

DOE National Laboratories and Universities:

Partnership Models for a New Era of Research

Report on results of a NAS/GUIRR workshop

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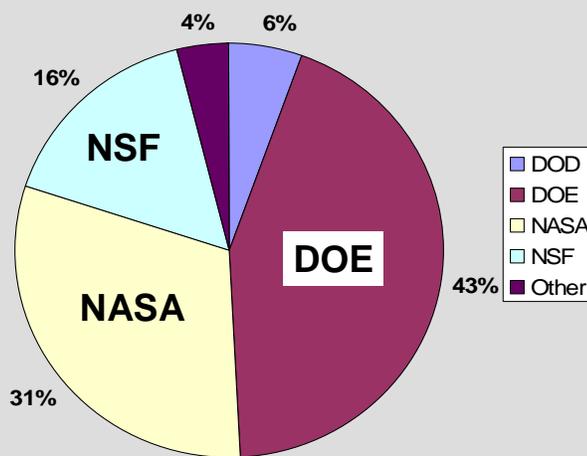
Exploring new models of collaboration

- ▶ DOE laboratories and universities have a history of productive collaboration among individual researchers
 - Joint research programs, personnel exchanges, use of scientific facilities
- ▶ New models for collaboration can provide increased value to both parties through strategic institutional alliances
 - Expanded resource base for research and education
 - Access to unique user facilities and complementary capabilities
 - More opportunities for scientists to work on mission-related problems and broad national challenges
- ▶ These partnerships are increasingly important Post 911
- ▶ However, a number of barriers to collaboration exist
 - Procurement rules
 - Human resource policies
 - Intellectual property issues

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Why is DOE so important? DOE is the physical sciences agency



Federal Support for the Physical Sciences

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Source: NSF - Division of Statistical Research Services

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DOE User Facilities Provide Unique Opportunities for Research and Learning



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Workshop Purpose and Design

- ▶ Validate mutual benefits of collaboration and share experiences on barriers and innovative partnership models
- ▶ Open dialogue among experts from universities, national laboratories, research agencies
- ▶ Clear articulation of rationale for and benefits of collaboration
- ▶ Focus on identifying best practices
 - Incentives and structures
 - Research in a classified environment
 - Building the S&E workforce
 - User facilities
 - Non-DOE examples (NIST, DOD)

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Stronger collaboration is important to achieving major scientific advances

- ▶ Scientific endeavors that require large, complex facilities and equipment
- ▶ Science that requires substantial engineering, including development of scientific instrumentation
- ▶ Long-term, interdisciplinary scientific programs
- ▶ While DOE remains the primary funding agency for physical science research, there is
 - Lack of political support for national laboratories, attributed in part to lack of a clearly articulated scientific mission
 - This may present a significant challenge for future collaborative activity, particularly with growing support for NIH and NSF facilities and programs

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Different incentives and structural issues hamper collaborations

- ▶ Contracting language and procedures make collaboration difficult
 - Labs may require clauses that universities are prohibited from signing (ie, indemnification)
- ▶ Differences in accounting procedures and costs can limit desired teaming arrangements
- ▶ Research funds may have specific limitations on use
 - Lack of sustained support for joint programs creates mismatch between timeline for university programs (4-5 years) and laboratory programs (1-3 years)
- ▶ Facility access at laboratories is increasingly limited for foreign-born students, who often constitute a significant proportion of university advanced S&E student population

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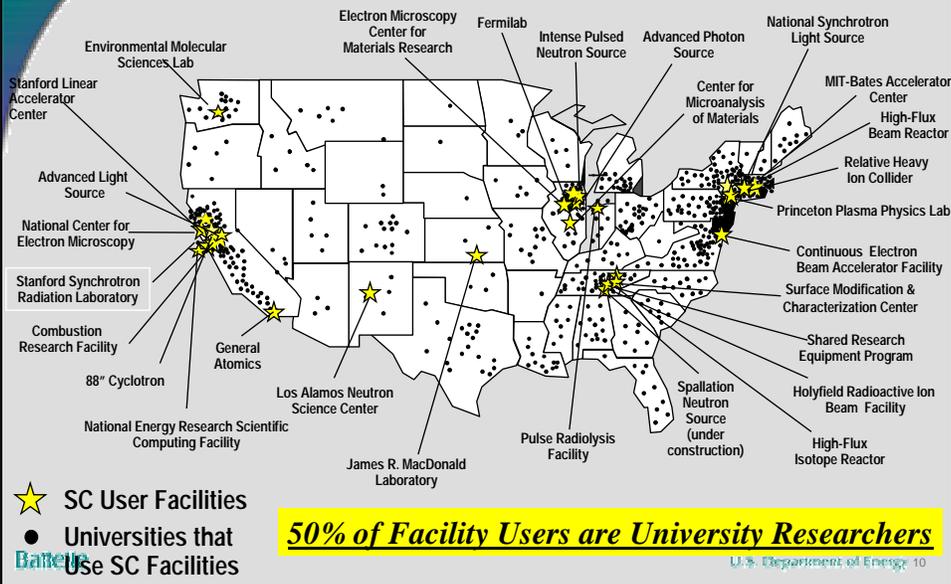
Access to and effective use of major user facilities was a key issue

- ▶ Differences between the access to and operation of large user facilities and smaller, single purpose facilities identified as a barrier to collaborative research
 - interagency agreements, input from the scientific community on needs, etc
- ▶ Lack of travel funding for university scientists limits their ability to use these facilities
- ▶ An increasing focus on security and preapprovals for access by foreign nationals may limit international participation in key scientific endeavors
 - This issue was viewed relevant both for US based facilities and potentially in non-US based experiments and facilities

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DOE Office of Science Scientific User Facilities and the Universities That Utilize Them



Building a vital S&E workforce is critical to our nation's future

- ▶ There is broad national concern about the state of our S&E workforce
 - Aging of the existing workforce and strength of the pipeline
 - Dependence on foreign nationals
 - Curriculum and training experiences designed to meet our national needs – e.g., multidisciplinary teams
- ▶ The resources required to develop the next generation of scientists and engineers are tougher to get
 - Federal research budgets are in decline
 - The pace of scientific advance is accelerating
 - Impacts DOE as well as universities
- ▶ Both DOE laboratories and universities are exploring new mechanisms and opportunities to develop and attract new scientists and engineers to their research teams

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Collaborations have an important role in building the S&E workforce of tomorrow

- ▶ An imbalance between the laboratory need for US citizens and university production of primarily non-US citizens in key areas of science and engineering is a growing concern
- ▶ New educational programs at college and post-doctoral levels can help address some of these challenges
- ▶ New national priorities in homeland security must be considered in developing effective programs for workforce development and growth

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The bottom line.....and what next?

- ▶ The dialogue at the workshop was extremely productive
 - Enhanced mutual understanding
 - Identified areas of common concern
 - Explored potential paths toward solution on priority barriers and challenges
- ▶ Individual institutions have flexibility to address many of the barriers identified
- ▶ Other issues must be addressed at the federal level
- ▶ Lessons learned from other agency programs can potentially be applied to DOE programs
- ▶ Final report being released later this month

What will you do to support and build new partnerships for this emerging era of research?

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Thank you

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