Responses to Specific RSV Recommendations

Recommendation 1: The participation of pre-college, community college groups, and students at HBCUs should be ramped up in the second year of the project and should continue as a priority thereafter.

Response:

Pre-college groups: In the first year of the project LA-SiGMA's pre-college activities included two open houses (LA Tech and Tulane), a number of public events (Nanodays, Girls Leaning About Math and Science, and SciPort Louisiana), inclusion of graduating seniors into the REU program in Baton Rouge, and interactions with the organizers of the Beowulf Boot Camp. In the coming year, LA-SiGMA plans to host or participate in open house events in all three metropolitan areas (Super Science Saturday in Baton Rouge has already occurred) and will increase the number of faculty, students, and post-docs in these events. The data associated with these activities will be documented. The LA-EPSCoR-supported Speaking of Science program (see response to Recommendation #3) facilitates presentations by college faculty to K-12 students; in year 2 we will increase the number of LA-SiGMA faculty participating in the program. LA-SiGMA will help fund and staff the Beowulf Boot Camp in year 2. Additional summer workshops and events will be planned that include high school students. In year 1, high school students were included in REU programs at LSU and LA Tech; LA-SiGMA will build upon these efforts by inviting high school students to apply to all our REU programs.

Community College groups: At the beginning of the second year of the project, LA-SiGMA has already held a workshop on microscopy at LA Tech for community college faculty. Eight faculty members representing all three community colleges in the region (Delta Community College, Bossier Parish Community College, and South Arkansas Community College) participated. Further meetings/workshops for local community college instructors will be held in the Baton Rouge and New Orleans areas to investigate opportunities for community college students in LA-SiGMA organized activities. An open house specific to Baton Rouge Community College is also planned for year 2, during which students will visit the LSU campus and observe demonstrations of equipment and methods used in materials science. A community college faculty member and student will be offered an opportunity to participate in the Beowulf Boot Camp in order to assess how best to present the class to community college students. Community college instructors will be asked to recommend their students for the LA-SiGMA REU program. It is LA-SiGMA's aim to have representation from community colleges in each of the three metropolitan areas.

Students at HBCUs: Steps will be taken to increase HBCU student participation in LA-SiGMA activities and their representation at the RII Symposia. LA-SiGMA will promote student exchanges during the summer between LA-SiGMA institutions using our existing REU programs and by seeking funding through the SURE program, which is exclusively tailored for underrepresented minorities and women. LA-SiGMA strives to have each supported student at the HBCUs take part in co-authoring a paper in a refereed journal or a presentation at a national/international meeting, as well as at the annual LA EPSCoR Symposium. At the recent LA-SiGMA Student Retreat (held on October 15, 2011), undergraduate and graduate students established network associations, presented ongoing research and findings, and practiced presentation skills. Underrepresented minorities comprised approximately 27% of the attendees. Due to the success of the retreat and the enthusiastic participation by students, we intend to support this as an annual event.

Recommendation 2: A systematic strategy for increasing industrial collaboration should be developed and implemented.

Response:

One of our new statewide EPSCoR programs initiated under this RII is the Opportunities for Partnerships in Technology with Industry (OPT-IN). OPT-IN provides funding for faculty to partner with industrial entities to build sustainable relationships between academia and industry; facilitate the commercialization of research; enhance research competitiveness; and contribute to the economic development of Louisiana. The first round of competition resulted in eight funded projects across the State.

For the first time, as part of our EPSCoR RII strategy, we have an included an Industrial Liaison Team (ILT) as part of the management structure. The current membership includes the Director of the Louisiana FastStart*TM* program—a highly successful workforce training program sponsored by State's Department of Economic Development—and the directors of intellectual property offices from three major research campuses involved in LA-SiGMA (LSU, Tulane, and Louisiana Tech), as well as Roy Keller of the LA Business and Technology Center. The ILT is coordinated by PET member Dr. Scott Whittenburg, the Vice-Chancellor for Research at UNO, and Dr. Ramu Ramachandran, Associate Dean for Engineering Science at Louisiana Tech. The ILT acts to identify industry and government partners who participate in the research projects and capitalize upon the tools and other research outcomes.

The ILT meets regularly and during the first year organized, in coordination with the State EPSCoR Committee, two workshops that brought together research teams and industry partners to explore collaborative projects. The workshops were thematically related to LA-SiGMA and featured materials/energy and software development/high-performance computing. Additional workshops are planned; the next one will focus on biomedical sciences and will be held in spring, 2012.

Our plans to increase industrial collaboration include:

- Increase number of OPT-IN competitions from one to two per year
- Expanding the membership of the ILT to include representatives from additional universities (specifically, minority-serving institutions) and industrial/business entities
- Initiate focused meetings between LA-SiGMA faculty and targeted industries
- Continue the successful series of faculty/industry workshops (see **Appendix A** for LA EPSCoR newsletters on two workshops held in year 1.)

Recommendation 3: Modes of public engagement should be strengthened, and the reporting and evaluation of that engagement made more complete.

Response:

The Speaking of Science (SoS) program sends faculty into K-12 classrooms to give tailored science presentations that spark the interest of students in STEM fields and professions. In our last annual report, it was mentioned that the SoS program has reached over 2,200 K-12 students during the first year of the RII project. Over the past five years, over 13,000 students have been impacted. This highly successful program has been featured in our monthly LA EPSCoR newsletter (see **Appendix B**); which includes positive feedback from the students themselves. We actively collect demographic data on the student participants and solicit teacher evaluations on the efficacy of the presentations. New speakers are continually recruited into the SoS program, and a specific effort to engage more LA-SiGMA speakers will be made.

Our monthly EPSCoR newsletter continues to highlight the role played by LA EPSCoR in promoting the development of the State’s S&T resources through partnerships involving its universities, industry, and government. The newsletter is distributed to approximately 1,000 individuals, including faculty members, State legislators, and other stakeholders. The newsletter features exciting research and education funded by LA EPSCoR, written in a way that is accessible to the general public.

We have recently established an LA EPSCoR FaceBook page and will be disseminating information through this medium.

LA-SiGMA faculty at each institution will work with their local University Relations officers to identify opportunities for interviews/publicity from print and TV media. In addition, many LA-SiGMA faculty and University Relations officers, as well as students and post-docs, will be attending an NSF-sponsored workshop entitled "Science: Becoming the Messenger" on November 17, 2011. Over the course of this full day of training, participants will learn how to craft a message and deliver it to a variety of audiences. They will also have the opportunity to experience live interview training, to develop writing and new media skills, and to hone their public presentations.

The public outreach events mentioned in the response to Recommendation 1 targeting pre-college students will also be used to engage the general public. RET faculty will be contacted to arrange classroom visits by their research mentors or other LA-SiGMA personnel, including post-doctoral associates. Records of the number of participating LA-SiGMA members, the attendance at the events, and the evaluation of the events will be tracked.

Recommendation 4: Evaluation questions should be rethought annually and mechanisms developed to ensure that evaluation results are used formatively.

Response:

A comprehensive evaluation plan was developed by The Office of Educational Innovation and Evaluation (OEIE), which serves as the external evaluator for the project. Logic models and evaluation questions were used by OEIE to guide the development of the evaluation plan. A detailed description of the evaluation process and work plan are included in **Appendix C**. All evaluation questions listed in **Appendix C** are addressed through the implementation of the evaluation plan. In response to the Reverse Site Visit (RSV) team report, the following three evaluation questions are a focus for Year 2. (Each of the three questions are represented in the original evaluation questions but have been stated below to match the specific recommendations from the RSV team.)

1. How has the project increased and enhanced participation from pre-college, Community College, and HBCU groups? (To address recommendation 1.)
2. What strategies were effective in increasing collaborations with industry and what were the outcomes of these strategies? (To address recommendation 2.)
3. What strategies were effective in strengthening public engagement and what were the outcomes of these strategies? (To address recommendation 3).

Ongoing throughout the year, as data is collected, analyzed, synthesized, and reported, both formative and summative findings will be provided to the appropriate stakeholders such as the lead researchers in each science driver area, the outreach coordinators, the Project Execution Team (PET), the Diversity Advisory Council (DAC) and the External Review Board (ERB). This continuous feedback loop provides specific information that allows project personnel to monitor and adjust as needed.

As stated in the proposal, the ERB receives the raw data as well as the analysis, confers with the Project Execution Team annually and provides recommendations. Course corrections will be made if specific project teams or a specific focus area appear to be falling behind. Examples of such corrections could include reassessment of project team leadership or resources committed to a focus area.

The Evaluation & Assessment (E&A) committee and external evaluator (OEIE) collaborate in the development and implementation of data collection mechanisms and instruments on a periodic basis. For example, the baseline survey (results of which were presented at the RSV) was created and administered by the LA-SiGMA E&A Team before the contract with OEIE was negotiated. The survey instrument was refined in Year 1 with OEIE input, and a data collection mechanism was also put in place to gather the information needed for the Year 1 report to NSF. A comprehensive web-based data collection portal is being designed at this time by OEIE with LA-SiGMA E&A input. The lessons learned from the previous data collection and survey experiences are being used to make this portal unambiguous, accurate, user-friendly, and useful. The user interface, the questions asked, the drop-down menus, the input fields, and behind-the-scenes data aggregation mechanisms of this portal will be reviewed after each data collection cycle, and improved. The online system will provide project administration aggregated summaries of data collected to provide real-time monitoring of project metrics. The web portal will be modified annually so that the evaluation team can collect new data required for formative evaluation of the program while continuing to collect longitudinal data required for long-term project evaluation.

Appendix A

Louisiana EPSCoR

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH VOL.8 NO.3 DECEMBER 2010

Collaborative industry-academia relationships spark innovations

Energy and materials were the focus of the first in a series of Industry-Academia Collaborative Workshops sponsored by Louisiana EPSCoR and the Board of Regents. Keynote speakers were John Bartos, Vice President of Development and Technology of Cameron International, and Louisiana Economic Development Secretary Stephen Moret.

Guest academia speaker Leslie Guice, Vice President for Research and Development at Louisiana Tech University, described Louisiana's Science & Technology Plan and the direct ties to economic development. Representing Louisiana industry, John Bartos spoke about leveraging the power of universities in pursuit of new technology. Secretary Moret presented the top growth initiatives for Louisiana and their connections to higher education.

John C. Bartos, Vice President of Development and Technology for Cameron International

Two workshop panels convened to provide open discussions regarding industry research needs and the mechanisms in place to collaborate with universities. Also discussed were relevant issues on intellectual property. Participants discussed how to facilitate policies and mechanisms that will help seize innovative opportunities and reap the benefits of research in Louisiana. Panelists included: John Parks, Albemarle; Reiner Kuhr, The Shaw Group; Darrel Zweigle, ExxonMobil; Ben Russo, Cleco Power; Tom Yura, BASF; Richard Kordal, LA Tech; Peter Kelleher, LSU. The closing remarks were provided by Kevin Carman, Dean of the LSU College of Science.

To facilitate additional industry-academia interchanges, Louisiana's leading energy and materials researchers provided poster presentations of their research programs and innovations that could support industry needs. This created a unique face-to-face matchmaking situation for researchers and industry representatives looking to identify possible future collaboration opportunities.

Dr. Michael Khonsari, project director of Louisiana's EPSCoR program and Associate Commissioner for Sponsored Programs at the Louisiana Board of Regents, opened the workshop by announcing the NSF EPSCoR $20 million Research Infrastructure Improvement Award and the establishment of LA-SiGMA, Louisiana's materials science research alliance.

Mr. Bartos' keynote presentation focused on how critical materials research is to maintaining Cameron International's established leadership in the development of innovative flow equipment for the oil, gas and process industries.

"This is a topic that I am quite passionate about − leveraging the power of universities to assist us in our pursuit of new technology," stated Bartos.

He described how the future of the oil and gas industry lies in ultra cold drilling of Arctic reserves where an estimated 25 percent of the world's undiscovered oil and gas natural resources exist. The Arctic is perhaps the harshest territory on Earth and presents unique problems that Cameron International would like to resolve by collaborating with university researchers.

"There is one technical limitation to what enables us to drill up there: finding a simple elastomer that can survive in those cold temperatures."

Engineers at Cameron International have done extensive work with elastomers and designed dual elastomer composites and very sophisticated geometries that can survive temperatures as low as +20 °F. However, in the harsh Arctic environment, the elastomers are required to function in a temperature range of -50 to +350 °F. “There is no elastomer on earth that can do that, that we know of.”

To solve this problem, Cameron International has entered the world of nanotechnology. Researchers are adding carbon nanotubes to hydrogenated nitrile butadiene rubber and nylon to augment the characteristics of the elastomers in a way that could extend their functional range.

Researchers are also actively working with Cameron International to reduce the extremely hazardous environmental and safety exposures of rig workers who hang and maintain the massive web of cables below the rig decks. Currently, the transmission of critical electrical, hydraulic and acoustic information is sent from the surface down to the equipment on the ocean floor and back by means of separate networks of cables and sensors.

“If we can combine all of those operations with functional convergence into a single structural element, we can solve a lot of the industry’s problems,” said Bartos.

Cameron International participates in a number of programs with universities in a variety of capacities, including mentoring students, sponsoring research programs, developing collaborations and building research laboratories. “We are able to tap into technologies that we really couldn’t research on our own. We don’t have the opportunity to go into things like nanotechnology and smart technologies. Our focus is on new products, not discovering new technologies, whereas that is the business of the universities and it gives us the opportunities to tap into those resources.”

“BASF utilizes a whole spectrum of university research, from specific to very broad-range subjects. We leverage consortiums, particularly for surface materials, because they bring together companies and academic experts to solve problems together.”

Tom Yura, Senior Vice President and General Manager, Geismar Site of BASF Corporation

Industry panel session moderated by Connie Fabre, Executive Director of the Greater Baton Rouge Industry Alliance and Louisiana EPSCoR Committee Member.

“We are a global manufacturer of highly engineered specialty chemicals and use university research a lot of different ways, from very simple tasks, like doing analytical work for particular products, to working with spin-off companies to see if they have technology that we could use to increase our technologies.”

John Parks, Research and Development Director of Albemarle Corporation

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Louisiana EPSCoR
EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH VOL.8 NO.9 JUNE 2011

Digital Networking Event Enhances Industry-Academia Connections

Digital Media and Software Development was the theme of the second in a series of industry-academia collaborative workshops sponsored by Louisiana EPSCoR and the Board of Regents. The workshop was held on June 14, 2011 at the Louisiana Immersive Technologies Enterprise (LITE) Center in Lafayette.

The workshop attracted leaders from industry and academia across Louisiana for a full day of networking, break-out group interactions and panel presentations.

Bobby Savoie, President of Geocent, presenting during the industry panel.

The plenary speaker for the workshop was Alex Chatfield, the Director of Operational Development for EA Sports. His presentation provided insight into industry-wide changes and needs that are ripe for further collaborations with academia. The industry has experienced a huge digital shift: the platforms are constantly evolving, the multi-dimensional games push the hardware to the limit, consumption is now 24/7, and users not only interact with the games, they generate their own content. Due to these rapid changes, Chatfield says the gaming industry hires not only programmers, but also a balance of designers and artists.

"From an industry perspective, we are looking for college graduates who are very creative and passionate, but they must also be disciplined, with respect to the constraints of the hardware and the limited time box," said Chatfield. He provided an example of the Apollo 13 crisis, where the engineers had to use their creativity to solve a problem while working with extremely tight resources and time constraints.

Panel Presentation I focused on how academia can help prepare students for a successful career in industry. Industry panelists included: Frank Auer (CEO, Praeses), Bobby Savoie (President, Geocent), Ryan Clark (Staff Scientist, ARCADIS), and Scott Eric Olivier (CEO, Skyscraper Data Solutions).

"Like a doctor is required to do clinicals, our industry finds that internship experience is far more valuable in the long run than time in books," said Frank Auer, CEO of Praeses, an international information management service company based in Shreveport. “It is better to cooperate than compete for students. We would prefer to hire Bachelors graduates and then we pay for graduate school,” he continued.

Mr. Olivier touted Louisiana’s “incredible connectivity” in both community and digitally, referring to LONI, the state-wide high-speed optical network and the national LambdaRail network.

Panel Presentation II presented stories of successful collaborations, and was led by: Marcus Morton (President, NiFTy-TV), Dr. Mike O’Neal (Chief Scientist, NiFTy-TV), Devin Broome (VP, First Call), Ray McIntyre Jr. (Visual Effects Supervisor, Pixel Magic), and C.E. Richard (Filmmaker and Professor, ULL).

Mr. Richard described a very successful collaboration between the booming digital media and film industry and ULL, where an entirely new baccalaureate program was created, called the Moving Image Arts Program.

Panel Presentation III featured the academic perspective with four panelists: Dr. Carolina Cruz-Niera, ULL; Dr. Brygg Ullmer, LSU; Dr. John Zachary, ULL; and Dr. Joel Tohline, LSU/LONI.

“Real applications of science and technology are growing at exponential rates. The role of universities in science and technology is becoming

> “Praeses is represented on industrial advisory boards for computer science at both LSU and LA Tech. We are delighted to have seen curriculum changes at both universities, based upon suggestions made by the respective advisory boards. We know such changes are non-trivial undertakings. The combination of the suggestions made by industry and the fitting responses made by the universities prove effective collaboration. We are excited about the mutual benefits we can expect by growing these relationships.”
>
> - *Mr. Frank M. Auer,* CEO of Praeses

more challenging, so there is a great need to continue to develop large, multidisciplinary teams," said Dr. Cruz-Niera, holder of the W. Hansen Hall and Mary Officer Hall/BoRSF Endowed Super Chair in Telecommunications in Computer Engineering and the Chief Scientist of LITE at ULL.

"These academic-industry partnerships are a win-win-win situation for Louisiana. Academia wins with stable funding for research, exposure to the real world, and training of students in research. Industry wins with low risk-high value innovations, access to pre-public IPs, access to multiple universities, and improved access to capital. The economy wins with creation of applied innovations and solutions, and knowledge economy workforce solutions," said Dr. Zachary, Director for Information Systems Research at the ULL Center for Business and Information Technologies.

Dr. Brygg Ullmer, Associate Professor of Computer Science at LSU, suggested that academia and industry would greatly benefit by adding an "A" to the science, technology, engineering, and mathematics (STEM) education pipeline. The "STEAM" pipeline would integrate vocational skills and the arts to help students connect tangible interfaces to digital visualization. Graphic design and vocational courses give valuable tacit experience engaging with materials and dimension - something that you cannot learn in a purely algorithmic setting.

Academia panelist Dr. Joel E. Tohline (center), Director of LSU's Center for Computation & Technology, participates in a workshop break-out discussion.

The Director of LSU's Center for Computation & Technology, Dr. Joel Tohline, said "to get from theoretical underpinnings to a computer solution requires core interdisciplinary expertise that enables all computer sciences and digital arts research," said Tohline. The Louisiana academic research community brings this valuable core interdisciplinary expertise and infrastructure to the table and is actively looking to develop further ties with industry. There is a natural overlap with the digital arts and entertainment industry with scientific visualization, grid computing and GPUs.

The workshop closing editorial viewpoint was given by Dr. Thomas Sterling, the Arnaud and Edwards Professor of Computer Science at the LSU Department of Computer Science, Adjunct Professor of the LSU Department of Electrical and Computer Engineering, and System Science and Engineering Focus Area Head of the Center for Computation and Technology.

Dr. Sterling pointed out that learning is lifelong, and Louisianans need to "learn how to learn and learn how to think." Education should involve both academia and industry, starting with outreach to K-12 students to provide role models, motivation and inspiration.

Enhancing mid-profession training will serve to supercharge industry, refresh the skill sets and knowledge of those working here, and provide rewarding career progression.

Another vital area ripe for additional industry and academic collaborations and focus is entrepreneurialism, including streamlining tech transfer from lab to market, developing additional business incubators, and finding new sources of start-up funds.

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Appendix B

Louisiana EPSCoR

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH VOL.6 NO.11 NOVEMBER 2009

And Speaking of Science...

Slime and Science A Winning Combo

Slime is the scientific tool of choice of a Tulane professor when she addresses elementary students.

Why Slime? "Slime makes for a really nice demonstration and shows children that science can be fun. It allows them to think like a scientist—to develop a hypotheses and test it experimentally—and they can pick it up and play with it too," says Dr. Diane Blake.

"If you want to interest kids in science I really think you have to reach them at an early age. I like to do presentations for elementary school students while they are still excited about learning and haven't reached the jaded teenage years.

"I have had audiences as young as six and as old as 10-12," continues the Tulane University Health Sciences Center Professor of Biochemistry, who plays a major role in the Biosensor Development team of LA EPSCoR's current Research Infrastructure Improvement Grant, CyberTools, from the National Science Foundation EPSCoR program.

Prior to her SoS presentations, parents are given a permission slip indicating that their children may or may not take their slime home with them. "I am really impressed by Louisiana parents; not a single one has refused. That wasn't true when I was in Tennessee; some parents were more timid and withheld their permission," adds Dr. Blake, who was on the faculty of Meharry Medical College in Nashville before joining Tulane in 1993.

Dr. Diane Blake, Tulane University Health Sciences Center Professor of Biochemistry and an SoS speaker.

Although very busy with her research, Dr. Blake says she enjoys making SoS presentations so much that she makes time for them. This academic year she has given presentations at elementary schools in Belle Chase, Franklinton, Chalmette and LaPlace.

"One of my graduate students, Marcia Henry, volunteered to assist me with the presentations. She impresses the students that girls and African Americans can have a major science career.

"The numbers of scientists and engineers graduating from U.S. institutions has been declining for years, and the nation has had to turn to foreign scientists to fill the gap, she adds.

"There are a lot of reasons for this decline, but I think a lack of interest in science and the limited numbers of scientists who can serve as role models have contributed to the problem.

"I am hoping that my contributions to the SoS program can play a small role in increasing the interest of Louisiana students in science as a profession."

Touting Science

LA EPSCoR's Speaking of Science (SoS) program for K-16 provides students in every type of school exposure to the State's best researchers.

Its purpose is to increase public awareness of exciting Research and Development in Louisiana, spark the interest of students in science and engineering (S&E) professions and showcase the excellence of Louisiana's leading S&E faculty and professionals.

SoS speakers are available free of charge to speak to students, educators, parents, and general audiences throughout Louisiana on a variety of topics.

Since 2001, 614 presentations to over 24,000 students have been made by SoS speakers. For information on SoS speakers and their topics and/or to make arrangments for a speaker, contact Ms. Susan Jernigan at 225.342.4253, ext. 673, or susan.jernigan@la.gov.

The accompanying articles focus on SoS presenter Dr. Diane Blake, Tulane University Health Sciences Center, and letters she received from a 4th grade class.

Letters, She Gets Lots & Lots of Letters

Excerpts from 21 letters thanking Dr. Blake for her presentation to a fourth grade class at LaPlace's John L. Ory Elementary School:

"Making slime was not just fun it was educationally fun! When I got home I did a trick with it…thank you for letting us bring it home. I hope you can come back next year."

"It was neat when you talked about atoms. You taught me a lot of science… The experiment was a success…The hypothesis was brilliant. You are the best scientist ever. My mom was freaked out by the slime."

"I still love my slime…Also, how is Tulane? Did you know I really like Tulane? How is the project of yours coming?...I hope to go to Tulane some day."

"I loved playing with the slime. I think you are a great scientist...It was a great experiment…I enjoyed having fun with you."

"Thank you for teaching us about atoms and matter. I was really interested... I scared my brother with the slime…Did food dye make the slime green?"

"It's a good thing you talked about atoms

Letters, Continued page 2

Letters Continued

and matter because we are having a big test on it soon so that really helped brush up my knowledge on it. The slime was the best part of the experiment."

"Even though I wasn't there I still appreciate you for coming. My friends told me that you were great and taught us a lot of things…I was really depressed because I couldn't come. I would have learned a lot of things...how to make slime. I hope you will come again and I won't be sick."

"I was amazed with the experiment… Before you came I didn't know about molecules and hypothesis at all…You taught me a whole lot of information…I didn't touch my slime but I will touch it today."

"The people in my family are scared of the slime, but my dad was not scared. My dog was trying to eat the slime, but I stopped her...My sister likes touching the slime, but she thinks it is gross. My mom thinks the slime is cool, but she does not want to touch it. My dad has not touched it yet, but I will let him touch the slime someday… Thanks for teaching us all about atoms, slime, molecules and hypothesis."

"I showed my mom and dad the slime and told them about how we made it...It was a great experiment that we did…You are a very great scientist."

"I showed my mom and dad the slime and I told them to touch it and they said it was slimy...I would make slime again if I remembered what was in it."

"When I got home I told it to my parents. I told them that I needed to show them how to make slime. I appreciate you teaching me slime and the tools for making it."

"When I brought my slime home my mom touched it and screamed...The experiment that we made was a life learning skill for me. Can you come back next year?

"I really love the experiment that we did. It was so much fun! I enjoyed playing with my slime when I got home…You are the best scientist I ever met. It was the best experiment I ever made. I really appreciated it."

"My sister wanted to do the experiment too so I let her play with me. The slime felt sticky...My sister…made a nose with part of the green slime. I made a green hand when I put the slime over my hand. I have to admit it was very funny. Atoms seem amazing now."

"I learned tons of things about my slime. It carried out all of the characteristics of water, but at reduced speed…When I tore it to pieces and put my slime in the beaker, in time the pieces came together to form one whole piece. If you poke a hole in it, the slime slowly fills the whole. Just as liquid, the slime takes the form of its container...I will treasure mine forever and ever."

Students at Our Lady of Prompt Succor in Chalmette hard at work making slime.

"When I was doing the experiment I felt like a scientist doing an experiment. Now my sister wants some slime too."

"...Another part I like out of the experiment is when you taught my classmates and I about atoms, molecules and hypothesis. When I got home I showed my mom the slime and I told her how we made it…"

"I learned a lot…I learned that atoms are the building blocks of life. It was extraordinary when you put a drop of stuff in my container and I could feel it before it formed...I learned some new things like new gases called helium, oxygen and carbon. When I got home I told my family how to make homemade slime…"

"You are a great scientist. When I went home I told my mom and dad how we made it. The experiment that we made was really fun."

"The best part I liked about making slime is when we stirred it. The slime was really sticky. When you told us all the things about atoms I was surprised. I did not believe you can make slime out of borax and glue at your house. I asked my mom if I could make that and she said yes. It came out white. Then my sister spilled it on the floor."

Homemade Slime Recipe

Interested in making slime at home? For a popular, easy recipe calling for Elmer's glue and borax, Dr. Blake suggests you go to http://www.stevespanglerscience.com/experiment/00000039.

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Appendix C

Evaluation Work Plan

The goal-based evaluation work plan is based on the goals and strategies provided in the Louisiana Track 1proposal. OEIE facilitated part of the strategic planning process for LA-SiGMA. As part of this service OEIE developed a logic model for the entire project. The logic model served to identify broader impacts and evaluation metrics for measurement. The nine identified LA-SiGMA project teams used this logic model to align individual team goals and measures to the overall project goals and to ensure overall project goals and measures were embedded in individual team plans where appropriate. The following evaluation questions were developed by OEIE to guide the evaluation of the project.

1. Who are the LA EPSCoR participants?
    a. Male/female
    b. Ethnicity
    c. Institutions (research, K-12, Community College, HBU)
    d. LA-SiGMA initiatives
    e. Disciplines
2. To what extent were project initiatives implemented (fidelity of implementation)?
3. What are the short term and long term impacts of project initiatives?
    a. How has the multi-scale computational tools developed by LA-SiGMA transformed advances in electronic materials, energy materials, and biomolecular materials?
    b. How has expanded and enhanced computational tools assisted LA researchers and students? OR How have new paradigms in computational science been used to advance multi-scale computational tools created by LA-SiGMA?
    c. To what extent have LA-SiGMA researchers established interdisciplinary and interinstitutional collaborations that enhance the work of the project?
    d. To what extent has the project contributed to a diverse and technically trained workforce?
        i. How has STEM participation been increased?
        ii. What are skills and knowledge gained by project participants?
    e. How has the project engaged the Lousiana community in outreach and dissemination of efforts?
        i. Has outreach activities led to broadening participation?
        ii. What skills and knowledge were gained?
    f. To what extent have partnerships (interdisciplinary, interinstitutional, national, international, business/industry) been created and expanded?
    g. To what extent has LA been successful in enhancing the competitiveness of LA research enterprises?
        i. How have number and types of funding increased?
        ii. How are EPSCoR funds leveraged?
    h. What mechanisms have been put in place to ensure continued availability and accessibility to project initiatives?

To ease in the transition to the implementation of an evaluation work plan, OEIE designed the evaluation work plan using the nine team goal areas identified in the strategic plan. The evaluation methods and metrics and the desired outcomes were derived from the proposal and from the logic model and evaluation questions developed by OEIE.

The evaluation **work plan** consists of a series of matrices that provide the strategies, types of data to be gathered, method of evaluation and timeline, criteria for accomplishment of outcomes desired, and level of effort of the proposer (OEIE) and Louisiana Board of Regents (PI) for the following LA-SiGMA goals:

- **Science Driver 1 – Electronic and Magnetic Materials**: Transform the field by extending many-body formalism and first principles methods to much larger length scales than currently possible.
- **Science Driver 2 – Materials for Energy Storage and Conversion**: Develop and apply multi-scale computations tools to study materials for energy generation, storage, and conversion.
- **Science Driver 3 - Biomolecular Materials**: Develop, apply, and validate experimentally multi-scale computational tools for the design of novel vehicles for drug delivery and other applications.
- **Cyberinfrastructure**: Develop multi-scale formalisms, algorithms, and codes for materials simulations and modeling; leverage existing tools and make optimum use of the next generation computing environments.
- **Diversity**: Dramatically increase the number of underrepresented minorities (URM) and women in LA-SiGMA.
- **Workforce Development**: Address many levels of the educational ladder through training and educational activities.
- **External Engagement**: Utilize a multiplicity of methods to engage researchers, K-12, community colleges, industry, and the general public.
- **Sustainability: Research Infrastructure**: Initiate and implement programs designed to propel Louisiana faculty to national competitiveness.
- **Sustainability: Faculty Development**: Compete effectively for an NSF-funded Center of Excellence in Materials Science Research & Education.

A key data collection tool referenced in Louisiana's EPSCoR proposal is the creation of a web-based data collection system (page 20 of funded proposal). The evaluation work plan has incorporated this data collection technique. The evaluation work plan specifically lists the data to be collected via the web-based system. OEIE collaborates with the internal evaluation team to ensure all relevant data is collected through this system. The web-based data collection system is designed to store all project participant data. This structure will allow EPSCoR to aggregate data as needed for reporting. Reports are designed to generate the NSF Appendices.

The data collection system also tracks the yearly status of each student participant (enters college, continues in college, intern/externships, graduates, or transfers, career choice). Data for students involved in Science Drivers will be obtained from the researchers. Data for students in educational and workforce initiatives will be obtained by the External Engagement and Workforce Coordinator (at LSU) and/or External Engagement/Assessment Coordinator (at LA Tech)..

Below is an example of the types of data to be collected by the web-based system (specifics are being determined in collaboration with internal evaluation team/database creation team).

- Participant demographics
- Publications (peer-reviewed, regional publication, brochure, etc.).
- Presentations (invited, academic conferences, LPB TV, public audience, industrial audience, etc.)
- Proposals (amount, funder, status (submitted, funded, not funded, etc.))
- Patents (royalties, licenses, etc.)
- Codes/algorithms cited/ported/used
- Awards /Honors
- Graduate Committee service
- LA-SiGMA courses taught or facilitated
- Recruitment strategies used
- Mentoring strategies used
- Types of collaborations with other teams, business and industry (name of collaborators, types of collaboration, etc.)
- Use of LONI, Cactus, and CyberTools
- Use of HD Polycomm and other communications technology
- Name, institution, and demographics of students/postdocs/researchers working for researcher
- Milestone Checklist: Team leader indicates progress/completion of annual milestones

Data for the evaluation will be gathered from a variety of methods: participant reporting via web-based data collection system, project records, observation, participation in meetings, and survey/interview of participants. There are several strategies that require survey/interview of participants specifically for the strategy; however, where appropriate OEIE will cluster similar type questions together in one survey/interview to gather perceptions from participants. For example, rather than create a survey for each strategy related to cyberinfrastructure, one survey/interview will be created that obtains feedback from researchers regarding multiple strategies from multiple initiatives related to the infrastructure and its impact on the project. This reduces participant burden of responding to multiple data collections. If feasible, rather than a survey/interview, the researchers may participate in a focus group held during the annual conference. The focus group would extract the same process and impact data as would the individual survey/interview.

The evaluation work plan details the evaluation methodology and metrics to assess each goal area and strategies within the goal areas. Embedded in the work plan are metrics that when aggregated will provide evidence to support the project's overarching goals. Some of the metrics used to measure overall impact that were listed on page 21 of the Louisiana EPSCoR proposal were integrated into the work plan where most appropriate and appear in yellow highlight.

The last column of the work plan delineates the level of effort and responsibilities of OEIE and the LA EPSCoR PI. The term "PI" in the work plan refers to responsibilities of the PI (LA EPSCoR Track 1 Principal Investigator) and the State (Louisiana Board of Regents).

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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- One survey/interview protocol will be created that incorporates all aspects to be evaluated. This eliminates participants from being burdened with individual surveys for each strategy.

Science Driver 1: Electronic and Magnetic Materials				
GOAL: Transform the field by extending many-body formalism and first principles methods to much larger length scales than currently possible.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Recruit, engage, and mentor a gender and ethnically diverse group of students and postdocs.	Project Database (Name, institution, major, Demographics of participants; Materials/strategies used for recruitment; Materials/strategies used for mentoring; College enrollment and graduation of students; Career selection of students/postdocs) Survey/interview of researchers and students/postdocs	Descriptive and content analysis annually	Years 1-5: Documented demographic breakdown of SD1 participants; Strategies used for effective. recruitment; Strategies used for effective mentoring. Years 2 – 5: Retention rate of project students from two- to four- year college, to graduate school, to career. [Disaggregated by major, gender and URM]. Years 1-5: Documented student/postdoc and researcher perceptions of best practices in recruitment, mentoring, and retention, barriers, and suggestions.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in project database; Create survey/interview and administer; Analyze database and survey/interview data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data submitted to database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.
Ensure close-knit collaboration with CSci and CTCI teams.	Project Database (Names and institutions of collaborators; Types of collaborations) Project Records (Meeting agendas & minutes) Survey/interview of researchers Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented number and types of collaborations. Years 1-5: Documented researcher perceptions of collaboration, barriers, and suggestions.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in project database; Create survey/interview and administer; Analyze database, project records, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE information from database and project records; Provide contact information for researchers; Pre-notify researchers that survey/interview is endorsed by PI.

Continued - Science Driver 1: Electronic and Magnetic Materials				
GOAL: Transform the field by extending many-body formalism and first principles methods to much larger length scales than currently possible.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Employ large scale computing and develop new, more efficient algorithms for the study of electronic and magnetic materials.	Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms cited/ported/used; Team Leader milestone checklist) Fidelity of Implementation (FOI) rating for components (Training, materials provided, alignment to proposed program, participant exposure, participant responsiveness)* Survey/interview of researchers and students/postdocs Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms cited/ported/used. Years 1-5: Fidelity of Implementation Ratings by site for each FOI component and overall FOI. Years 1-5: Documented evidence of participant perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create survey/interview and administer; Calculate FOI ratings; Analyze database, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

*Dane, A.V., and Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review, 18*, 23-45.

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- One survey/interview protocol will be created that incorporates all aspects to be evaluated. This eliminates participants from being burdened with individual surveys for each strategy.

Science Driver 2: Materials for Energy Storage and Conversion				
GOAL: Develop and apply multi-scale computations tools to study materials for energy generation, storage, and conversion.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Recruit, engage, and mentor a gender and ethnically diverse group of students and postdocs.	Project Database (Name, institution, major, demographics of participants; Materials/strategies used for recruitment; Materials/strategies used for mentoring; College enrollment and graduation of students; Career selection of students/postdocs) Survey/interview of researchers and students/postdocs	Descriptive and content analysis annually	Years 1-5: Documented demographic breakdown of SD1 participants; Strategies used for effective recruitment; Strategies used for effective mentoring. Years 2 – 5: Retention rate of project students from two- to four- year college, to graduate school, to career. [Disaggregated by major, gender and URM]. Years 1-5: Documented student/postdoc and researcher perceptions of best practices in recruitment, mentoring, and retention, barriers, and suggestions.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in project database; Create survey/interview and administer; Analyze database and survey/interview data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data submitted to database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.
Develop algorithms that combine chemistry and physics of energy storage.	Project Records (Meeting agendas and meeting minutes) Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms cited/ported/used; Institutions of collaborators and types of collaborations; Team Leader milestone checklist) Fidelity of Implementation (FOI) rating for components (Training, materials provided, alignment to proposed program, participant exposure, participant responsiveness)*	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms cited/ported/used; Number and types of collaborations. Years 1-5: Fidelity of Implementation Ratings by site for each FOI component and overall FOI.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create survey/interview and administer; Calculate FOI ratings; Analyze project records, database, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

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Continued - Science Driver 2: Materials for Energy Storage and Conversion				
GOAL: Develop and apply multi-scale computations tools to study materials for energy generation, storage, and conversion.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Continued - Develop algorithms that combine chemistry and physics of energy storage.	Survey/interview of researchers and students/postdocs Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented evidence of participant perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	
Develop new force fields for catalytic processes based on DFT functional.	Project Records (Meeting agendas and meeting minutes) Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms cited/ported/used; Institutions of collaborators and types of collaborations; Team Leader milestone checklist) Fidelity of Implementation (FOI) rating for components (Training, materials provided, alignment to proposed program, participant exposure, participant responsiveness)* Survey/interview of researchers and students/postdocs Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms cited/ported/used; Number and types of collaborations. Years 1-5: Fidelity of Implementation Ratings by site for each FOI component and overall FOI. Years 1-5: Documented evidence of participant perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create survey/interview and administer; Calculate FOI ratings; Analyze project records, database, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

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WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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- One survey/interview protocol will be created that incorporates all aspects to be evaluated. This eliminates participants from being burdened with individual surveys for each strategy.

Science Driver 3: Biomolecular Materials				
GOAL: Develop, apply, and validate experimentally multi-scale computational tools for the design of novel vehicles for drug delivery and other applications.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Recruit, engage, and mentor a gender and ethnically diverse group of students and postdocs.	Project Database (Name, institution, major, demographics of participants; materials/strategies used for recruitment; Materials/strategies used for mentoring; College enrollment and graduation of students; Career selection of students/postdocs) Survey/interview of researchers and students/postdocs	Descriptive and content analysis annually	Years 1-5: Documented demographic breakdown of SD1 participants; Strategies used for effective recruitment; Strategies used for effective mentoring. Years 2 – 5: Retention rate of project students from two- to four- year college, to graduate school, to career. [Disaggregated by major, gender and URM]. Years 1-5: Documented student/postdoc and researcher perceptions of best practices in recruitment, mentoring, and retention, barriers, and suggestions.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in project database; Create survey/interview and administer; Analyze database and survey/interview data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data submitted to database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.
Study unimolecular drug delivery vehicles.	Project Records (Meeting agendas and meeting minutes) Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms cited/ported/used; Institutions of collaborators and types of collaborations; Team Leader milestone checklist) Fidelity of Implementation (FOI) rating for components (Training, materials provided, alignment to proposed program, participant exposure, participant responsiveness)*	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms cited/ported/used; Number and types of collaborations. Years 1-5: Fidelity of Implementation Ratings by site for each FOI component and overall FOI.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create survey/interview and administer; Calculate FOI ratings; Analyze project records, database, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

*Dane, A.V., and Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review*, *18*, 23-45.

Continued - Science Driver 3: Biomolecular Materials				
GOAL: Develop, apply, and validate experimentally multi-scale computational tools for the design of novel vehicles for drug delivery and other applications.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Continued – Study unimolecular drug delivery vehicles.	Survey/interview of researchers and students/postdocs Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented evidence of participant perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	
Study self-assembled vehicles for drug delivery and other applications.	Project Records (Meeting agendas and meeting minutes) Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms cited/ported/used; Institutions of collaborators and types of collaborations; Team Leader milestone checklist) Fidelity of Implementation (FOI) rating for components (Training, materials provided, alignment to proposed program, participant exposure, participant responsiveness)** Survey/interview of researchers and students/postdocs Observations and field notes from team meetings	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms cited/ported/used; Number and types of collaborations. Years 1-5: Fidelity of Implementation Ratings by site for each FOI component and overall FOI. Years 1-5: Documented evidence of participant perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create survey/interview and administer; Calculate FOI ratings; Analyze project records, database, survey/interview and observation data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

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WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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- Demographics refer to gender, ethnicity, race and disability.
- One survey/interview protocol will be created that incorporates all aspects to be evaluated. This eliminates participants from being burdened with individual surveys for each strategy.

Cyberinfrastructure: Computational Team				
GOAL: Develop multi-scale formalisms, algorithms, and codes for materials simulations and modeling; leverage existing tools and make optimum use of the next generation computing environments.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Leverage LONI facilities (4.5M service units).	Project Database (Researchers report LONI use) Project Records (SU's assigned to SD teams)	Descriptive and content analysis annually	Year 1, 2nd quarter: 60% of 4.5M SU's assigned to SD teams. Year 1 – 5: 100% assigned to SD teams; Documented use reported by researchers.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze database and records data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database.
Build upon LSU CCT and existing tools like Cactus and CyberTools.	Project Database (Checklist of tools used by researchers) Project Records (List of LA-SiGMA sites with HD video access)	Descriptive and content analysis annually	Year 2: All LA-SiGMA sites with HD video access. Years 1-5: Documented use of cyberinfrastructure tools used by researchers. Year 5: 25% of SD researchers use Cybertools.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze database and records data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database.
Develop formalism, algorithms, codes and expertise on next-generation computers and migrate to National Leadership Class computers.	Project Database (Researchers report codes/algorithms ported) Survey of students	Descriptive and content analysis annually	Years 1- 5: Documented list of codes/algorithms ported. Year 3: More than three codes ported to National Leadership Class machines. Years 1-5: Documented evidence of student experiences on next-generation computers and persistence toward major/career path.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey; Analyze project database and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Provide contact information for students; Pre-notify students that survey is endorsed by PI.

Continued – Cyberinfrastructure: Computational Team				
GOAL: Develop multi-scale formalisms, algorithms, and codes for materials simulations and modeling; leverage existing tools and make optimum use of the next generation computing environments.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Distribute and promote LA-SiGMA software through web portals.	Project Database (Publications, presentations, patents, awards, honors, proposals, codes/algorithms released/used; Institutions of collaborators and types of collaborations; Team Leader milestone checklist) Examination of portals.	Descriptive and content analysis annually	Years 1-5: Documented evidence of milestones met; Number and types of publications, presentations, proposals, patents, awards/honors, and codes/algorithms released/used; Number and types of collaborations. Year 3: Four codes, with full documentation, publically available.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze database and portal data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and access to portal.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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- If subcontractors providing the program already have assessments, OEIE will review to determine if data may be used. If needed, OEIE will supplement the program assessment already provided by the subcontractor.
- The focus is on STEM majors and careers; however, data will be collected on all majors reported by participants and disaggregated for reporting.

Diversity				
GOAL: Dramatically increase the number of underrepresented minorities (URM) and women in LA-SiGMA. Note: The overall project goal is 100% of women and URM in the project graduate in 6-years. Since this is past the duration of the project, OEIE will track students during years 1-5; however, reporting on this goal will occur after the project.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Establish a Diversity Advisory Council.	Project Database (Names, institution, and demographics of council members) Project Records(Meeting agendas/minutes)	Descriptive and content analysis annually	Year 1: Council established. Years 2-5: Meetings conducted.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze database and project record data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records.
Provide financial incentives for pursuing advanced education.	Project Database (Names, institutions, demographics of students in LA-SiGMA who receive supplements; College enrollment and graduation of students; Career selection of students) Project Records (Recruiting materials used; NSF Fellowships secured)	Descriptive and content analysis annually	Year 1-5: Number of participants and amount of stipends distributed; Documented demographics of recipients; Types of recruiting strategies used. Years 2 – 5: Number of project students from year-to-year in graduate school and careers (academic, industry, government). [Disaggregated by major, gender and URM]. Year 3: Reach 30% women and 15% URM graduates in Alliance. Year 5: Reach 40% women and 20% URM graduates in Alliance. Year 5: At least 20 students secure NSF Graduate Fellowships.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit and administer survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Provide contact information for participants; Pre-notify participants that survey is endorsed by PI.

Continued - Diversity				
GOAL: Dramatically increase the number of underrepresented minorities (URM) and women in LA-SiGMA. Note: The overall project goal is 100% of women and URM in the project graduate in 6-years. Since this is past the duration of the project, OEIE will track students during years 1-5; however, reporting on this goal will occur after the project.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Continued - Provide financial incentives for pursuing advance education.	Survey* of participants	Descriptive and content analysis annually	Years 1-5: Documented evidence of participant perceptions of progress, persistence in major/graduation, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	
Develop of role models.	Project Database (Names, institutions, demographics of students in LA-SiGMA who receive supplements; Mentoring strategies used; College enrollment and graduation of students; Career selection of students) Project Records (Mentoring materials used) Survey* of participants	Descriptive and content analysis annually	Year 1 – 5: Number of students supported; Documented demographics of students; Types of mentoring strategies used. Years 2 – 5: Number of project students from year-to-year in graduate school and careers (academic, industry, government). [Disaggregated by major, gender and URM]. Beginning Year 3: Reach 30% women and 8% URM faculty in LA-SiGMA Year 5: Reach 40% women and 12% URM faculty in LA-SiGMA. Years 1-5: Documented evidence of participant perceptions of progress, persistence in major/graduation, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit and administer survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Provide contact information for students; Pre-notify students that survey is endorsed by PI.

*Since these strategies are related in the proposal, one survey will be created to access both strategies.

Continued - Diversity				
GOAL: Dramatically increase the number of underrepresented minorities (URM) and women in LA-SiGMA. Note: The overall project goal is 100% of women and URM in the project graduate in 6-years. Since this is past the duration of the project, OEIE will track students during years 1-5; however, reporting on this goal will occur after the project.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Create/expand pipelines to graduate school through dual degree programs around the state.	Project Database (Names, institutions, status in school, Demographics of students in programs contacted by LA-SiGMA) Project Records (List of dual degree programs contacted by LA-SiGMA; Articulation agreements; Dual degree programs created) Survey of participants	Descriptive and content analysis annually	Years 1-5: Number of students in graduate programs who were recruited by LA-SiGMA. Year 2: Five students recruited. Years 2 – 5: Number of project students from two- to four-year college, to graduate school, to career (academic, industry, government). [Disaggregated by major, gender and URM]. Year 5: Fifteen students recruited. Years 1-5: Documented evidence of participant perceptions of progress, persistence in major/graduation, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit and administer survey; Analyze database, project record, and survey data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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- If subcontractors providing the program already have assessments, OEIE will review to determine if data may be used. If needed, OEIE will supplement the program assessment already provided by the subcontractor.
- The focus is on STEM majors and careers; however, data will be collected on all majors reported by participants and disaggregated for reporting.
- Surveys will be distributed to participants in each strategy to assess impact of the particular strategy. Similar questions related to project goals will be asked in each survey with responses aggregated to assess overall impact of strategies.

Workforce Development				
GOAL: Address many levels of the educational ladder through training and educational activities.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Expose middle and high school students to computational and experimental materials through open houses and summer workshops.	Project Database (Name, grade level, school, demographics of open house and summer workshop attendees; Enrollment in college and major) Project Records (Dates, school names, and locations of open houses and summer workshops) Pre-post survey of summer workshop students	Descriptive and content analysis annually	Year 1: 100 open house attendees; 40 students in summer workshops. Years 2-5: Increases in open house and summer workshop attendance from Year 1 (baseline); Number of students from activities that enroll in college (by major). Years 1-5: Documented changes in summer workshop student skills, knowledge, and/or attitudes toward major/career path.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit and administer survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Ensure survey is administered at summer workshop and return responses to OEIE.
Provide Research Experiences for Teachers (RET) summer workshops to grade 6-12 and two-year college teachers.	Project Database (Name, school, demographics of teachers) Project Records (Agenda and location of each summer workshop; Classroom observation of number and types of modules used by teachers) Pre/post workshop survey of teachers with one year follow-up survey	Descriptive and content analysis annually	Years 1-5: 20 teachers each year participate of which 15% are from two-year institutions Years 2-5: Documented use of modules by teachers; Documented changes in teacher knowledge and application of modules; Documented evidence of RET expanded to other disciplines and two –year institutions. Years 1 – 5: Documented evidence of changes in teacher knowledge and application of discovery-based strategies, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit survey; Analyze database, project records, observation, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Ensure survey is administered at summer workshop and return responses to OEIE.

Continued - Workforce Development				
GOAL: Address many levels of the educational ladder through training and educational activities.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Multiple programs will serve two –year college students.	Project Database (Name, school, demographics enrollment in 4-year college, graduation and career choice of students) Project Records (Syllabus/Agenda, LA-SiGMA institutions and personnel involved for each program (short-course, Beowulf Boot Camp)) Pre/post program (short course, Beowulf) survey of students	Descriptive and content analysis annually	Year 1: Documented evidence of short coarse pilot program; Five two-year college students attend Beowulf Boot Camp. Year 3: Documented expansion of 2+2 programs to LA-SiGMA institutions. Year 5: Transfer and retention of two-year college participants into 4-year institutions, to career (academic, industry, government). Years 1-5: Documented changes in student skills, knowledge, and/or persistence toward major/career path, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Ensure survey is administered at programs and return responses to OEIE.
Undergraduates at two –and four-year institutions will participate in Research Experiences for Undergraduates (REUs).	Project Database (Name, institution, demographics, enrollment in college (two-to four or continuing in four), graduations, and career choice of students) Survey of students	Descriptive and content analysis annually	Years 1-5: 30 REU participants each year*; Retention of students in college. Year 5: 50% of all REU students pursue higher education and 25% of two-year college REU students enter degree program at four-year institution. Years 1-5: Documented changes in student skills, knowledge, and/or persistence toward major/career path, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create/edit survey; Analyze database and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database; Ensure survey is administered and return responses to OEIE.

*30 is stated as the milestone per year on page 17 of the proposal. Page 23 states 50 students per year.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

Continued - Workforce Development				
GOAL: Address many levels of the educational ladder through training and educational activities.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Provide graduate courses in materials science.	Project Database (Name, school, demographics, graduation and career choice of students) Project Records (Syllabus/Agenda, LA-SiGMA institutions and personnel involved, and technology used for each course; Graduate curriculum catalog from each LA-SiGMA institution) Survey of students	Descriptive and content analysis annually	Year 1-5: 40 enrolled statewide. Year 1: Documented evidence of broadcast of three courses via HD synchronous video statewide. Year 2: Integration into graduate curricula at two campuses. Year 3: Integration into graduate curricula at LA-SiGMA campuses. Years 2-5: Graduates and career choices (academic, industry, government). Years 1-5: Documented changes in student skills, knowledge, and/or persistence toward major/career path, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Provide contact information for students; Pre-notify students that survey is endorsed by PI.
Postdocs and graduate students participate in workshops.	Project Database (Name, institution, demographics, intern/externships, graduation and career choice of students) Project Records (Agenda of workshops) Survey of students	Descriptive and content analysis annually	Years 1-5: Number of participants at workshops; Number of intern/externships and extended visits. Year 2-5: Graduates and career choices (academic, industry, government). Years 1-5: Documented changes in student skills, knowledge, and/or persistence toward major/career path, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey; Analyze database, project records, and survey data; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database and records; Provide contact information for students; Pre-notify students that survey is endorsed by PI.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

- PI may provide data directly, by posting on Louisiana EPSCoR website, or by providing OEIE access to database log-ins.
- Demographics refer to gender, ethnicity, race and disability.
- One survey/interview will be created that incorporates all aspects to be evaluated. This eliminates participants from being burdened with individual surveys for each strategy.

External Engagement				
GOAL: Utilize a multiplicity of methods to engage researchers, K-12, community colleges, industry, and the general public.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Leverage multiple avenues to engage the general public.	Project Database (Date and titles of presentations to LPB, public and industry audiences, Speaking of Science Speakers Bureau reported)	Descriptive and content analysis annually	Years 1-5: Documented evidence of at least one LPB appearance each year; One public lecture each quarter; One lecture to industrial audiences each quarter; Two LA-SiGMA speaker to Speaking of Science Speakers Bureau each year.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze data obtained from database; Summarize for APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE data from project database.
Create a web portal for distribution of project deliverables.	Project Records (Portal traffic) Examination of portal Survey/interview of researchers	Descriptive and content analysis annually	Year 1: Documented evidence of web portal in operation. Years 2-5: Traffic increases 20% each year from baseline Year 1 (zero traffic). Years 2-5: Documented evidence of researcher perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Create and administer survey/interview; Analyze project record, portal, and survey/interview data; Summarize in APR. PI: Provide OEIE project records and access to portal; Provide contact information for researchers; Pre-notify researchers that survey/interview is endorsed by PI.
Create a repository and version control system for code development and distribution.	Project Records (Number of codes downloaded) Survey/interview of researchers	Descriptive and content analysis annually	Year 1: Documented evidence of SVN created. Years 2-5: Documented evidence upgrades to SVN. Years 3-5: 100 code downloads per year. Years 2-5: Documented evidence of researcher perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Create and administer survey/interview; Analyze project record and survey/interview data; Summarize in APR. PI: Provide OEIE project records; Provide contact information for researchers; Pre-notify researchers that survey/interview is endorsed by PI.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

Continued - External Engagement				
GOAL: Utilize a multiplicity of methods to engage researchers, K-12, community colleges, industry, and the general public.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Leverage cyberinfrastructure to facilitate communication.	Project Database (Technology used for collaboration) Project Records (Purchase receipts of materials; Dates of installation) Survey/interview of researchers	Descriptive and content analysis annually	Year 1: Documented evidence of Polycomm HD stations purchased and installed at participating institutions. Years 2-5: Documented evidence of researcher perceptions of progress, utilization and satisfaction of project, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey/interview; Analyze project database, records, and survey/interview data; Summarize in APR. PI: Design and maintain project database that uses project categories for reporting; Provide OEIE project database and records data; Provide contact information for researchers; Pre-notify researchers that survey/interview is endorsed by PI.
Use Newsletter/Brochures/Highlights to publicize LA-SiGMA activities.	Project Records (EPSCoR newsletter with LA-SiGMA highlights; Citation of regional/national press coverage)	Descriptive and content analysis annually	Years 1-5: Documented evidence of at least two LA-SiGMA highlights featured in EPSCoR newsletter each year; At least one story picked up by regional/national press.	OEIE: Analyze project records data and summarize in APR. PI: Provide OEIE project records.
Create formal mechanisms for engagement with NSF.	Project Records (Dates of meetings with NSF/other funding agencies and names of personnel involved; Copies of highlights sent to NSF)	Descriptive and content analysis annually	Years 1-5: Documented evidence of interactions with NSF; At least three research highlights reported to NSF each year.	OEIE: Analyze project records data and summarize in APR. PI: Provide OEIE project records.

Continued - External Engagement				
GOAL: Utilize a multiplicity of methods to engage researchers, K-12, community colleges, industry, and the general public.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Establish new national and international collaborations.	Project Database (Name, institution, demographics of faculty and students collaborating with international labs; Types of collaborations; Results of collaborations (publications, presentations, funding, etc.)) Project Records (Application and funding status of IGERT) Survey/interview faculty and students	Descriptive and content analysis annually	Years 1-5: Documented evidence of at least one faculty and one student working in an international lab for one or more weeks each year and types of collaborations. Years 1-5: More than 5 papers or conference presentations resulting from internships. Year 2: Statewide IGERT. Year 5: At least 10 industrial grants to support research in materials science to participating intuitions. Years 1-5: Documented evidence of faculty and student perceptions of impact, barriers and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey/interview; Analyze project database, records, and survey/interview data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and records data; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.
Create mechanism for internal communications.	Project Database (Name, institution, demographics of participants at EPSCoR sponsored meetings) Project Records (Agenda from each meeting) Survey/interview of participants	Descriptive and content analysis annually	Years 1-5: Documented evidence of participation at EPSCoR meetings; Documented evidence of annual statewide conference, up to four grant-writing workshops, three theme-specific workshops. Years 1-5: Documented evidence of participant perceptions of internal communication, barriers and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey/interview; Analyze project database, records and survey/interview data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and records data; Provide contact information for participants; Pre-notify participants that survey/interview is endorsed by PI.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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Sustainability – Research Infrastructure				
GOAL: Compete effectively for an NSF-funded Center of Excellence in Materials Science Research & Education.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Establish multi-institutional interdisciplinary research teams.	Project Records (Team meeting agenda, minutes, attendance)	Descriptive and content analysis annually	Years 1-5: Documented number of research team meetings and composition of teams.	OEIE: Analyze project record data; Summarize in APR. PI: Provide OEIE project record data.
Establish co-mentoring of students and postdocs.	Project Database (Name, institution, Demographics of LA-SiGMA graduate committee participants) Project Records (Institutional policies for graduate committee assignments)	Descriptive and content analysis annually	Years 1 – 5: Documented composition of LA-SiGMA graduate committees; Campus policies related to multi-institutional committees.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze project database and record data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and record data.
Enrich statewide Materials Science education with new course and curricula.	Project Database (Name, institution of faculty teaching new courses) Project Records (Meeting minutes; Syllabus from courses; PhD program approval documentation)	Descriptive and content analysis annually	Years 1-5: Number of courses delivered statewide by LA-SiGMA faculty; Documented efforts to get PhD programs approved.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze project database and record data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and record data.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

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Sustainability – Faculty Development				
GOAL: Initiate and implement programs designed to propel Louisiana faculty to national competitiveness.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Increase collaboration in research.	Project Database (Name, institution, demographics, joint publications, presentations, proposals, other collaborations of participants)	Descriptive and content analysis annually	Years 1-5: Documented 10 major collaborative grants with interdisciplinary and interinstitutional researchers; Documented number of publications, presentations, proposals, other collaborations with multi-institutional participation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Analyze project database data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database data.
Increase visibility of Louisiana faculty.	Project Database (Name, institution, publications and presentations of researchers) Project Records (Stories in papers, newsletters, newscasts, pod casts, websites (media releases from EPSCoR or not solicited by EPSCoR)) Citations of researcher work	Descriptive and content analysis annually	Years 1-5: Documented number of national/international publications and invited presentations to national/international conferences; Number of citations for LA-SiGMA researcher's work; Number of media stories about LA-SiGMA faculty.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Search for citations; Analyze project database and report data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and record data.
Stimulate national competitiveness of tenured and tenure-track faculty.	Project Database (Name, institution, publications, presentations, proposals, participation in project of researchers) Project Records (Pre-proposals for centers; Agendas for site visits) Impact factor of journals US average funding rate	Descriptive and content analysis annually	Years 1-5: Documented number of faculty applying to LA-EPSCoR programs; Number of publications by impact factor of journal; Number and amounts of new proposals and funding associated with programs. Years 1-5: Funding rate of federal proposals submitted meets at least the US average. Year 5: Four accepted pre-proposal for centers; Two site visits for federally funded centers.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Obtain journal impact factors and US funding rate; Analyze project database and report data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and record data.

WORK PLAN for Track 1 - Louisiana EPSCoR Research Infrastructure Improvement - May 1, 2011–September 30, 2015

Sustainability – Faculty Development				
GOAL: Initiate and implement programs designed to propel Louisiana faculty to national competitiveness.				
Strategy	**Types of Data**	**Method(s) of Evaluation and Timeline**	**Criteria for Accomplishment or Outcomes Desired**	**Level of Effort**
Provide education and training opportunities for faculty.	Project Database (Name, institution and demographics of participants) Project Records (List of programs provided and type/amount of support) Survey of participants	Descriptive and content analysis annually	Years 1-5: Documented list of programs provided; number and demographics of participants. Years 2-5: Documented evidence of participant perceptions of utilization and satisfaction of program, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey; Analyze project database, records and survey data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and records data; Provide contact information for participants; Pre-notify participants that survey is endorsed by PI.
Exploration of new research ideas & cutting-edge techniques.	Project Database (Name, institution and demographics of participants) Project Records (List of programs provided and type/amount of support) Survey of participants	Descriptive and content analysis annually	Year 1 -5: Documented number and type of Phase Zero grants that progress to Phase 1; Number of peer-reviewed publications; Number and amounts of new proposals and funding associated with these programs. Years 2-5: Documented evidence of participant perceptions of utilization and satisfaction of program, barriers, impact and suggestions for implementation.	OEIE: Collaborate with internal evaluation team to ensure proper data is collected, collated, and reported in database; Create and administer survey; Analyze project database, records and survey data; Summarize in APR. PI: Design and maintain project database that uses data categories needed for reporting; Provide OEIE project database and records data; Provide contact information for participants; Pre-notify participants that survey is endorsed by PI.