DOE Research Opportunities for HBCU’s

U.S. Department of Energy
Office of Science

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Office of Science, US Department of Energy

Federal R&D Budget — FY 2008 Data (1)

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<tr>
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<th>Crosscut</th>
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<tbody>
<tr>
<td>1</td>
<td>HHS 16,037</td>
<td>HHS 12,540</td>
<td>DOD 68,315</td>
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<td>2</td>
<td>NSF 3,687</td>
<td>DOD 4,478</td>
<td>NASA 6,755</td>
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<td>DOE 3,315</td>
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<td>4</td>
<td>NASA 2,226</td>
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<td>DHS 335</td>
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<td>5</td>
<td>DOD 1,422</td>
<td>AGRIC. 974</td>
<td>TRANSP. 194</td>
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(1) 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
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.
WDTS in Pictures

Mira Loma High School from Sacramento, Calif.

Current Opportunities

<table>
<thead>
<tr>
<th>Science Undergraduate Laboratory Internship</th>
<th>Pre-Service Teacher Program</th>
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<tbody>
<tr>
<td>Faculty and Student Teams</td>
<td>Community College Institute</td>
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</table>

**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

Faculty & Student Teams (FaST) Research Program

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

<table>
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<th>FY 2009:</th>
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<tbody>
<tr>
<td>Number of Students:</td>
<td>200</td>
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<tr>
<td>Number of Faculty:</td>
<td>70</td>
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<tr>
<td>Number of Institutions:</td>
<td>65</td>
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<table>
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<th>FY 2010:</th>
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<tbody>
<tr>
<td>Number of Students:</td>
<td>300</td>
</tr>
<tr>
<td>Number of Faculty:</td>
<td>100</td>
</tr>
<tr>
<td>Number of Institutions:</td>
<td>90</td>
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Mini-grants available to support continued research
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

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
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.

Questions and Comments

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