

Economic Development Generating Excellence (EDGE) Policy Board Annual Report 2009

The mission of the EDGE Policy Board is to bolster Oklahoma’s long-term economic growth by investing the earnings from the EDGE endowment in the State’s knowledge infrastructure. Technology-based research and development, commercialization of technology and entrepreneurial business successes attract capital, create more high-paying jobs, expand and diversify the State’s economy, and provide greater prosperity for Oklahomans now and in the future.

The State Legislature invested \$150 million of public funds as the initial installment of an EDGE endowment targeted at \$1.0 billion. An appointed EDGE Policy Board allocates the earnings toward applied research and technology commercialization. Annual earnings from the current endowment are approximately \$5.5 million. The EDGE Fund Board of Investors is managed by the Office of the State Treasurer as directed by Scott Meacham. Responsibilities of the Board of Investors are to:

- Manage the assets of the fund;
- Invest the funds in accordance with laws applicable to state retirement funds;
- Certify the funds available for expenditure – limited to not more than 5% of the assets of the fund;
- Discharge duties with care, diversifying the investments... so as to minimize the risk of large losses; and
- Submit report of EDGE Fund’s investments and asset value annually to the Governor and State Treasurer.

The EDGE Fund is uniquely designed to strengthen Oklahoma’s technology-based economy and to attract federal funds. Because of these distinctive characteristics, only the EDGE Fund can use state money to:

- Make multi-million dollar investments into competitively selected technology-based research and development projects;
- Direct investments toward the applied research needs that are requested by Oklahoma business sectors;
- Use a variety of different funding instruments to maximize the economic returns to Oklahoma citizens (grants, contracts, gifts, loans, partnerships) depending upon the best investment strategies;

EDGE Fund Policy Board Members	
H.E. “Gene” Rainbolt (Chair) Chairman of the Board, BancFirst Corp (Governor Appointee)	Samuel Combs III President, ONEOK Distribution Co (Pro Tempore Appointee)
Thomas C. Kupiec, Ph.D. President and CEO, Analytical Research Laboratories and DNA Solutions (Speaker Appointee)	Ken Levit Executive Director, George Kaiser Family Foundation (Pro Tempore Appointee)
Gary W. Derrick Derrick & Briggs (Governor Appointee)	Gregory McKenzie Attorney at Law (Governor Appointee)
Bond Payne Chairman of the Board, Heritage Trust (Speaker Appointee)	Paul G. Risser, Ph.D. Executive Director, EDGE Policy Board

- Give stated preference to collaborative proposals that involve researchers from multiple institutions and active businesses partners;
- Manage the investment decision-making process to bring together the most powerful combinations of researchers and businesses; and
- Spend public money for the specific purpose of increasing the State’s institutional research and development capacity.

The unique power of the EDGE concept is the leadership role accorded to the Policy Board. Most funding agencies make decisions in response to proposals submitted to one or more program topics. The EDGE Policy Board, however, has the opportunity to deploy its resources strategically in multiple ways, all focused on strengthening Oklahoma’s technology-based economy. Thus, the Policy Board can use a suite of different funding instruments, much like an orchestra conductor who combines the strengths of a variety of instruments and cadences to create a powerful symphony. The resulting “performance” of the EDGE “symphony” will be an integrated, evolving set of innovative investments—matched to Oklahoma’s talents, capabilities, and aspirations—and focused on building long-term prosperity.

The Policy Board is composed of seven members, as follows:

- (A) Four individuals who serve as senior officers of an Oklahoma business or financial company having knowledge of the Oklahoma economy and its potential to advance to a technology-based economy; the Governor appoints two of these individuals and the President Pro Tempore of the Senate and Speaker of the House of Representatives appoint one each;
- (B) One scientist, engineer or officer of a technology-based Oklahoma company or public or private research institution appointed by the President Pro Tempore of the Senate;
- (C) One attorney licensed to practice law in Oklahoma, who has experience with start-up companies and business practices appointed by the Governor; and
- (D) One venture capitalist with experience in the commercialization of technology and investment in technology-based companies appointed by the Speaker of the House of Representatives. [62 O.S. 2006, §52.B]

EDGE Fund Policy Board Meetings 10:00 AM-12:00 PM Presbyterian Health Foundation Conference Center Kiva Room 655 Research Parkway Oklahoma City, Oklahoma 73104	
<ul style="list-style-type: none"> • January 20, 2009 • April 07, 2009 • July 15, 2009 • November 10, 2009 	

State legislation stipulates that the Board of Directors shall meet at least once each calendar quarter and at other times upon call by the Board Chair, or the Executive Director or upon written request by a majority of the members of the Board. [62 O.S. 2006, §52.D]

The authorizing legislation further states that the EDGE Fund Policy Board shall consider only those projects and programs which satisfy one or more of the following criteria:

- *Expanding directly the number of researchers, technicians, support services and associated activity within Oklahoma*
- *Increasing the formation and growth of advanced technology companies in Oklahoma*
- *Leveraging additional federal research grants and/or privately funded research into Oklahoma research institutions*
- *Improving the health status and quality of life for Oklahoma*

At its meeting on November 10, 2008, the EDGE Fund Policy Board heard presentations and evaluated the merit of five projects recommended for funding. The following proposals were funded for two years, contingent upon satisfactory progress as defined by project-specific performance measures. Each of the projects has provided the EDGE Policy Board with Quarterly Updates and will be subject to an annual evaluation by November 1st, 2009.

Principal Investigator	Project Title	Organization	Total Awarded
Paul DeAnglis, PhD	Oklahoma Glyco-manufacturing Facility: Going Global with Next-gen Sugar-based therapeutics	Hyalose, LLC	1,237,611.00
Jing-xing Ma, MD, Ph.D.	Nanoparticle-mediated drug delivery for the treatment of Diabetic Retinopathy and Age-Related Macular Degeneration	Charlesson, LLC	2,881,031.00
John S. Greene, Ph.D.	The Renewable EDGE	The University of Oklahoma	1,749,819.00
Shivakumar Raman, Ph.D.	Shape Engineering Towards Advance Manufacturing (SEAM)	The University of Oklahoma	3,000,000.00
David Boone, Ph.D.	RESTORED: Restored Education Science and Technology for Orthopedic Rehabilitation and Economic Development	OrthoCare Innovations, LLC	1,600,000.00

Each of the projects has shown progress consistent with its contracted project milestones, with several of the companies exceeding expectations for the time period.

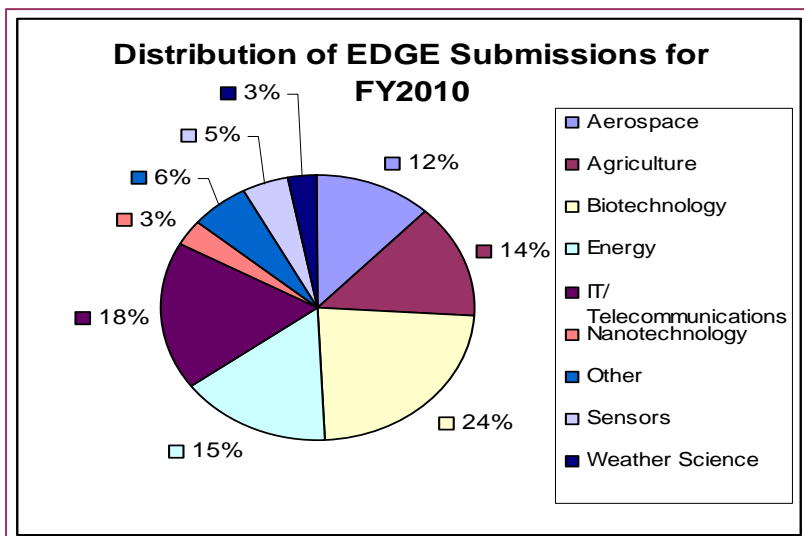
Oncethe EDGE Policy Board receives the annual reviews, the Board will evaluate the efficacy of each program in reaching the EDGE goals and the benchmarks of the specific project.

Each year the EDGE Policy Board follows nine steps to assure the most prudent investments. These are:

1. Invite letters of intent
2. Advisory Committee reviews and recommends pre-proposals to the Policy Board
3. Policy Board reviews and invites select applicants to submit full proposals
4. Technical reviews by peer experts
5. Advisory Committee reviews proposals and technical reviews
6. Advisory Committee recommends fundable proposals
7. Policy Board decides on funding investments
8. *Memorandum of Agreement* is established with each recipient
9. Evaluate and report on each investment

EDGE Timeline 2009	
April 22, 2009	Request for Pre-Proposals Issued
May 20, 2009 at 5:00 PM CST	Deadline for submission of Pre-Proposals
July 15, 2009	Policy Board selects Proposal applicants
September 16, 2009 at 5:00 PM CST	Deadline for submission of Full Proposals
October 23, 2009	Advisory Committee Meeting
November 10, 2009	Announcement of Full Proposal(s) selected as recipient(s) of EDGE funds

On April 22, 2009 the Policy Board announced the Request for Proposals with a media release and over 800 letters sent to research companies, colleges and universities throughout the State. The submission deadline was May 20, 2009. The EDGE Fund received another year of enthusiastic responses with 65 pre-proposals. This large number of pre-proposal submissions confirms the great potential for the development of innovative high-technology research in Oklahoma.



Last year the EDGE Fund received 94 pre-proposals, This decrease is not due to a lack of evolving technology and scientific research in the state, but rather that applicant now have a better understanding of the EDGE goals and the business and research expectations of projects. Although the EDGE Fund received fewer applicants than last year, the consensus is that the pre-proposals received were much better

developed and decidedly more focused on the long term economic goals of Oklahoma.

For the FY2009 proposal solicitation, the Board focused on the following areas: aerospace, agriculture, biotechnology, energy, information technology, nanotechnology, sensors, weather science, and other.

In 2008 the applicants were split with a majority among the biotechnology, agriculture, and energy fields. In 2009 EDGE saw a strong showing from the information technology and the aerospace fields. The increased participation of these focal areas illustrates that EDGE Funds can be used among all business sectors, and as the fund continues to grow so can the diversity of our economic structure.

Because of the wide range of topical areas and types of projects eligible for EDGE funding, the Policy Board did not invoke specific numerical evaluation criteria. However, the following criteria were used to evaluate all proposals with preferences to those that:

1. Meet the goals of the EDGE Fund, including the development and commercialization of applied research and technology, and/or increase the State's research and entrepreneurial capacity and/or expand and diversify Oklahoma's technology-based economy;
2. Leverage public and private resources to demonstrate broad support, to conduct the project and to sustain the impacts of the project;
3. Demonstrate that the research or technology is significant in its own right and likely to exert consequential positive impacts on Oklahoma's economy and quality of life;
4. Engage the highest level of expertise and the most advantageous techniques and technologies;
5. Exhibit significant imagination and creativity; articulate the highest probability of success and the rationale for that probability; and
6. Offer a sound business plan.

The 65 pre-proposals clearly indicated the power of the EDGE program to foster innovation and identify technology commercialization opportunities. In addition, through this process, EDGE has brought the private sector together with the public and private research community in unprecedented ways by combining cutting-edge applied research with Oklahoma's business opportunities.

65 EDGE Pre-Proposals Distribution of Requested EDGE Funding	
6	\$500,000 or less
44	\$2.5 Million to \$500,000
12	\$6.5 Million to \$2.5 Million
3	> \$6.5 Million

The total funding requests for 2009 were approximately \$75M for first year, and \$63M for second year. The total requested funds for this year was \$142M.

The Policy Board is assisted by an appointed Advisory Committee whose members bring technical expertise and extensive experience in evaluating and managing technology-based research and commercialization. The Advisory Committee reports to the Board through the Advisory Committee Chair and other regular communication channels.

The Committee is charged with three primary responsibilities: (a) to review submitted pre-proposals and recommend those applicants to be invited to submit full proposals, (b) to evaluate the full proposals requesting support from the EDGE Fund and to recommend those that justify funding to the Policy Board for making its final decision on those projects to be supported, and (c) complete yearly evaluations of currently funded projects with recommendations for future funding actions to the Policy Board.

The Advisory Committee was expanded this year to cover EDGE’s ever increasing topical diversity and to allow for more expertise in the focal areas for this year. The eleven-member Advisory Committee reviewed all pre-proposals and voted independently. From these individual reviews and scores, the top 25 proposals were discussed in detail during a conference call of the Committee. The EDGE Policy Board also received all the pre-proposals for review.

With respect to those invited to submit full proposals, the Policy Board accepted all the recommendations made by the Advisory Committee and included two additional ones. There were 65 pre-proposals and 14 were selected for full proposals, of those selected 13 submitted completed applications.

EDGE Fund Advisory Committee Members	
J. Donald Capra, M.D. (Chair) President Emeritus, Oklahoma Medical Research Foundation Oklahoma City, OK	
Richard A. Dixon, Ph.D. Senior Vice President and Director of the Plant Biology Division, The Noble Foundation Ardmore, Oklahoma	Leroy Chiao, Ph.D. Retired NASA Science Officer Houston, Texas
Robert McNeil, Ph.D. Managing Director, Sanderling Venture Partners San Mateo, California	Robert Hines, Ph.D. President, Tech Resources, Inc. and Researcher, Questline Columbus, Ohio
Duane J. Roth Ph.D. Chief Executive Officer and Board Member, CONNECT San Diego, California	William Paiva, Ph.D. Manager, Oklahoma Life Sciences Fund and Venture Partner, Sevin Rosin Funds Tulsa, Oklahoma
Edward Ungar, Ph.D. President Taratec Corporation Columbus, Ohio	Warren Qualley, Ph.D. Senior Weather Engineer, Harris Corporation Washington, D.C
Susan Bridges, Ph.D. Co-director Institute for Digital Biology Mississippi State, MS	Lori Wrottenbury Director, Oil and Gas Conservation Div. Oklahoma Corporation Commission Oklahoma City, OK

The applicants invited for full proposal this year include:

Agriculture

- Steve Trost (Strategic Solutions International, LLC) – Cattle Health Research Alliance: Integrating Development, Use, and Validation of Advance Biosensors

Aerospace

- Alfred Stritz (The University of Oklahoma) - Research, Development, Testing, and Production of Modular Unmanned Aerial Vehicles (M-UAVs), including Turnkey Modular Unmanned Aircraft Systems (M-UASs), based on product platform and product Family Concepts.
- Ken Viera (UML) - Oklahoma Flight Innovation, Research and Testing-Unmanned Aerial Systems (OKFIRST-UAS)

Biotechnology

- Wayne Drevets (LIBR- Laureate Institute for Brain Research) – Laureate Brain Research Consortium: Commercialization of Novel Methods for Diagnosis Treatment and Prevention of Neuropsychiatric Disorders
- Robert Floyd (Otologic Pharmaceuticals) - Preclinical investigation of HPN-07 and NAC for the prevention and treatment of acute noise induced hearing loss.
- John Harley/ Kenneth Kaufman (Oklahoma Medical Research Foundation) - JKA Genomics: GWAS to GENE, combining many genomes for rapid genotyping.
- Scott Rollins (Selexys Pharmaceuticals Corporation) - Oklahoma Drug Development Consortium (ODDC)
- Richard Harty (Altheus Therapeutics, Inc) - Therapeutic and Diagnostic Innovations in Inflammatory Bowel Disease

Energy

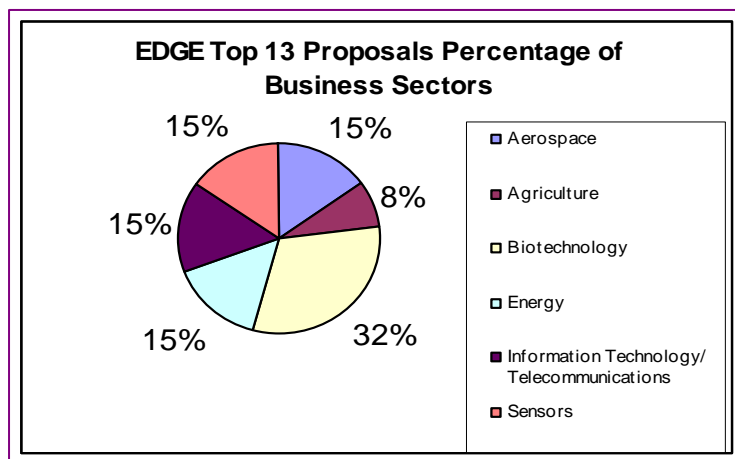
- Jeffrey Harwell (University of Oklahoma) - Boosting Oklahoma Oil Production with Next Generation Surfactant Technology
- Kenneth Oglesby (Impact Technologies) - Application of an Innovative Drilling System for Optimized Ground Source Heat Pump Installations

Information Technology/ Telecommunications

- David Kendrick (The University of Oklahoma Health Sciences Center) - Greater Tulsa Health Access Network (Greater THAN)
- Gerard Newman (NewMan Technologies, Inc) - The EDGE in Display Technology

Sensor Technology

- Nick Materer (Oklahoma State University) – Commercialization of Passive Wireless Corrosion Sensors
- Terry Golding (Amethyst Research Inc) - Nano-Engineered Infrared Sensors



Full proposals undergo rigorous evaluation from three perspectives:

- Technical Review:** Each proposal is assigned to experts in an appropriate technical field who evaluate the project's importance, soundness, feasibility, and probability of success. Because proposals may include a wide-range of research disciplines and technologies, experts are selected to address major components of the proposed project.
- Advisory Committee:** Considering advice from the technical reviewers, the Advisory Committee conducts a panel review of the proposals and recommends to the Policy Board those proposals that are the highest priority for funding.
- EDGE Policy Board:** The EDGE Policy Board makes all final funding decisions. In making these decisions, the Board evaluates the technical reviews of each project and the recommendations of the Advisory Committee. In addition, the Policy Board considers the strengths, needs, and opportunities of Oklahoma's technology-based research capacity, as well as, investments in research and commercialization that will benefit Oklahoma's private sector.

In making its final decisions about those projects to be funded, the EDGE Policy Board takes a long-term view of how best to orchestrate multiple technological, human, and financial resources through EDGE funded projects to strengthen Oklahoma's economy, provide higher paying jobs, and enhance the prosperity of its citizens.

The EDGE Policy Board used the following four criteria to evaluate each of the 13 Proposals submitted under this solicitation:

A. Merit (50%) Quality of the proposed work and its potential for success by advancing the technical state-of-the-art and technical competence; relevance to Oklahoma technical needs and the EDGE mission; and potential importance to intended recipients of the developed technology.

B. Technical Approach (20%) Realism of the proposed technical approach and methods and their potential for attaining stated objectives and milestones on schedule using the techniques and resources described; corporate/organizational and individual qualifications for the work; adequacy of equipment, materials and facilities proposed; and quality of technical management and plans.

C. Anticipated Benefits (15%) Potential to advance Oklahoma's capabilities in the broad and specific areas of interest at a reasonable cost and in a timely manner; potential for sustained, significant benefit to the State; and potential for generating intellectual property or follow-on support from sources other than the EDGE Policy Board.

D. Costs and Budget (15%) Realism and reasonableness of costs, overall budget, and project schedule; leverage, cost-saving, or value added aspects to the proposed effort. Cost and budget are considered a substantial evaluation criterion but are secondary to technical merit.

It should be noted that in 2008 the final round applicants were dominated by projects from the two major cities with a strong preponderance in the biotechnology arena. This year EDGE has successfully established a wonderful competition among numerous other industries within the state, encompassing not only our major city employers, but our outlying rural areas as well.

Along with the progress made with the EDGE programs grant recipients, the Policy Board has evolved its website to become an interactive and educational outlet for companies and individuals looking to expand their economic interests throughout Oklahoma. In the one year since its establishment, the EDGE program has created a sound footing in the scientific community as a recognized successful program for innovation of Oklahoma's science and technology industry.

Conclusion

As was exhibited by last year's applicants, many deserving and recommended proposals could not be funded simply because the earnings from the EDGE endowment were insufficient. The EDGE Fund is a unique and powerful mechanism for fostering innovative, technology-based business and research designed to strengthen Oklahoma's economy. Because the endowment

currently consists of public funds appropriated by the State Legislature, the Board is committed to making investments consistent with the intentions of the EDGE legislation. Therefore, it was important that each project demonstrate carefully constructed public-private collaboration, clearly anticipated expected returns on the investment particularly in creating more high-paying jobs in Oklahoma, and that projects involve the highest levels of innovative technical competence and technology commercialization. EDGE is not just a funding source, but a broad mechanism to encourage and expand Oklahoma's research and development capacity.

During this year of the program, the EDGE Policy Board has refined the evaluation process to support its truly merit-based decisions. Moreover, each of the funded projects includes clear performance measures consistent with the objectives of the EDGE program. Projects selected last year all include deep collaborations between Oklahoma's business community and research organizations. Beginning next year, the EDGE Policy Board will be able to report the returns on these investments to the citizens of the State. In addition, the Policy Board will provide analyses and recommendations about ways in which the EDGE Fund can further advance the economic development of Oklahoma.