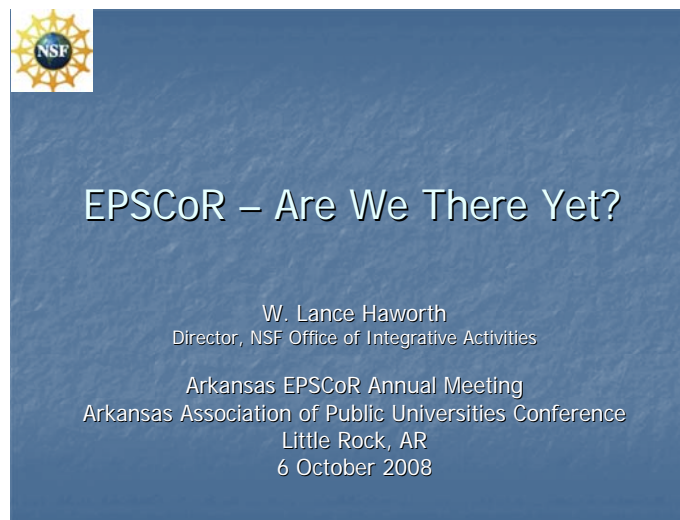


## **Are We There Yet?**

**W. Lance Haworth, Director, NSF Office of Integrative Activities  
Office of the Director**

Arkansas EPSCoR Annual Conference  
Arkansas Association of Universities Meeting  
Little Rock, AR  
6 October 2008

**Slide 1:** Good afternoon!



Vice President McClure, colleagues, and friends in the science and education enterprise:

It's a great pleasure to be here in Little Rock today. I want to thank the organizers for inviting me to participate in your meeting, and I bring you greetings and regards from NSF Director Arden Bement and Deputy Director Kathie Olsen. I also bring warm greetings from EPSCoR Director Henry Blount and his regrets for not being here in person. I can't hope to match Henry's knowledge of the EPSCoR canvas nationally, or of his broad grasp of your efforts here in Arkansas – but I do share his enthusiasm and passion for the EPSCoR program. I'm here to learn, and I have learned quite a few things already this morning from John Hehr, Gail McClure, Carole Creamer, Vijay Varadan and their colleagues.

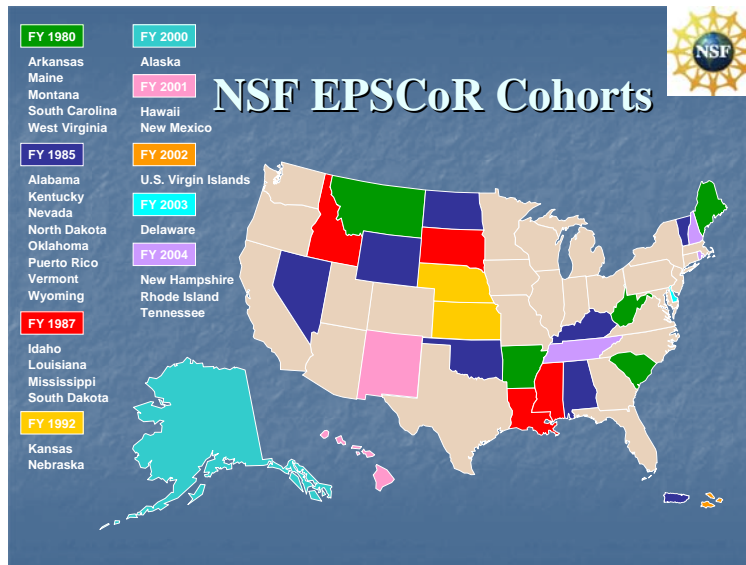
I'd like to cover three related themes in the time available today.

First, I want to say a few things about the NSF-EPSCoR partnership, how it is evolving, and how it applies here in Arkansas.

Second, and maybe at the risk of preaching to the choir, I want to underline the human resource challenge in science and engineering that faces us as a nation.

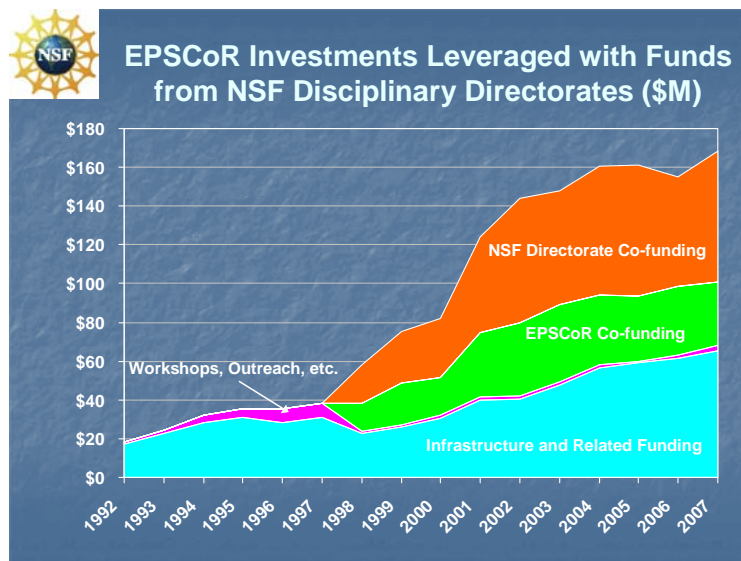
And finally, it's pretty clear that federal support for science and engineering may be at risk in the current climate of economic turmoil and uncertainty. I have some comments about the current budget outlook for NSF and for science and engineering research more generally. We will need all your help in maintaining critical support for the nation's research and education enterprise.

Slide 2: First, some comments about NSF's EPSCoR program.



When I joined NSF in the 1980s, EPSCoR was a new, \$2M or \$3M per year program involving just 5 states, one of which was Arkansas. Today there are six EPSCoR-like programs in other federal agencies, and the NSF EPSCoR program investment has grown to \$120 million, supporting efforts in 25 states, the Commonwealth of Puerto Rico, and the US Virgin Islands.

Slide 3:



NSF support for the EPSCoR states and jurisdictions comes in four primary flavors. The biggest piece is not shown – in 2007 there was approximately \$400M in direct support through the research directorates *without* EPSCoR co-funding. EPSCoR's *catalytic* effect is shown here – in 2007, about \$65M in core support for Research Infrastructure and Improvement awards (blue); and about \$40M in co-funding from the EPSCoR office (green) directly leveraging about \$60M in co-funding from other NSF programs (orange). There's also a small amount for workshops and outreach from the EPSCoR office (purple).

Slide 4:

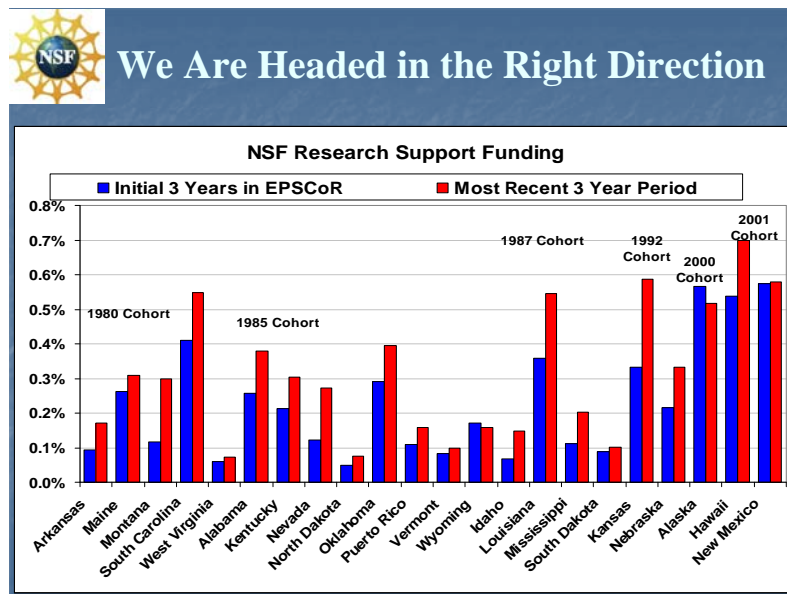


## EPSCoR Strategic Objectives

- Catalyze key research themes
- Activate effective jurisdictional and regional collaborations
- Broaden participation
- Use EPSCoR for development, implementation, and evaluation of programmatic experiments

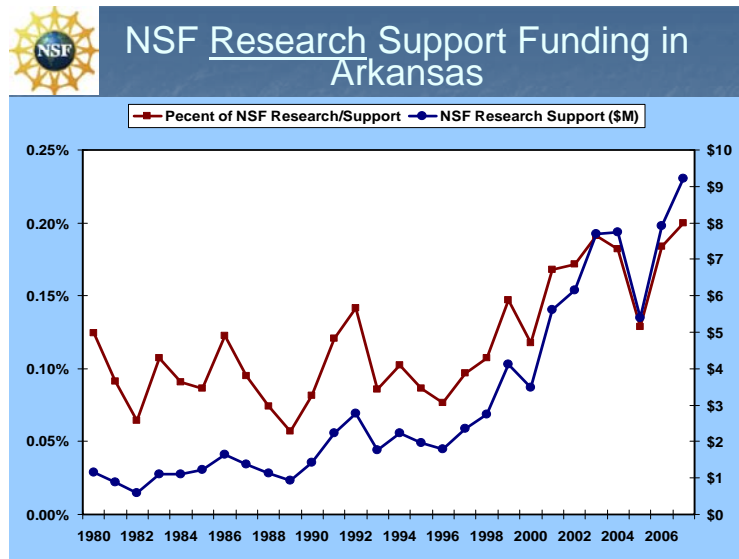
The EPSCoR program’s strategic objectives are straightforward. The program plays a catalytic role in support of key research areas for the state; it should stimulate collaborations both within the state and on a broader, regional basis; it should broaden participation in the sciences and engineering – by geography, by institution, and by engaging the entire spectrum of the human talent pool; and (as the name clearly implies) it should not be afraid to experiment.

Slide 5:



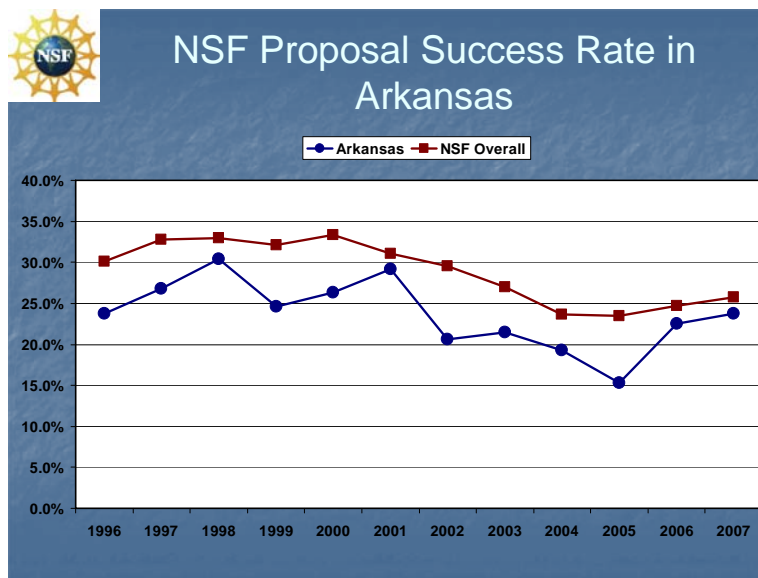
As this slide shows, we are headed in the right direction. Most EPSCoR jurisdictions – including Arkansas - have increased their share of NSF research funds since the year they joined the program.

Slide 6:



The detailed data for NSF research support to Arkansas grantees show a positive trend – these numbers *do not* include direct support from the EPSCoR program or from NSF’s Education Directorate – but the time scale is long and the overall numbers are still fairly modest.

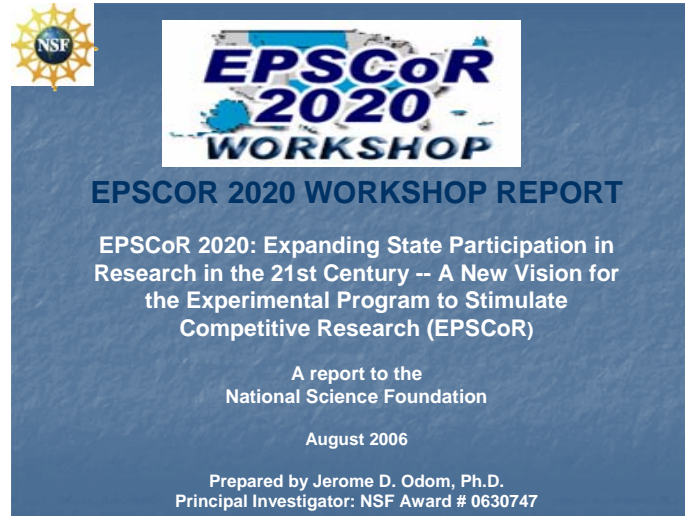
Slide 7:



And you probably don’t need me to remind you that success rates for all proposals at NSF have fallen over the past 10 years. Your success rates here in Arkansas have sometimes been a bit below the national numbers, although the gap seems to have closed. And this 25% success rate for ALL proposals includes renewals - the success rate for NEW proposals from young investigators with no prior NSF support is quite a bit lower.

We are not “There Yet”!

Slide 8:



Early in 2006, NSF's Deputy Director Kathie Olsen asked for a 'bottoms-up' approach from the community to help develop a new vision for EPSCoR. The EPSCoR 2020 workshop was a first step in that direction. I was struck by some of the recent vital statistics in the report from the EPSCoR 2020 workshop in 2006:

- These 27 jurisdictions comprise 20% of the US population
- 25% of the research/doctoral institutions nationwide
- 18% of the scientists and engineers in the national workforce
- Yet they receive only about 10% of NSF research funding!

As you probably know, the community made six major recommendations to NSF in the workshop report:

**Strategic Priority #1 is to provide more flexible EPSCoR Research Infrastructure Improvement Awards, focused on infrastructure development for basic competitive research.**

- As you know, in the FY08 competition, NSF increased the maximum duration of RII awards to 5 years. And the FY09 competition raises the annual funding cap for RII Track I awards from \$3M to \$4M.

**Strategic Priority #2 is to infuse EPSCoR goals into all the NSF's programs and initiatives. Specifically, the report recommends relocating EPSCoR to an Office within the Office of the Director in order to maximize its research focus and cross-directorate interactions.**

- Last year, EPSCoR was relocated to the Office of Integrative Activities ("OIA") within the Director's Office. I can assure you that this program has the full attention of Arden Bement and Kathie Olsen!
- OIA supports the efforts and policy of the Director and Deputy Director to promote unity and alignment in support of the NSF mission. My office plays a key role in fostering cross-disciplinary research and multidisciplinary programs. For example, OIA coordinates and oversees NSF's Science and Technology Centers program, and it also administers the annual competition for Major Research Instrumentation awards.
- The relocation of EPSCoR to OIA strongly underlines the research focus of EPSCoR together with its education and capacity-building activities, and it significantly raises the visibility of

EPSCoR activities across NSF. OIA is a catalyst for excellence in research and education, and I believe that is a key to EPSCoR's success.

**Strategic Priority #3 is to revitalize and extend other components of EPSCoR, including co-funding, planning grants, and outreach.** A specific recommendation is that co-funding should not be limited to the research thrusts identified in current RII awards.

- In my view the concern about the limits on co-funding is a perception based on some past practices, and not on present-day reality. EPSCoR co-funding is *not* restricted to the topical areas identified in the current RII award.
- Meanwhile the EPSCoR office is supporting a vigorous program of workshops and outreach visits, and plans to do even more.

**Strategic Priority #4 is to restore the focus on the “E”- for *Experimental* - in EPSCoR by using EPSCoR as a testbed for new strategies.**

- Here I want to salute Henry Blount for moving quickly to open up a new kind of opportunity. This builds on the results of the EPSCoR Cyberinfrastructure workshop held last fall in Kentucky. The current RII Track 2 competition is designed to support regional or thematic partnerships among EPSCoR jurisdictions that will enhance discovery, learning and economic development through the use of cyberinfrastructure.

**Strategic Priority #5 calls for the development of ‘state strategic S&T business plans’ for state EPSCoR programs, and for NSF to encourage jurisdictions to develop longer-term plans that fully integrate EPSCoR into the process.**

- Here the ball is in your court. The new NSF RII Track 1 solicitation requires you to set your proposal clearly in the context of your jurisdiction's science and technology plans and goals.
- Let me add that from what I have seen on the ground so far, I have been very favorably impressed with efforts to integrate the EPSCoR enterprise with science and technology planning at the state and jurisdictional level.

Finally, **Strategic Priority #6 of the EPSCoR 2020 Report calls for the creation of a shared understanding and definition of success.** This means developing a common view of what should be understood as success for EPSCoR, including metrics for educational and economic outcomes.

- This is clearly work in progress. It's important, and it doesn't admit of easy answers. EPSCoR has been around for 30 years and we certainly don't have the answers at this point. We have to work on it together – “we” being the NSF EPSCoR program and you, the EPSCoR community.

*Slide 9:*

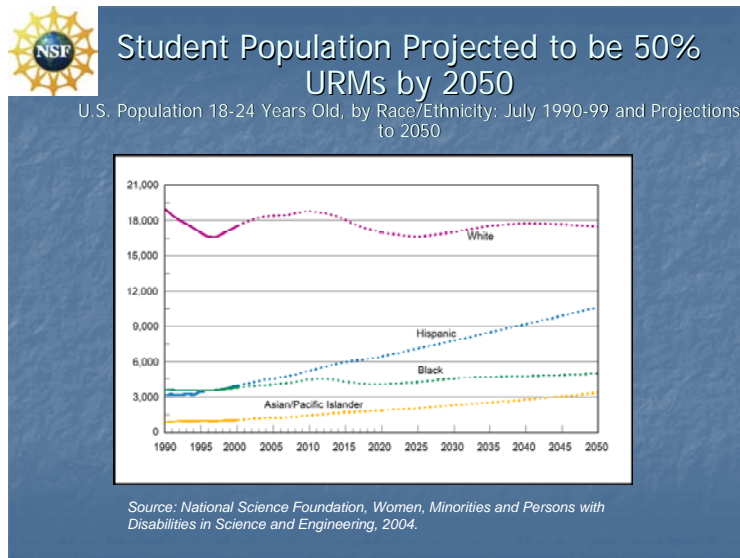


## EPSCoR Strategic Objectives

- Catalyze key research themes
- Activate effective jurisdictional and regional collaborations
- ***Broaden participation***
- Use EPSCoR for development, implementation, and evaluation of programmatic experiments

**One** important measure of success, of course, will be the degree to which we can engage the entire talent pool of Americans in the science and engineering enterprise. That effort to broaden participation is a key objective of the EPSCoR program, and this includes broadening the participation of under-represented groups.

**Slide 10:**



The demographics tell the story clearly. Women and ethnic minorities are woefully under-represented in most areas of science and engineering. These groups already form what Rensselaer University President Shirley Ann Jackson calls the **under-represented majority**. And by the year 2050 in the US, we will have a majority of ethnic minorities. This is a seismic demographic transformation. I believe we neglect this huge talent pool at our peril.

**Slide 11:**

*That we assure continued **national capacity in science and engineering** ... is an issue of self-interest, an issue of national self-interest, indeed, of national security.*

*If we engage the talent — with its beauty and the beautiful minds — of **all of our young people** in science and engineering studies and professions — we will address our national self-interest. And, we will have acknowledged the value inherent in talent and inherent in diversity.*

**-- Shirley Ann Jackson**

Here's **Shirley Ann Jackson** again. "That we assure **continued national capacity in science and engineering** ... is an issue of self-interest, an issue of national self-interest, indeed, of national security."

The argument for diversity is not just a moral argument, it's an argument from self-interest. Here's another way of expressing the value added by diversity in science and engineering:

Slide 12: “Diversity Drives Innovation”



## *Innovation and Broadening Participation*

*“Diversity Drives Innovation”*

*“You can do all the innovating you want in the laboratory, but if you can’t get it out of the university walls you do no one any good”*

*- Joseph DeSimone, University of North Carolina (MIT-Lemelson Innovation Award Winner, 2008)*

*“You can do all the innovating you want in the laboratory, but if you can’t get it out of the University walls you do no one any good.”*

And that brings us back full circle to the goals of the EPSCoR program and to efforts like the Arkansas ASSET Initiative that we heard about this morning. By the way, Joe DeSimone of NC State University won the \$500K MIT-Lemelson prize this year for his pioneering inventions, lab-to-market entrepreneurship and commitment to mentorship.

Slide 13: *Here’s the face of American science vs the face of America.*



## *A Huge Challenge for American Science and Engineering*

THE FACE OF AMERICAN S&E



Is Not Yet the Face of America!

Are we there yet? I did cheat a little - we have made *some* progress since this first photograph was taken, but we still have a huge challenge ahead of us. To quote Arden Bement:

*“We need to be on the leading edge of innovations to increase the participation of under-represented groups. We need to address this with the same energy and focus we have used to innovate and advance our disciplines and fields. We at NSF need to hear your ideas so we can work together.”*



## Slide 14: NSF 2009 Budget Request Web Page.



Finally, let me close with a few comments about the current climate for federal support of basic science. US Federal support for research in the physical sciences, mathematics and engineering has been stagnant for 20 years. In particular, when adjusted for inflation, the five year period from 2004 to 2008 represents the first continuous decline in federal investment in basic R&D at colleges and universities in the last twenty-five years.

The President's American Competitiveness Initiative and the America Competes Act both promised to double federal support for basic research through NSF, the Department of Energy, and NIST over the next seven to ten years.

Almost exactly a year ago, visiting the University of Arkansas, I made some very optimistic remarks about the prospects for a substantial increase in the NSF budget in 2008. But this increase did not materialize, and the budget doubling is simply not on track. We're feeling the effects across all of NSF. The President's budget this time around requests a healthy 14% increase for NSF in fiscal year 2009, which began on October 1. But the prospect of achieving that increase is uncertain to say the least, especially in the current economic and political climate. NSF is now operating under a continuing resolution – a flat budget - until at least March, 2009. As a result, emerging fields will lose momentum, many worthwhile awards may be turned down, and new projects are being delayed and may be cancelled.

And that continuing resolution could even be extended for the rest of the fiscal year. In the meantime, we will work with the transition teams of a new administration to determine what happens; one thing for sure, we must all continue to make the case for science and engineering research and education.

Here's another quote from a recent speech by NSF Director Arden Bement:

“We cannot maintain America's position on the frontier, and we cannot produce the talent and facilities to advance that frontier, without consistent, reliable resources. ...I ask you to make the case that we need a renewed commitment to cutting-edge research and education, to raise US innovation to the highest standard. Without a robust and growing economy, the nation will be seriously strained to meet pressing social needs.” (End quote).

These are difficult times. Together we need to build and maintain the strongest possible federal-state-private sector partnerships to support research and education, and to help sustain American leadership in science, technology, and innovation. And we need your leadership right here in Arkansas to help make that happen.

*Slide 15:*



Thank you!