

**NSF EPSCoR
Successful Management
Strategies**

**A Resource Manual
for EPSCoR States and Jurisdictions**

June 2003

NSF EPSCoR Successful Management Strategies

Preamble

The NSF EPSCoR program has entered a new era marked by significantly increased levels of funding of RII awards, the addition of new states to the EPSCoR community and a large amount of turnover in leadership at the state and national levels. The increased level of program funding has been accompanied by increased demands for managerial oversight and accountability. There has also been an expansion of areas of interest to NSF to which state EPSCoR programs are expected and in some cases required, to contribute.

This is a difficult task even for experienced Project Directors. The problems are increased greatly for new Project Directors particularly if they are new to the EPSCoR program and its (now) global range of activities.

This resource manual is designed to provide a starting point for Project Directors (and others) who are looking at management models which have proven successful in other EPSCoR states and jurisdictions. Sharing successful management strategies leads to greater efficiency and reinforces shared values and common goals across the EPSCoR community.

The document is the result of a workshop for NSF EPSCoR Project Directors, associate/assistant directors and state committee persons held in June, 2003. Several key features of this document should be noted up front:

- This is not a prescriptive document – it is not the intent of either the EPSCoR community or of the NSF to indicate that any one model or suggestion must be adopted by all states/jurisdictions.
- Indeed, the expectation is that the reader will be exposed to a variety of ideas and that this exposure will be the start of a process by which each state/jurisdiction decides what is best for their unique situation.
- This is a “living” document which should be routinely updated and expanded by the Project Directors.
- The list of topics covered does not exhaust all of those relevant to effective EPSCoR program management. It is expected that additional topics will be discussed and added over time.

Table of Contents

Section 1: Building Effective State Committees for Both New and Current Jurisdictions	
• Committee Size, Composition, and Terms	4
• Committee Member Selection Process	5
• Committee Chair	5
• Orientation of New and Existing Members	6
• Committee Structure	6
• By-laws / Operating Guidelines	6
• Committee Roles and Responsibilities	7
• Meetings and Communication	8
Section 2: Prioritizing Areas for EPSCoR Investment at the State and Federal Levels	
• Key Players in Prioritization Process	9
• Prioritization Process	10
• Determining Areas of Focus	12
• General Advice	13
Section 3: Effective Evaluation of Infrastructure Proposals	
• Pre-award: Planning and Integration	14
• Pre-award: Reviews	15
• Pre-Award: Metrics and Reporting	15
• During Award: Implementation	16
• During Award: Reviews	17
• During Award: Metrics and Reporting	18
• During Award: Continuity	18
Section 4: Human Resource Development at Research Universities	
• State Context.	19
• Integration – Across Funding Streams	19
• Integration – Across Elements of the Pipeline	20
• Mentoring	21
• Evaluation and Accountability	22
Section 5: The Role of EPSCoR in Economic Development	
• EPSCoR’s Involvement in Economic Development	23
• Small Business Innovative Research (SBIR)	25
• Key Players & Roles.	27
Section 6: Effective Communication with the Public and Legislators	
• Planning	28
• Objectives of Effective Communication	28
• Communication Strategies	29
• Formulating Messages	31
• Media Strategies	32
• Identifying Legislative “Champions”	33
• Legislative Strategies	34
Section 7: Emerging Issues.	35

Section 1 – Effective State Committees

Building Effective State Committees for Both New and Current Jurisdictions

State committees provide program stability and authority for policy development and long-term continuity. State committees may vary among states, but in principle they should be invariant in providing the core foundation for state EPSCoR programs to take advantage of Federal programs. In particular, they should be based on legislation or first principles (by-laws) and not be dependent on specific individual personal ties or positions.

Committee Size, Composition, and Terms

What Works:

- Pay attention to committee size – ideally about 12 members
- Seek balance and diversity of committee members across institutions, disciplines, demographics, political affiliation, residence, etc.
- Strive for statewide diversity, but accept area science and technology concentrations – do what makes sense for the state
- Include powerful and influential science and technology leaders from academia, government and industry
- Consider having one member external to the state
- Consider having someone from the Governor's office
- Set fixed terms for individual members to provide continuity – consider 2-3 year terms
- Establish staggered terms across members to provide a level of consistency during transitions
- Align committee membership with key positions (e.g., it's important to have the VP of Research on the committee, but if the individual leaves the position, membership should transfer to the new VP of Research)

Avoiding Pitfalls:

- Avoid membership instability
- Ensure representation, but avoid using artificial diversity that does not work
- Avoid domination by academics especially deans and academic leaders with political tensions
- Avoid candidates with narrow agendas
- Don't forget undergraduate / community colleges – they are often not well represented
- Recognize the length of term of legislators will influence the role they can play and their effectiveness

Section 1 – Effective State Committees

Committee Member Selection Process

What Works:

- Buffer politics to extent possible
- Make appointments by the highest appropriate authority (e.g., Governor, Regents, State Science and Technology Director, etc.)
- Obtain early involvement from a newly elected Governor in selection

Avoiding Pitfalls:

- Avoid overly-politicized appointments by the Governor, State Board of Education, or Higher Education Boards
- Avoid small self-selecting groups
- Be sensitive to potential problems arising from including the Project Director as a member of the committee

Committee Chair

What Works:

- Select the chair from the private sector or someone independent of the academic enterprise
- Choose a strong chair with vision, independence, and someone who focuses on strategy not tactics
- Choose a chair that knows how to run efficient meetings
- Elect the chair from among the members
- Develop a salaried position for managing the state committee financed at least partially by the state

Avoiding Pitfalls:

- Avoid having an ineffective or uncommitted chair

Section 1 – Effective State Committees

Orientation of New and Existing Members

What Works:

- Provide easily accessible orientation materials using CD, web, PowerPoint
- Provide professional development and orientation seminars to excite and inform new and existing members
- Include information about variation across EPSCoR programs

Committee Structure

What Works:

- Develop one state committee to handle all agency EPSCoR programs
- Utilize sub-committees or working groups within the larger committee – give them specific assignments (e.g., technical assessment, planning, administration)
- Clarify committee responsibility and reporting lines
- Stabilize committee structure and composition to extent practical

Avoiding Pitfalls:

- Avoid having only campus-specific representation – ensure state-wide representation when setting up the state committee

By-laws / Operating Guidelines

- Clarify representation / composition, term limits and staggered membership
- Define roles and voting rights of committee members
- Consider the state context in setting up by-laws
- Build flexibility into by-laws to allow for changes over time
- Consider a conflict-of-interest rule for proposal development (e.g., discussion of awards where members have a vested interest)
- Develop procedures that are fair and equitable

Section 1 – Effective State Committees

Committee Roles and Responsibilities*

What Works:

- Broaden the state committee’s scope beyond EPSCoR (with care)
- Develop a state science and technology plan to use as a “roadmap”
- Encourage individual members to bring a broad agenda vs. self-serving agenda to the table
- Use the committee to direct policy, structure, and procedures - do not use the committee for management or grant writing
- Engage legislators frequently to educate and solicit support
- Gain political and funding support for EPSCoR funds
- Preserve the integrity of the process
- Utilize external review – be willing to pay for expert advice and don’t be stingy
- Members should operate as “ambassadors” to external stakeholders and constituencies
- Facilitate networking
- Provide the link to university plans
- Identify technical support from outside the state
- Committee and Project Director should work effectively for common purposes and goals
- Ensure an open and transparent process
- Start early in terms of decision-making – don’t wait until the last minute
- Create and follow a plan
- Define clear tasks and pay attention to timelines throughout the process – concept, papers, proposals, decisions and approval
- Ensure commitment of members and key stakeholders
- Recognize the value of public relations – translate EPSCoR’s economic impacts
- Gain the support of the Governor
- Select a strong Project Director – recognize the Project Director is 1/3 scientist, 1/3 manager and 1/3 salesperson

*Note: There may be some difference between smaller jurisdictions and larger jurisdictions. For example, the smaller state committees may be the “only game in town” and therefore may be more dependent on powerful legislators and may have to develop the science and technology plan alone. Larger state committees may have to partner with many other players.

Section 1 – Effective State Committees

Committee Roles and Responsibilities

Avoiding Pitfalls:

- Avoid conflicting priorities
- Avoid political problems and traps – keep politics out of the process to the greatest extent possible
- Discourage committee members from driving a specific narrow agenda
- Avoid scientific turf wars and entrenched interests – allow initiatives to be graduated
- Avoid micro-management by committee
- Don't ignore the committee – once the committee is formed, use it for policy decisions
- Avoid the notion of entitled funding
- Avoid having the VP of Research seeing EPSCoR as a source of funding for their own needs
- Realize one shoe does not fit all

Meetings and Communication

What Works:

- Plan to meet 1-4 times per year
- Communicate in person, via teleconference or frequent e-mail
- Run the committee like a private sector board

Avoiding Pitfalls:

- Avoid irregular or insufficient meetings – not meeting at all means losing momentum

Section 2 - Prioritizing Areas for EPSCoR Investment

Prioritizing Areas for EPSCoR Investment At the State and Federal Levels

One of the most important aspects of state EPSCoR programs is the selection of areas in which to invest funds. This is the essence of EPSCoR management – deciding which projects to start and which to end.

Key Players in Prioritization Process

What Works:

- Recognize that the Project Director is a major force and plays a key broker role
- Identify science leadership for focus areas
- Include senior and junior investigators in idea development

Avoiding Pitfalls:

- Avoid fuzzy lines of authority
- Distinguish between Project Director and Principle Investigator roles – this is state specific and reporting lines are often confusing
- Recognize that the Project Director and Principle Investigator are responsible for both pre and post award decisions

Section 2 - Prioritizing Areas for EPSCoR Investment

Prioritization Process

What Works:

- Establish and maintain an open and transparent process
- Start early, ensure adequate lead times, and maintain focus over time
- Do strategic planning
- Use a combination of top-down and bottom-up processes – neither one works alone
 - Develop the framework from the top-down using federal, state and local priorities
 - Generate ideas from the bottom-up drawing upon the creativity of researchers
- Filter all ideas into the best plan – review committees can serve as a filter
- Utilize external review by people with EPSCoR experience – they understand content and priorities
- Consider an informal method of collecting ideas requiring a small investment of time and effort, e.g., pre-proposals
- Define direction with agency and Project Director and ensure buy-in of committee, state leadership, and faculty
- Know what the “end game” looks like
- Set realistic expectations about starting capabilities and competition
- Review and communicate criteria
- Include the long-term economic impact
- Use focus groups to generate input and provide feedback
- Communicate effectively and timely to faculty and other participants using mailing lists, e-mail, and face-to-face opportunities
- Have the Project Director shape the final product in terms of impact, sustainability, acceptance by state and university, state committee, and coincidence with the appropriate federal agency
- Explain rationale for focus of proposal to all state constituencies

Section 2 - Prioritizing Areas for EPSCoR Investment

Prioritization Process

Avoiding Pitfalls:

- Do not force collaborations – being too directive from top down doesn't work
- Avoid premature project graduation
- Avoid non-objective internal review
- Don't forget to document commitments, e.g., match, faculty / staff lines
- Recognize that sometimes 3 years is not enough – it takes time to catalyze and build a successful research effort
- Do not base process on popularity – ensure process is strategic and build details
- Avoid open competition without strategic direction
- Don't strive to divide funds equally across universities
- Avoid setting priorities based on history

Section 2 - Prioritizing Areas for EPSCoR Investment

Determining Areas of Focus

What Works:

- Ensure consistency with university, state and federal plans and priorities - think globally and act locally
- Build on institutional and emerging strengths – “water the green spots”
- Focus on state needs – consider state science and technology plan
- Develop a strong link to national trends and funding areas
- Consider selecting a niche to establish competitive position
- Choose focus areas that are achievable
- Identify overlap of focus areas, and coordinate them
- Ensure sustainability – will the research continue after the EPSCoR grant is over?
- Remember to focus, focus, focus!

Avoiding Pitfalls:

- Avoid overemphasizing “mature areas”
- Avoid isolated projects
- Avoid a short-term developmental focus
- Avoid being too broad or too diluted – it results in little or no impact
- Avoid divergence from state and federal trends

Section 2 - Prioritizing Areas for EPSCoR Investment

General Advice

What Works:

- Recognize that meeting the match requirements is very state specific
- Obtain external advice from outside the state to provide national perspective
- Recognize that accountability is crucial – both at the macro and micro level
- Ensure continuity and maintain flexibility in plan execution
- Synchronize goals with deans and other academic line officers
- Value collaboration with complementary programs (e.g., inter-departmental, inter-institutional, academic/private sector)
- Be sure to recognize emerging trends – be aware of “what’s hot”
- Use the web to facilitate interactions
- Establish early interaction with state legislature
- Address phase-out of project after initial 3 year investment

Avoiding Pitfalls:

- Recognize that the timing and presence of a new administration can be a problem
- Avoid viewing EPSCoR as a grant rather than an investment

Section 3 – Effective Evaluation of Infrastructure Proposals

Effective Evaluation of Infrastructure Proposals

Evaluation is a continuous process, based on defining and collecting metrics throughout the life cycle of the grant (pre-, during and post-award). The ultimate goal of evaluation is to determine the effectiveness of the program.

Pre-award: Planning and Integration

What Works:

- Recognize the uniqueness of infrastructure
- Establish an evaluation plan as the first step – map the process, steps, external review, and long-range plan
- Ensure fit with state and federal agency plans
- Provide appropriate integration of small / large institution proposals
- Provide appropriate integration of broad segments of the research and education communities
- Identify required infrastructure available
- Establish clear management structure and clarify expectations for hiring
- Establish sufficient authority and backing for the EPSCoR Project Director
- Establish external advisory board with content expertise and human resources expertise
- Address future sustainability
- Remove politics to extent possible

Avoiding Pitfalls:

- Avoid haphazard or undefined evaluation processes
- Beware of setting a goal of achieving egalitarianism
- Don't develop infrastructure proposals randomly
- Beware of over-ambitious project proposals
- Be aware of submission cycles

Section 3 – Effective Evaluation of Infrastructure Proposals

Pre-award: Reviews

What Works:

- Establish evaluation team separate from state committee to enhance quality of proposal
- Provide technical review via external agency or professional evaluator
- Consider using other EPSCoR states as evaluators – they understand the EPSCoR issues, especially infrastructure
- Ensure “declined groups” get useful feedback and direction from external review

Avoiding Pitfalls:

- Don't use the state EPSCoR committee as technical experts
- Don't use only in-state reviewers for proposal selection – this might lead to conflicts of interest
- Don't assume external reviewers always know best with state proposals – they may not be sensitive to state issues

Pre-Award: Metrics and Reporting

What Works:

- Identify upfront the potential hurdles, metrics and required reporting for researchers and evaluators and communicate these to the individuals
- Set reporting contingent on funding, even after the EPSCoR grant ends (for longitudinal studies)
- Establish periodic program review within an award cycle

Avoiding Pitfalls:

- Avoid letting only the state committee define metrics
- Avoid retroactive databasing – get started early!

Section 3 – Effective Evaluation of Infrastructure Proposals

During Award: Implementation

What Works:

- Allocate sufficient staff time and resources to manage and perform needed work
- Ensure timeframe is adequate for the long-lived programs that continue from award to award
- Pay attention to encumbrances and expenditures
- Establish milestones upfront for assessing researcher progress

Avoiding Pitfalls:

- Recognize one set of procedures does not fit all
- Avoid haphazard or undefined evaluation processes
- Avoid short “turn-around” times
- Address issues resulting from lack of budget manager
- Beware of complacency – keep researchers responsive

Section 3 – Effective Evaluation of Infrastructure Proposals

During Award: Reviews

What Works:

- Maintain an up-to-date, long-range database (e.g. externally funded research, student success, diversity, etc.)
- Perform regular internal assessments/evaluations in addition to external review
- Utilize high caliber external evaluation team with content and human resource expertise – external evaluation teams work well for pre and post award
- Use other EPSCoR states as evaluators – they understand the EPSCoR issues especially infrastructure
- Offer annual external review of scientific progress - review milestones and management objectives
- Hire professional evaluator
- Evaluate project management (e.g., financial and administrative activities)
- Remove politics to extent possible

Avoiding Pitfalls:

- Don't use the state EPSCoR committee as technical experts
- Don't use in-state reviewers to determine research and Education and Human Resources progress
- Don't assume external reviewers always know best with state proposals – they may not be sensitive to state issues
- Avoid in-state review and evaluation of program and management that does not constitute a team approach
- Ensure independent evaluators and visitors from NSF understand the state context

Section 3 – Effective Evaluation of Infrastructure Proposals

During Award: Metrics and Reporting

What Works:

- Establish metrics up front and communicate them
- Use models for decision-making based on defined metrics
- Establish post-grant measure of competitiveness
- Standardize reporting
- Ensure quality of program administration
- Conduct periodic program review – evaluate progress against established metrics
- Expand and share “Nuggets” and information – support workshops on process, outreach, framework, management, education and human resources

Avoiding Pitfalls:

- Beware of timeframes that are too short to demonstrate success/progress in a new project
- Recognize it is difficult to measure cultural change without easily available quantitative data
- May need to develop evaluation plans to collect data in addition to the quantitative data requested by NSF in progress reports
- Recognize that getting compliance in reporting is difficult

During Award: Continuity

What Works:

- Address graduation of researchers
- Ensure institutional commitments are honored even with administrative changes
- Request NSF help when administrations change and threaten to renege on matching funds – NSF can relay that failure to meet obligations to EPSCoR can result in loss of funding

Avoiding Pitfalls:

- Recognize forces outside the Project Director’s control, e.g., administrative changes, changing program criteria
- Address lack of continuity of commitment to support EPSCoR by new administrator hires

Section 4 – Human Resource Development

Human Resource Development at Research Universities

EPSCoR programs provide an important mechanism to develop human resources in science, technology, engineering, and mathematics. State EPSCoR programs are key contributors in developing the next generation of scientists and engineers. States vary greatly in their needs and programmatic thrusts.

State Context

What Works:

- Tailor the Education and Human Resources (EHR) Program to specific state needs and effectively use role models and mentors
- Partner with established, successful state agencies and programs
- Tie into state standards
- Broaden definition of diversity to under-served groups, e.g., first generation college, rural poor, disadvantaged
- Ensure state committee demonstrates leadership in diversity and human resource development and supports specific activities
- Publicize outreach efforts to generate political support

Avoiding Pitfalls:

- Avoid pursuing EPSCoR education and human resources for its own sake – EPSCoR mission is to build science and technology infrastructure
- Avoid “one size fits all” mentality or top-down force fit solutions
- Avoid the perception of exploitation of under-represented groups in education and human resources efforts

Integration – Across Funding Streams

What Works:

- Be aware of, partner with and leverage other programs – (e.g. BRIN, etc.)
- Recognize continuum and overlap of Boards (e.g., state and local Boards of Education)
- EPSCoR can serve as a facilitator and resource for education initiatives for integrating programs and securing additional funding
- Incubate small programs that may lead to funding through non-EPSCoR programs
- Establish internships for students and teachers with universities, private labs and industry

Section 4 – Human Resource Development

Integration – Across Elements of the Pipeline

What Works:

- Initiate statewide effort, where possible, to coordinate all activities of which EPSCoR human resource development is one part
- Recognize that EPSCoR should facilitate and not be responsible for everything in K-12
- Develop an integrated program – include 6th - 12th with increasing complexity, target selected K-12 schools, and fit faculty with schools
- Use other grants to broaden and build a more comprehensive program of individual components
- Involve higher education institution(s) that are community-based and willing to make outreach work
- Establish high school student summer program with supervision
- Utilize state-specific high school programs as opportunity for career monitoring (first generation going to college) – do not only target minorities
- Make projects relevant to students' lives in high school programs or other NSF grants that build curriculum
- Involve content scientists (MSP) and focus on topics relevant to the group
- Recognize that jobs on campus reduce dropout rates
- Provide experience beyond the job in the lab – GRE training and guidance, graduate school information, contacts in other universities

Avoiding Pitfalls:

- Don't ignore the experience and findings of the K-12 community in designing education and human resource programs
- Recognize that high school programs do not get to the root cause of math deficiencies early enough
- Be sensitive to difficulties involved in requiring students and high school teachers to leave home for the summer
- Recognize difficulty of asking EPSCoR project scientist to run education and human resource program administration – research vs. education role
- Avoid isolated outreach program – Mr. Wizard's demo
- Avoid unrealistic expectations – match expertise, funding and opportunities
- Avoid thinking that funding alone will work
- Avoid add-ons for K-12 teachers – they already have a lot on their plate

Section 4 – Human Resource Development

Mentoring

What Works:

- Provide early exposure to role models and mentors at multiple levels
- Foster close interactions between established faculty and K-12, college students, graduate students and new faculty
- Provide peers or role models close to the student's age
- Provide positive role models for under-represented groups
- Engage students in “hands-on” activities
- Value and reward undergraduate research mentoring by research faculty through annual evaluation, equipment, and salary benefits
- Offer teaching grants to faculty and graduate students
- Use high demand fields to attract and keep students in the pipeline
- Utilize undergraduate research programs as a mentoring tool
- Encourage undergraduates to go to research labs early
- Include human resource development as an accepted part of faculty professional development
- Recognize every step in the academic ladder primarily at undergraduate institutions
- Develop retention incentives for faculty
- Build critical mass and networks with female faculty and under-represented minorities
- Identify faculty with talent and interest in outreach activities
- Teach the teachers and train administrators
- Consider appointing K-12 teachers and/or state K-12 science and math coordinators to the state committee

Avoiding Pitfalls:

- Recognize that undergraduates work in summer research – limit the number of courses they can take and discourage competing jobs
- Recognize the difficulty of engaging high school teachers
- Avoid conflicting messages to new faculty during mentoring – clash of generations, salary differentials, workload differences, viewing research lab experience as “menial” job, etc.
- Recognize that motivating faculty to do outreach is often at odds with the directive to do research and teaching

Section 4 – Human Resource Development

Evaluation and Accountability

What Works:

- Define specific goals of each program – long-term investment should be supported by assessment
- Recognize that assessment is critical for fine-tuning and selection of programs that work
- Pay attention to the local situation to make programs work
- Provide oversight and ensure accountability
- Recognize important role of developing young faculty – provide incentives to department for new faculty development
- Account for the fact that management and faculty commitment and assessment take both money and time

Avoiding Pitfalls:

- Make sure to track students over the long-term

Section 5 – The Role of EPSCoR in Economic Development

The Role of EPSCoR in Economic Development

A significant component of the justification for federal investment in research is the contribution of research to the economic health of the nation. It is important that EPSCoR programs be positioned to contribute in this area. In many cases, EPSCoR states lag non-EPSCoR states in important areas of technology-related business development. While EPSCoR initiatives are not intended to be economic development entities, in many cases they can play assistive or catalytic roles.

EPSCoR's Involvement in Economic Development

What Works:

- Develop and utilize a strategic plan
- Ensure that the EPSCoR program's economic development initiatives are consistent with and linked to the state's economic vision and programs
- Convince the state to invest in a focused and realistic approach
- Gain support from the industrial community and state agencies responsible for economic development
- Establish a matching industry fund
- Build political capital by highlighting EPSCoR's role in economic development
- Build an awareness of economic development opportunities statewide
- Get involved in SBIR and STTR programs
- View EPSCoR as a catalyst for economic development (e.g. Phase 0)
- Ensure that commercialization is an important goal of research centers
- Connect commercialization activities to large-scale state science and technology initiatives
- Reduce the indirect cost rate for state government and state-incorporated small business

Section 5 – The Role of EPSCoR in Economic Development

EPSCoR's Involvement in Economic Development

Avoiding Pitfalls:

- Avoid using start-ups as the only measure of EPSCoR's research success
- Don't let others raid EPSCoR funds for financial incentives
- Don't expect substantive change in the short term
- Reconcile incompatible expectations between the state and universities
- Beware of state policy makers that don't see the connection between universities and economic development
- Don't expect all faculty to be involved in the economic development mission
- Don't expect to impact economic development without a strong research base
- Avoid throwing large amounts of money at information technology as a solution for economic development
- Avoid promising more than you can deliver

Section 5 – The Role of EPSCoR in Economic Development

Small Business Innovative Research (SBIR)

What Works:

- Manage SBIR program through the state EPSCoR office
- Recognize that Phase 0 programs work
- Identify state funding to enhance SBIR activities
- Provide SBIR awards to any appropriate science and technology area
- Develop non-monetary assistance to SBIR efforts
- Ensure early, direct communication with those seeking SBIR funding
- Establish a network of mentors from successful Phase 0 awardees to assist new proposers
- Identify or hire an SBIR champion for the state, preferably not from academia
- Showcase one company's SBIR success to stimulate broader involvement
- Recognize that universities gain large benefits from working with SBIR
- Establish programs that provide bridging between Phase I and Phase II federal awards
- Exploit STTR program – broaden portfolio
- Recognize that EPSCoR can provide creative approaches for new business development (courses, advocacy, connections)
- Recognize that faculty are best in a technical capacity
- Use state match for SBIR programs to clearly demonstrate EPSCoR benefit to state
- Have Phase I applicants cite Phase 0 success as evidence of one level of peer review
- Obtain funding to “pull” research from universities to commercialization
- Consider subcontracting SBIR assistance
- Incorporate entrepreneurship into graduate and undergraduate science, technology, engineering and mathematics curricula
- Provide easy access for companies to university facilities

Section 5 – The Role of EPSCoR in Economic Development

Small Business Innovative Research (SBIR)

Avoiding Pitfalls:

- Avoid using Phase 0 funds to only hire grant writers
- Avoid forcing faculty to be involved in SBIR
- Avoid companies seeking non-research support
- Avoid projects without long-term potential
- Avoid unfocused priorities for economic development
- Avoid using SBIR funding as last resort for summer faculty and graduate student salaries
- Avoid the perception that EPSCoR funds are a source of capital

Section 5 – The Role of EPSCoR in Economic Development

Key Players & Roles

What Works

- Recognize that some states may have economic development mechanisms (e.g., SBIR program) independent of EPSCoR – identify linkages and develop partnerships where appropriate
- Consider having a person from state economic development agency on the state committee
- Encourage university-industry research and commercialization interactions
- Educate researchers about business issues (e.g., intellectual property protection, licensing processes, business planning)
- Have the state science and technology council serve as an umbrella for economic development coordination activities
- Establish science and technology centers where the key individual is respected by peers
- Establish partnerships between EPSCoR and incubators – provide courses on intellectual property, business planning, etc.
- Use EPSCoR to stimulate development of a technology transfer office
- Use the EPSCoR “voice” to recruit and advocate for venture capital
- Create or link to effective networking organizations that support new commercial ventures (e.g., San Diego Connect, Rockies Venture Club)
- Involve business schools with science, technology, engineering and mathematics departments to create business-savvy researchers (e.g., business plan competitions, specialized courses)

Avoiding Pitfalls:

- Don't expect EPSCoR to be the primary facilitator of economic development
- Avoid “What's in it for my university?” myopia
- Avoid lack of focus – don't try to be everything to everybody
- Work to eliminate university and/or state regulations prohibiting faculty involvement in business
- Don't expect faculty to manage companies
- Ensure that Principal Investigators are informed about the intellectual property and licensing processes
- Recognize that universities are risk averse (especially university counsel)
- Beware of ineffective university-based technology transfer programs

Section 6 – Effective Communication

Effective Communication with the Public and Legislators

Communication regarding EPSCoR's objectives, outcomes and programs beyond the immediate EPSCoR community is increasingly important. In addition to helping recruit bright students into math and science fields, thus reversing the declining national trend, outreach to political leaders can engender valuable support for state cost-sharing of research infrastructure grants.

Planning

What Works:

- Recognize communication is not a “cookie-cutter” enterprise
- Have a communications plan with the following elements:
 - Goals and objectives
 - Specific targeted messages
 - Tools, tactics, and mechanisms
 - Roles and responsibilities
 - Resources
- Ensure communication plan includes assessment of effectiveness
- Recognize that internal marketing is key, but if possible, avoid centralization of public relations within the university system
- Allocate dedicated staff person for communication - identify an effective research “communicator” even if it is a part-time responsibility

Objectives of Effective Communication

What Works:

- Highlight broader goal of science education
- Inform voters about value of research and higher education
- Refine the understanding that EPSCoR was the key first step
- Keep Principal Investigators on board (so highlight the PI)
- Recruit kids for science and entry strategy to reach legislators
- Establish good will
- Educate to a particular point of view or set of values
- Describe and promote services
- Win prestige and establish credibility
- Overcome misconceptions and prejudices
- Get matching grant

Section 6 – Effective Communication

Communication Strategies

What Works:

- Design and implement a coordinated media effort
- Involve in-state students! Student-oriented events and media are well-received
- Use all Principal Investigators (research, 4 year, 2 year) for national outreach
- Get buy-in from key faculty and researchers to help communicate the message (a good word can be critical at the right time)
- Gain champion support and advocacy of Governor, Chancellor, other key officials and private sector leaders
- Provide media training to those responsible for communication
- Use awardees to cultivate legislative relationships and media
- Communicate with councils and boards as well as the media
- Work with professionals – graphic designers, writers, media consultants
- Develop relationship with and involve trusted media professionals
- Partner with well recognized organizations (including large companies) to increase visibility
- Sponsor a campus tour and focus on programs that highlight research
- Ensure good coordination with Vice President for Research
- Keep your institutional lobbyist informed about EPSCoR
- Encourage private sector committee members to advocate for EPSCoR
- Know your audience and stay focused
- Be prepared to address important questions
- Keep current on what is happening
- Keep in mind 80-20 rule – focus effort on the 20% that will return 80% of the benefit
- Use “poll data” to demonstrate public support for research (e.g., from Research America, etc.)

Section 6 – Effective Communication

Communication Strategies

Avoiding Pitfalls:

- Don't do it all yourself
- Avoid loose cannons and lone rangers dealing with legislature and media – strive for balance between “controlled” efforts vs. “coordinated” efforts
- Don't underestimate that management has become more sophisticated and more experienced – it's more costly to do right – resources have to be used
- Avoid poor quality, staged, or “stale” presentations
- Don't assume you are the only important game in town
- Don't utilize the WRONG communicator(s)
- Don't assume good scientists can be good communicators
- Address the lack of communication skills within faculty
- Make sure you recognize “hot button” issues (e.g., abortion, environmental activism, water rights) and communicate sensitively
- Don't assume media relations will solve all your problems
- Recognize the importance of the EPSCoR “brand” in science and technology infrastructure development
- Don't assume someone else has delivered the message
- Don't overlook the general public as an important audience
- Don't “end run” the university

Section 6 – Effective Communication

Formulating Messages

What Works:

- Develop and communicate a consistent message
- Focus on results and benefits of the EPSCoR program rather than EPSCoR as an organization
 - Emphasize impacts beyond research
 - Make EPSCoR part of the research story
- Track the success of the program by telling success stories, not gimmicks
- Ensure accurate, simple communication
 - Utilize simple, clear sound bites
 - K.I.S.S. – keep it simple stupid!
- Use talking points and distribute them to others
- Make your message specific to your EPSCoR funding and match
- Link EPSCoR activities to other K-12 activities

What Doesn't Work – Pitfalls to Avoid

- Don't assume people know anything about EPSCoR
- Avoid long, complex messages, especially in a short time frame
- Don't depend on newspapers to deliver your message
- Avoid acronyms (RII, BRIN, SBIR, EPSCoR), technical language, and jargon
- Avoid negative messages
- Watch out for arrogance – avoid an “ivory tower” perception
- Avoid conflicting messages

Section 6 – Effective Communication

Media Strategies

What Works:

- Know your audience
- Utilize targeted products for different audiences with appropriate level of technical sophistication
- Utilize diverse communication activities and media (e.g., tours, written, video, web, shows, news, radio)
- Find unique ways to communicate (e.g., postcards, “research on tape”, CD’s)
- Maintain an effective web page and other web-based communication
- Put a “what’s new” page on web site and update frequently
- Distribute newsletter (e.g., quarterly, hard copy, on-line)
- Utilize student researchers in presentations
- Utilize news releases
- Keep media focus at the community level whenever possible
- Actively involve media people in EPSCoR activities
- Consider purchasing advertising
- Utilize public forums sponsored by EPSCoR
- Build a network of contacts, communicators, and media interests

Avoiding Pitfalls:

- Recognize that websites can’t be kept hidden – promote it and maintain it – don’t let it get out-of-date
- Don’t rely on media without personal contact
- Be careful with reporters – they don’t always “get it right”
- Don’t rely on one-time communications or contact

Section 6 – Effective Communication

Identifying Legislative “Champions”

What Works:

- Cultivate a champion in each house of the legislature
- Target congressmen according to their interests and committee assignments
- Put key legislators from both houses on state EPSCoR committees
- Target up-and-coming legislators
- Promote legislative champion’s recognition as an expert by colleagues (e.g., provide information, showcase them at key events)
- Work with legislative aides to build relationships by including them in key meetings
- Develop succession plan and continually nurture champions for the future

What Doesn’t Work – Pitfalls to Avoid

- Don’t rely on too few senior or key legislators

Section 6 – Effective Communication

Legislative Strategies

What Works:

- Develop and maintain personal relationships with legislators and their staff – this is vital to success
- Cultivate the relationship – ask what their issues are, then ask for what you need
- Let the elected official take the credit
- Sponsor events and invite legislators to attend
- Sponsor “Research Day” at statehouse - pick the date carefully, directly engage legislators and involve K-16 students (ask students to invite their legislators, showcase students in activities showing research, etc.)
- Get legislators to attend various key state and national meetings
- Promote face-to-face contact between EPSCoR and the legislature
- Encourage legislator participation in EPSCoR projects, activities and meetings
- Utilize national EPSCoR conferences and state committee meetings as an opportunity to build relationships with state legislators (when appropriate), business leaders, and university presidents
- Tour key legislators around labs of funded success stories
- Provide each legislator information on what has happened in their district
- Target media to key legislators and home districts
- Coordinate legislative contacts with university legislative contacts
- Utilize public “poll data” about the value of research

What Doesn't Work – Pitfalls to Avoid

- Don't make requests before building relationships
- Don't make requests only during the Legislative session – work with committees on their terms out of session
- Avoid uncoordinated visits by Principal Investigators
- Don't waste time on entrenched legislators

Section 7 – Emerging Issues

Emerging Issues

The EPSCoR program remains committed to playing a significant role in building the nation's science and technology community. To accomplish this goal, EPSCoR must meet emerging needs and demands. Attempting to predict the future is, at best, an imperfect art. Below are some near-term and longer-term issues which may be relevant to a dynamic, growing EPSCoR program.

Emerging issues that involve state committees:

- Dealing with increasing complexity of EPSCoR
- Developing or maintaining matching funding in an era of declining state budgets
- Developing mechanisms to use funds from multiple agencies on a common/ multi-disciplinary project
- Developing the next generation of EPSCoR leaders and project administrators
- Addressing the needs of individual programs (e.g., EPSCoR, DoE-EPSCoR, DEPSCoR, IDeA)
- Integrating infrastructure development programs
- Involving business and industry effectively as committee members
- Building regional alliances and communication between states with special emphasis on EPSCoR states
- Adapting and being flexible to political change at local, state and Federal levels
- Serving as agents for change
- Integrating research and education where appropriate
- Catalyzing workforce development
- Developing multi-disciplinary and cross-cutting cooperative ventures
- Providing external review of state committees
- Exploring ramifications of decoupling management and research components of RII

Section 7 – Emerging Issues

Emerging issues that involve setting priorities:

- Managing the match in the future, especially for programs that are not specific about the nature of the match
- Identifying alternative funding of match requirements in light of declining state budgets
- Differentiating between EPSCoR and IDeA projects
- Increasing diversity of those involved in state R&D
- Facilitating inter-state cooperation and partnerships (EPSCoR and non-EPSCoR) which fit multi-state priorities
- Developing multi-agency projects
- Encouraging partnerships with non-EPSCoR institutions through new co-funding mechanisms
- Identifying future research priority areas (e.g. OSTP Office of Science and Technology Policy) directives to agencies
- Strengthening meaningful discussion between EPSCoR and IdeA agencies
- Expanding EPSCoR agencies (e.g. Homeland Security)
- Determining whether there is a place for international partnerships
- Bridging the department/interdisciplinary dilemma
- Establishing small scale research centers
- Encouraging linkage with state economic plans
- Promoting a closer tie-in between research and education programs and outreach

Section 7 – Emerging Issues

Emerging issues that involve evaluation:

- Tracking previous awardees (e.g., sustainability, leveraging of other funds)
- Putting more emphasis on accountability
- Making greater use of databases
- Ensuring program evaluation metrics don't blind EPSCoR to the individual impact of our programs
- Recognizing that large state/small state evaluation issues will become more apparent with different performance and different expectations
- Exploring an approach like the Science Technology Center evaluation that could be useful in some states
- Developing comprehensive metrics that cover administration and research
- Providing technical assistance for evaluations
- Evaluating state EPSCoR administrative roles

Section 7 – Emerging Issues

Emerging issues that involve human resources:

- Improving HR program assessment (need better metrics and follow-up)
- Enhancing presence of under-represented groups participation as students, scientists and leaders
- Increasing diversity and gender equity in EPSCoR leadership
- Developing a systematic approach, including the state department of education
- Increasing funding for undergraduate research opportunities
- Increasing opportunities for graduate student career preparation in the private sector, entrepreneurship, motivation, and teaching
- Ensuring HR development activities (undergraduate research, high school summer programs, etc.) count as part of tenure and promotion criteria
- Increasing mid-career faculty career development opportunities (link with junior faculty development teams)
- Integrating faculty in outreach
- Serving rural areas (recognizing who is underserved, utilizing distance technologies, breaking down technological barriers)
- Identifying multi-state initiatives that might work
- Conducting outreach to find niche strengths in 4 year colleges
- Involving more stakeholders (K-12, community colleges, Tribal, Hispanic serving, etc.)

Section 7 – Emerging Issues

Emerging issues that involve economic development:

- Developing a larger and more aggressive role for EPSCoR in technology-based economic development
- Developing valid measures for EPSCoR's contribution to economic development
- Rising to the challenge of geography and dispersed population
- Creating a mechanism for getting faculty ideas into Federal SBIR solicitations
- Encouraging business and law experts to interface with researchers
- Promoting technology leadership
- Increasing internships/cooperative opportunities through EPSCoR
- Encouraging some states to consider non-traditional research areas for economic development (e.g. hydrology)
- Providing incentives for faculty and student participation
- Creating greater academic and industry cooperation
- Encouraging Universities to provide more basic R&D for industry

Section 7 – Emerging Issues

Emerging issues that involve communication:

- Dealing with increasingly complex EPSCoR programs as a communications challenge
- Understanding EPSCoR’s role in questions involving collaboration and access to outcomes of research (e.g. Patriot Act, Homeland Security, and threat to publication)
- Implementing strategies to capitalize on the media becoming more attuned to role of research to economic development – helping editorial writers “get it”
- Increasing capabilities in web-based communication (multi-media)
- Developing more creative strategies for engaging public officials possibly utilizing communications professionals
- Providing communications training for key and new faculty to build strong relationships with champions
- Dealing with the changing political leadership (plan ahead – ensure message is packaged and updated; consider how to cultivate and educate)
- Sharing successes and coordinating communication strategies across the EPSCoR community