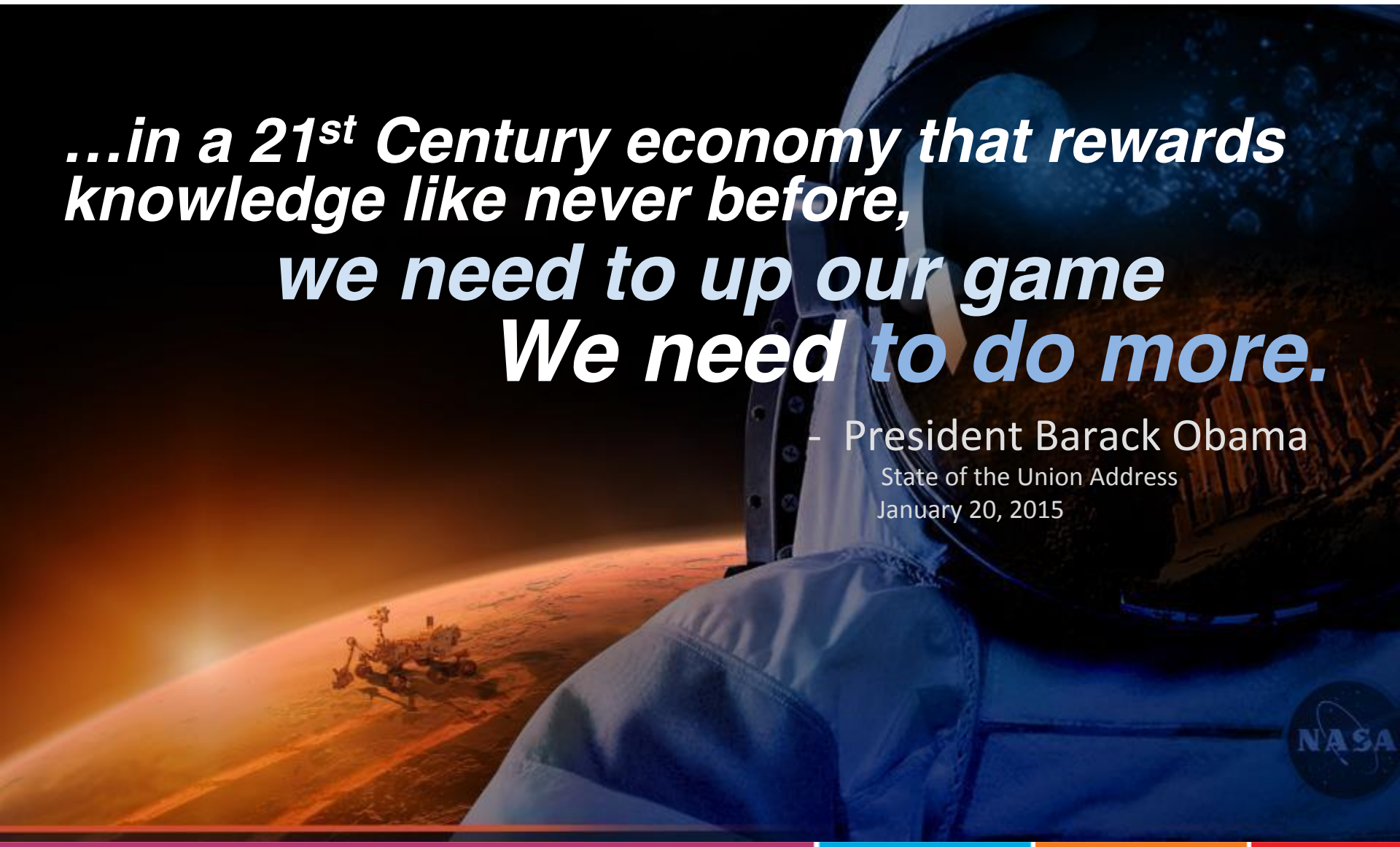
2017 Senate Report 114-239
Commerce, Justice, Science, Appropriations Report (Cont'd)

- Competitive Program -The Committee provides up to $10,000,000 for the Competitive Program for Science, Museums, Planetariums and NASA Visitors Centers within the STEM Education and Accountability Projects.
  - This competitive grant program creates interactive exhibits, professional development activities, and community-based programs to engage students, teachers, and the public in science, technology, engineering, and mathematics.
- Space Law - As the civilian space market continues to grow and national policies are developed for remote sensing and commercial space launches for cargo and crew, there is an increasing need for education on the legal aspects of human use of aerospace technologies.
  - To encourage legal research in this area, the Committee provides up to $1,000,000 for space law education and outreach. NASA shall provide a spending plan to the Committee within 60 days of enactment on how NASA will implement this direction.

FY 2017
House & Senate Proposed Marks

Budget Authority in Millions	FY 2016 Enacted Budget	Delta	FY 2017 Budget Request	FY 2017 HAC Marks	Delta	FY 2017 SAC Marks
Education	**152.0**	**(26.9)**	**125.1**	**152.0**	**(2.0)**	**150.0**
Aerospace Research and Career (ARCD) Development Program	**58.0**	**(25.0)**	**33.0**	**58.0**	**0.0**	**58.0**
NASA Space Grant	40.0	(16.0)	24.0	40.0	0.0	40.0
Experimental Project to Stimulate Competitive Research (EPSCoR)	18.0	(9.0)	9.0	18.0	0.0	18.0
STEM Education & Accountability (SEA) Program	**57.0**	**10.1**	**67.1**	**57.0**	**(7.0)**	**50.0**
Minority University Research Education Project (MUREP)	32.0	(2.0)	30.0	32.0	0.0	32.0
STEM Education & Accountability Projects (SEAP)	25.0	12.1	37.1	25.0	(7.0)	18.0
Science Mission Directorate	**37.0**	**(12.0)**	**25.0**	**37.0**	**5.0**	**42.0**
NASA Science Mission Directorate STEM Projects	37.0	(12.0)	25.0	37.0	5.0	42.0

Looking Forward…



…in a 21st Century economy that rewards knowledge like never before,

we need to up our game

We need to do more.

- President Barack Obama
  State of the Union Address
  January 20, 2015

BACKUP SLIDES

Detailed Historical Context

Under the O'Keefe Administration (December 2001 – April 2005)

- NASA Education removed from underneath Human Capital and made an Enterprise, led Chief Education Officer Dr. Adena Loston.

Under the Griffin Administration (April 2005 – January 2009)

- Education removed as Enterprise, and became part of new organization – Office of Strategic Communications.
- Between 2005-2006, there were several acting ASSISTANT Administrators for Education including Dr. Bernice Alston, Angela Phillips Diaz, and John Hairston before permanent selection of Dr. Joyce Winterton in Oct 2006.
- During the tenure of Diaz, the management of education projects were internally competed across the Centers with projects then being transferred under MOA to selected Centers.
- Additionally in this timeframe, the ceiling size of the HQ Office of Education was significantly reduced.
- In Dec 2005, the **Education Coordinating Committee (ECC) established** to provide strategic direction & planning related to education and made recommendations to propel Agency towards a streamlined education portfolio. The committee has since been designated a "Council" instead of committee.

Under the Bolden Administration (July 2009 – present)

- The **America COMPETES Reauthorization Act of 2010** required the Office of Science and Technology Policy (OSTP) to establish, maintain, and periodically update an inventory of Federal investments in STEM education as part of a **5-year Federal STEM education strategic plan.**
- Leland Melvin selected to lead Education (Oct 2010) and title then became ASSOCIATE Administrator (AA).
- The **America COMPETES Reauthorization Act of 2010** required the Office of Science and Technology Policy (OSTP) to establish, maintain, and periodically update an inventory of Federal investments in STEM education as part of a **5-year Federal STEM education strategic plan.**
- The **Committee on STEM Education (CoSTEM)** was established in 2011, as called for by the America COMPETES Act, to coordinate Federal programs and activities in support of STEM education.
- Since 2011, there has been Program/Activity consolidation in an effort to align with CoSTEM goals.
- Donald James was competitively selected following the retirement of Leland Melvin in Feb 2014, and began as AA in September 2014.