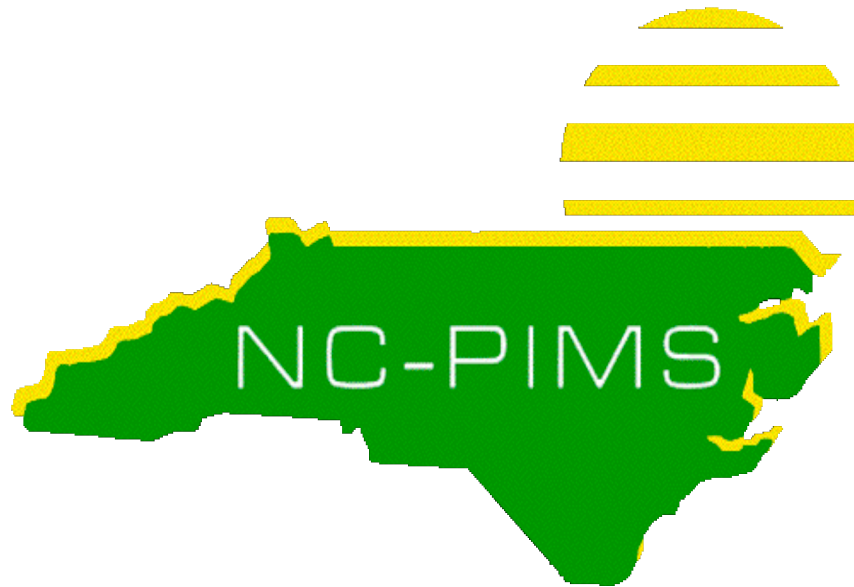
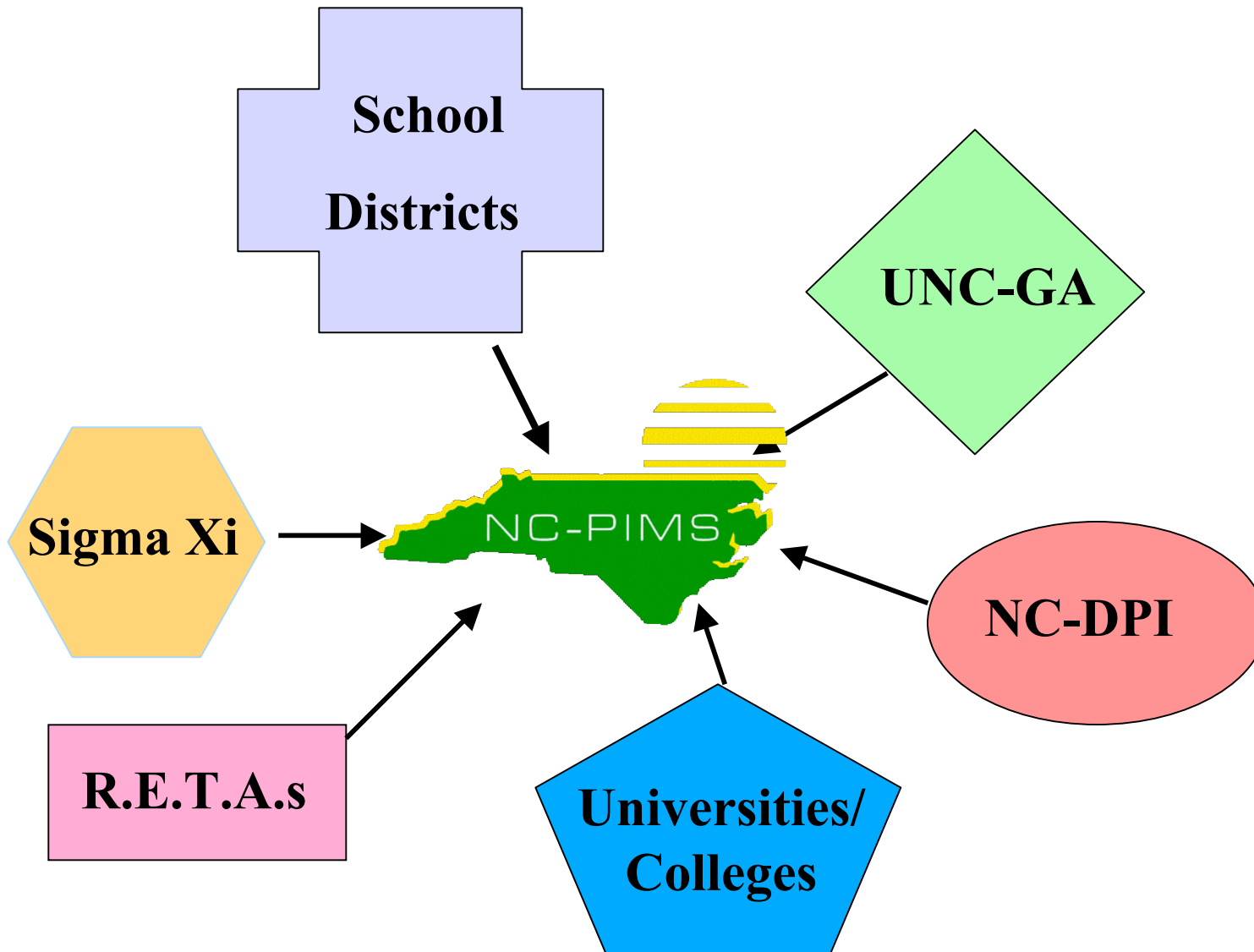


North Carolina Partnership for Improving Mathematics and Science

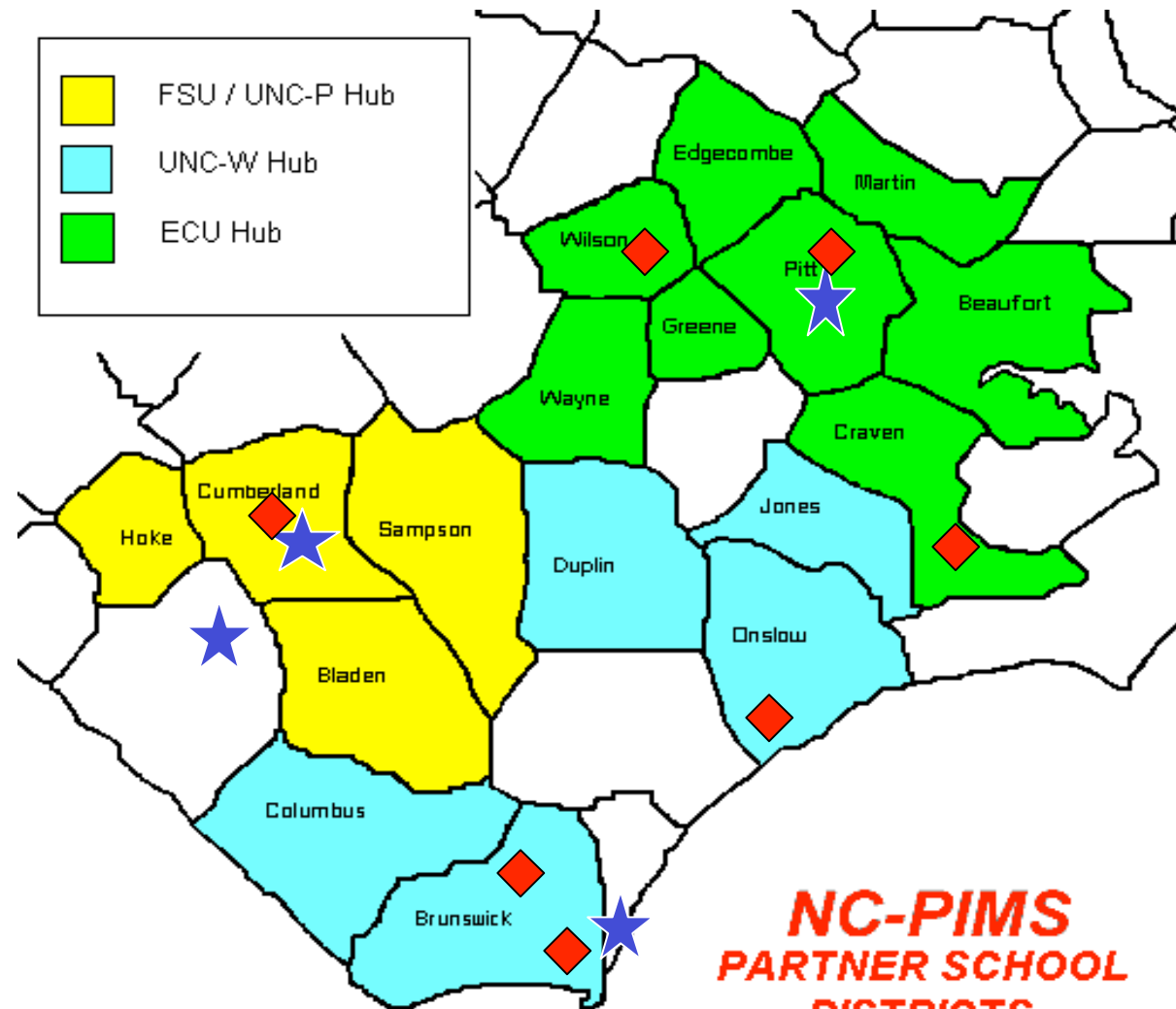


The Partnership



School District Partners with University Hubs

Beaufort
 Craven
 Edgecombe
 Greene
 Martin
 Pitt
 Wayne
 Wilson
 Bladen
 Cumberland
 Hoke
 Sampson
 Brunswick
 Columbus
 Duplin
 Jones
 Onslow



★ University Sites
 ♦ Course Sites 2004

NC-PIMS
PARTNER SCHOOL
DISTRICTS

The NC-PIMS Goals

- To have educational policies, practices and school leadership that support high quality learning of science and mathematics
- To improve science and mathematics achievement, while decreasing achievement gaps
- To raise student aspirations and parental support for student learning of science and mathematics

The Strategies to Support Goal Achievement

1. Develop school leadership and promote policies that support instruction in science and mathematics.
2. Create and deliver high quality professional development to teachers
3. Design and implement activities which encourage students to remain engaged in science and mathematics learning

Progress and Accomplishments

Goal 1 (School Leadership & Policy)

Formation of Statewide Advisory Board

- 41-member* Board created with 27 members participating in first meeting-April 7, 2004
- Co-chairs: UNC-President, Molly Corbett Broad, State Superintendent, Dr. Michael Ward;
- Statewide representation—NC General Assembly, Universities, Schools, Foundations, Businesses
- Charged with advising on
 1. State Legislation and Policy
 2. Colleges, Universities and Schools
 3. Resources and Partnerships

Progress and Accomplishments for Goal 1 (cont.)

Formation of District Leadership Teams

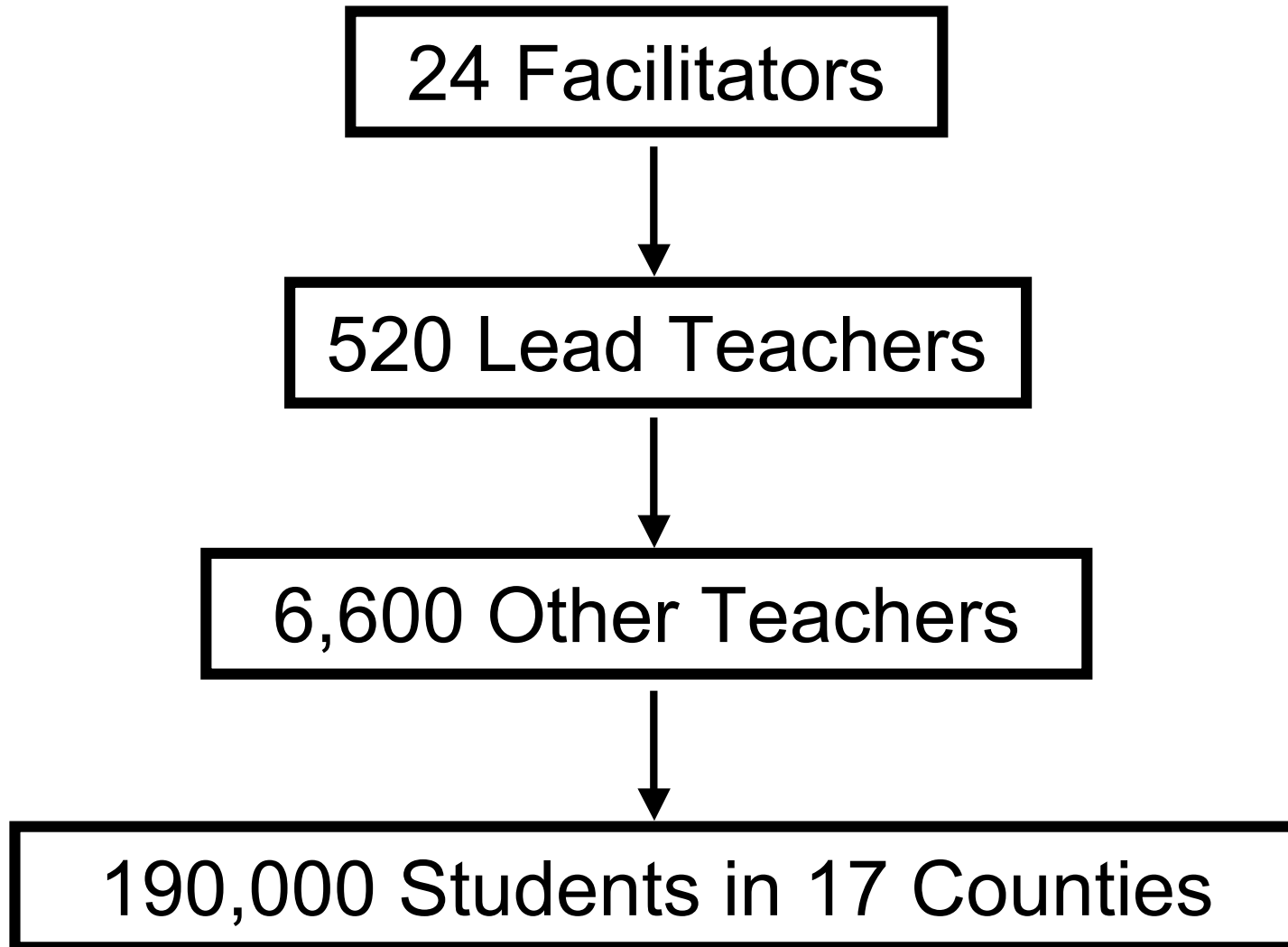
- School Districts have 5-12 member teams consisting of central office administrators, teachers, principals, counselors, STEM professionals, parents
- Teams guide and schedule professional development with help from Facilitators

Progress and Accomplishments for Goal 1 (cont.)

Lead Teacher Model Adopted by Districts

- Consensus-process to adopt the K-5 Lead Teacher model for 6-12 support of all teachers of science and mathematics
- Flexibility for districts to support other mathematics and science teachers as needed

Lead Teacher Model



Progress and Accomplishments

Goal 2 (Student Achievement)

- On-going Professional Development of Facilitators
8/03 – 6/04
- Design of Secondary Lead Teacher Model
9/03 – 12/03
- Recruitment of 520 K-12 Lead Teachers
12/03 – 4/04

Progress and Accomplishments for Goal 2 (cont.)

- Course Development and Review
9/03 – 5/04
- Orientation of Lead Teachers
5/1/04
- Piloting Professional Development and the
Lead Teacher Model
1/04 – 6/04

Progress and Accomplishments for Goal 2 (cont.)

- Plan for Professional Development of Principals

2/04 – 6/04

- STEM faculty/professionals recruited

9/03 – 6/04

Progress and Accomplishments

Goal 3 (Student Encouragement/Parental Involvement)

- Over 110 Student Encouragement/Parental Involvement Community Workshops and over 2200 parent and community participants
- Training of after-school and summer-program providers

Additional Enabling Activities and Events

Other Connections

- NC Science, Mathematics and Technology Education Center
- NC Infrastructure for Science Education (NC-ISE)
- Conference on K-12 Outreach from University Science Departments, funded by the Burroughs Wellcome Fund
- Contact with Duke University Targeted MSP

Dissemination-Presentations and Exhibits

- Exhibit: Coalition for National Science Funding, Wash., DC 6/03
- Presentations: NC Delegation 6/03
- 5 Conference Exhibits 6/03 – 3/04
- 11 Conference or Board Presentations 10/03 – 3/04
- 3 Invited Presentations 1/04 – 2/04

Participation with Research and Evaluation Technical Assistance (RETA)

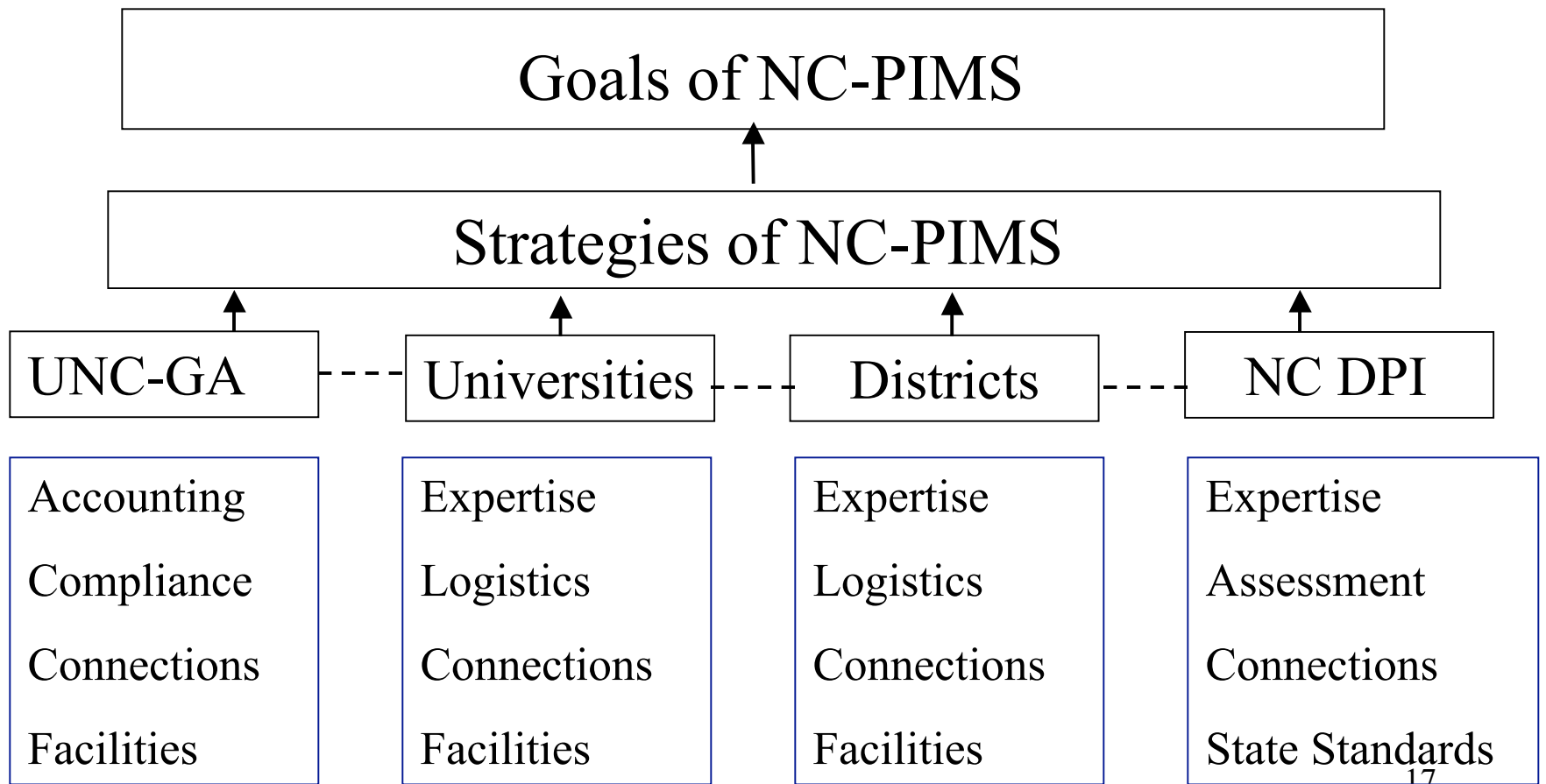
13 Scheduled events

3/03 – 2/04

- WestEd (3)
- National Academies (4)
- Council Chief State School Officers (2)
- TERC (1)
- EDC (1)
- University of Wisconsin-Madison (2)

Actualizing the Key Feature

Partnership-Driven



Examples of a Partnership-Driven Project

- **Collaboration of district partners Oct '03 – Dec '03 to adopt the Secondary Lead Teacher Model**
- **Identification and selection of topics for school-year professional development by districts professional development coordinators**
- **Negotiation of schedules for professional development between districts, and Facilitators for school-year commitment**
- **Collaboration among STEM faculty/professionals for course development, review and instruction**
- **Support of NC-PIMS within the UNC-Board of Governors' Long-Range Plan 2004-2009: K-16 Education Strategic Direction**
- **Collaboration among universities, Management Team and UNC-GA to fit budgets to accommodate the participant support revision for 6-12 Secondary Lead Teacher Model**

Actualizing the Key Feature

Teacher Quality/Quantity and Diversity

Problem: Among the primary reasons teachers give for leaving the profession is the lack of professional support and the feeling of inadequacy over the range of subject matter and recent demands of teaching.

Strategy: Minimize the obstacles

- Provide high quality courses in mathematics and science leading to licensure and advanced degree work
- Provide school-based leadership resource for teachers of mathematics and science through the Lead Teacher Model
- Design and deliver quality professional development in preparation for higher demands of content and for State curricular and testing revisions

Actualizing the Key Feature
Challenging Courses and Curriculum

NC-PIMS Professional Development

- High quality mathematics and science courses
- Professional development leadership training
- School-year professional development for all teachers of science and mathematics
- On-going Facilitators' professional development

Actualizing the Key Feature

Challenging Courses and Curriculum

Quality Resources & Proven Materials for Professional Development-Examples

- From research-based materials-e.g., *Physics by Inquiry* (McDermott) and *Powerful Ideas in Physical Science* (Am. Assoc. of Physics Teachers).
- Hawaii Algebra Learning Project, Team II Project, and Middle Math: Curriculum Development Project
- Leadership in Professional Development Training by WestEd R.E.T.A.
- NCTM Standards for Content and Professional Development
- NC Standard Course of Study
- Expertise of STEM Faculty/Professionals

Actualizing the Key Feature
Challenging Courses and Curriculum

NC-PIMS Delivery of Professional Development

- Group & individual assignments—for Facilitators
- Courses—for Lead Teachers and other teachers
- School-year professional development—for
Teachers
- Leadership training—for Facilitators and Lead
Teachers

Actualizing the Key Feature

Evidence-Based Design and Outcomes

NC-PIMS Program Design-- grounded in
current research-examples:

- Parental and community support: In Parsing the Achievement Gap, *Correlates of Achievement and Gaps* (ETS, October 2003)
- Challenging curriculum for teachers:
(Guskey, T. R., & Sparks, D. (1997). Exploring the relationship between staff development and improvement in learning. *Journal of Staff Development* 17(4), 34- 38.)

Actualizing the Key Feature

Evidence-Based Design and Outcomes

Collected Data on Teacher and Student Indicators, disaggregated by race, ethnicity, gender and SES:

- Teacher indicators: R.E.T.A. sponsored instruments; e.g., *Survey of Enacted Curriculum* and *Professional Development Assessment Log* (CCSSO)
- Student indicators: NC State End-of-Grade and End-of-Course tests; Science benchmark tests (with ETS) for 3rd, 5th and 8th grades.

Actualizing the Key Features

Institutional Change & Sustainability

The project supports reform and sustainability for improving science and mathematics teaching and learning:

Statewide Policy Advisory Board to take under study:

1. Policies that can be refined and augmented to enhance support for teaching and learning
2. Approaches that can be taken to affect greater participation of colleges and universities in K-12 education
3. Human, educational and financial resources that would promote further standards-based mathematics and science teaching and learning

Actualizing the Key Feature

Institutional Change & Sustainability

- Lead Teacher Model: The project seeks to demonstrate that in-school/in-district teacher leadership enhances the ability of teachers, schools and districts to meet their annual performance objectives in science and mathematics, that it increases the likelihood of retaining teacher through added support, and that the model is sustainable by districts.

Actualizing the Key Feature

Institutional Change & Sustainability

- The project anticipates that its future work with Sigma Xi, with over 3,000 members in NC, will establish a program of support for universities, districts, schools, teachers and students.
- STEM Faculty who work in the review, development and teaching of NC-PIMS courses will take with them the underpinnings of course revisions for their university courses and programs.

Barriers to Overcome

- Uniqueness of school districts and schools
- Limits on number of days available for professional development
- Multiple and changing demands by federal and state legislation on schools
- High stakes impact of the focus on test scores for classroom teaching
- Uniqueness of universities and colleges
- Multiple school factors (e.g., other programs) having a confounding impact on outcomes
- Competing programs in schools

