

**FY 2018-2019 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**

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BY THE
LOUISIANA BOARD OF REGENTS**

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- 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 – 2017

- ◆ **\$1.364 BILLION GENERATED IN EXTERNAL FUNDING (\$2.17 FOR EACH BoRSF DOLLAR INVESTED IN COMPETITIVE GRANTS)** for grants and contracts through Federal, private, and industry sources
- ◆ **\$400 MILLION GENERATED IN NON-STATE CONTRIBUTIONS FOR \$270 MILLION IN BoRSF MATCHES (\$1.48 FOR EACH BoRSF DOLLAR MATCHED)** for faculty and scholarship endowments
- ◆ **3,378 EXTERNAL AWARDS** from Federal, private and other non-Support Fund sources
- ◆ **311 ENDOWED CHAIRS FOR EMINENT SCHOLARS** established at 26 campuses
 - Two hundred fifty-seven (257) \$1 million chairs
 - Fifty-one (51) \$2 million chairs
 - Two (2) \$3 million chairs
 - One (1) \$4 million chair
 - Includes ninety-nine (99) chairs funded by special legislative appropriation
- ◆ **2,397 ENDOWED PROFESSORSHIPS** established at 38 campuses since FY 1990-91
- ◆ **274 UNDERGRADUATE, GRADUATE, AND WORKFORCE STUDENT SCHOLARSHIPS** endowed at 31 campuses since FY 2007-08
- ◆ **1,655 SUPERIOR GRADUATE FELLOWSHIPS** supported at 16 campuses
- ◆ **APPROXIMATELY 450 PATENTS FILED** during the grant period
- ◆ **MORE THAN 11,000 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 2018-2019**

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 higher education 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. Since its inception in 1986, the BoRSF has evinced a 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. As higher education becomes more focused on defined education and workforce missions, the BoRSF is adjusting to target funding to these priority areas and ensure that the most critical needs and priorities of the State, systems, and campuses are supported in ways that enhance higher education and contribute to Louisiana's economic growth.

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; (2) recruitment of superior graduate students; (3) carefully defined research efforts; and (4) enhancement of the quality of academic, research, or agricultural departments or units within a university.

1.1 BOARD OF REGENTS SUPPORT FUND REVENUE PROJECTION, FY 2018-19

The base revenue amount used in the FY 2018-19 BoRSF Plan and Budget is \$19,500,000, reflecting divergent projections of the Revenue Estimating Conference (\$20,000,000) and the Treasury (\$16,500,000), as well as recent earnings levels.

1.2 BUDGET RATIONALE AND PREAMBLE

In deliberations about the Board of Regents Support Fund Plan and Budget for FY 2018-19 and the Fund's structure in future years, the Board recognized several issues:

- Continuing high demand for drastically reduced Support Fund resources under all program components along with increases in proposal quality and outstanding results achieved;
- The State's expanding emphasis on economic development and diversification, particularly related to 21st-century innovation industries;
- Greater need for strategic investment in research and workforce development areas related to campus, system, Board of Regents, and State priorities;

- Demand from campuses, foundations, and donors for endowment matching significantly beyond available Support Fund resources;
- Increasing importance of data collection, analysis, and evaluation to inform decision making; and
- Attention, especially during a period of continuing budgetary challenges, to constitutionally defined Support Fund goals, objectives, and restrictions.

It is vital that cores of strength be maintained in and across the four interrelated Support Fund components. While the Board has increased funding available for endowment matching, which now comprises approximately half of all available first-year funding, to encourage private philanthropy, it is also mindful that significant reductions already taken across Support Fund grant programs could jeopardize the programs' viability; further reductions will impair the overall impact and quality of the Support Fund as a whole, and its ability to achieve mandated goals. In addition, endowed chairholders, professors, and graduate and undergraduate students must have basic infrastructure and equipment, strong educational and training opportunities, and supportive cutting-edge facilities and research across priority departments and units in order to achieve the results expected of them. It is therefore imperative to balance matching funds for endowments with monies for competitive grants across the Enhancement and R&D programs.

1.3 ADOPTION OF FY 2018-19 PLAN AND BUDGET

The following Plan and Budget for FY 2018-19 were adopted by the Board of Regents at its meeting of December 11, 2017.

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 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

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/>.

In light of dramatic declines in Support Fund earnings, totaling more than 40% since 2008, as well as changing circumstances in higher education in Louisiana, the Board of Regents undertook a review and restructuring of the Support Fund in 2016. Campuses at all levels, higher education systems, and other stakeholders were provided with numerous opportunities to assist in shaping the Support Fund for the future through participation in meetings of the two advisory committees constituted in Board of Regents policy, as well as extensive circulation of concepts and drafts. In November 2016 the Board adopted a revised structure, organized around current and prospective campus, system, and statewide strengths and needs, as well as individual campus roles, scopes, missions, and priorities. This revised structure formed the basis for the FY 2017-18 Plan and Budget and was implemented for that fiscal year's competitive cycle. As implementation continues, the Regents will monitor outcomes and make any changes needed to boost the impact of the Support Fund's limited dollars.

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, including 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. In FY 1990-91, the Board undertook a systematic evaluation process, concluding in an evaluation by a distinguished panel of out-of-state experts in 1994. At that time, the panel concluded that the BoRSF was efficiently administered, was effectively addressing some of the State's economic development and higher education infrastructure needs, and had been successful in attracting Federal funds to the State.

As Support Fund operations continued in the 1990s, the need for comprehensive and regular assessment of programmatic benefits became evident and the Board accordingly adopted processes by which this could be accomplished. Over the past two decades, numerous programmatic evaluations have been conducted, which have yielded significant insights into Support Fund operations and revisions to maximize the benefits to higher education of programmatic expenditures:

- 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.
- During 2016, comprehensive assessment by the Board of Regents and higher education stakeholders of Support Fund priorities and programs in the context of the changing landscape for higher education in Louisiana led to adoption and implementation of a revised structure for the Fund as a whole.

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 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 faculty endowment subprograms, and no specific research support or external grants are attributed to the Recruitment of 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.

3.1 STATEWIDE RESULTS

- * **\$1.364 billion in grant and contract funding has been generated** from Federal, private, and industry sources from the BoRSF's investment in Enhancement and R&D awards, thereby significantly increasing the total monies available for higher education in Louisiana. This represents a **return during the grant period of \$2.17 for every Support Fund dollar invested** in competitive grants 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 award completion.
- * **Approximately \$400 million in non-State contributions, matched by more than \$270 million from the Support Fund, have been provided** to Louisiana institutions to establish endowed chairs, professorships, and graduate, undergraduate, and two-year workforce scholarships. The market value of BoRSF-matched endowment accounts is almost \$1 billion.
- * **3,378 grants and/or contracts have been awarded** to Louisiana post-secondary institutions from external funding agencies directly and indirectly as a result of BoRSF investments, and Louisiana's competitiveness for federal funding has increased, as reflected in a growth of research expenditures by 14% since 2005.
- * **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.)

- * **Approximately 450 patents related to BoRSF-supported research have been filed** during the life of the awards.

3.2 RESULTS FROM SELECTED PROJECTS

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

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: the NSF LaSER Advanced Development Proposal (ADP) and the Louisiana Systemic Initiatives Program (LaSIP) in Math and Science Education.² 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 projects;
- To expand opportunities available through BoRSF programs;
- To augment infrastructure development begun under BoRSF programs, which is necessary to enable Louisiana's postsecondary campuses to compete with greater success for Federal funding; 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.

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

The Board was successful in the early NSF EPSCoR competitions, and these efforts encouraged a continued quest for competitive Federal research and educational dollars from NSF and a variety of other agencies including the National Aeronautics and Space Administration (NASA), the Department of Defense

² Details of these awards are included in Attachment I.

(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, is 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 federally sponsored grants and research 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 ³ 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 ⁴ 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 DEPCoR 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

³ 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.)

⁴ Because of the nature of the Graduate Fellows Program, money for this component is 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.

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/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
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

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 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
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

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	TR ENH 100%	\$250,000	\$750,000	2015-16 through 2017-18	3
NASA EPSCoR Research Infrastructure	TR ENH 100%	\$125,000	\$375,000	2015-16 through 2017-18	3
NSF EPSCoR RII Track 1 Proposal	TR ENH: 100%	\$800,000	\$4 Million	2015-16 through 2019-20	5
NASA LaSPACE Continuation	TR ENH: 100%	\$250,000	\$750,000	2015-16 through 2017-18	3
NASA EPSCoR - Research 10	TR ENH 100%	\$250,000	\$750,000	2016-17 through 2018-19	3
DOE EPSCoR Implementation Renewal	TR ENH 100%	\$500,000	\$500,000	2017-18	1
NASA EPSCoR - Research 11	TR ENH 100%	\$250,000	\$750,000	2017-18 through 2019-20	3
NASA EPSCoR - Research 12	TR ENH 100%	\$250,000	\$750,000	2018-19 through 2020-21	3
NASA EPSCoR Research Infrastructure Fourth-Yr. Extension (Pending)	TR ENH 100%	\$125,000	\$375,000	2018-19	1
NASA LaSPACE Fourth-Yr. Extension (Pending)	TR ENH: 100%	\$250,000	\$750,000	2018-19	1

4.2 PENDING PROPOSALS

Both NASA's Space Grant program, called LaSPACE in Louisiana, and Research Infrastructure program solicited proposals for fourth-year extensions to the current projects as the agency reorganizes the programs. NASA EPSCoR's university-based research activities program has moved to a two-year cycle, in which proposals will be solicited every other year; accordingly, no competition will be held and no proposals will be pending for FY 2018-19. An additional new research award has already been approved by NASA for funding, with BoRSF match beginning in FY 2018-19.

It is anticipated that \$625,000 will be required in FY 2018-19 to provide match to successful new projects funded through NASA. The funds are included as new awards in the Federal Matching Grants component of the Enhancement Program (see Section 5.5).

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 funds and encourage resource sharing. 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 traditional BoRSF program components. The Board's support of such proposals has helped to seed the Louisiana Academic Library Network (LaLINC) project, which as the Louisiana Library Network (LOUIS) has computerized databases and linked academic libraries throughout the State, and the establishment of the Louisiana Optical Network Infrastructure (LONI), a critical tool for Louisiana's research competitiveness.

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, the Board has specifically encouraged, through requests for proposals and long-range planning documents, the submission of collaborative proposals that promise statewide benefits. The Board reaffirms its encouragement of multidisciplinary and/or multi-institutional proposals across all Support Fund program components for FY 2018-19. Reflecting this emphasis, beginning with its FY 2000-01 budget, the Board has set aside funds each year from the Traditional Enhancement Subprogram for the funding of these types of projects. 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, 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 in subsequent years was calculated as a percentage of the Traditional Enhancement budget (20%). This percentage calculation continues as part of the Departmental Enhancement Subprogram. Any unexpended Multidisciplinary funds will revert to discipline-based Departmental Enhancement (see Section 5.5.5).

5. BOARD OF REGENTS SUPPORT FUND PROGRAM COMPONENTS

5.1 BUDGETARY CONTINGENCIES

If in FY 2018-19 the income received for the higher education portion of the Board of Regents Support Fund is greater than the \$19,500,000 projected, additional revenues shall be allocated to existing programs as approved by the Board. In the event that earnings are lower than projected, proportionate cuts shall be taken in first-year amounts allocated for proposals across all competitive programs and subprograms. Only after all first-year funds budgeted for competitive programs and subprograms have been eliminated shall any necessary reductions be taken in the non-competitive endowment subprograms, federal matching commitments, or prior contractual obligations.

5.2 ENDOWED CHAIRS FOR EMINENT SCHOLARS - \$1,220,000

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 2016-17, 311 chairs are matched at twenty-six institutions, and the program has generated a total endowment (including non-State match) of \$366 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 in \$1-million increments: \$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 established by combining existing matched Chairs or incremental requests for BoRSF match. Fifty-one (51) of the 311 chairs matched have been at the \$2 million level, two (2) at \$3 million and one (1) at \$4 million.

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 of 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 performance reviews of the chairholder are intended to assure continued accomplishment. As verified by these reviews, chairholders are required to maintain highly productive records of scholarly and/or creative endeavor, exceptional teaching, recruitment and mentoring of high-quality students, leadership activities, and economic development activity.

As part of the restructuring of the Support Fund, the Board adopted a policy that, for all future competitions, requires that endowed chairs for which match is requested be aligned with the submitting campus’s role, scope, mission, and strategic priorities. This practice will ensure that these highly influential chairs are established in the areas of greatest strength and/or greatest need on the campus.

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 reduced to \$2,020,000. Though the traditional \$3,220,000 budget was restored in FY 2015-16, continuing declines in Support Fund income again required a reduction in the FY 2016-17 budget level, to \$2,020,000. To accommodate ongoing budget challenges and backlogs in Endowed Professorships, the budget level was further reduced in FY 2017-18, to \$1,620,000. Persistent revenue shortfalls and Professorships demands result in an additional reduction in FY 2018-19, to \$1,220,000, including \$1,200,000 for endowment matching and \$20,000 for the competitive review.

5.3 RECRUITMENT OF SUPERIOR GRADUATE STUDENTS - \$4,180,500

The Recruitment of Superior Graduate Students component provides fellowships and endowment matching to select departments to attract and retain top-quality students in their graduate programs. Through FY 2017-18, the Board of Regents has funded 1,655 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, in addition, 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. Fellowships have clearly helped a large number of students to pursue graduate education, but each fellowship is expensive – over four years averaging \$100,000 in BoRSF funding plus tuition waivers provided by the campus – and its impact is limited to the single student recipient.

In FY 2015-16, the Board established a subprogram to match endowments for Superior Graduate Student Scholarships. Such endowments will provide a permanent source of support affecting generations of students.

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)-State Doctoral 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. Given their expense and limited impact, the Board determined that graduate student support would be better provided through R&D and Enhancement awards with broader purpose, so the standalone fellowship subprograms were suspended for new awards beginning in FY 2017-18. Given the structure of the program and the unfunded one-year recruitment year provided, an additional competition for Traditional Graduate Fellows went forward in FY 2016-17, with individual awards approved in April 2017; funds for these awards were approved in the FY 2016-17 Plan and Budget and represent the year one prior commitments in the FY 2018-19 plan and budget.

The \$3,495,500 budgeted for these Subprograms in FY 2018-19, therefore, is entirely for previous obligations, including: (a) \$653,500 for funding of graduate fellows who began their course of study in AY

2015-16; (b) \$984,500 for graduate fellows who began their course of study in AY 2016-17; (c) \$1,060,000 for graduate fellows who began their course of study in AY 2017-18; and (d) \$797,500 for graduate fellows who will begin their course of study in AY 2018-19.

5.3.2 Endowed Superior Graduate Student Scholarships

In September 2014, the Board of Regents approved establishment of the competitive BoRSF 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 are 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 in a) high-demand professional master's and first professional degrees which target Louisiana's workforce needs and b) 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 the permanent endowment may be used for direct benefit of the appointed student(s), to support scholarships and fellowships as well as experiential opportunities including internships, externships, research and conference travel, and field work.

Based on severely reduced funding across the Support Fund, and demand for backlog matching in other endowment subprograms in the Support Fund, the Endowed Superior Graduate Student Scholarships Subprogram budget for FY 2018-19 is \$685,000, including \$680,000 for endowment matching and \$5,000 for proposal review by an external consultant(s). This funding level may be revisited in future fiscal years as the Subprogram becomes established, long-term demand for matching funds is better understood, backlog requests in other endowment programs are addressed, and Support Fund income increases.

5.4 CAREFULLY DEFINED RESEARCH EFFORTS - \$5,574,954

Board of Regents Support Fund Research and Development subprograms have consistently been highly successful in positioning faculty for non-State research funding, promoting economic development, and bringing major scholarly and creative works to the marketplace. In addition to contributing to knowledge, understanding, and practical deployment of ideas, projects funded through these subprograms also bring a significant flow of federal and private-sector dollars to Louisiana in support of university-based research. A recent survey of completed projects indicated that the average return for one dollar of Support Fund research investment is approximately \$10.50. Due to the success of these initiatives and their significant benefits to the State, it is important to retain them with minimal changes.

A total of \$3,274,954 is required during FY 2018-19 to honor prior commitments for multi-year projects in the BoRSF 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.

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 limited time span of a Board of Regents Support Fund grant. The one-year component of RCS emphasizes short-term seed funding to prepare research projects on the cusp of competitiveness for submission to and success in competitive Federal programs. 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.

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, life sciences, 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 in Louisiana (biological, computer & information, and earth & environmental sciences) are targeted for funding annually. The eligibility cycle for RCS, including rotating disciplines eligible in FY 2018-19, is specified in Schedule I.

SCHEDULE I: ELIGIBILITY OF DISCIPLINES* IN THE RESEARCH COMPETITIVENESS SUBPROGRAM (RCS)

GROUP I - ELIGIBLE EVERY YEAR

Biological Sciences
Computer & Information Sciences
Earth & Environmental Sciences

GROUP II - ELIGIBLE IN FYs 2018-19, 2019-20

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

GROUP III - ELIGIBLE IN FYs 2020-21, 2021-22

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

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

Given the success of RCS in preparing faculty for competitiveness in the federal R&D marketplace, 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 set at \$1,500,000 in FY 1999-2000, a level maintained for several years. Beginning in FY 2006-07 and continuing through FY 2009-10, the amount budgeted 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 declines 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 lower levels of prior commitments and Federal matching obligations, monies for first-year funding in RCS were restored to \$1,350,000; this budget level was maintained between FY 2015-16 and FY 2017-18. For FY 2018-19, due to continued declines in Support Fund revenues, the RCS first-year budget will be reduced to \$1,250,000 and provide opportunities for both single-year and multi-year (up to three years) projects.

5.4.2 Industrial Ties Research Subprogram (ITRS)

The principal goal of the Industrial Ties Research Subprogram (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 Proof-of-Concept/Prototyping (PoC/P) Initiative, consolidated with ITRS in FY 2016-17, provides support for faculty developing products and ideas for the marketplace, 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 market.

To ensure that investments align as much as possible with State and higher education priorities, projects are encouraged in the five priority areas identified by the Louisiana Department of Economic Development and higher education research leaders and adopted by the Board of Regents in 2015: Advanced Manufacturing and Materials, Clean Technology and Energy, Coastal and Water Management, Digital Media and Enterprise Software, and Life Sciences and Bioengineering. So no opportunities with the potential to promote economic development and diversification are overlooked, the Board allows funding in other research areas, provided a persuasive, well-documented case is made in the proposal for a project's major contributions to the State and economic development. Further, the Board continues 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. Through its Master Plan Research Advisory Committee, the Board regularly reassesses research priority areas and needs related to economic development.

Though it has resulted in a number of projects with significant economic benefits (see Attachment II), ITRS 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 was maintained in FY 2015-16 for the traditional ITRS component.

The Opportunities for Partnerships in Technology with Industry (OPT-In) component, established in FY 2011-12 by Louisiana EPSCoR as part of its NSF Track 1 award, provided 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. During its years of operation through EPSCoR, OPT-In funded 41 projects with an annual allocation of \$350,000 from the Support Fund match to the Track 1 award. Now the Proof-of-Concept/Prototyping (PoC/P) Initiative and directly funded through the BoRSF, this ITRS component exclusively targets products and ideas which are near to commercialization or transfer to the marketplace.

In FY 2016-17, the activities and objectives of ITRS and PoC/P were consolidated to ensure both innovation and partnership continue to be supported; in FY 2017-18, the consolidated budget was set at \$800,000 to reflect the growing demand for research funding directly related to economic development. This consolidated approach is retained in FY 2018-19, though budget constraints require a reduction of first-year funding to \$750,000.

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 completion of manuscripts for publication and/or 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.

ATLAS, 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 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 and maintained in FY 2015-16. Given ongoing Support Fund revenue declines, in FY 2016-17, the budget was reduced to \$350,000 and then to \$330,000 in FY 2017-18. Continuing fiscal stresses lead to a further reduction, to \$300,000, in FY 2018-19.

5.4.4 Summary of FY 2018-19 Research and Development Allocations

<u>Prior Commitments (RCS and ITRS only):</u>		\$3,274,954
<u>New Awards:</u>	RCS	\$1,250,000
	ITRS	\$ 750,000
	ATLAS	<u>\$ 300,000</u>
R&D PROGRAM TOTAL		\$5,574,954

5.5 ENHANCEMENT OF THE QUALITY OF DEPARTMENTS OR UNITS - \$7,845,118

NOTE: Matching commitments for all Federal Matching Grants Subprogram proposals are accommodated through 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 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 academic, research, and agricultural departments and units, the basic entities leading higher education's mission, remains a fundamental need, essential to accomplishing goals of the other three BoRSF components and the BoRSF as a whole. For this reason, the Board shall dedicate \$7,845,118 to the Enhancement Program in FY 2018-19. Thus, approximately 42% of the total program funds available in FY 2018-19 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 \$2,645,000 of the \$7,845,118 budgeted for Enhancement awards in FY 2018-19 will be required to honor prior commitments for multi-year projects and new and prior-year matching for Federal projects. Of this amount, \$720,000 has been budgeted for potential second-year commitments for multi-year proposals to be approved in FY 2017-18 under the Departmental Enhancement Subprogram. Departmental 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 2018. In addition, a total of \$1,925,000 is needed to meet the State's matching commitments in six current and pending federal programs (see Section 5.5.1).

After deducting these projected commitments for multi-year Enhancement projects and the prior and projected obligations for Federal matching opportunities, \$5,200,118 will be available for new Enhancement projects submitted for funding consideration in FY 2018-19. 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, 52% 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 2018-19” in Section 6 of this Plan and Budget.)

5.5.1 Federal Matching

Federal matching leverages Support Fund monies to compete for funds from federal research programs, particularly through the Experimental Program to Stimulate Competitive Research (EPSCoR). The Board has also matched Enhancement monies to obtain federal grants that implement and sustain statewide education reform efforts. Between 1987 and 2017, federal programs awarded more than \$385 million to joint federal/State initiatives, for which the BoRSF provided match of \$92 million. Budget levels for federal matching are determined by known demand – upcoming federal competitions and program policies and regulations defining what must and may be matched by the State.

A total of \$1,925,000 has been pledged as the State's matching commitment under jointly funded Board of Regents Support Fund/Federal Matching Grants in FY 2018-19, including: (a) \$800,000 for the fourth year of the NSF Research Infrastructure Improvement (RII) Track 1 project; (b) \$250,000 for the third year of the NASA EPSCoR Research 10 project; (c) \$250,000 for the second year of the NASA EPSCoR Research 11 project; (d) \$250,000 for the first year of the NASA EPSCoR Research 12 project; (e) \$250,000 for the fourth-year extension of NASA LaSPACE; and (f) \$125,000 for the fourth-year extension of the NASA EPSCoR Research Infrastructure project.

5.5.2 Endowed Professorships

The Endowed Professorships Subprogram was incorporated into the Enhancement component in FY 1990-91. Funds were first allocated to match professorships in FY 1991-92. The funding of an endowed professorship requires the college or university to raise funds from non-State sources, to be matched by the BoRSF at a defined ratio, thus establishing an endowed professorship valued at a minimum of \$100,000.

Following the Subprogram’s initial implementation 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 funding cycles, 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. During several years campuses were able to receive more than two professorships when slots were unclaimed. In addition, in FY 1995-96 and numerous 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, along with critical 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 monies were sufficient to continue matching 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 matching of guaranteed slots. Also in FY 2012-13, the Treasury realized an additional \$5,000,000 in revenue, which the Board dedicated entirely to matching the Endowed Professorships backlog, to fund an additional 125 \$40,000 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 challenge, 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 was restored in FY 2015-16. To accommodate additional campuses eligible for Professorships matching, the budget level was increased to \$2,000,000 in FY 2016-17.

As part of the restructuring of the Support Fund in 2016, Endowed Professorships' history and performance were assessed, as well as the Subprogram's continued viability as the Support Fund's expendable earnings continue to decline even while demand for matching dollars increases. The Board of Regents determined that the ratio of non-State contributions to public match should increase to 4:1 (\$80,000 non-State contribution matched with \$20,000 BoRSF) to enable matching of more slots, continuation of the non-competitive distribution of available monies, and retention of a funding guarantee of two slots per eligible campus per year. The Board shall annually assess the impact of this change and make adjustments as necessary.

In addition to the requirement of \$1,680,000 in matching funds to match at a rate of two \$20,000 slots per eligible campus, the FY 2017-18 Endowed Professorships budget of \$3,000,000 provided funds to continue matching an existing backlog of \$40,000 slots. As of the June 30, 2017 deadline to submit Professorship contributions under the previous match rate, the Board of Regents has received more than \$8 million in requests, including 23 unmatched since 2012. A total of \$2,000,000 is budgeted in FY 2018-19 for both new and backlogged requests. Any unclaimed funds from new guaranteed slots shall be distributed equally among campuses with backlogged slots.

5.5.3 BoRSF Endowed Two-Year Student Workforce Scholarships

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. During the Subprogram's operation, a competitive peer-review process was used to assess and prioritize proposals for funding.

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 on Louisiana's critical workforce shortages in four- and five-star job areas. The Board established the competitive 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. Since the program's inception, 41 scholarship funds have been matched at 12 eligible campuses.

Funding for the first year of the BoRSF Endowed Two-Year Student Workforce Scholarships Subprogram was \$1,100,000. In FY 2016-17, reflecting reductions across the Support Fund and limited demand in the Subprogram's first year, the budget level was reduced to \$800,000. Given persistent declines in Support Fund revenues, along with increased demand for backlog matching in Endowed Professorships, the budget level was further reduced in FY 2017-18, to \$650,000; demand below this level in the previous year leads to a budget of \$600,000 for FY 2018-19. This funding level will be revisited in future fiscal years as the Subprogram becomes established, demand for matching funds is clarified, and Support Fund revenue increases.

5.5.4 Endowed Undergraduate Scholarships 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 public school students entering the ninth grade this fall only about 67 will graduate from high school four years hence. Forty-seven 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 need-based subprogram to help address this funding gap. 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 was guaranteed one \$40,000 endowed scholarship fund challenge grant annually to match a private/institutional contribution of \$60,000. Each two-year institution was guaranteed one \$20,000 endowed scholarship fund challenge grant annually to match a private/institutional contribution of \$30,000. Proceeds established/enhanced 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 scholarship funds through the endowment. 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.

As part of the restructuring of the Support Fund, the First-Generation Scholarships Subprogram was carefully assessed. It was determined that the Subprogram's ability to address defined goals is limited, due to the targeting of funds to individual students and the minimal amounts of earnings available for award to students. The Board suspended the Subprogram while retaining opportunities for campuses to target Support Funds to high-need students through the Departmental Enhancement Subprogram. Accordingly, in FY 2017-18 a total of \$380,000 was budgeted to help clear backlogged and new applications; additional funds are needed in future years, to match the \$1,360,000 in requests received by the June 30, 2017 Subprogram suspension date. In FY 2018-19, a budget of \$320,000 will allow matching of approximately one-third of the slots for which match has been requested. If revenues are sufficient, all remaining slots should be matched by FY 2020-21.

5.5.5 Departmental Enhancement

Since 1987, competitive grants programs in Enhancement, including Traditional, Undergraduate, and Two-Year Campus programs, have been instrumental in maintaining and developing the capacities and quality of academic, research, and agricultural departments and units, providing funding for acquisition of instructional and research equipment as well as a broad array of curriculum revision projects, student success initiatives, service learning projects, and colloquia presented by outstanding out-of-state scholars.

Throughout the history of Enhancement grant competitions, proposals have been developed and submitted by individual investigators and groups of faculty, and generally have reflected the ideas of the proposal developers rather than a holistic assessment of the needs and direction(s) of a department, unit, center, or other larger academic group on the campus. While this approach has yielded good results and hundreds of highly successful projects, it does not enable and encourage strategic thinking on the part of the larger department or unit as to what investments will propel it forward in directions of value to the students, campus, State, private industry, and/or other stakeholders.

In addition, a founding principle of Enhancement has been support for all disciplines at all levels, which has yielded a very broad distribution of funds without consideration of the roles, scopes, missions, and priorities of submitting campuses. As Support Fund revenues continue to shrink, the broad but shallow approach of providing support across all areas limits the impact that funds can have in the areas of greatest need and emphasis for the campuses, systems, and State.

These considerations led the Board to modify Traditional Enhancement, to create a Departmental Enhancement Subprogram, with funding to be aligned with campus roles, scopes, missions, and priorities. In this new approach, a formally constituted academic, research, or agricultural organizational unit must develop proposals based on its strategic needs, potential for future enhancement or growth, alignment of activities with broader goals and priorities of the campus, and projected impact. Three types of proposals, defined by the proposed impact of the investment – primarily educational, primarily workforce, and primarily research – will be considered, with the expectation that many projects will seek to combine all three types in a single project to launch the department forward in a holistic way. Opportunities will be available for both large-scale, multi-year projects (3-5 years) and small, short-term awards to target a specific need.

After deducting all previous and projected commitments for other components of the Enhancement Program, \$2,280,118 remains for the first year of projects submitted in the first competition of the Departmental Enhancement Subprogram, including the Multidisciplinary component (see Section 4.3), during FY 2018-19. 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.

Though applicants will be required to demonstrate the alignment of projects with campus role, scope, mission, and priorities, the wide variety of campuses and priorities across the State indicates that opportunities must still be provided across all academic disciplines on a rotating basis. Schedule II indicates the discipline eligibility cycle for Departmental Enhancement during its initial years; this cycle may be revisited as higher education priorities, demand, and need are clarified and refined.

**SCHEDULE II: ELIGIBILITY OF DISCIPLINES* IN THE
DEPARTMENTAL ENHANCEMENT SUBPROGRAM**

CYCLE I – ELIGIBLE IN FYs 2017-18, 2019-20

Engineering B (Industrial, Materials Mechanical)
Biological Sciences
Health and Medical Sciences
Physics
Social Sciences
Humanities
Agricultural Sciences
Astronomy
Targeted Workforce (Programs leading directly to Louisiana jobs)

CYCLE II – ELIGIBLE IN FYs 2018-19, 2020-21

Engineering A (Chemical, Civil, Electrical)
Chemistry
Computer and Information Sciences
Business
Education
Earth and Environmental Sciences
Arts
Mathematics
Targeted Workforce (Programs leading directly to Louisiana jobs)

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

5.5.6 Summary of FY 2018-19 Enhancement Allocations

<u>Prior Commitments:</u>	Departmental Enhancement	\$ 720,000
	Federal Matching Grants	\$1,300,000
<u>New Awards:</u>	Federal Matching Grants	\$ 625,000
	Endowed Professorships	\$2,000,000
	Endowed Two-Year Workforce Scholarships	\$ 600,000
	Endowed First-Generation Scholarships	\$ 320,000
	Departmental Enhancement	<u>\$2,280,118</u>
ENHANCEMENT PROGRAM TOTAL		\$7,845,118

5.6 ADMINISTRATIVE EXPENSES - \$679,428

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 \$679,428 to be expended in this category during FY 2018-19.

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
Research and Development	\$135,000
Enhancement	\$ 85,000
Graduate Fellows	\$ 5,000

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 and Endowed Superior Graduate Student Scholarships (Graduate Fellows) are added to the regular allocation to preserve the matching units necessary for the endowments.

6. OVERVIEW OF FY 2018-19 BUDGETARY ALLOCATIONS BY PROGRAM COMPONENT

Table II provides an overview of FY 2018-19 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 2018-19			
	TOTAL SUPPORT FUND ALLOCATION	ALLOCATION FOR NEW PROJECTS	ALLOCATION FOR PRIOR COMMITMENTS
ENDOWED CHAIRS	\$ 1,220,000	\$ 1,220,000	\$ 0
GRADUATE FELLOWS	\$ 4,180,500	\$ 685,000	\$ 3,495,500
RESEARCH & DEVELOPMENT	\$ 5,574,954	\$ 2,300,000	\$ 3,274,954
ENHANCEMENT*	\$ 7,845,118	\$ 5,825,118	\$ 2,020,000
SUBTOTALS	\$18,820,572	\$10,030,118	\$ 8,790,454
ADMIN. COSTS	\$ 679,428		
GRAND TOTAL	\$19,500,000		

*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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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 A&M, LSU-S, LA Tech, Loyola, McNeese, Nicholls, ULM, NSU, SLU, SUBR, SUNO, ULL, UNO, Xavier</p> <p>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 A&M, Loyola, McNeese, SUBR, Tulane, ULL, ULM, UNO, Xavier</p> <p>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>						

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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 A&M, 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 A&M, 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 A&M, 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.						

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(NASA and BOR portions
awarded directly to LSU)

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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 A&M, 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 A&M, 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 A&M, 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).						

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<p>Participating Institutions: LSU A&M, Tulane, ULL</p> <p>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.</p> <p>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	FY1999-00 – FY2001-02	Grant numbers vary	DOD	3 years	\$1,459,473	\$189,798
<p>Participating Institutions: LSU A&M, LA Tech, UNO</p> <p>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</p> <p>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 A&M, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier</p> <p>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>						

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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
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.						
NASA LaSPACE Continuation	FY2000-01 – FY2004-05	NGT5-40115	NASA	5 years	\$1,281,250	\$1,000,000
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.						
EPA EPSCoR 2000 Program –Coastal Monitoring	FY1999-00 – FY2000-01	R-82778501-0	EPA	2 years	\$483,939	\$500,000
Participating Institutions: LUMCON, Tulane (all data obtained will be 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.						
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
Participating Institutions: Dillard, Grambling, LUMCON, LSU A&M, 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.						
NASA EPSCoR Preparation Grant Program Renewal	FY2000-01	NCC5-393	NASA	1 year	\$225,000	\$0
Participating Institutions: A significant number statewide. Funds are competitively awarded. Description/Purpose: To continue the efforts described above for the NASA EPSCoR Preparation Grant.						
NASA EPSCoR Program Continuation Funding (year seven) 1 year	FY2000-01	NCC5-167	NASA	1 year	\$400,000	\$0
Participating Institutions: Dillard, LA Tech, LSU A&M, LSU Ag, LUMCON, McNeese, SUBR, Tulane, UNO, Xavier Description/Purpose: This award is the seventh-year continuation of the NASA EPSCoR Program previously described.						

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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
Participating Institutions: LA Tech, LSU A&M, 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 will operate over existing Internet lines instead of over telephone lines, and allow desktop-to-desktop multimedia communications.						
Louisiana EPSCoR Research Infrastructure Improvement (RII)	FY2001-02 – FY2003-04	EPS-0092001	NSF	3 years	\$9,000,000	\$3,000,000
Participating Institutions: A significant number statewide, including LA Tech, LSUHSC-NO, UNO, Grambling, LSU A&M, 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.						
NASA EPSCoR 2000	FY2001-02 – FY2003-04	NCC5-573	NASA	3 years	\$2,100,000	\$2,100,000
Participating Institutions: LSU A&M, 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 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 three multi-institutional research projects.						
EPA EPSCoR 2001 Program – Climate Change	FY2002-03 – FY2003-04	R-82642001-0	EPA	2 years	\$494,195	\$494,542
Participating Institutions: LUMCON, UL-Lafayette, 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.						
Louisiana’s Strategic Infrastructure Improvement (LSII)	FY2003-04– FY2005-06	EPS-0346411	NSF	3 years	\$9,000,000	\$3,000,000
Participating Institutions: A significant number statewide, including LSU A&M, 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.						

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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
Participating Institutions: LSU A&M, 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.						
DOE EPSCoR Implementation 2004	FY2004-05 – FY2006-07	DE-FG02-04ER46136	DOE	3 years	\$1,200,000	\$1,200,000
Participating Institutions: ULL, LSU A&M, 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.”						
LAMP Phase III	FY2005-06 – FY2009-10	HRD-0503362	NSF	5 years	\$2,500,000	\$2,500,000
Participating Institutions: Dillard, Grambling, LUMCON, LSU A&M, 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.						
NASA LaSPACE Continuation II	FY2005-06 – FY2009-10	NNG05GH22H	NASA	5 years	At least \$1,280,000	\$1,000,000
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.						
NASA EPSCoR Phase 3	FY2006-07 – FY2011-12	NNX07AL03A, NNX07AT62A, NNX07AT67A	NASA	6 years	\$2,175,000	\$2,250,000
Participating Institutions: LSU A&M, 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.						

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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.

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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.

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Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
DOE EPSCoR Implementation 2014	FY2014-15	DE-SC0012432	DOE	3 years	\$4,949,000	\$500,000
Participating Institutions: LSU A&M, 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.						
NASA LaSPACE Continuation	FY2015-16 – FY2017-18	NNX15AH82H	NASA	3 years	\$1,375,000	\$750,000
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.						
NASA EPSCoR Research 9	FY2015-16 – FY2017-18	NNX15AM61A	NASA	3 years	\$750,000	\$750,000
Participating Institutions: LSU A&M, SUBR, Xavier, University of Puerto Rico. Description/Purpose: This research program will help us better understand a component of lightning-producing storms called terrestrial gamma flashes, or TGFs. The project will also build research infrastructure at three minority institutions in two EPSCoR jurisdictions and train underserved minority students.						
NASA EPSCoR Research Infrastructure	FY2015-16 – FY2017-18	NNX15AK33A	NASA	3 years	\$375,000	\$375,000
Participating Institutions: LSU A&M. 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.						
Louisiana EPSCoR Research Infrastructure Improvement (CIMM)	FY2015-16 – FY2019-20	OIA-154079	NSF	5 years	\$20,000,000	\$4,000,000
Participating Institutions: A significant number statewide, including LSU A&M, Grambling, LA Tech, SUBR, and UNO. A portion of the grant funds will be awarded to these and other institutions on a continuing, competitive basis.						
Description/Purpose: The research component of the NSF EPSCoR project will create the <i>Consortium for Innovation in Manufacturing and Materials (CIMM)</i> . The two main goals of the project are to 1) address challenges in high-throughput manufacturing of components with functional features ranging from microns to millimeters and beyond with high fidelity and repeatability and 2) focus on adaptive manufacturing of application-specific structures with a high degree of geometric and microstructural complexity and variability. In addition, the Consortium's workforce development program will provide advanced hands-on training in manufacturing-relevant skills for students in two- and four-year institutions.						

FUNDED PROPOSALS: JOINT FEDERAL/STATE PROGRAMS WITH STATEWIDE IMPACT
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Title	Fiscal Years	Federal Award Number	Federal Agency	Duration	Federal Award Amt.	Support Fund Match
NASA EPSCoR Research 10	FY2017-18 – FY2019-20	NNX16AQ93A	NASA	3 years	\$750,000	\$750,000
Participating Institutions: LSU A&M, SUBR. Description/Purpose: This project will develop new polymer composite panels for in-service damage self-healing through (1) design, synthesis, characterization, and manufacturing of two-way shape memory polymers (2W-SMPs); (2) multiscale modeling of the smart composite structures; and (3) additive manufacturing using 3D printing and experimental evaluation of the smart composite panels for impact mitigation and in-service crack healing. This project was also designed to attract and retain a greater number of high caliber students, including underrepresented minority students, in STEM disciplines, and train a larger number of high caliber STEM students for NASA related industry.						
NASA EPSCoR Research 11	FY2017-18 – FY2019-20	N/A	NASA	3 years	\$750,000	\$750,000
Participating Institutions: LSU A&M, SUBR. Description/Purpose: This research addresses the transport of carbon through the land-sea interface, and supports NASA's major strategic goal to advance understanding of Earth. The team proposes to investigate two contrasting coastal sites across the Mississippi River Delta: the Bataria Bay Region and the Wax Lake Delta region. Understanding these two contrasting environments which are under same climate conditions is critical to assess the role of delta systems in carbon export to the coastal oceans on a global scale.						
DOE EPSCoR Implementation Renewal	FY2017-18	DE-SC0012432	DOE	3 years	\$4,938,95	\$500,000
Participating Institutions: LSU A&M, Tulane, UNO. Description/Purpose: : This is a three-year renewal of the DOE EPSCoR LaCNS project which seeks to build on its prior success to attain a sustainable neutron scattering infrastructure capable of treating both soft and hard materials. This project will also enhance related research infrastructure and workforce training in materials science at the participating universities.						
NASA EPSCoR Research 12	FY2017-18 – FY2019-20	N/A	NASA	3 years	\$750,000	\$750,000
Participating Institutions: ULL. Description/Purpose: The overarching goal of this project is to develop a waste management system, BIOSYS, that is energy- and oxygen-use neutral (produces as much or more of these resources than it consumes) and is capable of meeting treatment goals while producing additional life support resources. This project will also (a) position the project team as leading experts on in-space waste management strategies and (b) build a foundation of interest among current and future students in space-related STEM areas.						

ATTACHMENT II

Board of Regents Support Fund Results of Selected Projects

Following are brief synopses of several successful projects recently funded through Board of Regents Support Fund competitive grants programs. These represent just a small sample of the supplementary and enhancing activities made possible across higher education in Louisiana by distribution of these dollars.

ENHANCEMENT

With support from a Traditional Enhancement grant, a team at **Louisiana State University and A&M College** initiated the TETRA (TGF and Energetic Thunderstorm Rooftop Array)-II experiment in order to create research opportunities for students and faculty. The scientific objective is to measure the flux and energy spectrum of gamma rays from electrons accelerated to high energies by the electric fields in terrestrial lightning, and to associate the gamma rays with the thunderstorm characteristics. The array was designed by LSU staff, then built and operated by a student team from LSU, Southern University Baton Rouge and Xavier University. It has been installed and is currently operating with ten detectors at the University of Puerto Rico and two on the roof of Nicholson Hall at LSU. Ten more detectors are scheduled to be established in Jamaica. The project is expected to provide continuing research opportunities for students at LSU, Southern Baton Rouge and Xavier, as well as the University of Puerto Rico and the University of the West Indies for a decade or more. *{LEQSF(2014-16)-ENH-TR-02; Michael Cherry, PI}*

A Traditional Enhancement project at **McNeese State University** has helped to expand educational opportunities in the Medical Laboratory Science program. It established blood banking education and expanded the capabilities and the overall scope of study of the student lab. The students participating in the lab have the opportunity to participate in hospital simulations that were not available to them before this project. They can simulate real-life blood bank scenarios, and become proficient in blood bank testing before they are placed in actual hospital laboratories for their clinical year. The introduction of these opportunities is producing more competitive graduates with marketable skills in the Louisiana workforce, and strongly impacting recruiting to the program. *{LEQSF(2016-17)-ENH-TR-15; Sonya Hidalgo, PI}*

Using Undergraduate Enhancement funding, a team at **Southern University at New Orleans** has acquired a Genetic Analyzer, allowing faculty to provide opportunities for hands-on student training and learning of modern DNA sequencing techniques. The acquisition has already had a significant impact on numerous courses, as well as student and faculty research. It also been a part of community outreach activities conducted by the campus, including summer research and learning programs for K-12 students. *{LEQSF(2015-16)-ENH-UG-23; Illya Tietzel, PI}*

Baton Rouge Community College used Two-Year Enhancement funding to complete a major expansion of their simulation lab for Nursing education. The expanded capabilities provide clinical experiences for students that were not available in hospitals' internship, lab and training programs. The project had a significant impact on practices in the nursing program, and the lab has been integrated into regular classwork. Nursing simulation software has been loaded on classroom computers to allow faculty to integrate simulation where appropriate into lecture to enhance students' critical thinking skills during content delivery and skills demonstrations. The new capabilities are leading to the creation of new classes, and positively contributed to an increase in the program's standing during a recent accreditation process. *{LEQSF(2015-16)-ENH-PEN-02; Toni Manogin, PI}*

Through a Traditional Enhancement award, **Louisiana Tech University** acquired a Raman Microscope which has had a significant impact on both chemistry research and education. In terms of research, the capabilities it provided greatly strengthened journal publications as well as multiple research proposals for both faculty and students. In terms of education, exposure to this cutting-edge instrument has made research "come alive" for both undergraduate and graduate students who had previously only read extensively about its use. To ensure the broadest possible impact of the purchase, the research team which initiated the request has made the instrument available across the department as well as to the institution as a whole. *{LEQSF(2014-15)-ENH-TR-11; Adarsh Radadia, PI}*

An Enhancement project at **LSU Health Sciences Center – New Orleans** has helped to introduce disaster simulations into junior- and senior-level nursing curricula. 100% of students enrolled in the junior or senior level of study were provided an opportunity to participate in the project; the disaster scenarios developed through the project were then incorporated into simulation/lab component or practicum component of a student's course. A total of 556 students participated in at least one level of disaster simulation. Of these participants, 52% took part in two different simulations. Participation in the project provided all students the opportunity to experience a disaster in a safe, controlled environment while working in the role of the nurse. Simulation scenarios included a variety of natural and manmade disasters and explored the role of the nurse once the disaster had occurred. In addition, participants were administered a pre- and post-test of National Council Licensure Examination (NCLEX)-style questions that increased their overall disaster knowledge and prepared them for disaster questions that are a component of the licensing exam, better positioning them for the test at the end of their studies. *{LEQSF(2016-17)-ENH-TR-10; Alison Davis, PI}*

Southeastern Louisiana University, with assistance from an Undergraduate Enhancement award, was able to equip an engineering laboratory with essential improvements, including high performance computers for engineering design and analysis. The project's primary goal was to develop a dedicated laboratory for course instruction and capstone design projects in

Southeastern's Engineering Technology program. Students majoring in Engineering Technology (320 during the active period of the grant), as well as students enrolled in the Integrated Science and Technology (ISAT) master's program, benefit from the facility in the laboratory. The hardware and software in the laboratory provide a platform for students to experience a complete cycle of product design, analysis, and prototyping, and prepare them for the entrepreneurial environment taking hold across STEM fields. The lab supports class work, research, and community outreach to local high school programs, ensuring that its impact expands far beyond the immediate programs affected. *{LEQSF(2015-16)-ENH-UG-19; Mohammad Saadeh, PI}*

A Traditional Enhancement project at **Nicholls State University** has helped create a simulated mathematics classroom experience that is in line with the latest trends and technology, with a goal of fully preparing students to teach mathematics in the classrooms of this century. The new environment facilitates conceptual and collaborative learning for all students preparing to teach mathematics and allows teacher candidates to utilize classroom materials that involve hands-on experiences. Such activities meet the mathematics objectives of the course content while incorporating the fundamental pedagogical elements of today's mathematics standards as described in the Common Core State Standards (CCSS) and by the National Council of Teachers of Mathematics (NCTM). During the life of the grant, approximately 200 students and eight faculty members were impacted. Now that the enhancements are established the program will annually include approximately 300 students and 11 faculty members. The classroom will be used for a wide variety of purposes, including teaching courses, study sessions, course office hours, and professional development workshops for current local teachers. *{LEQSF(2014-15)-ENH-TR-14; DesLey Plaisance, PI}*

A faculty team at **Louisiana State University and A&M College** has used Enhancement funding to purchase a scanning probe microscope (SPM) for chemistry research and education. During the life of the project the new instrumentation allowed the faculty to secure numerous publications in prominent journals and deliver major research presentations at national and international conferences. By the end of the project, additional experimental work and manuscripts were already underway, and a number of grant proposals were in the planning stages. The new equipment was also integrated into undergraduate and graduate coursework and research, increasing their capacity to learn new techniques and skills. The expansive uses of the equipment and its availability on campus will increase research capacity well beyond the targeted disciplines, to extend across sciences and engineering at LSU. *{LEQSF(2014-16)-ENH-TR-03; Jayne Garno, PI}*

RESEARCH AND DEVELOPMENT

Research Competitiveness Subprogram (RCS)

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}*

With the help of RCS funding, a research group at **Louisiana State University and A&M College** is developing diagnostic tools and methodologies to identify and characterize leakages in oil and gas drilling sites. Though still in its early stages, the research, which has potential for significant real-world application, has already generated numerous refereed publications and invited presentations, both national and international. The PI has also been able to leverage his research, serving as Co-PI on a \$1 million U.S. Department of Energy (DoE) grant to study carbon capture in Louisiana's Chemical Corridor. *{LEQSF(2016-18)-RD-A-13; Mehdi Zeidouni, PI}*

A principal investigator at **Tulane University Health Sciences Center** is making good progress in a research project studying the aging brain, to better map its function and responsiveness. Such research is essential, particularly as the U.S. population ages, to understand how the brain changes over time and disease processes that affect brain function. Demonstrating the value and potential of the project, the PI has secured a major \$1.5 million award from the National Institute on Aging, leveraging by approximately 10 times the initial BoRSF investment of \$156,375. *{LEQSF(2016-19)-RD-A-24; Ricardo Mostany, 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 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. *{LEQSF(2011-14)-RD-A-18; Dentcho Genov, PI}*

Industrial Ties Research Subprogram (ITRS)

A team of researchers at the **University of Louisiana at Lafayette** has used ITRS funding to work with a private-sector partner, Advanced Applied Research, LLC, to develop and commercialize a software package for comparison of protein structures. A provisional patent application has been filed, which has been supplemented with additional research results during the spring of 2017. The work has been featured in a high-profile plenary talk at the 2016 ACM/IEEE Web Intelligence Conference and major journal articles are beginning to appear. The project PI was able to leverage industrial relationships established through this grant and his research to secure a major Industrial Innovation award from the National Science Foundation, which will provide total funding from federal and industry sources of \$1.5 million over five years. During the final year of the ITRS award, the PI expects to develop further major federal proposals as research results are published and disseminated. *{LEQSF(2015-18)-RD-B-06; Vijay Raghavan, PI}*

Through an ITRS/Proof-of-Concept and Prototyping project, a research group at **Louisiana State University and A&M College** is developing a novel design for enhanced oil recovery in deep waters of the Gulf of Mexico. The project addressed the ongoing challenge to find a cost-effective and high-yield approach to maximize productivity. The excellent project results led LSU to secure a license on the technology, and patents have already been filed. *{LEQSF(2016-17)-RD-D-07; Dandina Rao, PI}*

Researchers at the **Louisiana State University Agricultural Center**, working with industrial partners in New Iberia and Houston, TX, are developing industrial applications of nanocellulose-tailored drilling fluids for oil well applications, and have begun the process of identifying locations and industries to conduct field testing. The PIs have filed two disclosures and multiple patent applications based on the work to date, and have attracted interest from major potential users in the oil and gas sector. In addition, external funding of more than \$500,000 has been secured, in part from the USDA Forest Service's public-private partnership program. This has enabled the project to leverage BoRSF partnership support and build private-sector involvement in the project. *{LEQSF(2015-17)-RD-B-01; Qinglin Wu, PI}*

Awards to Louisiana Artists and Scholars (ATLAS) Subprogram

An ATLAS principal investigator at **Louisiana State University and A&M College** has completed a groundbreaking major study of the development and growing popularity of botox, entitled *Botox Nation: Changing the Face of America*. Drawing on a wide body of written documents – magazine articles, medical documents, and advertisements – as well as extensive interviews with botox users and providers, the study provides the first in-depth look at this increasingly prevalent product in contemporary society and promises to be a major contribution to our understanding of the body in social contexts. {LEQSF(2015-16)-RD-ATL-01; Dana Berkowitz, PI}

With help from an ATLAS award, a composer at the **University of New Orleans** has completed a new orchestral work, which was premiered in April 2017 on Lake Pontchartrain as a major community event. The piece, entitled “New Water Music”, featured the Louisiana Philharmonic Orchestra and more than 100 regional musicians performing on the shore and on boats. The performance featured shrimp and oyster boats, as well as a barge, doing a water ballet as the musicians played, and hosted a temporary village to provide a space for people who live and work on Louisiana’s waterways, as well as coastal advocacy organizations, to talk to attendees about Louisiana’s unique and inspiring relationship to water. {LEQSF(2015-16)-RD-ATL-15; Yotam Haber, PI}

LOUISIANA EPSCoR

In 2015 a consortium of researchers put Louisiana’s growing advanced manufacturing and materials industries into the national spotlight through the award of a highly competitive \$20 million Track 1 grant from the National Science Foundation’s Experimental Program to Simulate Competitive Research (EPSCoR). The grant established the **Consortium for Innovation in Manufacturing and Materials (CIMM)**, a research collaboration among five of Louisiana’s public universities: Louisiana State University and A&M College, Louisiana Tech University, Grambling State University, Southern University in Baton Rouge, and the University of New Orleans.

The five-year award is having a significant impact on the State, launching the next level of research and development for the materials and advanced manufacturing industries. Researchers will address the fundamental building blocks of metal and alloy materials on a scale ranging from millimeters down to nanometers. The overarching goal of CIMM is to accelerate manufacturing technology development by combining supercomputer modeling and simulation with physical experimentation in a shared specialized research lab.

Strategic investments over the past 20 years in experimental and computational materials research and infrastructure have yielded significant opportunities for long-term growth in Louisiana. CIMM directly capitalizes on the successes of Louisiana's 2010-15 NSF RII award, matched with \$10 million from the Support Fund, which established the successful Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA).

Louisiana EPSCoR also holds several additional awards through federal programs. A \$3.251 million collaborative award between Louisiana and Mississippi, funded through NSF EPSCoR Track 2, established 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.**

The NSF EPSCoR Track 3 award, led by **Louisiana Tech University** with participation of high schools and middle schools across the State, is developing and implementing 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 and improve education, training, and opportunities for industry in Louisiana.

An additional award, approximately \$5 million from the Department of Energy's EPSCoR program paired with \$500,000 in BoRSF matching, is a continuation of the highly successful project entitled "Building Neutron Scattering Infrastructure in Louisiana for Advanced Materials." The project is building 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 continues to 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