

## DOE Research Opportunities for HBCU's

### U.S. Department of Energy Office of Science

Bill Valdez

Director

Office of Workforce Development for Teachers and Scientists  
Office of Science, US Department of Energy



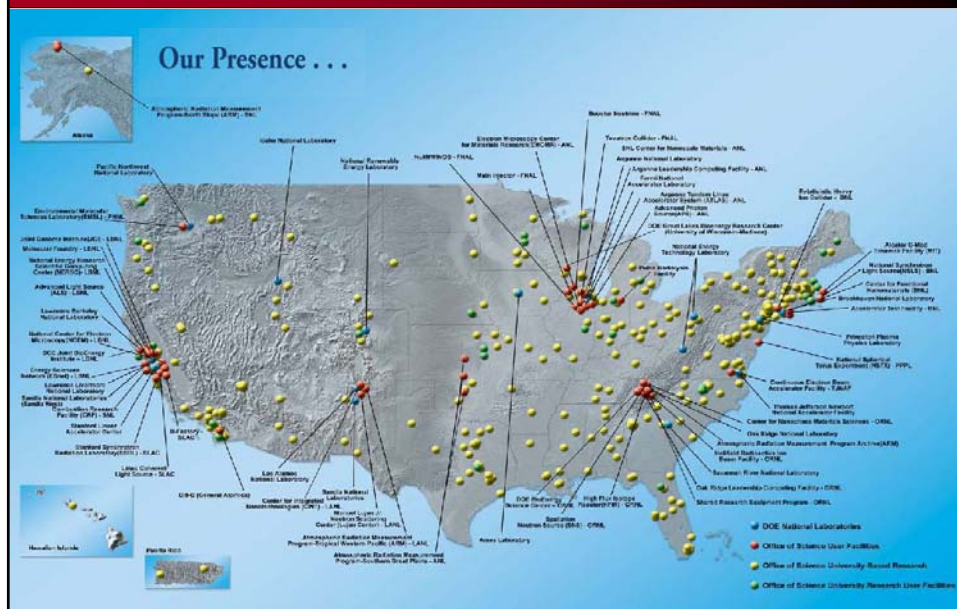
## Federal Research Funding Rankings

Federal R&D Budget -- FY 2008 Data <sup>(1)</sup> (dollars in millions)						Crosscut	Crosscut	Crosscut
	Basic Research	Applied Research	Development	Facilities/ Equipment	Total R&D	Networking And Info. Technology R&D	National Nanotechnolog y Initiative	Climate Change Science Program
1	HHS 16,037	HHS 12,540	DOD 68,315	NASA 2,146	DOD 74,234	DOD 1,018	NSF 373	NASA 1,025
2	NSF 3,687	DOD 4,478	NASA 6,755	DOE 1,130	HHS 28,737	NSF 904	DOD 345	NSF 205
3	DOE 3,315	DOE 2,723	DOE 1,990	NSF 482	NASA 12,245	HHS 541	DOE 258	DOC 186
4	NASA 2,226	NASA 1,118	DHS 335	DHS 181	DOE 9,158	DOE 473	HHS 173	DOE 126
5	DOD 1,422	AGRIC. 974	TRANSP. 194	HHS 123	NSF 4,548	NASA 82	COMMERCE 86	AGRIC. 61

<sup>(1)</sup> Source: FY 2008 Budget of the United States, Analytical Perspectives volume, R&D Chapter



## Office of Science Supported Facilities & Universities



## DOE's Priorities and Goals

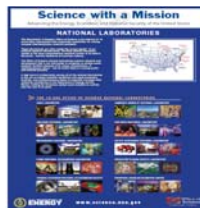
- **Priority: Science and Discovery: Invest in science to achieve transformational discoveries**
  - Organize and focus on breakthrough science
  - Develop and nurture science and engineering talent
  - Coordinate DOE work across the department, across the government, and globally
- **Priority: Change the landscape of energy demand and supply**
  - Drive energy efficiency to decrease energy use in homes, industry and transportation
  - Develop and deploy clean, safe, low carbon energy supplies
  - Enhance DOE's application areas through collaboration with its strengths in Science
- **Priority: Economic Prosperity: Create millions of green jobs and increase competitiveness**
  - Reduce energy demand
  - Deploy cost-effective low-carbon clean energy technologies at scale
  - Promote the development of an efficient, "smart" electricity transmission and distribution network
  - Enable responsible domestic production of oil and natural gas
  - Create a green workforce
- **Priority: National Security and Legacy: Maintain nuclear deterrent and prevent proliferation**
  - Strengthen non-proliferation and arms control activities
  - Ensure that the U.S. weapons stockpile remains safe, secure, and reliable without nuclear testing
  - Complete legacy environmental clean-up
- **Priority: Climate Change: Position U.S. to lead on climate change policy, technology, and science**
  - Provide science and technology inputs needed for global climate negotiations
  - Develop and deploy technology solutions domestically and globally
  - Advance climate science to better understand the human impact on the global environment





## *The Office of Science...*

- ...supports basic research and research capabilities that underpin DOE mission in energy, environment and national security through long-term, high-risk, high-payoff multidisciplinary research programs
- ...constructs and operates 32 world leading large-scale user facilities open to the scientific community, including the international science community
- ...provides over 40% of Federal support for the physical sciences
- ...directly supports (FY '08) the research of 21,000 Ph.D.'s, graduate students, and undergraduates; and indirectly supports 23,000 more at the large-scale facilities - developing and nurturing a highly trained scientific workforce
- ...manages 10 of the 17 DOE national laboratories
- ...funds research at more than 300 universities, involving 5,600 Ph.D's, 2,500 post-docs, 3,900 graduate students, and 800 technicians and support staff



## *Research at the Office of Science is an Investment in America's Future*

### *The Office of Science Enhances U.S. Competitiveness Through...*

#### **Transformational Science**

Basic research for advanced scientific breakthroughs that will revolutionize our approach to the nation's energy, environment, and national security challenges

#### **National Scientific Facilities**

World-leading research capabilities that maintain U.S. leadership in science & technological innovation

#### **A Scientific Workforce for the Nation's Future**

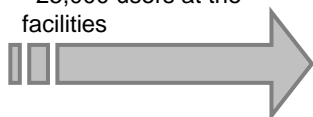
Supporting, training, & educating the nation's current and future scientific & technical workforce: Ph.D.'s, post-docs, graduate students, & science educators



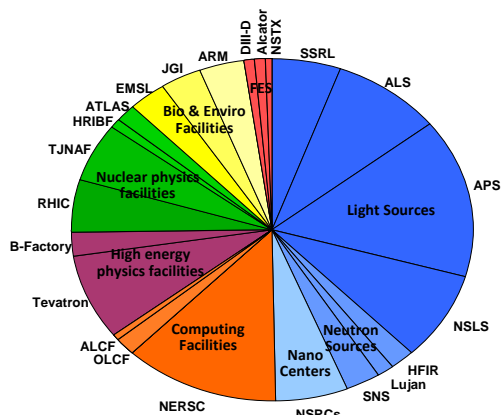
## Office of Science by the Numbers in FY 2010

- ~ 25,000 Ph.D.s, graduate students, undergraduates, engineers, and technicians at more than 300 universities and at all 17 DOE laboratories

- ~25,000 users at the facilities



~25,000 users in FY 2010 (distribution of users by facility)



7

## WDTs Program Mission

**Mission:** Help ensure that DOE and the Nation have a sustained pipeline of highly trained science, technology, engineering and mathematics (STEM) workers.

### **Priorities:**

- Contribute to the development of STEM K-16 educators through experiential-based programs.
- Provide mentored research experiences to undergraduate students and faculty through participation in the DOE research enterprise.
- Increase opportunities for under-represented students and faculty to participate in STEM energy and environment education and careers leveraging the unique opportunities at DOE national laboratories.
- Provide graduate fellowships for the pursuit of advanced degrees in scientific disciplines that prepare U.S. students for careers important to the DOE mission.



8



## WDTS in Pictures



9



## Current Opportunities



Science Undergraduate  
Laboratory Internship



Faculty and  
Student Teams



Pre-Service Teacher Program



Community College Institute

### Student Benefits

- Undergraduate students mentored by a laboratory scientist or engineer
- \$400 per week stipend
- Housing allowance
- Round trip travel to laboratory

### Faculty Benefits

- Opportunity to collaborate in research at a DOE National Laboratory
- Linkage of research capability at home institution
- Create grant opportunities for research



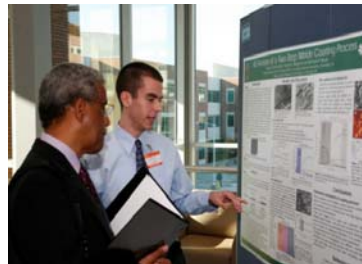
## Undergraduate Research Opportunities With DOE

DOE runs one of the Nation's largest undergraduate research internships

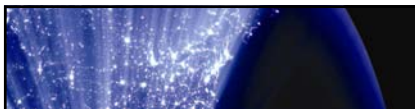
- Numbers of students
  - 600 funded internships directly from WDTS in FY 2008
  - 4,000 total funded in FY 2008 in all programs at all DOE laboratories
  - 650 in FY 2009
  - 1,300 in FY 2010(Projected)

### *The Internships lead to:*

- Mentored research on a world class project relevant to DOE's missions
- Publication in the DOE *Journal of Undergraduate Research*
- Eligibility for the SERCh competition
- Job possibilities at DOE



11



## Faculty & Student Teams (FaST) Research Program

**Purpose:** To provide opportunities for faculty and student teams to conduct research with DOE scientists.

### FY 2009:

Number of Students: 200

Number of Faculty: 70

Number of Institutions: 65

### FY 2010:

Number of Students: 300

Number of Faculty: 100

Number of Institutions: 90

Mini-grants available to support continued research



12



## Science & Energy Research Challenge – SERCh

**Purpose: Recognize and reward valuable undergraduate contributions to DOE research efforts**

- **85 competitors in 2008**

- Represented 67 colleges and universities
- Encouraged under-represented participation
  - 10 individuals from 6 HBCUs (11.76%)
  - 33 women (33.9%)
  - 29 EPSCoR universities (34.12%)
  - 53 small schools (<15,000 students) (62.35%)

- **University Faculty at SERCh**

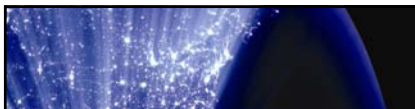
- 43 faculty mentors accompanied students
- Seminars on connecting institutions with DOE

- **Scholarships**

- Grand Prize winner awarded \$10,000 scholarship
- Multiple scholarship winners in multiple categories



13



## Summer Intern Project

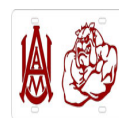
- Christopher P. Adams attends Fort Valley State University
- He is currently a junior majoring in Business Administration
- A member of Alpha Phi Alpha Fraternity Incorporated
- A part of many different activities on his campus
- He found out about the internship through his father
- His father works for DOE AT Savannah River Site in Aiken, SC
- Christopher is creating a searchable database for all Minority Serving Institutions
- This will allow the Office of Science to have a direct link to the VP's of Research at each institution



14

## Progress with HBCU's

- 33 out of 105 HBCU's have responded
  - 8 are considered to be Science & Technology Schools.
  - 14 have graduate programs that offer courses in the Science & Technology fields
- The undergraduate and graduate courses that are offered are: Biology, Chemistry, Physics, Engineering Technology, Computer Science, Mathematics, Transportation, Industrial Technology, Nursing, Psychology, Marine Science, Environmental Science, Construction Management Technology, and Astrology.



15

## Questions and Comments

**Bill Valdez**

Director

Office of Workforce Development for Teachers & Scientists

[Bill.Valdez@science.doe.gov](mailto:Bill.Valdez@science.doe.gov)



16