

**FY 2015-2016 PLAN AND BUDGET
FOR THE EXPENDITURE OF REVENUES AVAILABLE FROM THE
BOARD OF REGENTS SUPPORT FUND
WITH AN OVERVIEW OF RESULTS OBTAINED**

**SUBMITTED TO THE
GOVERNOR AND THE LEGISLATURE
IN ACCORDANCE WITH THE CONSTITUTIONAL PROVISIONS OF
ARTICLE VII, SECTION 10.1**

ADOPTED

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**BY THE
BOARD OF REGENTS**

TABLE OF CONTENTS

OVERVIEW OF RESULTS	i
PREFACE.....	1
1. INTRODUCTION	1
1.1 Board of Regents Support Fund Revenue Projection, FY 2015-16.....	1
1.2 Budget Rationale and Preamble.....	1
1.3 Adoption of FY 2015-16 Plan and Budget	2
2. LONG-RANGE PLANNING AND EVALUATION	2
2.1 Long-Range Planning	2
2.2 Long-Range Evaluation	3
3. AN OVERVIEW OF RESULTS OBTAINED	4
3.1 Statewide Results	4
3.2 Results from Selected Projects.....	4
3.3 Multiplier Effects	5
4. LEVERAGING BOARD OF REGENTS SUPPORT FUND MONEY, EXPANDING BOARD OF REGENTS SUPPORT FUND OPPORTUNITIES, AND PROMOTING MULTI-INSTITUTIONAL COOPERATION AND COLLABORATION	5
4.1 Funded Proposals: Joint Board of Regents Support Fund/Federal Programs with Statewide Impact.....	6
4.2 Pending Proposals.....	10
4.3 Multidisciplinary and Multi-Institutional Proposals in Support Fund Program Components	11
5. BOARD OF REGENTS SUPPORT FUND PROGRAM COMPONENTS	11
5.1 Budgetary Contingencies.....	11
5.2 Endowed Chairs for Eminent Scholars	11
5.3 Recruitment of Superior Graduate Students	13
5.3.1 Traditional and BoR/SREB Graduate Fellowships.....	13
5.3.2 Endowed Superior Graduate Student Scholarships	14

5.4	Carefully Defined Research Efforts.....	15
5.4.1	Research Competitiveness Subprogram	17
5.4.2	Industrial Ties Research Subprogram.....	18
5.4.3	Awards to Louisiana Artists and Scholars Subprogram	19
5.4.4	Summary of FY 2015-16 Research and Development Expenditures	19
5.5	Enhancement of the Quality of Departments or Units.....	19
5.5.1	Undergraduate Enhancement.....	20
5.5.2	Endowed Professorships	20
5.5.3	BoRSF Endowed Two-Year Student Workforce Scholarships	21
5.5.4	Endowed Undergraduate Scholarships for First-Generation College Students ...	22
5.5.5	Supervised Undergraduate Research Experiences.....	23
5.5.6	Traditional Enhancement.....	23
5.5.7	Summary of FY 2015-16 Enhancement Expenditures	24
5.6	Administrative Expenses	25
6.	OVERVIEW OF FY 2015-16 BUDGETARY ALLOCATIONS BY PROGRAM COMPONENT	26

TABLES AND SCHEDULES

Table I:	Federal Matching Grants Subprogram.....	7
Schedule I:	Eligibility of Disciplines in the Traditional GF Subprogram	14
Schedule II:	Eligibility of Disciplines in the Research Competitiveness Subprogram	18
Schedule III:	Eligibility of Disciplines in the Traditional and Undergraduate Enhancement Programs	24
Table II:	An Overview of FY 2015-16 Board of Regents Support Fund Budgetary Allocations by Program Component.....	26

ATTACHMENTS

- I. Funded Proposals: Joint Federal/State Programs with Statewide Impact
- II. Results of Selected Projects
- III. Taxonomy of Disciplines

OVERVIEW OF RESULTS

Investment of Board of Regents Support Fund Money in Higher Education 1987 - 2014

- ◆ **\$1,243,938,342 GENERATED IN EXTERNAL FUNDS**
 - **\$869,623,746 in new external funding** (through 6/30/2013) from Federal, private and other non-Support Fund sources
 - **\$374,314,596 in non-State contributions** for Endowed Chairs, Endowed Professorships, and First-Generation Endowed Undergraduate Scholarships

- ◆ **3,128 EXTERNAL AWARDS** from Federal, private and other non-Support Fund sources

- ◆ **319 ENDOWED CHAIRS FOR EMINENT SCHOLARS** established at 26 campuses
 - Two hundred seventy (270) \$1 million chairs
 - Forty-seven (47) \$2 million chairs
 - One (1) \$3 million chair
 - One (1) \$4 million chair
 - Includes ninety-nine (99) chairs funded by special legislative appropriation

- ◆ **2,369 ENDOWED PROFESSORSHIPS** established at 39 campuses

- ◆ **104 UNDERGRADUATE SCHOLARSHIPS** endowed at 20 campuses since FY 2007-08

- ◆ **1,544 SUPERIOR GRADUATE FELLOWSHIPS** supported at 16 campuses

- ◆ **1:1.50 RATE OF RETURN** for all projects funded since 1987
 - For every Support Fund dollar invested, \$1.50 has been returned to the State during the life of the awards

- ◆ **218 PATENTS ISSUED, 197 PATENT APPLICATIONS PENDING** during the life of the awards

- ◆ **10,322 PUBLICATIONS** in peer-reviewed journals, scholarly monographs, and conference proceedings

- ◆ **EXPANDED MULTI-CAMPUS COLLABORATION** increases competitiveness for Federal R&D money

**PLAN AND BUDGET
FOR THE EXPENDITURE OF REVENUES AVAILABLE FROM
THE BOARD OF REGENTS SUPPORT FUND
FISCAL YEAR 2015-2016**

PREFACE

A sound educational system at all levels and in all disciplines which is well-supported on a consistent basis is crucial to achieving the two goals established in the Constitutional amendment which created the Louisiana Education Quality Support Fund (hereinafter referred to as the Board of Regents Support Fund): enhancing academic programs and units and promoting economic development. The four programs of the Board of Regents Support Fund (BoRSF) pursue separate but related strategies in the quest to achieve these goals. All disciplines are eligible to compete in the Graduate Fellows, Enhancement, and Endowed Chairs programs, thus reflecting the Board's broad and long-range commitment to building and maintaining strength across all disciplines and, in so doing, to promoting economic development through the enhancement of higher education in general. The Research and Development (R&D) Program has primarily supported those science and technology disciplines in which basic and applied research generate near- and long-term economic development and diversification in Louisiana, as well as contribute to fundamental knowledge.

I. INTRODUCTION

According to Article VII, Section 10.1 of the Louisiana Constitution, at least sixty days prior to each regular session of the Legislature the Board of Regents must submit to the Governor and the Legislature a proposed plan and budget for the expenditure, during the coming fiscal year, of money available to higher education from the Board of Regents Support Fund. Higher education's portion of these funds may be spent for "any or all" of the following purposes: (1) endowment of chairs for eminent scholars (hereinafter referred to as the Endowed Chairs Program); (2) recruitment of superior graduate students (the Graduate Fellows Program, including Traditional Graduate Fellows, BoR/SREB Graduate Fellowships, and Endowed Superior Graduate Student Scholarships); (3) carefully defined research efforts (the Research and Development Program, including the Research Competitiveness Subprogram, the Industrial Ties Research Subprogram, and the Awards to Louisiana Artists and Scholars Subprogram); and (4) enhancement of the quality of academic, research, or agricultural departments or units within a university (the Enhancement Program, including Traditional Enhancement, Undergraduate Enhancement, BoRSF Endowed Two-Year Student Workforce Scholarships, Supervised Undergraduate Research Experiences, Federal Matching Grants, Endowed Professorships, and Endowed Undergraduate Scholarships for First-Generation College Students).

1.1 BOARD OF REGENTS SUPPORT FUND REVENUE PROJECTION, FY 2015-16

The base revenue amount used in the FY 2015-16 BoRSF Plan and Budget is \$26,500,000. The official projection of the Revenue Estimating Conference, as well as estimates from the State Treasurer, current and historic trends, Board policies and interpretations of the Board's Finance Section, were considered in deriving this base funding level.

1.2 BUDGET RATIONALE AND PREAMBLE

In deliberations about the Board of Regents Support Fund Plan and Budget for FY 2015-16, the Board recognized several issues requiring long-range strategic planning:

- Steadily increasing demand for Support Fund resources under all four program components with concomitant increases in proposal quality and outstanding results achieved, including the leveraging **during the grant period** of \$1.50 in non-State money for every Support Fund dollar awarded;

- The State's expanding emphasis on economic development and diversification, particularly related to 21st-century innovation industries;
- Greater emphasis on strategic investment in research through the Fostering Innovation Through Research in Science and Technology for Louisiana (FIRST Louisiana) statewide plan as well as the 2011 Board of Regents Master Plan and the Granting Resources and Autonomy for Diplomas (GRAD) Act;
- The need for improved data collection and enhanced evaluation to better inform decision making; and
- Attention, especially during a period of continuing budgetary challenges, to constitutional restrictions on supplanting State appropriations with Support Fund dollars.

It is vital that strength be maintained in and across all four interrelated Support Fund components. While the Board lauds the private philanthropy reflected in applications for endowed chairs, professorships, and undergraduate scholarships, it is also mindful that significant cuts in budgets for competitive Enhancement, R&D and Recruitment of Superior Graduate Students subprograms would jeopardize their viability and hence impair the overall impact and quality of the Support Fund programs. Endowed chairholders and professors must have basic infrastructure and equipment, supportive cutting-edge research across departments and units, and top-quality graduate students in order to achieve the results expected of them, making it imperative to balance matching funds for endowments with monies for competitive grants in the Enhancement, R&D and Graduate Fellows programs.

1.3 ADOPTION OF FY 2015-16 PLAN AND BUDGET

The following Plan and Budget for FY 2015-16 were adopted by the Board of Regents at its meeting of September 25, 2014.

2. LONG-RANGE PLANNING AND EVALUATION

2.1 LONG-RANGE PLANNING

In FY 1987-88 the Board of Regents determined that, in addition to the Constitutionally required annual plan and budget which set forth short-term programmatic goals and fiscal objectives, long-range strategic plans were needed to accomplish the interrelated purposes and goals of the Support Fund. Short-term activities outlined in the annual plans and budgets could then be shaped by these long-term goals.

The first long-range plan evolved from a carefully researched white paper prepared by the Louisiana Stimulus for Excellence in Research (LaSER) Committee. Titled *Strategic Plan for Higher Education's Portion of the Louisiana Education Quality Support Fund*, it was adopted in 1988. Cognizant of changes in economic conditions which affected academic issues, the Board in 1993 adopted a revised plan: *Board of Regents Support Fund Long-Range Strategic Plan for Higher Education*. It maintained the central themes and strategies of the earlier plan, adjusted to reflect changing conditions and lessons learned. In 1999 the Board adopted a third revised plan to guide the Support Fund through FY 2005-06. In the wake of Hurricanes Katrina and Rita, the Board extended that Strategic Plan through FY 2006-07 and at its meeting of June 22, 2006 adopted a new

Strategic Plan to begin in FY 2007-08. This Plan continued the approach of balancing continuity based on effectiveness with revisions reflecting lessons learned.¹

2.2 LONG-RANGE EVALUATION

From the first Strategic Plan in 1988, methods have been in place for assessment of the long-range impacts of the Board of Regents Support Fund, as well as levels of success attained by individual funded projects and the programs and subprograms through which funding is awarded. In the early years, program and project success was evaluated annually by the BoRSF Planning Committee using programmatic assessments provided by external reviewers and annual and/or final reports submitted by project directors. Beginning in FY 1990-91, the Board implemented a systematic evaluation process based on four elements: (1) collection of background information; (2) submission of annual and/or final reports by project directors; (3) submission of additional information one year after project termination; and (4) evaluation by out-of-state experts of individual projects and overall programs. In the spring of 1994 such an evaluation was conducted by a distinguished panel of out-of-state experts. At that time, the panel concluded that the BoRSF was effectively and efficiently administered, was addressing some of the State's economic development and higher education infrastructure needs, and had been successful in attracting Federal funds to the State.²

As Support Fund operations continued in the 1990s, the need for more comprehensive and regular assessment of programmatic benefits became evident. Accordingly, the Board conducted a thorough revision of the long-range evaluation system, adopting a cyclical process by which Support Fund programs could be assessed. Though the process began during the summer and fall of 1998 with the comprehensive review of the Endowed Chairs Program, the cyclical approach was codified in the 1999 BoRSF Strategic Plan. This first Endowed Chairs review and subsequent programmatic evaluations yielded significant benefits to Support Fund components:

- The 1998 Endowed Chairs review culminated in the March 1999 adoption of the Board of Regents Endowed Chairs Policy, which significantly strengthened a program with already impressive accomplishments.
- The FY 1999-2000 comprehensive review of the Endowed Professorships Subprogram led to the adoption, in December 2000, of the Board of Regents Endowed Professorships Policy, improving and focusing that subprogram.
- The FY 2000-01 review of the Recruitment of Superior Graduate Students Program led to the January 2002 adoption of recommendations designed to elevate the program's accomplishments.
- The 2009 review of Endowed Chairs resulted in policy and program revisions implemented during the FY 2009-10 review process.
- The FY 2001-02 and 2010-11 reviews of the Research and Development Program yielded powerful endorsements of the program's success as well as recommendations for improvement.

¹ Copies of the 1988, 1993, 1999, and 2007 Strategic Plans are available in the Board's office and at <http://web.laregents.org/program-evaluations/strategic-planning/>.

² The panel report is available in the Board's office.

3. AN OVERVIEW OF RESULTS OBTAINED

Significant benefits are accruing to the State as a result of the Support Fund investment in higher education. The results reported herein are even more impressive when one understands that: (1) realization of the full benefit of investment in higher education is a long-term proposition, and results evolve over a period of many years; (2) reported results include **only benefits derived during the life of the grants awarded**, and do not attempt to measure the many benefits which accrue after the conclusion of relatively brief Support Fund contracts; and (3) no specific benefits beyond the initial private match are claimed as a result of the Endowed Chairs for Eminent Scholars Program, and no specific external grants are attributed to the Recruitment for Superior Graduate Students Program. Programmatic evaluations have led the Board to adopt reporting mechanisms that do, however, enable measurement of external funding success related to BoRSF components.

Annual and/or final reports have been used since the inception of the BoRSF to monitor the progress of all projects. A few of the most significant achievements are described in the following sections.

3.1 STATEWIDE RESULTS

- * **\$1,243,938,342 in external funds have been generated** from Federal, private, and industry sources as a result of the Board of Regents Support Fund's investment in higher education, thereby significantly increasing the total monies available for higher education. This represents a **return of \$1.50 for every Support Fund dollar invested** in higher education since the inception of the programs. The figure reflects only external funds generated during the life of the awards--additional revenues are and will continue to be generated after expiration of the awards.
- * **3,128 grants and/or contracts have been awarded** to Louisiana post-secondary institutions from external funding agencies directly as a result of BoRSF investments.
- * An analysis performed by the Louisiana Department of Economic Development concluded that, for all completed Industrial Ties Research Subprogram projects, **48% had either been successfully commercialized or were in the process of commercialization**. Forty-five percent (45%) of projects that were successfully commercialized are protected by a patent and/or license. Additionally, **almost 60% of all completed projects reported moderate to significant industrial interaction**.
- * **Increased institutional collaboration has resulted from Support Fund investments, as evidenced by the multi-million dollar, multi-institutional Federal grants awarded to the Board of Regents on behalf of statewide university consortia for research initiatives**. Their purpose is to increase research capacity and success, as well as the amount of Federal research and development money awarded to Louisiana scientists and engineers. (See descriptions of awards in Attachment I.)
- * **218 patents were issued, with another 197 applications pending** during the life of the awards.

3.2 RESULTS FROM SELECTED PROJECTS

See Attachment II for brief summaries of the achievements of selected recent projects funded across Support Fund components.

3.3 MULTIPLIER EFFECTS

Using the input/output table constructed by the Bureau of Economic Analysis in the U. S. Department of Commerce and housed in the Department of Economics at LSU, one can estimate the multiplier effects of such an infusion of new dollars on the Louisiana economy in terms of new revenues, income, and jobs for its citizens.

Effects of the \$1,243,938,342 in external funds generated from Board of Regents Support Fund projects are estimated as follows:³

- **Approximately \$2.56 billion in new revenues to Louisiana firms and organizations;**
- **Approximately \$1.04 billion in new income for Louisiana citizens; and**
- **Approximately 45,292 new jobs for Louisianans.**

4. LEVERAGING BOARD OF REGENTS SUPPORT FUND MONEY, EXPANDING BOARD OF REGENTS SUPPORT FUND OPPORTUNITIES, AND PROMOTING MULTI-INSTITUTIONAL COOPERATION AND COLLABORATION

The Board began co-sponsoring research projects with the National Science Foundation (NSF) and supporting the development of scientific research and educational infrastructure in Louisiana under NSF's Experimental Program to Stimulate Competitive Research (EPSCoR) during FY 1988-89. In FY 1991-92 the Board dedicated a portion of Board of Regents Support Fund monies as matching commitments for two statewide, multi-institutional initiatives to be submitted in national competitions for Federal funds in areas that coincided with constitutionally prescribed BoRSF activities. These initiatives were the NSF LaSER Advanced Development Proposal (ADP) and the Louisiana Systemic Initiatives Program (LaSIP) in Math and Science Education.⁴ The reasons for, and goals of, these matching commitments were fourfold:

- To continue and accelerate the leveraging of Federal money with BoRSF investments, as is consistently accomplished by principal investigators of individually funded Support Fund projects;
- To expand opportunities available through Support Fund programs;
- To augment the building of infrastructure begun under traditional BoRSF programs, which is necessary to enable Louisiana's universities to compete with greater success for Federal research money; and
- To promote multi-institutional collaboration and cooperation among Louisiana's colleges, universities, and K-12 schools.

The FY 1991-92 Board of Regents Support Fund Plan and Budget described the dedication of BoRSF money as State matching commitments for these multi-year Federal grant proposals (in preparation during FY 1990-91) under the auspices of the Board. Each proposal required significant State matching money as a condition of funding.

³These estimates were determined through application of a formula developed by Dr. Loren Scott of LSU-Baton Rouge, who authored "The Impact on the Louisiana Economy of \$66.5 Million in Outside Research Funding at LSU," January 1990.

⁴Details of these awards are included in Attachment I.

4.1 FUNDED PROPOSALS: JOINT BOARD OF REGENTS SUPPORT FUND/FEDERAL PROGRAMS WITH STATEWIDE IMPACT

The Board was successful in the competitions described above, and these efforts encouraged a continued quest for competitive Federal research and educational dollars from the National Science Foundation (NSF) and a variety of other agencies including the National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), the Department of Energy (DOE), the Department of Commerce, the Environmental Protection Agency (EPA), and the National Institutes of Health (NIH). Support Fund obligations for these Federal grants appear below in Table I. A more detailed description of each grant, including the Federal funds received for each, can be found in Attachment I.

The Board's decision to leverage the Support Fund by targeting matches for Federal grant opportunities has borne significant fruit. It has enabled the State to progress from receiving minimal support from NSF for research collaborations in the 1980s, to the current environment, in which Louisiana is among the elite of EPSCoR states in successful research-related grants and activities.

Table I
Federal Matching Grants Subprogram
For Joint State and Federal Projects with Systemic and/or Statewide Impact
By Types of Support Fund Activity, Monetary Commitment, and Duration

Federal Grant	Type of Support Fund Activity	Amount of Annual Matching Commitment	Amount of Total Matching Commitment	FYs in which Commitment is Applicable	Total Length of Commitment in Years
NSF/EPSCoR ¹ LaSER Implementation	TR ENH: 30% R&D: 70%	Yr. 1 \$685,043 Yr. 2 440,202 Yr. 3 191,791	\$1,317,036	1988-89 through 1990-91	3 ¹
NSF/SI LaSIP	TR ENH, UG ENH, PLEx: Pro-rata	\$1 Million	\$5 Million	1991-92 through 1995-96	5
NSF/EPSCoR LaSER Advanced Development Program	TR ENH: 1/3 GR FEL: 1/3 ² ITRS: 1/3	\$1.2 Million	\$4.8 Million	1991-92 through 1994-95	4
NASA/ LaSPACE	RCS: 60% GR FEL: 40% ²	\$100,000	\$500,000	1991-92 through 1995-96	5
NSF/SI LaCEPT	TR ENH: 100%	\$500,000	\$2.5 Million	1992-93 through 1996-97	5
DOE/EPSCoR Implementation	TR ENH: 60% RCS: 40%	\$519,795	\$1,039,590	1993-94 through 1994-95	2
DOD/EPSCoR Planning	TR ENH: 100%	\$25,000	\$25,000	1993-94	1
NASA/EPSCoR Implementation	TR ENH: 50% RCS: 25% GR FEL: 25% ²	\$500,000	\$1.5 Million	1994-95 through 1996-97	3
1993 DEPSCoR Implementation	TR ENH: 50% RCS: 25% GR FEL: 25% ²	Yr. 1 \$166,666 Yr. 2 166,666 Yr. 3 166,667	\$500,000	1994-95 through 1996-97	3
NSF/SI Teaching Scholars	TR ENH: 100%	\$ 50,000	\$250,000	1994-95 through 1998-99	5
NSF/EPSCoR LaSER Systemic Initiatives	TR ENH: 60% UG ENH: 10% R&D: 20% GR FEL: 10% ²	\$1 Million	\$3 Million	1995-96 through 1997-98	3
DOE/EPSCoR Implementation Renewal	TR ENH: 10% R&D: 70% GR FEL: 20% ²	\$800,000	\$3.2 Million	1995-96 through 1998-99	4
NSF/SI LAMP	TR ENH: 100%	Yr.1 \$200,000 Yrs. 2-5 500,000	\$2.2 Million	1995-96 through 1999-2000	5

¹ The thirteen research projects that were a part of the first NSF/EPSCoR award received Board of Regents Support Fund money for two years prior to receiving NSF support in January of 1989 (FY 1988-89), for a total of five years and \$3,374,355 in Board of Regents Support Fund money. This table reflects only years three through five of Board of Regents Support Fund money (or \$1,317,036), since only that period of State support that coincides with Federal Support can be counted as part of the State's matching commitment. (See Section 4.1.)

² Because of the nature of the Graduate Fellows Program, money for this component must be committed in the fiscal year prior to expenditure. For this reason, the first year's Graduate Fellows portion of matching funds committed to a particular project was usually actually charged to Enhancement or R&D, or prorated between the two program components.

Table I (Continued)

Federal Grant	Type of Support Fund Activity	Amount of Annual Matching Commitment	Amount of Total Matching Commitment	FYs in which Commitment is Applicable	Total Length of Commitment in Years
NASA LaSPACE Renewal	RCS: 50% GR FEL: 50% ²	\$100,000	\$400,000	1996-97 through 1999-2000	4
1995 DEPSCoR Implementation	TR ENH: 50% R&D: 25% GR FEL: 25% ²	Yr. 1 \$551,439 Yr. 2 311,740 Yr. 3 311,972	\$1,175,151	1996-97 through 1998-99	3
NSF/SI LaSIP Renewal	TR ENH: 100%	\$1 Million	\$5 Million	1996-97 through 2000-01	5
NASA/EPSCoR Implementation Renewal	TR ENH: 50% RCS: 25% GR FEL: 25% ²	\$500,000	\$1 Million	1997-98 through 1998-99	2
NSF/SI Delta Rural SI	TR ENH: 100%	\$200,000	\$1 Million	1997-98 through 2001-02	5
LaCEPT Supplemental	TR ENH: 100%	\$100,000	\$300,000	1998-99 through 2000-01	3
1997 DEPSCoR Implementation	TR ENH: 50% R&D: 25% GR FEL: 25% ²	\$250,000	\$750,000	1997-98 through 1999-2000	3
NSF/EPSCoR New Cooperative Agreement	TR ENH: 75% R&D: 25%	\$1 Million	\$3 Million	1998-99 through 2000-01	3
1999 DEPSCoR Implementation	TR ENH: 100%	Yr. 1 \$65,998 Yr. 2 61,900 Yr. 3 61,900	\$189,798	1999-2000 through 2001-02	3
EPSCoT	TR ENH: 100%	\$300,000	\$300,000	1999-2000	1.5
NASA/EPSCoR Continuation Funding	TR ENH: 100%	\$250,000	\$250,000	1999-2000	1
NASA/EPSCoR Preparation Grant	TR ENH: 100%	\$100,000	\$100,000	1999-2000	1
NASA LaSPACE Continuation	TR ENH: 100%	\$200,000	\$1 Million	2000-01 through 2004-05	5
EPA/EPSCoR 2000	TR ENH: 100%	Yr. 1 \$255,261 Yr. 2 244,739	\$500,000	1999-2000 through 2000-01	2
LAMP Phase II	TR ENH: 100%	\$500,000	\$2.5 Million	2000-01 through 2004-05	5
NSF/EPSCoR Research Infrastructure Improvement	TR ENH: 100%	\$1 Million	\$3 Million	2001-02 through 2003-04	3
NASA/EPSCoR 2000	TR ENH: 100%	\$700,000	\$2.1 Million	2001-02 through 2003-04	3
EPA/EPSCoR 2001	TR ENH: 100%	Yr. 1 \$250,000 Yr. 2 244,542	\$494,542	2002-03 through 2003-04	2
NSF/EPSCoR Research Infrastructure Improvement II	TR ENH: 100%	\$1 Million	\$3 Million	2003-04 through 2005-06	3

Table I (Continued)

Federal Grant	Type of Support Fund Activity	Amount of Annual Matching Commitment	Amount of Total Matching Commitment	FYs in which Commitment is Applicable	Total Length of Commitment in Years
DOE/EPSCoR Implementation 2004	TR ENH: 100%	\$400,000	\$1.2 Million	2004-05 through 2006-07	3
NASA/EPSCoR 2000 Renewal	TR ENH: 100%	\$493,280	\$986,560	2004-05 through 2005-06	2
LAMP Phase III	TR ENH: 100%	\$500,000	\$2.5 Million	2005-06 through 2009-10	5
NASA LaSPACE Continuation II	TR ENH: 100%	\$200,000	\$1 Million	2005-06 through 2009-10	5
NASA/EPSCoR 2006 - Infrastructure	TR ENH: 100%	\$125,000	\$375,000	2006-07 through 2008-09	3
NASA/EPSCoR 2006 - Research 1	TR ENH: 100%	\$250,000	\$750,000	2006-07 through 2008-09	3
NASA/EPSCoR 2006 - Research 2	TR ENH: 100%	\$250,000	\$750,000	2006-07 through 2008-09	3
NSF EPSCoR Cyber RII	TR ENH: 100%	\$1 Million	\$3 Million	2006-07 through 2008-09	3
DOE EPSCoR Implementation Renewal	TR ENH: 100%	\$400,000	\$1.2 Million	2007-08 through 2009-10	3
NASA EPSCoR 2009 - Research 3	TR ENH: 100%	\$250,000	\$750,000	2009-10 through 2011-12	3
NASA EPSCoR 2009 - Infrastructure	TR ENH: 100%	\$125,000	\$375,000	2009-10 through 2011-12	3
NASA EPSCoR 2009 - Research 4	TR ENH: 100%	\$250,000	\$750,000	2009-10 through 2011-12	3
NSF EPSCoR RII Track 1 Proposal	TR ENH: 100%	\$2 Million	\$10 Million	2009-10 through 2013-14	5
NASA LaSPACE Renewal	TR ENH: 100%	\$250,000	\$1.25 Million	2010-11 through 2014-15	5
LAMP Phase IV	TR ENH: 100%	\$500,000	\$2.5 Million	2010-11 through 2014-15	5
NASA EPSCoR 2009 - Research 5	TR ENH 100%	\$250,000	\$750,000	2011-12 through 2013-14	3
NASA EPSCoR Research Infrastructure	TR ENH 100%	\$125,000	\$375,000	2012-13 through 2014-15	3

Table I (Continued)

Federal Grant	Type of Support Fund Activity	Amount of Annual Matching Commitment	Amount of Total Matching Commitment	FYs in which Commitment is Applicable	Total Length of Commitment in Years
NASA EPSCoR 2009 - Research 6	TR ENH 100%	\$250,000	\$750,000	2012-13 through 2014-15	3
NASA EPSCoR - Research 7	TR ENH 100%	\$250,000	\$750,000	2013-14 through 2015-16	3
DOE EPSCoR Implementation 2014	TR ENH 100%	\$500,000	\$500,000	2014-15	1
NASA EPSCoR - Research 9 (Pending)	TR ENH 100%	\$250,000	\$750,000	2015-16 through 2017-18	3
NASA EPSCoR Research Infrastructure (Pending)	TR ENH 100%	\$125,000	\$375,000	2015-16 through 2017-18	3
NSF EPSCoR RII Track 1 Proposal (Pending)	TR ENH: 100%	\$800,000	\$4 Million	2015-16 through 2019-20	5
NASA LaSPACE Continuation (Pending)	TR ENH: 100%	\$250,000	\$750,000	2015-16 through 2017-18	3

4.2 PENDING PROPOSALS

The NASA EPSCoR Program annually issues a Cooperative Agreement Notice (CAN) research announcement for university-based research activities which will make significant contributions to the strategic research and development priorities of NASA and to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the State. In the past, the CAN has been issued late in the calendar year. Proposals from Louisiana faculty will be submitted to respond to this announcement in spring 2015.

NASA is also expected to announce a new Research Infrastructure Development (RID) competition for fiscal year 2015. The goal of this program is to develop research capacity in space/aerospace fields by developing collaborations between NASA scientists and engineers and the Louisiana research community.

It is anticipated that \$875,000 will be required in FY 2015-16 to provide match to successful projects funded through NASA EPSCoR and the Space Program. The funds are included as new awards in the Federal Matching Grants component of the Enhancement Program (see Section 5.5).

NSF EPSCoR issued a solicitation for the Research Infrastructure Improvement (RII) Track 1 award in 2014. In August 2014, the Board submitted a proposal, requesting a total of \$20 million in NSF funds, matched

with \$4 million in BoRSF monies, over five years, in response to this solicitation. Results from this competition are expected in the spring of 2015.

4.3 MULTIDISCIPLINARY AND MULTI-INSTITUTIONAL PROPOSALS IN SUPPORT FUND PROGRAM COMPONENTS

The Board has long recognized the potential of multidisciplinary and/or multi-institutional projects to enhance academic quality and promote economic development, as well as to make the most prudent use of scarce State resources. Accordingly, the Board has encouraged these kinds of proposals since the inception of the Board of Regents Support Fund, not only as part of the joint Federal/State efforts described in Section 4.1 of this Plan and Budget, but also in proposals submitted under the traditional BoRSF program components. The best known manifestations of the Board's support of proposals of this type are an \$800,000 Enhancement award to provide initial funding to the Louisiana Academic Library Network (LaLINC) project, which has computerized databases and linked academic libraries throughout the State, and an award of \$3,500,000 to support the establishment of the Louisiana Optical Network Initiative (LONI).

To further emphasize its belief in the potential of multidisciplinary, multi-institutional efforts to achieve BoRSF goals and promote the best interests of the State, in its most recent solicitation for proposals, as well as in the 1993, 1999 and 2007 revisions of the Strategic Plan, the Board specifically encouraged the submission of collaborative proposals which would yield statewide benefits. Beginning with its FY 2000-01 budget, and continuing in FY 2015-16, the Board has set aside funds each year from the Traditional Enhancement Subprogram for the funding of these types of projects. The Board reaffirms the eligibility and encourages the submission of multidisciplinary, multi-institutional proposals in all Support Fund program components for FY 2015-16. Consistent with the growing emphasis placed on interdisciplinary research throughout the academic community and the large numbers of quality proposals submitted each year in the Multidisciplinary Enhancement category of Traditional Enhancement, the Board increased the funds available for awards in this category to \$950,000 in the FY 2004-05 Plan and Budget. The funding level for Multidisciplinary Enhancement has since been calculated as a percentage of the Traditional Enhancement budget (20%). This percentage calculation will continue in the FY 2015-16 Plan and Budget. Any unexpended Multidisciplinary funds will revert to discipline-based Traditional Enhancement (see Section 5.5).

5. BOARD OF REGENTS SUPPORT FUND PROGRAM COMPONENTS

5.1 BUDGETARY CONTINGENCIES

If in FY 2015-16 the income received for the higher education portion of the Board of Regents Support Fund is greater than the \$26,500,000 projected, the additional revenues shall be allocated as approved by the Board. In the event that reductions are necessary, they shall be accommodated through a proportionate reduction in the first-year amounts allocated for competitive proposals in Enhancement and R&D Program components.

5.2 ENDOWED CHAIRS FOR EMINENT SCHOLARS - \$3,220,000

The Endowed Chairs for Eminent Scholars Program, introduced in 1987, is designed to enhance the recruitment and retention of distinguished faculty at higher education institutions throughout Louisiana. Since 1990, the program has typically been budgeted at an annual level of at least \$3.2 million. Legislative supplemental appropriations, beginning in FY 1995-96 and continuing in several subsequent years, have enabled the funding of 99 additional chairs. Through FY 2013-14, 319 chairs are matched at twenty-six

institutions, and the program has generated a total endowment (counting private match) of \$371 million. Comprehensive reviews conducted in 1993, 1998 and 2009 led to significant strengthening of the program.

The program pairs a 60% private-sector match with a 40% Board of Regents award to endow a chair to be filled by an exemplary scholar. The Board endows chairs in any discipline at several levels: \$1 million total endowment (\$600,000 match/\$400,000 BoRSF); \$2 million total endowment (\$1.2 million match/\$800,000 BoRSF); and \$3 million total endowment (\$1.8 million match/\$1.2 million BoRSF). Higher endowments are encouraged, generally through combining existing matched Chairs or incremental requests for BoRSF match. Forty-seven (47) of the 319 chairs matched have been at the \$2 million level and two (2) have combined multiple matched endowments to create a \$3 million chair and a \$4 million chair, respectively.

A policy providing “Special Provisions for Public Four-Year Campuses with Fewer than Three Eminent Scholars Chairs,” adopted in 2001, allowed public four-year institutions with fewer than three chairs to invert the 60:40 ratio of private funds/BoRSF, but retained the principle of competition without favor. Through FY 2005-06, when the special provisions expired, nine chairs (three from Northwestern State University, two from Louisiana State University-Shreveport, and one each from Grambling State University, Louisiana State University-Alexandria, Southern University and A&M College, and Southern University at New Orleans) were funded under its aegis. One additional inverse-ratio chair from Southern University at New Orleans was funded under special circumstances in FY 2006-07.

During the first years of the program’s operation, chairs were matched on a “first-come, first-served” basis. This approach was replaced in 1993 by a competitive process to ensure that the highest quality chairs with the greatest potential for impact are funded. The competition established to determine endowment awards is rigorous and highly selective. A panel of out-of-state experts reviews proposals on an annual basis, recommending for funding those most representative of and able to achieve the goals of the program. Stringent rules governing the selection of the faculty recipient are designed to ensure his or her excellence. An endowed chair must be filled through a national search and the committee conducting the search must include at least one individual recognized as an expert in the field of the chair but not affiliated with the institution, the private donor, or the Board of Regents. While a chair recipient may be selected from within the affected campus, this should occur infrequently and only when a national search has documented the national and/or international eminence of the prospective chairholder.

As the national search guarantees the past reputation of the chairholder, periodic peer reviews of the chairholder are intended to assure continued accomplishment. Chairholders are held to standards of performance which require that they maintain highly productive records of scholarly and/or creative endeavors, exceptional teaching, recruitment and mentoring of high-quality students, leadership activities, and enhancement of the State’s economy.

Traditionally \$3,220,000 has been budgeted annually for the Endowed Chairs category; severe funding constraints caused by sharp declines in Support Fund income required that the FY 2013-14 Endowed Chairs budget be reduced by 25%, to a level of \$2,420,000. In FY 2014-15, given the number of vacant existing chairs and the significant backlog in requests for State match in the Endowed Professorships subprogram, the budget for Endowed Chairs was further reduced to \$2,020,000. A restoration of the traditional funding level of \$3,220,000 is recommended for FY 2015-16, providing funds for eight \$400,000 matching “slots” plus \$20,000 in consultant costs.

5.3 RECRUITMENT OF SUPERIOR GRADUATE STUDENTS - \$5,469,500

The Recruitment of Superior Graduate Students component, also called the Graduate Fellows Program, provides resources to select departments to attract and retain top-quality students in their graduate programs. Through FY 2013-14, the Board of Regents has provided 1,544 graduate fellowships to a spectrum of departments at sixteen institutions in Louisiana. More than 90% of all awards have been made to science, technology, engineering, and mathematics programs and about 10% of fellowships have been awarded to programs specifically targeting in-service K-12 teachers in mathematics and science disciplines pursuing master's degrees in education. While the full economic and cultural benefits of these fellowships are difficult to quantify, it is clear that the program has contributed highly educated employees to Louisiana business and industry, expert teachers at levels from kindergarten to college, and a community of enthusiastic, energetic, and dedicated students to further the educational and research agendas of colleges and universities across the State.

5.3.1 Traditional and BoR/SREB Graduate Fellowships

The Traditional Graduate Fellows (GF) subprogram has been part of the Graduate Fellows Program since its inception; the Board became a full participant in the Southern Regional Education Board (SREB) Minority Scholars Program in FY 2007-08 and, as a result, established the Board of Regents/SREB Graduate Fellowships to Promote Diversity Subprogram (BoR/SREB), adding it to the Graduate Fellows component. The Traditional Subprogram primarily supports excellent doctoral-level fellows, but also allows stipends for students at master's-level programs of distinction. The BoR/SREB Subprogram, a continuation of the Perkins Doctoral Fellows Program established in response to the Louisiana Consent Decree, offers successful colleges and universities fellowships to build diversity in graduate programs by recruiting and retaining excellent underrepresented minority doctoral candidates. The Traditional GF and BoR/SREB subprograms provide a comprehensive opportunity for departments and universities across the State to receive assistance in the recruitment, training and support of high-quality graduate students.

Implementation of the Traditional GF subprogram requires the following schedule:

- Year One: Award of the grant by the Board of Regents
- Year Two: Recruitment by awardees of superior graduate candidates
- Year Three: Enrollment of recruited students and initial disbursement of funds committed under the grant

For example, colleges and universities that submit successful proposals during the current fiscal year (FY 2014-15) will have a full year (FY 2015-16) during which to recruit students who, in turn, will enroll in Louisiana universities' graduate programs and receive the Board of Regents Support Fund fellowship for the first time in the fall of 2016 (FY 2016-17). The BoR/SREB Subprogram, in contrast, does not require that fellowships be used for recruitment, so makes funds available in the fiscal year immediately following the award announcement (e.g., in FY 2015-16 for awards made in FY 2014-15).

The \$3,469,500 budgeted for these subprograms in FY 2015-16, therefore, is almost entirely for previous obligations, including: (a) \$962,000 for fourth-year funding of graduate fellows who began their course of study in AY 2012-13; (b) \$1,002,500 for third-year funding of graduate fellows who began their course of study in AY 2013-14; (c) \$706,500 for funding of second-year graduate fellows who began their course of study in AY 2014-15; (d) \$773,500 for funding of graduate fellows who will begin their course of study in AY 2015-16; and (e) \$25,000 for review of proposals submitted during FY 2015-16. In addition to

outlining prior commitments in the Graduate Fellows Program in FY 2015-16, this information also notifies the Governor and the Legislature that an amount of approximately \$3.5 million will have been committed from the FY 2016-17 Support Fund budget prior to the submission of the annual plan and budget for that year.

In keeping with the conceptual framework that encourages the use of Support Fund money to enhance all areas of higher education, all disciplines are eligible to compete in the Traditional GF Subprogram. Science, Technology, Engineering, and Mathematics (STEM) disciplines are eligible to compete every year, while non-STEM disciplines are eligible on a rotating cycle. The eligibility cycle for Traditional GF, including disciplines eligible in FY 2015-16, is specified in Schedule I.

SCHEDULE I: ELIGIBILITY OF DISCIPLINES* IN THE TRADITIONAL GF SUBPROGRAM

GROUP I - ELIGIBLE EVERY YEAR

Agriculture
Biological Sciences
Chemistry
Computer and Information Sciences
Earth/Environmental Sciences
Engineering A and B
Health/Medical Sciences**
Mathematics
Physics/Astronomy
Social Sciences

GROUP II - ELIGIBLE IN FYs 2016-17, 2018-19

Business
Education, including Literacy

GROUP III - ELIGIBLE IN FYs 2015-16, 2017-18

Arts
Humanities

*The listing of those sub-disciplines which are included in these larger groupings is in Attachment III.

**Effective with the Board action of June 22, 1995, the LSU Health Sciences Centers in New Orleans and Shreveport and the Tulane University Health Sciences Center are permitted to submit a maximum of three proposals each in Health and Medical Sciences when it is an eligible category. Health and Medical Sciences was made eligible each year in the 1999 and 2007 Strategic Plans.

5.3.2 Endowed Superior Graduate Student Scholarships

In September 2014, the Board of Regents approved establishment of the Board of Regents Support Fund (BoRSF) competitive Endowed Superior Graduate Student Scholarships Subprogram, enabling campuses to

enhance support for graduate and first professional degree students through permanent endowments which combine non-State contributions and Support Fund match. Endowed Superior Graduate student scholarships will be established to assist departments, units, colleges, and/or campuses to recruit, retain, and graduate excellent graduate and first professional degree candidates as well as post-doctoral research fellows. Though all disciplines are eligible, priority is given to scholarships for students a) in high-demand professional master's and first professional degrees which target Louisiana's workforce needs as defined for the Workforce and Innovation for a Stronger Economy (WISE) Fund and b) in professional experiential opportunities substantially related to those workforce needs.

The funding of an endowed graduate scholarship requires the eligible college or university to raise at least \$60,000 from non-State sources, to be matched by \$40,000 from the Support Fund, thus establishing an endowed graduate scholarship valued at a minimum of \$100,000. Income from a scholarship's permanent endowment may be used to support scholarships and fellowships as well as experiential opportunities including internships, externships, research and conference travel, and field work.

Funding for the first year of the Endowed Superior Graduate Student Scholarships Subprogram is \$2,000,000. This funding level may be revisited in future fiscal years as the subprogram becomes established and demand for matching funds is clarified.

5.4 CAREFULLY DEFINED RESEARCH EFFORTS - \$5,870,000

A total of approximately \$2,735,000 will be required during FY 2015-16 to honor prior commitments for multi-year projects in the Board of Regents Support Fund Research and Development (R&D) Program. Since most research projects are multi-year endeavors, the Board has historically been conservative in recommending an increase in funds dedicated for new research projects in the R&D Program. Allocations for new awards in the R&D Program peaked at approximately \$2,800,000 in FY 1990-91. The budget for new R&D projects was reduced in FY 1991-92, in part because of a slight drop in total Support Fund monies available, but primarily as a result of the matching commitments required for Federal grants.

In the current year, due to changes in the National Science Foundation's policy, the Support Fund's pledged match for the Louisiana Experimental Program to Stimulate Competitive Research (LA EPSCoR) Track 1 award was significantly reduced, leaving unfunded its legacy competitive programs. Two research-centered programs – Pilot Funding for New Initiatives (Pfund) and Opportunities for Partnerships in Technology with Industry (OPT-In) – provide short-term opportunities complementary to existing Support Fund R&D subprograms for building competitiveness and encouraging industrial partnerships, technology transfer, and proof-of-concept activities. In consideration of their high value and success, these programs will be incorporated into the existing subprograms and funded directly by the Support Fund in FY 2015-16.

The Research Competitiveness Subprogram (RCS) has been consistently successful since its inception in FY 1986-87. Accordingly, the Board has made every effort to fund this subprogram at the highest possible level. The amount devoted to RCS for first-year awards was increased to \$1,500,000 in FY 1999-2000 and was maintained at that level for seven years. Beginning in FY 2006-07 and continuing through the FY 2009-10 Plan and Budget, the amount for first-year awards was reduced to \$1,350,000 to facilitate funding of the Post-Katrina Support Fund Initiative. The funding level was restored in FY 2010-11 to \$1,500,000. Due to persistent reductions in revenue in combination with lower projected income in the BoRSF, in FY 2011-12 and FY 2012-13 the funding level was again reduced to \$1,350,000. Additional significant declines in revenue projections required that first-year funding for RCS be further reduced in FY 2013-14, to a level of \$865,000. In FY 2014-15, due to decreases in prior commitments and Federal matching obligations, monies for first-year funding in

RCS were restored to \$1,350,000; this budget level will be maintained in FY 2015-16 for the traditional RCS component.

The Pilot Funding for New Research (Pfund) component, established by Louisiana EPSCoR as part of its NSF Track 1 award, provides pilot funding for competitive research likely to secure Federal or other external funding. Pfund goals are aligned with those of RCS, but projects are more limited in scope and duration. Since its inception in FY 2004-05, Pfund has funded 425 projects with an annual allocation of \$400,000 from the Support Fund match to the Track 1 award. In FY 2015-16, this budget level will be maintained and the program operated directly through the BoRSF as a component of RCS. Total RCS first-year funding, including the traditional and Pfund components, will be \$1,750,000

The Industrial Ties Research Subprogram (ITRS), though it has resulted in a number of projects with significant economic benefits (see Attachment II), has also presented some challenges. Louisiana's relatively undiversified industrial economy and dearth of large industrial-based corporations (only two Fortune 500 companies – CenturyLink and Entergy – and relatively few industries with substantial capacity for R&D spending) have made it difficult for university faculty to foster meaningful partnerships with State-based industries. The Board significantly reduced the funding level for ITRS to reflect this reality; the amount available for first-year funding of this component was set at \$650,000 for several years. To make funds available for the Post-Katrina Support Fund Initiative, the amount was further reduced by 10%, to a first-year level of \$585,000, for FY 2006-07 through FY 2009-10. The funding level was restored to \$650,000 in FY 2010-11. In FY 2011-12, the funding level was again reduced by 10%, to \$585,000, to accommodate lower projected income in the BoRSF; this funding level was retained in FY 2012-13. Continued declines in revenue projections required that first-year funding for ITRS be further reduced in FY 2013-14, to a level of \$375,000. In FY 2014-15, due to decreases in prior commitments and Federal matching obligations, monies for first-year funding in ITRS were restored to \$585,000; this budget level will be maintained in FY 2015-16 for the traditional ITRS component.

The Opportunities for Partnerships in Technology with Industry (OPT-In) component, established by Louisiana EPSCoR as part of its NSF Track 1 award, provides industrial partnership awards similar in focus to ITRS, but more limited in scope and duration, as well as funds for proof-of-concept and prototype development. Since its inception in FY 2011-12, OPT-In has funded 41 projects with an annual allocation of \$350,000 from the Support Fund match to the Track 1 award. In FY 2015-16, this budget level will be maintained and the program operated directly through the BoRSF as a component of ITRS. Total ITRS first-year funding, including the traditional and OPT-In components, will be \$935,000

While the R&D Program historically has been focused almost exclusively on the sciences, mathematics, and engineering, the Board remains cognizant of its responsibility, elucidated in each strategic plan since 1988, to improve the quality of education “at all levels in all disciplines.” The comprehensive review of the R&D Program during FY 2001-02 documented the need for a subprogram with emphasis on the arts, social sciences, and humanities. The ATLAS Subprogram, modeled after the internationally famous John Simon Guggenheim Memorial Foundation Fellowships, was inaugurated at a funding level of \$500,000 in FY 2004-05. The funding level for this subprogram, now named Awards to Louisiana Artists and Scholars (ATLAS), remained at \$500,000 for FY 2005-06, but was reduced to \$450,000 in FY 2006-07 and subsequent years in order to make funds available for the Post-Katrina Support Fund Initiative. The funding level was restored to \$500,000 in FY 2010-11. In FY 2011-12, given lower projected income in the BoRSF, the funding level was again reduced by 10%, to \$450,000, a level retained in FY 2012-13. ATLAS funds were further reduced in FY 2013-14, to a level of \$285,000, to accommodate additional substantial declines in projected Support Fund income. In FY 2014-15,

due to decreases in prior commitments and Federal matching obligations, monies for first-year funding in ATLAS were restored to \$450,000; this budget level will be maintained in FY 2015-16.

5.4.1 Research Competitiveness Subprogram (RCS)

RCS is a stimulus initiative directed toward those researchers who are at the threshold of becoming competitive in the Federal R&D marketplace. It is designed to assist these researchers to overcome the barriers that have prevented them from competing successfully at the national level for R&D funds. RCS is also focused only on those researchers who clearly show strong potential for enhancing their competitive status within the time span of a Board of Regents Support Fund grant. In every year since the subprogram's inception, far more Louisiana university researchers who fit this funding profile have submitted quality research proposals to RCS than the Board has been able to support and encourage with funding.

The Pilot Funding for New Research (Pfund) subprogram is similar to RCS, but with an emphasis on short-term seed funding to prepare research projects for submission to competitive Federal programs. Like RCS, Pfund is available to help non-tenured faculty to sharpen research ideas and develop cutting-edge techniques and for senior faculty to investigate new areas that require a shift in their existing research direction.

Disciplines eligible to compete for research funds in the RCS are restricted to the sciences and engineering (as defined by the National Science Foundation), agriculture, and health and medical sciences. Most disciplines are eligible on a staggered, two-years-on, two-years-off cycle; however, three disciplines accorded the highest priority for economic development (biological, computer/information, and earth/environmental sciences) are targeted for funding annually. The eligibility cycle for RCS, including disciplines eligible in FY 2015-16, is specified in Schedule II.

**SCHEDULE II: ELIGIBILITY OF DISCIPLINES* IN
THE RESEARCH COMPETITIVENESS SUBPROGRAM**

GROUP I - ELIGIBLE EVERY YEAR

Biological Sciences
Computer and Information Sciences
Earth/Environmental Sciences

GROUP II - ELIGIBLE IN FYS 2014-15, 2015-16, 2018-19

Agricultural Sciences
Engineering A (Chemical, Civil, Electrical, etc.)
Mathematics
Physics/Astronomy
Social Sciences

GROUP III - ELIGIBLE IN FYS 2012-13, 2013-14, 2016-17, 2017-18

Chemistry
Engineering B (Industrial, Materials, Mechanical, etc.)
Health and Medical Sciences

*The listing of those sub-disciplines which are included in these larger groupings is in Attachment III.

5.4.2 Industrial Ties Research Subprogram (ITRS)

The principal goal of ITRS is to fund research proposals which have significant near-term potential for contributing to the development and diversification of the Louisiana economy. Accordingly, all proposals and funded projects must demonstrate strong interest from and continued involvement of the private sector and/or non-State public agencies. Because ITRS also functions as a stimulus initiative, funded projects should either (a) bring about significant near-term Federal or private-sector funding of research with commercial applications, or (b) enhance or establish a Louisiana business or industry that will attract significant external revenues to the State.

The Opportunities for Partnerships in Technology with Industry (OPT-In) component also provides support for faculty working with industry or on projects directly related and contributing to economic development. OPT-In projects must be limited in scope, to complete defined objectives in one year or less, often enabling faculty who have completed the research phases of their investigations to pursue proof-of-concept work and prototype development, to prepare products for testing and the marketplace.

To ensure that no opportunities with the potential to promote economic development and diversification are overlooked, the Board has, since 1993, opened competition in ITRS to proposals from all research areas. Further, the Board has attempted to encourage university/industry initiatives through cooperation with the

Governor's Economic Development Cabinet and with related entities such as the Louisiana Department of Economic Development and the Louisiana Innovation Council.

5.4.3 Awards to Louisiana Artists and Scholars (ATLAS) Subprogram

The ATLAS Subprogram provides support for major scholarly and artistic productions with potential to have a broad impact on a regional and/or national level. ATLAS awards facilitate the completion of manuscripts for publication and/or the mounting of creative productions including recordings, performances, and gallery shows. The subprogram allows the State to profit from its rich cultural traditions and makes Louisiana faculty members' expertise and creativity in these disciplines well known both nationally and internationally.

5.4.4 Summary of FY 2015-16 Research and Development Expenditures

<u>Prior Commitments (RCS and ITRS only):</u>		\$2,735,000
<u>New Awards:</u>	RCS (Including Pfund)	\$1,750,000
	ITRS (Including OPT-In)	\$ 935,000
	ATLAS	<u>\$ 450,000</u>
R&D PROGRAM TOTAL		\$5,870,000

5.5 ENHANCEMENT OF THE QUALITY OF DEPARTMENTS OR UNITS - \$11,151,770

NOTE: Matching commitments for all Federal Matching Grants Subprogram proposals for which Federal approval has not been received as of the date of submission of the affected Plan and Budget will be accommodated from the Enhancement Program. The Board has elected to operate in this manner due to (a) the uncertainty of a proposal's potential success in the national competition for Federal funds; (b) the difficulty and uncertainty surrounding moving Board of Regents Support Fund money from one BoRSF program budget to another, once budgeted in the prior year's appropriation process; and (c) the fact that all projects of this nature contain elements, in varying degrees, that enhance academic departments and units at colleges and universities.

After weighing interrelations among the four components of the Support Fund, the Board has concluded that enhancement of the instructional and research infrastructure of departments and units remains a fundamental need, essential to accomplishing goals of the other three BoRSF components. For this reason, the Board shall dedicate \$11,151,770 to the Enhancement Program in FY 2015-16. Thus, approximately 43% of the total program funds available in FY 2015-16 have been dedicated to this component. This reflects the Board's strong commitment to Enhancement, which provides competitive opportunities to all Support Fund-eligible colleges and universities in the State.

Approximately \$1,975,000 of the \$11,151,770 budgeted for Enhancement awards in FY 2015-16 will be required to honor prior commitments for multi-year projects and new and prior-year matching for Federal projects. Of this amount, \$300,000 has been budgeted for potential second-year commitments for two-year proposals to be approved in FY 2014-15 under the Traditional and/or Undergraduate Enhancement Subprograms. Traditional and Undergraduate Enhancement proposals submitted in this fiscal year are currently undergoing competitive external review and the Board will make funding decisions in April or May of 2015. A total of \$1,675,000 has been pledged as the State's matching commitment under five jointly funded Board of

Regents Support Fund/Federal Matching Grants, including: (a) \$250,000 for the third year of the NASA EPSCoR Research 7 project; (b) \$125,000 for the first year of the NASA EPSCoR Research Infrastructure project; (c) \$250,000 for the first year of the NASA EPSCoR Research 9 project; (d) \$800,000 for the first year of the NSF Research Infrastructure Improvement (RII) Track 1 project; and (e) \$250,000 for the first year of the NASA LaSPACE continuation.

After deducting these projected commitments for multi-year Enhancement projects and the prior and projected obligations for Federal matching opportunities, \$9,176,770 will be available for new Enhancement projects submitted for funding consideration in FY 2015-16. Maintenance of the highest possible budgetary allocations to the Enhancement subprograms is particularly important because: (a) Enhancement subprograms build infrastructure at higher education institutions which is critical to the success of the other three Support Fund programs; and (b) all higher education institutions are eligible to compete and the majority of campuses most successfully compete in Enhancement subprograms. Significantly, 56% of the total funds available for new awards will be dedicated to Enhancement subprograms. (See Table II, “An Overview of Board of Regents Support Fund Budgetary Allocations by Program Component, FY 2015-16” in Section 6 of this Plan and Budget.)

5.5.1 Undergraduate Enhancement Subprogram

Some colleges and universities without sizeable graduate programs have difficulty competing against larger universities with greater resources and as a result were, in the early years of the Support Fund, less aggressive in submitting Enhancement proposals. To continue to affirm the principle that improvement of infrastructure is essential at all academic levels, the Board established a special Enhancement component for primarily undergraduate institutions. In recent years, \$1,620,000 has been annually allocated to improve education at these campuses. Severe budget constraints caused by declining income in the Support Fund required that the first-year funding level for FY 2013-14 be reduced to \$1,030,000. In FY 2014-15, due to the decrease in prior commitments and Federal matching obligations, monies for first-year funding in Undergraduate Enhancement were increased to \$1,600,000; this budget level will be retained in FY 2015-16.

Prerequisites for participation in the Undergraduate Enhancement Subprogram are as follows: (1) to be eligible, the applying campus may not offer more than two doctoral programs, and (2) the applying department may not offer a doctoral degree. The maximum number of doctoral programs a campus may offer and still be eligible to participate in the Undergraduate Enhancement Subprogram was lowered from ten in FY 1991-92 to two in FY 1992-93 and beyond. The Board took this action to promote maximum participation in this subprogram by primarily undergraduate campuses.

Participation in Undergraduate Enhancement does not preclude campuses from competing for other Enhancement funds, and quality considerations continue to form the basis for all funding decisions. The same rotation of disciplines (Schedule III) and types of projects eligible under the Traditional Enhancement Subprogram, as well as the same regulations for proposal submission, also apply in Undergraduate Enhancement. Funds not awarded in Undergraduate Enhancement will be transferred to Traditional Enhancement.

5.5.2 Endowed Professorships Subprogram

This subprogram was created by the Board and incorporated into the Enhancement component in FY 1990-91. Funds were first allocated to endow professorships in FY 1991-92. The funding of an endowed professorship requires the college or university to raise at least \$60,000 from non-State sources, to be matched

by \$40,000 from the Support Fund, thus establishing an endowed professorship valued at a minimum of \$100,000.

Following the subprogram's inception the Board became concerned that too many eligible campuses were not reaping its benefits. One manifestation of this concern appeared in the FY 1995-96 Plan and Budget, when the Board first allowed campuses to use Federal funds as the matching source for one endowed professorship per year. The Board also encouraged campuses to maximize efforts to attain matching funds for endowments from private philanthropic sources. Almost all Support Fund-eligible campuses now hold at least one matched Endowed Professorship.

This year, as in previous years, the Board searched to identify money in the Support Fund to support both new and previously submitted but unmatched applications. Measured against pressing financial needs throughout higher education, every component of the Support Fund is severely underfunded. Consequently, each dollar used to fund endowments means that fewer dollars are available for critical, immediate needs elsewhere. In FY 2010-11 and in several previous years, the Board funded the Endowed Professorships subprogram at a level of \$2,680,000, a level sufficient to endow two \$40,000 professorships at each four-year and special purpose campus and one \$40,000 professorship at each two-year campus. In several years campuses were able to receive more than two Professorships when slots were unclaimed. In addition, in FY 1995-96 and several subsequent years, the Legislature approved special appropriations to fund unmatched Professorships. Given recent changes in the markets which have led to limited returns on these smaller endowments, as well as the urgent needs throughout the higher education community and steady declines in Support Fund income, the Board reduced funding for the Endowed Professorships subprogram during FY 2011-12 to the level of \$1,560,000, an amount equivalent to one slot per eligible campus, though available funds were sufficient to continue funding two slots per four-year campus. The level of one \$40,000 match per four-year and two-year campus was retained in FY 2012-13, though the funding amount was increased to \$1,600,000 to accommodate the addition of Northshore Technical Community College as a Support Fund-eligible institution and the Board continued to maintain its matches of guaranteed slots. Also in FY 2012-13, the Treasury realized an additional \$5,000,000 in revenue, which the Board dedicated to the backlog of Endowed Professorships to fund an additional 125 matching slots. The funding level of \$1,600,000 was maintained in FY 2013-14, while the Board continued to identify mechanisms to fund the remaining backlog. To help address the extensive backlog in requests for match in Endowed Professorships, the subprogram was funded at a level of \$2,800,000 in FY 2014-15. With backlogs cleared at all but one campus, the previous budget level of \$1,600,000 will be restored in FY 2015-16.

5.5.3 BoRSF Endowed Two-Year Student Workforce Scholarships Subprogram

The Board's commitment to improvement of educational quality at all academic levels and in all disciplines drove the establishment, in FY 2002-03, of the Enhancement Subprogram for Two-Year Institutions. The subprogram, open to all community and community technical colleges as well as the Louisiana Community and Technical College System, provided enhancements for academic and student access and success activities supporting the joint missions of two-year campuses to provide general academic preparation for post-secondary programs and workforce training to meet local and regional needs. Since the subprogram's inception, a competitive peer-review process has been used to assess and prioritize proposals for funding.

By guaranteeing two-year campuses only one endowed professorship match per year, the Board ensured that at least \$440,000 per year would be available to sustain this subprogram. Additional funds were taken from the Traditional Enhancement Subprogram. In FY 2003-04, \$1,000,000 was allotted to the Enhancement Subprogram for Two-Year Institutions; its FY 2004-05 allocation was raised to \$1,200,000. The \$1,200,000

level was maintained for FY 2005-06. The FY 2006-07 level of \$1,080,000 reflected a reduction of 10% to provide funds for the Post-Katrina Support Fund Initiative, and was sustained in subsequent years. In the FY 2010-11 Plan and Budget, the \$1,200,000 funding level was restored. Given lower income projections for the BoRSF, the lower first-year funding level of \$1,080,000 was reinstated for FY 2011-12 and retained in FY 2012-13. Additional significant declines in income required that first-year funding be further reduced in FY 2013-14, to a level of \$695,000. In FY 2014-15, due to decreases in prior commitments and Federal matching obligations, monies for first-year funding in the Enhancement Subprogram for Two-Year Institutions were increased to \$1,100,000.

In December 2014 the Board of Regents approved a new direction for Support Fund monies targeted to community and community technical campuses, to better align funding with a focus Louisiana's critical workforce shortages in four- and five-star job areas. The Board established the competitive BoRSF Endowed Two-Year Student Workforce Scholarships Subprogram, enabling two-year campuses to provide academic and training support for students enrolled in degree and certificate programs related to these workforce needs. Specific requirements of the program will be developed in collaboration with affected systems and campuses during Spring 2015.

Funding for the first year of the BoRSF Endowed Two-Year Student Workforce Scholarships Subprogram is \$1,100,000. This funding level may be revisited in future fiscal years as the subprogram becomes established and demand for matching funds is clarified.

5.5.4 Endowed Undergraduate Scholarship Subprogram for First-Generation College Students

The State faces a well-documented crisis in terms of educating its future workforce. According to statistics provided by the National Center for Higher Education Management Systems (NCHEMS), for every 100 students entering the ninth grade this fall only about 62 will graduate from high school four years hence. Forty will enter college immediately after graduation, and a meager fifteen of these will earn a degree or certificate within 150% of the standard time to completion. Research indicates that this massive "pipeline leakage" is due primarily to socioeconomic factors. Many worthy Louisiana students are now effectively denied the opportunity for a postsecondary education either because the assistance provided under the Taylor Opportunity Program for Students (TOPS) is not sufficient to make college affordable for them or because they approach but fall short of satisfying all of the requirements necessary to qualify for TOPS.

In FY 2007-08, the Board implemented a merit- and needs-based subprogram to help address this situation. To be eligible, students must be Louisiana residents who are "first-generation" college students (i.e., neither parent has earned a baccalaureate degree), have been awarded the Federal Pell grant, and have been admitted to the institution awarding the scholarship. Each four-year institution is guaranteed one \$40,000 endowed scholarship fund challenge grant annually to match a private/institutional contribution of \$60,000. Each two-year institution is guaranteed one \$20,000 endowed scholarship fund challenge grant annually to match a private/institutional contribution of \$30,000. Proceeds will be used to establish/enhance a permanent endowed scholarship fund. Interest earnings from the fund(s) are awarded at the discretion of the institution to eligible students and may be divided among multiple recipients, provided that each student receives at least \$1,000 per year in subprogram funds. In addition to scholarship proceeds, institutions must provide student recipients with structured support through active and engaged advising, as well as meaningful campus employment of at least ten hours per week over and above the scholarship. The subprogram will be funded at a level of \$1,000,000 during FY 2015-16.

5.5.5 Supervised Undergraduate Research Experiences (SURE)

The Supervised Undergraduate Research Experiences (SURE) subprogram, established by Louisiana EPSCoR as part of its NSF Track 1 award, seeks to further student preparation for STEM employment or graduate study by fostering opportunities for students to conduct supervised research with a faculty mentor. Since its inception in FY 2010-11, SURE has supported 134 students with an annual allocation of \$100,000 from the Support Fund match to the Track 1 award. In FY 2015-16, this budget level will be maintained and the program operated directly through the BoRSF as a subprogram of Enhancement.

5.5.6 Traditional Enhancement Subprogram

Based on its continuing review of academic programs, coupled with evaluation of BoRSF projects and the rapid advancement of technology across all disciplines and levels of postsecondary education, the Board anticipates that the acquisition of instructional and research equipment will remain indefinitely as the area of greatest need in the Enhancement Program. During the first three years in which the BoRSF operated, instrumentation was the only type of request allowed in the Enhancement Program. Beginning in FY 1989-90, the Board invited the submission of other types of enhancement requests, due primarily to the eligibility for the first time of selected non-scientific and non-engineering disciplines. Types of non-instrumentation enhancement requests include curriculum revision projects, student success initiatives, service learning projects, and colloquia presented by outstanding out-of-state scholars.

In an attempt to limit the obligation of future BoRSF money, in FY 1989-90 the Board further decided that equipment may only be purchased in the initial year of a project and that, for projects which envision multi-year funding, the following stipulations apply: (1) no project may be of more than two years' duration; (2) no project may request more than \$50,000 in the second year; and (3) the total of all second-year commitments in the Traditional Enhancement Subprogram may not exceed \$1 million. This year, the Board will continue to allow the submission of multi-year Enhancement requests, with the same stipulations as adopted previously.

After deducting all previous and projected commitments for other components of the Enhancement Program, \$3,776,770 remains for new projects submitted in the Traditional Enhancement Subprogram, including the Multidisciplinary component (see Section 4.3), during FY 2015-16. This amount may increase from the Plan and Budget as submitted if allocated money is not fully expended in one of the other Enhancement Program components. Further, the Board may use money from the BoRSF Reserve Fund to preserve the integrity of this vital component.

In keeping with the conceptual framework of using Support Fund money to enhance all areas of higher education, all disciplines are eligible to compete in the Traditional and Undergraduate Enhancement Subprograms on a rotating basis as set forth in the Support Fund strategic plans. Schedule III indicates the discipline eligibility cycle, including those disciplines eligible in FY 2015-16.

SCHEDULE III: ELIGIBILITY OF DISCIPLINES* IN THE TRADITIONAL AND UNDERGRADUATE ENHANCEMENT SUBPROGRAMS

GROUP I - ELIGIBLE IN FYS 2012-13, 2015-16, 2018-19

Agricultural Sciences
Arts
Earth/Environmental Sciences
Engineering A (Chemical, Civil, Electrical, etc.)
Health and Medical Sciences

GROUP II - ELIGIBLE IN FYS 2013-14, 2016-17, 2019-20

Business
Chemistry
Education
Mathematics
Physics/Astronomy

GROUP III - ELIGIBLE IN FYS 2014-15, 2017-18, 2020-21

Biological Sciences
Computer and Information Sciences
Engineering B (Industrial, Materials, Mechanical, etc.)
Humanities
Social Sciences

* Attachment III provides a listing of those sub-disciplines which are included in these larger groupings.

5.5.7 Summary of FY 2015-16 Enhancement Expenditures

<u>Prior Commitments:</u>	Traditional and Undergraduate Enhancement	\$ 300,000
	Federal Matching Grants	\$ 250,000
<u>New Awards:</u>	Federal Matching Grants	\$ 1,425,000
	Undergraduate Enhancement	\$ 1,600,000
	Endowed Professorships	\$ 1,600,000
	Endowed Two-Year Workforce Scholarships	\$ 1,100,000
	Endowed First-Generation Scholarships	\$ 1,000,000
	Supervised Undergraduate Research Experiences	\$ 100,000
	Traditional Enhancement	<u>\$ 3,776,770</u>
	ENHANCEMENT PROGRAM TOTAL	\$11,151,770

5.6 ADMINISTRATIVE EXPENSES - \$788,730

Act 675 of 1989 established the following restrictions with respect to the amount of Support Fund money that may be used to administer BoRSF programs:

No more than 3% of the annual total amount appropriated to each board or eight hundred thousand dollars, whichever is smaller, shall be appropriated for such purposes to each board, subject to a thorough review with the goal of limiting such costs to those necessary and proper...

This legislation was modified by Act 698 of 2001, which specifies:

Costs attributable to the Board of Regents for use of external peer-review consultants for purposes of review, evaluation, and assessment of program proposals are recognized as costs appropriately borne by the respective Support Fund programs and shall be paid from the category of expenditure related to the program for which the review, evaluation, and assessment applies.

Act 703 of 2006 further allows the Board of Regents Support Fund administrative budget to be determined by formula:

No more than three percent of the average annual amount of actual expenditures...for the most recent three previous fiscal years for which actual expenditures are available shall be appropriated for such [administrative] purposes.

This formula yields an actual amount of \$788,730 to be expended in this category during FY 2015-16.

Each program component whose expenditures are itemized in sections 5.2 through 5.5 of this Plan and Budget will incur expenditures for professional services of out-of-state consultants, estimated as follows:

Endowed Chairs for Eminent Scholars	\$ 20,000
Recruitment of Superior Graduate Students	\$ 25,000
Research and Development	\$135,000
Enhancement	\$ 85,000

The amounts estimated above will be deducted from the total amounts available for expenditure in respective program components. Estimated consultant costs for the Endowed Chairs for Eminent Scholars Program are added to the regular allocation to preserve the \$400,000 units necessary for the endowments. Estimated costs for the review of Graduate Fellows subprograms are also added to the regular allocation since FY 2015-16 funding for the Traditional and BoR/SREB subprograms exists as prior commitments.

6. OVERVIEW OF FY 2015-16 BUDGETARY ALLOCATIONS BY PROGRAM COMPONENT

Table II provides an overview of FY 2015-16 Board of Regents Support Fund budgetary allocations for new projects and previous commitments.

TABLE II

AN OVERVIEW OF BOARD OF REGENTS SUPPORT FUND BUDGETARY ALLOCATIONS BY PROGRAM COMPONENT, FY 2015-16			
	TOTAL SUPPORT FUND ALLOCATION	ALLOCATION FOR NEW PROJECTS	ALLOCATION FOR PREVIOUS COMMITMENTS
ENDOWED CHAIRS	\$ 3,220,000	\$ 3,220,000	\$ 0
GRADUATE FELLOWS	\$ 5,469,500	\$ 3,150,000*	\$ 3,469,500
RESEARCH & DEVELOPMENT	\$ 5,870,000	\$ 3,135,000	\$ 2,735,000
ENHANCEMENT**	\$11,151,770	\$ 10,601,770	\$ 550,000
SUBTOTALS	\$25,711,270	\$18,956,770	\$ 6,754,500
ADMIN. COSTS	\$ 788,730		
GRAND TOTAL	\$26,500,000		

*Because allocations for the Traditional and BoR/SREB Graduate Fellows Subprograms must be determined one to two years in advance of when students first arrive on campus, the FY 2015-16 allocation for new Traditional and BoR/SREB graduate fellowships was determined in FY 2013-14 and set forth for the first time in the FY 2014-15 Plan and Budget. Thus, \$1,150,000 of the total allocation for new projects must come from the FY 2016-17 budget and has not been included in the subtotal and grand total figures in this table. See Section 5.3 for a detailed explanation of the timing of the allocation process for this Board of Regents Support Fund component.

**Enhancement figures also include funds used for Federal Matching Grants opportunities.

ATTACHMENT I

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NSF/LaSER: The Louisiana EPSCoR Program	FY1989-90 – FY1992-93	STI-8820219	NSF	3 years	\$1,945,312	\$3,374,355
<p>Participating Institutions: A significant number statewide; grant funds awarded on a competitive basis. Description/Purpose: 1) To increase the competitiveness of Louisiana scientists and engineers in the Federal R&D marketplace, 2) to effect permanent improvements in the quality of science and engineering in Louisiana, 3) to develop human resources in Louisiana in the sciences and in engineering, and 4) to ensure that improvements achieved continue with State and/or private support beyond the end of the grant period.</p>						
NSF LaSER Advanced Development Proposal (ADP)	FY1991-92 – FY1994-95	EHR-9108765	NSF	3 years	\$3,700,000	\$4,800,000
<p>Participating Institutions: A significant number statewide, organized into research clusters; grant funds awarded on a competitive basis. Description/Purpose: 1) To increase the competitiveness of Louisiana scientists and engineers in the Federal R&D marketplace, 2) to effect permanent improvements in the quality of science and engineering in Louisiana, 3) to develop human resources in Louisiana in the sciences and in engineering, and 4) to ensure that improvements achieved continue with State and/or private support beyond the end of the grant period.</p>						
Louisiana Systemic Initiatives Program (LaSIP) in Math and Science Education	FY1991-92 – FY1995-96	TPE-9150043	NSF	5 years	\$10,000,000	\$10,000,000 (\$5 million each from Regents and BESE)
<p>Participating Institutions: A significant number statewide; grant funds awarded on a competitive basis. Description/Purpose: To reform statewide – from kindergarten through college – methods of instruction and learning in mathematics, science, and engineering education.</p>						
NASA Training Grant (LaSPACE)	FY1991-92 – FY1995-96	NGT-40039	NASA	4 years	\$600,000	\$500,000 (NASA and BOR portions awarded directly to LSU)
<p>Participating Institutions: A consortium of sixteen campuses; grant funds awarded on a competitive basis. Description/Purpose: To develop the infrastructure for aerospace research to competitive levels, while improving the quality of aerospace research and education.</p>						
Louisiana Collaborative for Excellence in the Preparation of Teachers (LaCEPT) Program	FY1992-93 – FY1996-97	DUE-9255761	NSF	5 years	\$4,000,000	\$2,500,000
<p>Participating Institutions: Centenary, Grambling, LSU-BR, LSU-S, LA Tech, Loyola, McNeese, Nicholls, ULM, NSU, SLU, SUBR, SUNO, ULL, UNO, Xavier Description/Purpose: To improve the quality of undergraduate teacher preparation programs in mathematics and science and to increase substantially the number of mathematics and science educators.</p>						
U.S. Department of Energy/EPSCoR Program	FY1993-94 – FY1994-95	DE-FC02- 91ER75669	DOE	2 years	\$1,039,590	\$1,039,590
<p>Participating Institutions: Grambling, LA Tech, LSU-BR, Loyola, McNeese, SUBR, Tulane, ULL, ULM, UNO, Xavier Description/Purpose: To develop the infrastructure for energy and energy-related research in Louisiana, while improving the quality of energy research and education in the State and encouraging human resource development in this area. This proposal was the result of a one-year \$99,454 planning grant awarded to the Board by DOE.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 2 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
Defense Experimental Program to Stimulate Competitive Research (DEPSCoR) Planning Program	FY1993-94	DAAH04-93-G-0466	DOD	1 year	\$50,000	\$25,000
Participating Institutions: A significant number statewide						
Description/Purpose: To prepare a statewide plan for increasing the State's capacity to perform defense-related research and technology transfer.						
1993 DEPSCoR Implementation Program	FY1994-95 – FY1996-97	Grant Numbers vary	DOD	3 years	\$2,400,000	\$500,000
Participating Institutions: Dillard, Grambling, LSU-BR, LSUHSC-NO, SUBR, SUNO, Tulane, ULM, UNO, Xavier						
Description/Purpose: To conduct research and educate scientists and engineers in Louisiana in areas important to national defense.						
NASA EPSCoR Program	FY1994-95 – FY1996-97	NCCW-0059	NASA	3 years	\$1,500,000	\$1,500,000
Participating Institutions: Dillard, LA Tech, LSU-BR, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier						
Description/Purpose: 1) To improve the infrastructure for aerospace-related research and education in Louisiana, and increase the State's capability to perform federally-funded aerospace research; and 2) to support three multi-institutional research cluster projects.						
NSF Teaching Scholars Program	FY1994-95 – FY1998-99	DUE-9255761 (Supplement)	NSF	5 years	\$500,000	\$250,000
Participating Institutions: Centenary, LA Tech, Loyola, Nicholls, SLU, SUBR, SUNO, ULL, ULM, UNO, Xavier						
Description/Purpose: To increase the number of minority teachers by providing a financial supplement to the Teaching Scholars program for Historically Black Colleges and Universities (HBCUs).						
NSF/EPSCoR LaSER Systemic Improvement Program (SI)	FY1995-96 – FY1997-98	OSR-9550481	NSF	3 years	\$4,400,000	\$3,000,000
Participating Institutions: Grambling, LA Tech, LSUHSC-S, LSU-BR, Loyola, SUBR, SUNO, Tulane, ULL, UNO, Xavier						
Description/Purpose: 1) To stimulate systemic and sustainable improvements in the science and technology enterprise by creating centers of research excellence in the State, improving the infrastructure for scientific and engineering research and education in Louisiana, and enhancing human resources development in the sciences and engineering, thereby increasing the State's capability to perform federally-funded research of economic importance to Louisiana; and 2) to create real and meaningful research linkages between the State's Historically Black and Majority White Campuses and Universities through Joint Faculty Appointments. This proposal continued the efforts begun under the EPSCoR ADP award described above.						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
Building Research Partnerships with Audio/Video Conferencing Facilities	FY1996-97 – FY1998-99	EPS-9632665	NSF	2 years	\$494,198	\$0
<p>Participating Institutions: LA Tech, LSU-BR, LSU Ag, LSUHSC-NO, NSU, SLU, SUBR, Tulane, ULL, ULM, UNO Description/Purpose: To promote research partnerships by establishing an inter-institutional audio/video (A/V) research communications network across Louisiana. The A/V network enhances collaborative exchanges within and among the State's EPSCoR and EPSCoR associated schools and promotes new research partnerships by eliminating geographical (distance/separation) barriers.</p>						
LaSERnet II Backbone for Institutions of Higher Education in Louisiana	FY1997-98 – FY1999-00	EPS-9720147	NSF	2 years	\$552,893	\$0
<p>Participating Institutions: LA Tech, LSU-BR, LSUHSC-S, LSUHSC-NO, SLU, SUBR, Tulane, ULL, ULM, UNO Description/Purpose: To provide researchers in the State with a high-speed intra-state backbone for sharing resources and access to broad-band (Internet II) service and direct vBNS (very Broadband Network Service) connectivity.</p>						
U.S. Department of Energy/EPSCoR Program Renewal	FY1995-96 – FY1998-99	DE-FC02- 91ER75669	DOE	4 years	\$3,473,402	\$3,200,000
<p>Participating Institutions: Grambling LA Tech, LSU-BR, Loyola, McNeese, SUBR, Tulane, ULL, ULM, UNO, Xavier Description/Purpose: 1) To increase research competitiveness and capabilities of Louisiana scientists and engineers in areas of importance to the State and the U.S. Department of Energy; 2) to educate and recruit individuals, especially minorities and women, to work in these areas in Louisiana; 3) to provide new technologies that lead to economic development in the State; and 4) to support three multi-institutional research cluster projects.</p>						
Louis Stokes Louisiana Alliance for Minority Participation (LS-LAMP) Program	FY1995-96 – FY1999-00	HRD-9550765	NSF	5 years	\$5,944,914	\$2,249,280
<p>Participating Institutions: Dillard, Grambling, LUMCON, LSU-BR, McNeese, Nunez, SUBR, SUNO, SUSLA, Tulane, ULL, UNO Description/Purpose: To increase the number of underrepresented minorities receiving B.S. degrees in science, engineering, and mathematics in Louisiana from the baseline rate of 610 annually to an annual rate of 1,110.</p>						
NASA LaSPACE Renewal Program	FY1996-97 – FY1999-00	NGT-40039	NASA	4 years	\$600,000	\$400,000 (NASA and BOR portions awarded directly to LSU)
<p>Participating Institutions: A consortium of sixteen campuses; grant funds awarded on a competitive basis Description/Purpose: To continue the development of the infrastructure for aerospace research to competitive levels, while improving the quality of aerospace research and education.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 4 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
Louisiana Systemic Initiatives Program (LaSIP) Renewal in Math and Science Education	FY1996-97 – FY2000-01	ESR-9634088	NSF	5 years	\$7,000,000	\$10,000,000 (\$5 million each from Regents and BESE)
Participating Institutions: A significant number statewide; grant funds awarded on a competitive basis						
Description/Purpose: To continue the education reform efforts begun under the original LaSIP program.						
1995 DEPSCoR Implementation Program	FY1996-97 – FY1998-99	Grant Numbers vary	DOD	3 years	\$2,350,303	\$1,500,000
Participating Institutions: LSU-BR, LSUHSC-NO, SLU, Tulane						
Description/Purpose: To continue previous efforts to conduct research and educate scientists and engineers in Louisiana in areas important to national defense, thus improving the State's research infrastructure.						
NASA EPSCoR Program Renewal (2 years)	FY1997-98 – FY1998-99	NCC5-167	NASA	2 years	\$1,000,000	\$1,000,000
Participating Institutions: Dillard, LA Tech, LSU-BR, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier						
Description/Purpose: A renewal program to 1) continue to improve the infrastructure for aerospace-related research and education in Louisiana, and increase the State's capability to perform federally-funded aerospace research; and 2) to continue the support of three multi-institutional research cluster projects.						
Delta Rural Systemic Initiative in Science, Mathematics, and Technology	FY1997-98 – FY2001-02	ESR-9700041	NSF	5 years	\$10,000,000 (\$2.46 million is Louisiana's share)	\$2,000,000 (divided equally between BOR and BESE)
Participating Institutions: A significant number; all campuses are eligible to compete						
Description/Purpose: To complement and supplement current statewide math and science education reform initiatives such as LaSIP and LaCEPT. A tri-state effort involving Louisiana, Mississippi, and Arkansas, it concentrates on professional development programs for teachers, pre-service enhancement programs for educators, leadership institutes for administrators, and acquisition of supportive hardware and software in an effort to impact 64 counties and/or parishes (22 school districts in 21 parishes within Louisiana) that are rural and have major economic problems.						
Louisiana Collaborative for Excellence in the Preparation of Teachers (LaCEPT) Program Supplemental Award	FY1998-99 – FY2000-01	DUE-9816194	NSF	3 years	\$600,000	\$300,000
Participating Institutions: Grambling, LSU-BR, LSU-S, LA Tech, Loyola, Nicholls, NSU, SLCC, SLU, SUBR, SUNO, ULL, ULM, UNO, Xavier						
Description/Purpose: To improve the quality of undergraduate teacher preparation programs in mathematics and science and to increase substantially the number of mathematics and science educators; to evaluate the effectiveness of the initial five-year award (FYs 1993-98).						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 5 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
1997 DEPSCoR Implementation Program	FY1997-98 – FY1999-00	Grant numbers vary	DOD	3 years	\$1,770,504	\$750,000
<p>Participating Institutions: LSU-BR, Tulane, ULL Description/Purpose: To continue previous efforts to conduct research and educate scientists and engineers in Louisiana in areas important to national defense, thus improving the State's research infrastructure.</p>						
NSF/EPSCoR New Cooperative Agreement (NCA)s	FY1998-99 – FY2000-01	EPS-9720652	NSF	3 years	\$3,000,000	\$3,000,000
<p>Participating Institutions: A significant number statewide; grant funds awarded on a competitive basis Description/Purpose: 1) To enhance the competitiveness of science and engineering (S&E) faculty of the State's higher education institutions by making them more competitive in gaining national research and development support, engaging them in science and technology transfer activities with business and industry, and helping them educate effectively large numbers of S&E students at both graduate and undergraduate levels; 2) to create real and meaningful linkages between the State's HBCUs and MWCUs through the Joint Faculty Appointments Program; and 3) to foster economic development in the state by facilitating, through various initiatives, interaction between business & industry, universities, and state government. This proposal continued the efforts begun under the EPSCoR ADP and SI awards previously described.</p>						
1999 DEPSCoR Implementation Program 3 years	FY1999-00 – FY2001-02	Grant numbers vary	DOD	3 years	\$1,459,473	\$189,798
<p>Participating Institutions: LSU-BR, LA Tech, UNO Description/Purpose: As in past DEPSCoR awards, the individual research projects funded through this award enhance the statewide research infrastructure improvement efforts.</p>						
Experimental Program to Stimulate Competitive Technology (EPSCoT)	FY1999-00 – FY2000-01	60NANB9D0005	Dept. of Commer ce	2 years	\$250,000	\$300,000
<p>Participating Institutions: A significant number statewide Description/Purpose: To develop and implement regional and statewide strategies to accelerate commercialization of university-based technologies, thus contributing to the economic development of the State.</p>						
NASA EPSCoR Program Continuation Funding	FY1999-00	NCC5-167	NASA	1 year	\$400,000	\$250,000
<p>Participating Institutions: Dillard, LA Tech, LSU-BR, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier Description/Purpose: A renewal program to 1) continue to improve the infrastructure for aerospace-related research and education in Louisiana, and increase the State's capability to perform federally-funded aerospace research; and 2) to continue the support of three multi-institutional research cluster projects. This award is the sixth-year continuation of the NASA EPSCoR Program and NASA EPSCoR Program Renewal previously described.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 6 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NASA EPSCoR Preparation Grant Program	FY1999-00	NCC5-393	NASA	1 year	\$225,000	\$100,000
<p>Participating Institutions: A significant number statewide. Funds are competitively awarded. Description/Purpose: To allow Louisiana researchers to initiate contacts and promote collaborative research programs with NASA Centers and Enterprises, and begin research activities in areas of strategic importance to NASA in preparation for submission of a statewide proposal to NASA EPSCoR in 2001.</p>						
NASA LaSPACE Continuation	FY2000-01 – FY2004-05	NGT5-40115	NASA	5 years	\$1,281,250	\$1,000,000
<p>Participating Institutions: A consortium composed of sixteen campuses; grant funds are awarded on a competitive basis. Description/Purpose: This award continues the efforts begun under the original LaSPACE program and the LaSPACE renewal described previously.</p>						
EPA EPSCoR 2000 Program – Coastal Monitoring	FY1999-00 – FY2000-01	R-82778501-0	EPA	2 years	\$483,939	\$500,000
<p>Participating Institutions: LUMCON, Tulane (all data obtained are made available to scientists and students throughout the state) Description/Purpose: To establish and maintain a series of instrument platforms by which university scientists can monitor environmental variables in coastal Louisiana for research and educational needs, thus increasing the State's capability to compete for and perform federally-funded environmental research.</p>						
Louis Stokes Louisiana Alliance for Minority Participation (LS-LAMP) Phase II	FY2000-01 – FY2005-06	HRD-000272	NSF	5 years	\$5,000,000	\$2,500,000
<p>Participating Institutions: Dillard, Grambling, LUMCON, LSU-BR, McNeese, Nunez, SUBR, SUNO, SUSLA, Tulane, ULL, UNO Description/Purpose: To continue to increase the number of underrepresented minorities in Louisiana receiving B.S. degrees in science, engineering, and mathematics.</p>						
NASA EPSCoR Preparation Grant Program Renewal	FY2000-01	NCC5-393	NASA	1 year	\$225,000	\$0
<p>Participating Institutions: A significant number statewide. Funds are competitively awarded. Description/Purpose: To continue the efforts described above for the NASA EPSCoR Preparation Grant.</p>						
NASA EPSCoR Program Continuation Funding (year seven) 1 year	FY2000-01	NCC5-167	NASA	1 year	\$400,000	\$0
<p>Participating Institutions: Dillard, LA Tech, LSU-BR, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier Description/Purpose: This award is the seventh-year continuation of the NASA EPSCoR Program previously described.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 7 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
Video to the Desktop: A Louisiana Model	FY2000-01 – FY2001-02	EPS-0083089	NSF	2 years	\$494,450	\$0
<p>Participating Institutions: LA Tech, LSU-BR, LSU Ag, LSUHSC-NO, LSUHSC-S, NSU, SLU, SUBR, Tulane, ULL, ULM, UNO Description/Purpose: To promote research partnerships by establishing an inter-institutional H.323 research communications (videoconferencing) network, which operates over existing Internet lines instead of over telephone lines, and allow desktop-to-desktop multimedia communications.</p>						
Louisiana EPSCoR Research Infrastructure Improvement (RII)	FY2001-02 – FY2003-04	EPS-0092001	NSF	3 years	\$9,000,000	\$3,000,000
<p>Participating Institutions: A significant number statewide, including LA Tech, LSUHSC-NO, UNO, Grambling, LSU-BR, SUBR, Tulane, Xavier, NSU, ULM. A portion of the grant funds will be awarded on a continuing, competitive basis Description/Purpose: This award funds the “Micro/Nano Technologies for Advanced Physical, Chemical, and Biological Sensors” research consortium in addition to a variety of initiatives to enhance the competitiveness of science and engineering (S&E) faculty of the State’s higher education institutions. This proposal continues the efforts begun under the EPSCoR ADP, SI, and NCA awards previously described.</p>						
NASA EPSCoR 2000	FY2001-02 – FY2003-04	NCC5-573	NASA	3 years	\$2,100,000	\$2,100,000
<p>Participating Institutions: LSU-BR, LUMCON, Tulane, Dillard, ULL, UNO, Xavier. A portion of the grant funds will be awarded on a continuing, competitive basis. Description/Purpose: 1) To develop and strengthen long-term academic research enterprises that make significant contributions to the strategic research and technology priorities of NASA and, in turn, to contribute to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the State; and 2) to support three multi-institutional research projects.</p>						
EPA EPSCoR 2001 Program – Climate Change	FY2002-03 – FY2003-04	R-82642001-0	EPA	2 years	\$494,195	\$494,542
<p>Participating Institutions: LUMCON, ULL, LSUBR Description/Purpose: To enhance Louisiana’s capability for understanding and predicting the effects of climate change on the state’s coastal ecosystems, thus increasing the State’s capability to compete for and perform federally-funded environmental research.</p>						
Louisiana’s Strategic Infrastructure Improvement (LSII)	FY2003-04– FY2005-06	EPS-0346411	NSF	3 years	\$9,000,000	\$3,000,000
<p>Participating Institutions: A significant number statewide, including LSU-BR, LSUHSC-NO, SUBR, Tulane, ULL, ULM, UNO, Xavier. A portion of the grant funds will be awarded on a continuing, competitive basis Description/Purpose: This award funds the “Center for Bio-Modular Multi-Scale Systems” in addition to a variety of initiatives to enhance the competitiveness of science and engineering (S&E) faculty of the State’s higher education institutions. This proposal continues the efforts begun under the EPSCoR ADP, SI, NCA, and RII awards previously described.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NASA EPSCoR 2000 Renewal	FY2004-05 – FY2005-06	NCC5-573	NASA	2 years	\$986,236	\$986,560
<p>Participating Institutions: LSU-BR, LUMCON, Tulane, Dillard, ULL, UNO, Xavier. A portion of the grant funds will be awarded on a continuing, competitive basis. Description/Purpose: A two-year renewal of the NASA EPSCoR 2000 Program to 1) To develop and strengthen long-term academic research enterprises that will make significant contributions to the strategic research and technology priorities of NASA and, in turn, to contribute to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the State; and 2) to support multi-institutional research projects.</p>						
DOE EPSCoR Implementation 2004	FY2004-05 – FY2006-07	DE-FG02- 04ER46136	DOE	3 years	\$1,200,000	\$1,200,000
<p>Participating Institutions: ULL, LSU-BR, SUBR Description/Purpose: To develop the infrastructure for energy and energy-related research in Louisiana, while improving the quality of energy research and education in the State and encouraging human resource development in this area. This award funds the multi-institutional, multidisciplinary research project entitled "Ubiquitous Computing and Monitoring System (UCoMS) for Discovery and Management of Energy Resources."</p>						
LAMP Phase III	FY2005-06 – FY2009-10	HRD-0503362	NSF	5 years	\$2,500,000	\$2,500,000
<p>Participating Institutions: Dillard, Grambling, LUMCON, LSU-BR, McNeese, Nunez, SUBR, SUNO, SUSBO, Tulane, ULL, UNO Description/Purpose: To continue to increase the number of underrepresented minorities in Louisiana receiving B.S. degrees in science, engineering, and mathematics, and to transition at least 30% of these graduates to graduate school by 2010.</p>						
NASA LaSPACE Continuation II	FY2005-06 – FY2009-10	NNG05GH22H	NASA	5 years	At least \$1,280,000	\$1,000,000
<p>Participating Institutions: A consortium composed of sixteen campuses; grant funds are awarded on a competitive basis. Description/Purpose: This award continues the efforts begun under the original LaSPACE program and the LaSPACE renewals described previously.</p>						
NASA EPSCoR Phase 3	FY2006-07 – FY2011-12	NNX07AL03A, NNX07AT62A, NNX07AT67A	NASA	6 years	\$2,175,000	\$2,250,000
<p>Participating Institutions: LSU-BR, SUBR. A portion of the grant funds will be awarded to these and other institutions on a continuing, competitive basis. Description/Purpose: 1) To develop and strengthen long-term academic research enterprises that will make significant contributions to the strategic research and technology priorities of NASA and, in turn, to contribute to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the State; and 2) to support two research projects of particular interest to NASA, one studying adhesively bonded joints in composite structures and one focusing on high-energy astrophysics.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 9 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
Louisiana EPSCoR Research Infrastructure Improvement (CyberRII)	FY2006-07 – FY2008-09	EPS-0701491	NSF	3 years	\$9,000,000	\$3,000,000
<p>Participating Institutions: A significant number statewide, including LSU-BR, LSUHSC-NO, LA Tech, SUBR, Tulane, Tulane Health Sciences Center, Xavier, ULL, UNO. A portion of the grant funds will be awarded to these and other institutions on a continuing, competitive basis</p> <p>Description/Purpose: The focus of this project is the development of multi-functional cyberinfrastructure (<i>CyberTools</i>) that will broadly enable significant advances in modern science and engineering. In addition, a variety of initiatives to enhance the competitiveness of science and engineering (S&E) faculty of the State's higher education institutions are also supported. This project continues the efforts begun under the EPSCoR ADP, SI, NCA, RII, and LSII awards previously described.</p>						
DOE EPSCoR Implementation Renewal	FY2007-08 – FY2009-10	DE-FG02-04ER46136	DOE	3 years	\$900,000	\$1,200,000
<p>Participating Institutions: ULL, LSU-BR, SUBR</p> <p>Description/Purpose: This is a three-year renewal of the DOE EPSCoR program, which seeks to develop the infrastructure for energy and energy-related research in Louisiana, while improving the quality of energy research and education in the State and encouraging human resource development in this area. This award funds the multi-institutional, multidisciplinary research project entitled "Ubiquitous Computing and Monitoring System (UCoMS) for Discovery and Management of Energy Resources."</p>						
NASA EPSCoR 2009 Research 3	FY2009-10 – FY2011-12	NNX09AP72A	NASA	3 years	\$750,000	\$750,000
<p>Participating Institutions: LSU-BR, SUBR.</p> <p>Description/Purpose: Support for a research project to develop thermal barrier coatings with high reflectance in both the visible and infrared bandwidth to reduce the thermal radiation transport. Such nano-structured TBCs would make significant contributions to NASA's efforts to develop advanced thermal barrier systems for jet engine propulsion.</p>						
NASA EPSCoR 2009 Research 4	FY2009-10 – FY2011-12	NNX10AP07A	NASA	3 years	\$750,000	\$750,000
<p>Participating Institutions: LSU-BR, LA Tech, SUBR.</p> <p>Description/Purpose: This research program will investigate existing and novel microorganisms with tolerances to cold, desiccation, and radiation as models for astrobiology. The expected outcomes include the development of fundamental astrobiological concepts and operational capabilities that would promote the success of future NASA-driven life detection missions, inform policies on planetary protection, and lay the foundation for a new space research enterprise in Louisiana.</p>						
Louisiana EPSCoR Research Infrastructure Improvement (LA-SIGMA)	FY2009-10 – FY2013-14	EPS-1003897	NSF	5 years	\$20,000,000	\$10,000,000
<p>Participating Institutions: A significant number statewide, including LSU-BR, Grambling, LA Tech, SUBR, Tulane, Xavier, and UNO. A portion of the grant funds will be awarded to these and other institutions on a continuing, competitive basis</p> <p>Description/Purpose: The research component of the NSF EPSCoR project will create the <i>Louisiana Alliance for Simulation-Guided Materials Applications (LA-SIGMA)</i>. Program objectives include: building the next generation of experimentally validated formalisms, algorithms, and codes for multiscale materials simulations; implementing them on present and next generation super-computers; and educating the next generation of a highly skilled workforce of materials scientists and engineers.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 10 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NASA LaSPACE Renewal	FY2010-11 – FY2014-15	NNX10AI40H	NASA	5 years	At least \$3,145,000	\$1,250,000
<p>Participating Institutions: A consortium composed of sixteen campuses; grant funds are awarded on a competitive basis. Description/Purpose: This award continues the efforts begun under the original LaSPACE program and the LaSPACE renewals described previously.</p>						
LAMP Phase IV (Senior-Level Alliance)	FY2010-11 – FY2014-15	HRD-1002541	NSF	5 years	\$2,500,000	\$2,500,000
<p>Participating Institutions: Dillard, Grambling, LUMCON, LSU-BR, McNeese, Nunez, SUBR, SUNO, SUSBO, Tulane, ULL, UNO, Xavier Description/Purpose: The purpose of the LAMP program is to increase the number of underrepresented minorities in Louisiana receiving degrees in science, engineering, and mathematics. Phase IV will continue a comprehensive set of institutional transformation and systemic mentoring activities, with special emphasis on the progression of minority STEM students to and through graduate school and their transition to research-based careers that include the professoriate.</p>						
NASA EPSCoR 2009 Research 5	FY2011-12 – FY2013-14	NNX11AM17A	NASA	3 years	\$750,000	\$750,000
<p>Participating Institutions: LSU-BR, SUBR. Description/Purpose: This research program will provide NASA with more durable, reliable, lighter, safer, and smarter composite sandwich structures, create knowledge and develop enabling technology in self-healing composite materials/structures, and enhance related research infrastructure and workforce training at LSU and SU.</p>						
NASA EPSCoR 2009 Research 6	FY2012-13 – FY2014-15	NNX13AD29A	NASA	3 years	\$750,000	\$750,000
<p>Participating Institutions: UNO, LSU-BR, SUBR. Description/Purpose: This research program will provide NASA with joint decision and estimation framework to enable heavier yet safer air traffic in the Next Generation Air Transportation System. This project will also enhance related research infrastructure and workforce training at UNO, LSU and SU.</p>						
NASA EPSCoR Research Infrastructure	FY2012-13 – FY2014-15	NNX13AB14A	NASA	3 years	\$375,000	\$375,000
<p>Participating Institutions: LSU-BR. A significant portion of the grant funds will be awarded to other LA institutions on a continuing, competitive basis. Description/Purpose: 1) To develop and strengthen long-term academic research enterprises that will make significant contributions to the strategic research and technology priorities of NASA and, in turn, to contribute to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the State; and 2) to support research projects of particular interest to NASA.</p>						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
Page 11 of 11

Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NASA EPSCoR 2009 Research 7	FY2013-14 – FY2015-16	NNX13AN05A	NASA	3 years	\$750,000	\$750,000
<p>Participating Institutions: LA Tech, Grambling, ULL. Description/Purpose: This research program will provide NASA with a means of assessing the impact of high-energy radiation on genetic material, which can be used to improve radiation risk analysis on space missions. This project will also enhance related research infrastructure and workforce training at LA Tech, Grambling, and ULL.</p>						
DOE EPSCoR Implementation 2014	FY2014-15	DE-SC0012432	DOE	3 years	\$4,949,000	\$500,000
<p>Participating Institutions: LSU-BR, LA Tech, Tulane, UNO. Description/Purpose: This research program seeks to establish unique capabilities among Louisiana faculty by using the advanced neutron scattering facilities at Oak Ridge National Laboratory to characterize complex materials. This project will also enhance related research infrastructure and workforce training in materials science at the participating universities.</p>						

ATTACHMENT II

Board of Regents Support Fund Results of Selected Projects

ENHANCEMENT

A Traditional Enhancement award at **Louisiana State University and A&M College** has helped to establish a cybersecurity laboratory on campus, allowing students and faculty to study methods to detect and defend against cyber threats. The lab, equipped with dedicated servers, client systems, and computers, provides a safe environment to study cyber attacks without exposing data systems used for other purposes. The lab enables investigators and students to quickly set up computers to model various situations in which an electronic system might be compromised, then study attack methods, defensive responses, and forensics. Three refereed journal articles by lab-affiliated faculty have already appeared in highly prestigious academic journals. A high-tech tool for an increasingly important field of study, the lab has also proven attractive to students interested in cybersecurity and cyber threats; increased student participation in research is expected as the lab is completed and library resources are developed. *{LEQSF(2012-13)-ENH-TR-04; David Koppelman, PI}*

An award made to **SOWELA Technical Community College** through the Enhancement Program for Two-Year Institutions has helped to implement a more comprehensive chemistry and physics curriculum through the addition of modern lab equipment and collaborations with McNeese State University faculty. Equipment purchased with grant funds resulted in major improvements to SOWELA's laboratory programs, giving students an opportunity to participate actively in research projects. As a result, the students, along with the PI, presented a poster at the 2013 American Chemical Society Conference in New Orleans. The partnership with McNeese expanded the reach of the project, enabling the two campuses to align their science lecture programs, resulting in a more consistent learning process for students and smoother transition for students intending to transfer to four-year programs. *{LEQSF(2012-13)-ENH-PEN-16; James Mendez, PI}*

A Traditional Enhancement award at the **University of New Orleans** has allowed the Department of Mathematics to offer a statistical consulting course during two semesters, as well as invite industry experts to speak to students during a third year. These courses gave students valuable real-world experience in finding statistical solutions to business problems. Students worked with industry experts, accessing their resources, participating in live projects, and writing reports based on their analyses. During the Spring 2012 course offering, students participated in a project with the New Orleans Pelicans to design a fan-intercept survey, collect data during a game, analyze the data collected, and present findings to Pelicans executives. Students are able to include this experience on their resumes, which gives them an edge in job applications. In fact,

three students who participated in the program during the grant period have successfully competed for jobs on a national level. *{LEQSF(2011-13)-ENH-TR-37; Tumulesh Solanky, PI}*

An Undergraduate Enhancement project at **Southeastern Louisiana University** is training the next generation of graphic designers for careers in advertising and marketing, providing students with the most advanced technology currently available in the graphic design profession. The grant has helped to expand and institutionalize the Interactive and Environmental Design course. Southeastern is the only campus in the State, and one of only a handful in the country, to offer an environmental design course, preparing students to develop products that consider and complement the environment in which they will be placed. The advanced technology purchased in part with Support Funds gives students expanded skills, enhancing their marketability after college. Students learn techniques to create large-scale, three-dimensional projects including outdoor signage, retail directional systems, product display units, and point-of-purchase display systems. In this highly competitive field, because of the quality and breadth of their training, Southeastern's students are securing excellent jobs and the internship program currently experiences 100% participation. *{LEQSF(2013-14)-ENH-UG-12;Tasheka Arceneaux-Sutton, PI}*

With support from a Traditional Enhancement award, **Tulane University** has created a semester-long course through which Biomedical Engineering students learn to conduct translational research and device development as members of integrated teams. Called "Grand Challenges in Biomedical Engineering", the course helps prepare students to become professional members of research and development groups. In addition to the new course, the department also enhanced existing "domain" classes to reinforce the relationship between fundamental engineering and science, coupled with physiology, as the foundation of translational research in biomedical engineering. From this increased emphasis on research commercialization, Tulane has recently submitted three proposals to Federal agencies to continue growing the translational focus of the department and degree program. *{LEQSF(2012-13)-ENH-TR-25; Donald Gaver, PI}*

Undergraduate Enhancement funding is helping **Nicholls State University** improve core facilities and instructional resources in Biological Sciences through the purchase of equipment and supplies. Through the award, Nicholls enhanced its biology research environment with systems to provide chemically pure water and water with no detectable bacterial contamination. These systems supplemented several other new pieces of equipment, including microscopes, a projection system, gene probes and other molecular equipment, all purchased with previous Support Fund grants. The improvements to the biology labs have provided necessary facilities for faculty research as well as giving students more and better hands-on lab experiences. In addition to enhancing research, through reorganization of the water purification and treatment systems, the new equipment has generated a cost savings to the Department of Biological Sciences of \$650 per year in consumables. *{LEQSF(2012-13)-ENH-UG-18; Angela Corbin, PI}*

The University of Louisiana at Monroe has used a Traditional Enhancement grant to acquire a high-resolution time-of-flight mass spectrometer to enhance pharmaceutical research and education in the School of Pharmacy. The equipment was immediately useful in generating additional and/or expanded data for ongoing funded grants, as well as preliminary results incorporated into proposals being prepared for submission. The expanded capacity was also essential for the PI's pharmaceutical research, which has attracted interest from industry leaders and resulted in three U.S. patents. In addition to the contributions of the project to possible commercialization activities, the equipment has also had a significant impact on both faculty and students. Numerous faculty scientists either have used or plan to use the equipment in their research, while students have been trained on the spectrometer and are able to incorporate it and the capabilities of the mass facility into their research projects and coursework. *{LEQSF(2013-14)-ENH-TR-26; Khalid El Sayed, PI}*

A Traditional Enhancement award at **Pennington Biomedical Research Center** provided funds to purchase three hybrid detectors for incorporation into an existing confocal microscope. These detectors add sensitivity to the existing microscope, facilitating live cell and whole mount image capture. The new sensitivity has allowed investigators to image whole mouse embryos; currently efforts are underway to leverage the detectors to include whole mouse brain imaging, as well as other organs of interest to local and regional research communities. This is an important enhancement to the core facility which not only provides Pennington faculty with added capacity to generate data for research publications, intellectual property development, and pre-clinical experiments, but also encourages multidisciplinary partnership and facility sharing. Several researchers from the LSU Chemistry Department have already made use of the core's capabilities, and Pennington expects other external faculty to follow. *{LEQSF(2012-13)-ENH-TR-20; David Burk, PI}*

Funding from the Enhancement Program for Two-Year Institutions has helped **Louisiana State University Eunice** to establish an Assessment Center to test students in math, English composition, and reading. In just its first year, the Center gave more than 900 assessments to 600 students using ACT's COMPASS system. The upgrade to COMPASS, a computerized assessment system, enabled LSUE to replace the ACT ASSET pencil and paper assessment, which was more than 20 years old. COMPASS allows for better, more accurate placement of students in entry-level math and English courses, resulting in fewer students being placed in the first developmental math course. This provides a significant benefit, decreasing time to degree and expenses to the student, the institution, and the State. Also improved was student performance in and satisfaction with developmental math courses. Success rates increased by 9-15% and students were able to move through their developmental education much more quickly. These preliminary results have positioned LSUE for national recognition, with the Vice Chancellor for Academic Affairs and the project PI presenting project work at the annual

meeting of the Southern Association of Colleges and Schools Commission on Colleges in December 2014. *{LEQSF(2013-14)-ENH-PEN-06; Paul Fowler, PI}*

A principal investigator at the **Louisiana Universities Marine Consortium (LUMCON)** has used a Traditional Enhancement award to obtain equipment needed to measure naturally occurring radioisotopes. Naturally occurring radioisotopes are powerful tools for quantifying rates of natural processes, particularly the accumulation of sediments in a delta. This is critical information for understanding how the Louisiana coast can be restored. The equipment purchased with Enhancement monies has a broad reach, affecting LUMCON-housed researchers, visiting faculty, and students. The technology has contributed to several projects related to the design and operation of river diversions, central to Louisiana's plan to stabilize and restore its coast. The equipment was also used to leverage additional resources and compete successfully for substantial grants from NSF, totaling more than \$1 million. *{LEQSF(2010-11)-ENH-TR-21; Alexander Kolker, PI}*

An Undergraduate Enhancement award has enabled **Dillard University** to secure much-needed instrumentation for use in histology courses as well as faculty and student research. Prior to these purchases, lab exercises had been limited to studying prepared slides; with the enhancement, students receive hands-on training in tissues processing, embedding, staining, and several other techniques routinely used by histotechnicians. And the impact of the equipment extends beyond histology courses to microbiology, cell biology, human physiology, environmental biology, ecology, research methodology, and biology research. As a result, students have access to the instruments in a variety of courses to learn methods and techniques essential to successfully pursue job opportunities in health, medical, and biological sciences fields. In addition, the instrumentation has assisted the PI in developing a research program that could enable a new partnership with scientists in New York and offer highly valuable real-world research experiences for students working with the PI. *{LEQSF(2013-14)-ENH-UG-02; Julie Basu Ray, PI}*

The **University of Louisiana at Lafayette** has used a Traditional Enhancement award to expand and enhance the university's robotics lab, making the facility available to middle and high school students and their teachers and promoting faculty and student research. The principal goal of the project is to develop a stable pipeline to provide skilled engineers and technologists for manufacturing industries in Louisiana that use control, automation, and robotics in their systems. Making the cutting-edge equipment and lab environment available to both undergraduate and pre-college students has generated enthusiasm for and interest in pursuing robotics as a career. A further benefit of the lab is that it has created a dedicated environment for the study of robotics, which is typically a multidisciplinary field with expertise and research distributed across numerous departments in the College of Engineering. Collectively over 300 students in the Department of Industrial Technology and 700 undergraduate students – more than 70% of the

undergraduates in the College of Engineering – can benefit from the lab. The facility is also contributing to research productivity among faculty and students; two refereed journal articles and two invited presentations have already been produced based on experiments conducted in the lab during 2012-13. *{LEQSF(2012-13)-ENH-TR-30; Gholam Massiha, PI}*

RESEARCH AND DEVELOPMENT

Research Competitiveness Subprogram (RCS)

With the help of RCS funding, a research group at **Louisiana State University and A&M College** has been able to participate in the Long-Baseline Neutrino Experiment (LBNE), a major collaborative initiative housed at Fermilab to explore key questions in particle physics and astrophysics, some of the most fundamental questions about the physical universe. As a result of the RCS project, LSU researchers gained significant exposure, and the PI was elected convener of LBNE's Cross Sections and Nuclear Models working group. An undergraduate student working with the program received a summer internship at Fermilab, and both the PI and Co-PI have given numerous invited lectures and presentations both nationally and internationally. In 2014 the research group, along with other faculty at LSU, secured a competitively awarded Department of Energy grant totaling almost \$6 million to study neutrino oscillations, which will keep LSU at the forefront of fundamental physics research. *{LEQSF(2011-14)-RD-A-11; Martin Tzanov, PI}*

Nanomaterials and engineered nanoparticles (ENPs) hold significant promise for various applications, including remediation of environmental damage, and have been used successfully at Superfund sites across the United States. Despite the benefits, however, little is known about environmental, health, and safety aspects of these materials once they are released into an environment. An RCS researcher at **Southeastern Louisiana University** is playing a leadership role in developing exposure assessment models to estimate worker and public health risks associated with the handling of ENPs, helping to determine the consequences of deploying certain ENPs in remediation and to develop an understanding of which ENPs are good candidates for use. The importance of this research is reflected in the level of interest in scientific and industry communities: the PI has presented at four national conferences, chaired a national committee including representatives of numerous federal agencies, made local presentations to Louisiana agencies, and established significant collaborations with local, regional, national, and international organizations including the Environmental Protection Agency, Occupational Health and Safety Administration, and United Nations Environment Program. Ultimately research funded through the project is anticipated to provide guidelines and components of training modules and best practices for use by site managers and workers at Superfund sites. *{LEQSF(2011-14)-RD-A-22; Ephraim Massawe, PI}*

A principal investigator at **Tulane University** made significant advances in the development of synthetic agents to help control the activity of certain drugs, both in timing and in location, after they are administered. Such advances are particularly important for medical treatments like chemotherapy, which is effective in treating cancer but can be toxic to non-disease sites in the body, limiting its utility. Research such as this seeks mechanisms to target the treatments, to maximize their effectiveness while reducing or eliminating negative impacts throughout the body; this project has focused on achieving these outcomes through synthetic agents that target proteins in a controlled manner using specific trigger molecules. The PI has had remarkable technical and academic success, achieving all research goals and publishing three peer-reviewed manuscripts related to the project. This success has led to a patent application, currently pending, and approximately \$1.5 million in funding from the National Institutes of Health to continue research into protein binders. *{LEQSF(2009-12)-RD-A-17; Janarthanan Jayawickramarajah, PI}*

Thanks in part to an RCS award, a principal investigator at **Louisiana Tech University** has established a competitive research program focused on a new and rapidly expanding field of optics called electromagnetic metamaterials (EMMs). The field – built on progress in nanofabrication and sub-wavelength optics – opens the possibility of manipulating light at will. The PI's experimental and computational studies of EMMs have applications in low-observability stealth technology (LOST) and dense optical media for development of microscopic light concentrators. During the RCS project, the PI has published 13 peer-reviewed journal articles and conference proceedings and given 10 regional, national, and international invited conference presentations, one at the prestigious CAREER Award Regional Forum. His work on stealth technology has been featured in the media in discussions of scientific progress toward making invisibility possible. In addition, the grant supported three graduate assistants who conducted project research as part of their doctoral dissertations. *{LEQSF(2011-14)-RD-A-18; Dentcho Genov, PI}*

Computers, appliances, tools, and gadgets that employ sensors are already widely used and are expected to become ubiquitous in the coming years. Despite being in common use and a vital component of a multi-billion dollar industry, most sensors are simply a few lines of code, and more work is needed to develop software methodologies, algorithms, control software, and evaluation mechanisms. A principal investigator at the **University of Louisiana at Lafayette** has undertaken this challenge, and is making excellent progress toward creating a complex and complete sensor control system. The work has already attracted support from the National Science Foundation, as well as generated 15 publications including book chapters and a book. One doctoral and six master's students worked on special projects related to the PI's research, and three undergraduates, all of whom have since graduated, got hands-on research experience, invaluable in the STEM job market. *{LEQSF(2009-12)-RD-A-22; Ashok Kumar, PI}*

Through RCS funding, a principal investigator at **Louisiana State University and A&M College** is successfully pursuing research into surface plasmons – light waves that propagate along metal surfaces – which enable a wide variety of functions, including light guiding and manipulation at the nanoscale. This technology, though still in its infancy, holds significant promise across many applications: data storage, light generation, lithography, microscopy, photovoltaics, and biophotonics. The results of this project, investigating the effects of fabrication-related disorders on nanoplasmonic devices, represent important breakthroughs in integrated optics and optical information processing, fields already crucial to modern technology. The PI has leveraged his RCS research into an NSF Faculty Early Career Development (CAREER) Award, a highly prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research. During the three-year grant period, the PI will receive \$400,000 to develop and further the research begun through the RCS project. *{LEQSF(2009-12)-RD-A-08; Georgios Veronis, PI}*

Industrial Ties Research Subprogram (ITRS)

A team of researchers at the **University of Louisiana at Lafayette** has used ITRS funding to assist a local inventor, Webster Pierce of Pierce Industries, LLC, in conducting extensive lab testing and design refinement of his modular shoreline protection/sediment protection system, the Wave Robber™. The system works by absorbing or reflecting most wave energy back into open water; it has been shown that 80-90% of wave height can be eliminated by the system, saving the shoreline from significant erosion and wear. While Mr. Pierce independently conducted some testing of the system, more refined and scientific testing was needed to move it to commercialization. University researchers focused on fabricating laboratory-scale models, testing in the lab environment, analyzing results, confirming initial hypotheses, and developing design guidance and performance estimates for specific applications. While research and testing were ongoing, Mr. Pierce worked with the Louisiana Small Business Development Center to identify marketing potential and manufacturing alternatives. *{LEQSF(2011-14)-RD-B-07; Daniel Gang, PI}*

Through an ITRS project, a research group at **Louisiana Tech University** is working with private-sector partners in Louisiana and Texas to advance major research in anticorrosion coatings for steel that are able to withstand harsh deep sea water conditions. Clay nanotubes are a natural and less expensive material that can provide protection to industrial products from a variety of threats, including fire, water, and metal corrosion. One approved and two pending patents have already resulted from the research, and additional funding has been received from the U.S. Environmental Protection Agency and the National Science Foundation. In addition, several applications of the anticorrosion formulations developed through this project have been

transferred to Louisiana and national industries for testing, with a very high potential for commercialization in the near future. *{LEQSF(2009-12)-RD-B-06; Yuri Lvov, PI}*

Researchers at **Louisiana State University and A&M College** are developing ways to monitor hydraulic fracturing processes, used extensively across the United States to release natural gas from rock using a mix of highly pressurized fluids, to ensure the safety of the process and mitigate risks of contaminating groundwater and other environmental hazards. The research is developing novel techniques for determining the size and extension of hydraulic fractures. Though typical fractures are very small, excessive fractures can be so large that they may reach to aquifers and other underground water resources, possibly causing contamination to drinking water in nearby communities. These events, while rare, have attracted significant public attention and could hinder shale gas industrial development in affected areas, including Louisiana. A method for monitoring drilling and preventing this kind of error is critical to the industry's growth. The PI's research, in partnership with Schlumberger, has improved accuracy in locating fractures through a novel, complex, and multilayered approach. ITRS results were successfully leveraged into an \$180,000 grant from the Research Partnership to Secure Energy for America (RPSEA), a nonprofit group managing the Department of Energy's Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research and Development Program. *{LEQSF(2011-13)-RD-B-02; Arash Dahi Taleghani, PI}*

Awards to Louisiana Artists and Scholars (ATLAS) Subprogram

With help from an ATLAS grant, a member of the horn faculty at **Louisiana State University and A&M College** has completed a major new recording of music for trumpet and wind instruments. Featuring a combination of classical pieces and new compositions, the CD, titled *Redshift*, was recorded with the Dallas Wind Ensemble and has received high critical praise since its release in September 2014. The CD's title track is the premiere recording of a major new trumpet concerto by LSU percussion faculty Brett William Dietz. *{LEQSF(2013-14)-RD-ATL-05; Brian Shaw, PI}*

An ATLAS principal investigator at the **University of Louisiana at Lafayette** is finishing work on a major history of the Hawaiian guitar and its role in American musical culture. Under contract with the University of North Carolina Press, the book promises to contribute significantly to our understanding of various American popular musical forms, including the blues and rock and roll. Even before the book is completed, the work has generated a great deal of interest. The PI has given numerous invited lectures and presentations on the topic at campuses from UC Berkeley to Wesleyan University and UNC Chapel Hill, and published a refereed journal article on Hawaiian influences on the development of blues guitar; a second refereed journal article, based on research for the book, is forthcoming in 2015. *{LEQSF(2012-13)-RD-ATL-10; John Troutman, PI}*

A geographer at **Louisiana State University and A&M College** has completed a study of water in the American South, published by LSU Press in October 2014. The book – *Southern Waters: The Limits of Abundance* – explores ways in which water resources have historically been used, abused, consumed, and exploited across the South, a region often defined by its excess of water. By looking analytically at the past, the work provides insights into ways the region can address changes in availability of and access to water as population growth and industrial demands challenge its ready and easy availability. {LEQSF(2012-13)-RD-ATL-01; Craig Colten, PI}

LOUISIANA EPSCoR

The Board of Regents committed matching funds to a **Louisiana EPSCoR** program that in 2010 was awarded a five-year, \$20 million Track 1 grant from the National Science Foundation (NSF) – the largest single award ever made by NSF to Louisiana – for a major research and education project involving seven campuses. Researchers are leveraging existing statewide computational, experimental, and intellectual assets to design useful, cost-effective, and environmentally friendly new materials for specific tasks. The power of modern computers and sophisticated computational tools enable researchers to develop and test these materials quickly and economically using simulations. The institutions involved in the project, known as the Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA), include **Grambling State University, Louisiana State University and A&M College, Louisiana Tech University, Tulane University, Southern University and A&M College, the University of New Orleans, and Xavier University of Louisiana**. At the end of its fourth year of grant operation, LA-SiGMA continues to make significant progress toward project goals and has positioned faculty to compete successfully for additional Federal and private-sector funding.

The LA-SiGMA project will conclude in FY 2014-15, and Louisiana EPSCoR has recently submitted a new proposal for Track 1 funding. The new project, including **Grambling State University, Louisiana State University and A&M College, Louisiana Tech University, Southern University and A&M College, and the University of New Orleans**, seeks to establish the Consortium for Innovation in Manufacturing and Materials (CIMM) to strategically direct existing and projected statewide investments in experimental facilities, computational resources, and intellectual assets toward research, education, and workforce development relevant to cutting-edge manufacturing. Following a rigorous review process, NSF is expected to announce results of the competition in spring 2015.

Louisiana EPSCoR was also successful in securing three additional awards in FY 2013-14. A \$3.251 million collaborative award between Louisiana and Mississippi, funded through NSF EPSCoR Track 2, establishes the Smart MATerials Design, Analysis, and Processing (SMATDAP) consortium to address the scientific, engineering, and educational training needs of the multibillion-dollar chemical and polymer industries in the Gulf Region. Participating

Louisiana institutions include **Tulane University, Louisiana State University and A&M College, the University of New Orleans, and Xavier University of Louisiana.**

A new NSF EPSCoR Track 3 award, led by **Louisiana Tech University** with participation of high schools and middle schools across the State, will develop and implement Science, Technology, Engineering and Mathematics (STEM) discovery camps for students and teachers that can be replicated across the State. By focusing on teachers over a period of several years, the program will ultimately have a broad impact on significant numbers of students.

A third new award, funded with \$4.949 million from the Department of Energy's EPSCoR program with \$500,000 in BoRSF matching, is in support of a project entitled "Building Neutron Scattering Infrastructure in Louisiana for Advanced Materials," which seeks to build a regional base of users of the Spallation Neutron Source (SNS) and the High Flux Isotope Reactor (HFIR) at the Oak Ridge National Laboratory. A collaborative effort led by **Louisiana State University and A&M College in partnership with Louisiana Tech, Tulane, and UNO**, the project will enable the training of highly talented students and postdocs, the next generation of neutron users, in synthesis and neutron scattering techniques.

ATTACHMENT III

TAXONOMY OF DISCIPLINES
USED IN THE
BOARD OF REGENTS SUPPORT FUND PROGRAMS

NATURAL SCIENCES - BIOLOGICAL

Agriculture

- 0101 Agricultural Economics
- 0102 Agricultural Production
- 0103 Agricultural Sciences
- 0104 Agronomy
- 0105 Animal Sciences
- 0106 Fishery Sciences
- 0107 Food Sciences
- 0108 Forestry and Related Sciences
- 0109 Horticulture
- 0110 Resource Management
- 0111 Parks and Recreation Management
- 0112 Plant Sciences
(Except Agronomy, see 0104)
- 0113 Renewable Natural Resources
- 0114 Soil Sciences
- 0115 Wildlife Management
- 0199 Agriculture - Other

Biological Sciences

- 0201 Anatomy
- 0202 Biochemistry/Biophysics
- 0203 Biology
- 0204 Biometry
- 0205 Botany
- 0206 Cell and Molecular Biology
- 0207 Ecology
- 0208 Embryology
- 0209 Entomology and Parasitology
- 0210 Genetics
- 0211 Marine Biology
- 0212 Microbiology
- 0213 Neurosciences
- 0214 Nutrition
- 0215 Pathology
- 0216 Pharmacology
- 0217 Physiology
- 0218 Radiobiology
- 0219 Toxicology
- 0220 Zoology
- 0299 Biological Sciences - Other

NATURAL SCIENCES -BIOLOGICAL (CONTINUED)

Health and Medical Sciences

- 0601 Allied Health
- 0602 Audiology and Speech Pathology
- 0603 Chiropractic
- 0604 Dental Sciences
- 0605 Environmental Health
- 0606 Epidemiology
- 0607 Health Science Administration
- 0608 Immunology
- 0609 Medical Sciences
- 0610 Nursing
- 0611 Optometry
- 0612 Osteopathic Medicine
- 0613 Pharmaceutical Sciences
- 0614 Podiatry
- 0615 Pre-Medicine
- 0616 Public Health
- 0617 Veterinary Science
- 0699 Health and Medical Sciences - Other

NATURAL SCIENCES - PHYSICAL

Chemistry

- 0301 Chemistry, General
- 0302 Analytical Chemistry
- 0303 Inorganic Chemistry
- 0304 Organic Chemistry
- 0305 Pharmaceutical Chemistry
- 0306 Physical Chemistry
- 0399 Chemistry - Other

Physics and Astronomy

- 0801 Astronomy
- 0802 Astrophysics
- 0803 Atomic/Molecular Physics
- 0804 Nuclear Physics
- 0805 Optics
- 0806 Planetary Science
- 0807 Solid State Physics
- 0899 Physics and Astronomy - Other

NATURAL SCIENCES - COMPUTATIONAL

Computer and Information Sciences

- 0401 Computer Programming
- 0402 Computer Sciences
- 0403 Data Processing
- 0404 Information Sciences
- 0405 Microcomputer Applications
- 0406 Systems Analysis
- 0499 Computer Sciences - Other

Mathematical Sciences

- 0701 Actuarial Sciences
- 0702 Applied Mathematics
- 0703 Mathematics
- 0704 Probability and Statistics
- 0799 Mathematical Sciences - Other

NATURAL SCIENCES - EARTH/ENVIRONMENTAL

Earth, Atmospheric, and Marine Sciences

- 0501 Atmospheric Sciences
- 0502 Environmental Sciences
- 0503 Geochemistry
- 0504 Geology
- 0505 Geophysics and Seismology
- 0506 Paleontology
- 0507 Meteorology
- 0508 Oceanography
- 0599 Earth, Atmospheric, and
Marine Sciences - Other
- 4403 Environmental Design
- 4405 Landscape Architecture

ENGINEERING - A

Engineering - Chemical

- 1001 Chemical Engineering
- 1002 Pulp and Paper Production
- 1003 Wood Science
- 1099 Chemical Engineering - Other

Engineering - Civil

- 1101 Architectural Engineering
- 1102 Civil Engineering
- 1103 Environmental/Sanitary Engr.
- 1199 Civil Engineering - Other

ENGINEERING - A (CONTINUED)

Engineering - Electrical and Electronics

- 1201 Computer Engineering
- 1202 Communications Engineering
- 1203 Electrical Engineering
- 1204 Electronics Engineering
- 1299 Electrical and Electronics
Engineering - Other

ENGINEERING - B

Engineering - Industrial

- 1301 Industrial Engineering
- 1302 Operations Research
- 1399 Industrial Engineering - Other

Engineering - Materials

- 1401 Ceramic Engineering
- 1402 Materials Engineering
- 1403 Materials Science
- 1404 Metallurgical Engineering
- 1499 Materials Engineering - Other

Engineering - Mechanical

- 1501 Engineering Mechanics
- 1502 Mechanical Engineering
- 1599 Mechanical Engineering - Other

Engineering - Other

- 1601 Aerospace Engineering
- 1602 Agricultural Engineering
- 1603 Biomedical Engineering
- 1604 Engineering Physics
- 1605 Engineering Science
- 1606 Geological Engineering
- 1607 Mining Engineering
- 1608 Naval Architecture and
Marine Engineering
- 1609 Nuclear Engineering
- 1610 Ocean Engineering
- 1611 Petroleum Engineering
- 1612 Systems Engineering
- 1613 Textile Engineering
- 1699 Engineering - Other

SOCIAL SCIENCES

Anthropology and Archaeology

- 1701 Anthropology
- 1702 Archaeology

Economics

- 1801 Economics
- 1802 Econometrics

Law (5102)

Political Science

- 1901 International Relations
- 1902 Political Science and Government
- 1903 Public Policy Studies
- 1999 Political Science - Other

Psychology

- 2001 Clinical Psychology
- 2002 Cognitive Psychology
- 2003 Community Psychology
- 2004 Comparative Psychology
- 2005 Counseling Psychology
- 2006 Developmental Psychology
- 2007 Experimental Psychology
- 2008 Industrial and Organizational Psychology
- 2009 Personality Psychology
- 2010 Physiological Psychology
- 2011 Psycholinguistics
- 2012 Psychometrics
- 2013 Psychopharmacology
- 2014 Quantitative Psychology
- 2015 Social Psychology
- 2099 Psychology - Other

Sociology and Social Work

- 2101 Demography
- 2102 Sociology
- 5001 Social Work

Social Sciences - Other

- 2201 Area Studies
- 2202 Criminal Justice/Criminology
- 2203 Geography
- 2204 Public Affairs and 4801 Public Administration
- 2205 Urban Studies and 4406 Urban Design
- 2299 Social Sciences - Other
- 4401 Architecture
- 4402 City and Regional Planning
- 4404 Interior Design

SOCIAL SCIENCES (CONTINUED)

Communications

- 4501 Advertising
- 4502 Communications Research
- 4503 Journalism and Mass Communication
- 4504 Public Relations
- 4505 Radio, TV and Film
- 4506 Speech Communication
- 4599 Communications - Other

Home Economics

- 4601 Consumer Economics
- 4602 Family Relations
- 4699 Home Economics - Other

Library and Archival Sciences

- 4701 Library Science
- 4702 Archival Science

ARTS

Arts - History, Theory, and Criticism

- 2301 Art History and Criticism
- 2302 Music History, Musicology, and Theory
- 2399 Arts - History, Theory, and Criticism - Other

Arts - Performance and Studio

- 2401 Art
- 2402 Dance
- 2403 Drama/Theatre Arts
- 2404 Music
- 2405 Design (including Industrial)
- 2406 Fine Arts
- 2499 Arts - Performance and Studio - Other

Arts - Other

- 2999A Arts - Other
- 5101A Interdisciplinary Programs

HUMANITIES

English Language and Literature

- 2501 English Language and Literature
- 2502 American Language and Literature
- 2503 Creative Writing
- 2599 English Language and Literature - Other

HUMANITIES (CONTINUED)

Foreign Language and Literature

- 2601 Asiatic Languages
- 2602 Foreign Literature
- 2603 French
- 2604 Germanic Languages
- 2605 Italian
- 2606 Russian
- 2607 Semitic Languages
- 2608 Spanish
- 2699 Foreign Languages - Other

History

- 2701 American History
- 2702 European History
- 2703 History of Science
- 2799 History - Other

Philosophy

- 2801 All Philosophy Fields

Humanities - Other

- 2901 Classics
- 2902 Comparative Language and Literature
- 2903 Linguistics
- 2904 Religious Studies; 4901 Religion; and 4902 Theology
- 2999H Humanities - Other
- 5101H Interdisciplinary Programs

EDUCATION

Education - Administration

- 3001 Educational Administration
- 3002 Educational Supervision

Education - Curriculum and Instruction

- 3101 Curriculum and Instruction

Education - Early Childhood

- 3201 Early Childhood Education

Education - Elementary

- 3301 Elementary Education
- 3302 Elementary-level Teaching Fields

EDUCATION (CONTINUED)

Education - Evaluation and Research

- 3401 Educational Statistics and Research
- 3402 Educational Testing Evaluation and Measurement
- 3403 Educational Psychology
- 3404 Elementary and Secondary Research
- 3405 Higher Education Research

Education - Higher

- 3501 Educational Policy
- 3502 Higher Education

Education - Secondary

- 3601 Secondary Education
- 3602 Secondary Level Teaching Fields

Education - Special

- 3701 Education of the Gifted
- 3702 Education of the Handicapped
- 3703 Education of Special Learning Disabilities
- 3704 Remedial Education
- 3799 Other Special Education Fields

Education - Student Counseling and Personnel Services

- 3801 Personnel Services
- 3802 Student Counseling

Education - Other

- 3901 Adult and Continuing Education
- 3902 Bilingual/Crosscultural Education
- 3903 Educational Media
- 3904 Junior High/Middle School Education
- 3905 Pre-Elementary Education
- 3906 Social Foundations
- 3907 Teaching English as a Second Language/Foreign Language
- 3999 Other Education Fields

BUSINESS

Accounting

- 4001 Accounting
- 4002 Taxation

Banking and Finance

- 4101 Commercial Banking
- 4102 Finance
- 4103 Investments and Securities

Business, Administration and Management

- 4201 Business Administration and
Management
- 4202 Human Resource Development
- 4203 Institutional Management
- 4204 Labor/Industrial Relations
- 4205 Management Science
- 4206 Organizational Behavior
- 4207 Personnel Management
- 4299 Business Management - Other

Business - Other

- 4301 Business Economics
- 4302 International Business Management
- 4303 Management Information Systems
- 4304 Marketing and Distribution
- 4305 Marketing Management and Research
- 4399 Business Fields - Other