

# SENATE STAFF ANALYSIS AND ECONOMIC IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

BILL: SB 1900  
 SPONSOR: Senator Klein  
 SUBJECT: Florida Technology Development Act/Centers of Excellence  
 DATE: February 28, 2004      REVISED: \_\_\_\_\_

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Matthews	O'Farrell	ED	Favorable
2.	_____	_____	CM	_____
3.	_____	_____	AED	_____
4.	_____	_____	AP	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____

**I. Summary:**

This bill revises the Florida Technology Development Act to provide for the establishment of additional centers of excellence or the expansion of current centers subject to appropriation by the Legislature.

In particular, the bill calls for the Florida Research Consortium to review and revise, if necessary, the factors contributing to success of a center of excellence. In turn, the Emerging Technology Commission is required to approve criteria for evaluating proposals for establishing or expanding a center of excellence for submission to the State Board of Education along with a recommended plan. The State Board of Education must develop and approve a final plan for establishing or expanding centers of excellence along with authorizing expenditures for implementing the plan. The final plan must contain performance and accountability measures to assess plan implementation and each center's progress and must be submitted to the Legislature and the Governor.

The bill appropriates \$100 million from the General Revenue Fund to the Department of Education for the purpose of implementing the final plan with the caveat that each center of excellence approved under the plan must receive, at a minimum, \$10 million. In addition, the bill appropriates \$50,000 from the General Revenue Fund to the Executive Office of the Governor for staff and administrative support for the Emerging Technology Commission.

Finally, the bill imposes term limits of 4 years on certain members of the Emerging Technology Commission with vacancies filled in the same manner as the original appointment.

This bill takes effect upon becoming a law.

This bill substantially amends section 1004.225, of the Florida Statutes.

## II. Present Situation:

Section 1004.225, F.S., the Florida Technology Development Act, provides a mechanism to foster technology transfer, a complex commercialization process through which an entity that develops a new technology, but does not have the means or desire to bring it to market, transfers the new technology to another entity that does. The act begins the technology transfer process by creating centers of excellence for which the 2002 Legislature appropriated \$30 million. A center of excellence is an organization of personnel, facilities, and equipment established at or in collaboration with one or more universities in Florida that:

- Facilitates the identification of collaborative research opportunities between universities and businesses;
- Facilitates the acquisition of public and private funding for collaborative research opportunities and maximizes the leveraging of such funds;
- Creates partnerships between industrial and governmental entities to advance knowledge and research and to move technologies from academic laboratories and research centers to commercial sectors;
- Stimulates and supports new venture creation through partnerships with venture capital firms and other business, governmental, and educational entities;
- Assists in the enhancement of advanced academic curricula through improved communication between academia and businesses;
- Increases the number of graduates and faculty researchers in advanced technology programs while ensuring that a larger percentage of such graduates pursue careers in Florida industries;
- Recruits and retains eminent scholars in advanced technology disciplines; and
- Provides capital facilities necessary to support research and development.

As a result of the act, the Emerging Technology Commission was created within the Executive Office of the Governor. The commission consists of:

- Nine regular members who must be recognized business leaders, industrial researchers, academic researchers, scientists, or engineers. The regular members include four members and the chair appointed by the Governor; two members appointed by the President of the Senate, and two members appointed by the Speaker of the House of Representatives;
- The Commissioner of Education as an ex officio nonvoting member; and
- The state senator and state representative who serve as members of the Florida Research Consortium, Inc., as ex officio nonvoting members.

Commission members serve without compensation but are entitled to receive certain per diem and travel expenses while performing their duties. The Governor's Office provides staff support for the commission and per diem and travel expenses for commission members.

The Florida Research Consortium, Inc.<sup>1</sup>, must provide a report to the Emerging Technology Commission, which describes and prioritizes factors that contribute to the success of the creation of centers of excellence. At a minimum, the factors must include:

- The maturity of existing university programs relating to a proposed center of excellence;
- The existing amount of university resources dedicated to activities relating to a proposed center of excellence;
- The comprehensiveness and effectiveness of site plans relating to a proposed center of excellence;
- The regional economic structure and climate;
- The degree to which a university that proposes to house a center of excellence identifies and seizes opportunities to collaborate with other public or private entities for research purposes;
- The presence of a comprehensive performance and accountability measurement system;
- The use of an integrated research and development strategy using multiple levels of the educational system;
- The ability of a university that proposes to house a center of excellence to raise research funds and leverage public and private investment dollars to support advanced and emerging technological research and development projects;
- The degree to which a university that proposes to house a center of excellence transfers advanced and emerging technologies from its laboratories to the commercial sector;
- The degree to which a university that proposes to house a center of excellence stimulates and supports new venture creation;
- The existence of a plan to enhance academic curricula by improving communication between academia and industry;
- The existence of a plan to increase the number, quality, and retention rate of faculty, graduate students, and eminent scholars in advanced and emerging technology-based disciplines;
- The existence of a plan to increase the likelihood of faculty, graduate students, and eminent scholars pursuing private-sector careers in the state; and
- The ability to provide capital facilities necessary to support research and development.

The Florida Research Consortium, Inc., issued a report to the Emerging Technology Commission outlining the factors contributing to the success of a center of excellence (in order of priority):

- Clear and integrated vision to develop commercially promising, advanced, and innovative technologies and to transfer those technologies to the commercial sector;

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<sup>1</sup> Florida Research Consortium, Inc., is a private not-for-profit advisory board to ITFlorida.com, Inc. It is composed of volunteer university heads and industry leaders whose goal is to establish progressive research programs at Florida's universities.

- National and prominent technology-centric research focus;
- Positive economic impact on the state and the nation;
- Ability to acquire and leverage public and private-sector resources to support the operations and research of the center, including funding, personnel, facilities, and equipment;
- Promotes collaboration among university scholars, research center scientists and engineers, public schools, and private businesses; and
- Fosters the development of a highly skilled, high-wage workforce.

Following public hearing and consideration of the report of the Florida Research Consortium, Inc., the Emerging Technology Commission developed criteria for evaluating university-submitted proposals for creating centers of excellence. The Emerging Technology Commission forwarded the criteria to the universities in the state and to the State Technology Office for publishing on the Internet. The commission directed the universities to submit their proposals in a specific format addressing each of the adopted criteria. The adopted criteria along with the weight of the criteria as part of a proposal are as follows:

- Vision for technology transfer – The proposal must demonstrate a clear and integrated vision to develop commercially promising, advanced, and innovative technologies and to transfer those technologies to the commercial sector. (25 percent)
  - The degree to which a university that proposes to house a center of excellence transfers advanced and emerging technologies from its laboratories to the commercial sector.
  - The degree to which a university that proposes to house a center of excellence stimulates and supports new venture creation.
  - The presence of a comprehensive performance and accountability measurement system.
  - The use of an integrated research and development strategy using multiple levels of the educational system.
  - A compelling scientific research and commercialization vision of the Center and relevance to the future Florida economy.
  - A competitive analysis of the key national research competitors of the proposed center, the competitive advantages of the proposed center, and the niche market that the center would fill.
  - A plan to support technology transfer for the public benefit, while complying with the universities' policies on patents and copyrights.
  - Industry participation and collaboration in defining, proposing, and advancing the Center's goals and programs.
- Research Focus – The proposal must demonstrate national and prominent technology-centric research focus. (25 percent)
  - Ability to recruit and retain world-class, leading-edge scholars, high performing students, and leading scientists and engineers in advanced technology disciplines to engage in research to develop commercially promising, advanced, and innovative technologies.

- Discussion of: the technology that the proposed center would pursue; the current state of related technology research upon which the center would build; the research that is needed to bring the technology forward; and how the center would advance the state of the art in the proposed technology.
  - Critical challenges related to basic science, enabling technologies, and systems integration to be addressed by the center.
  - Plan for a recruitment process that will result in new world-class, leading edge, scientific talent who are ready, willing, and able to engage in industrial collaboration and commercialization.
  - Plan for encouragement, recognition, and reward for faculty for participation in commercialization and industry collaborations.
  - Use of highly qualified faculty/research staff in science/technology fields that are the subject of, or closely related to, the center.
  - The names and research disciplines of current faculty members and research staff who would contribute to the center.
  - Faculty and research staff publications in leading journals in the fields proposed.
  - Faculty and research staff honors and awards in the fields proposed.
  - Reputation for excellence in the fields proposed.
- Economic Impact Potential – The proposal must demonstrate the potential for positive economic impact on the State of Florida and the Nation. (20 percent)

#### Economic Climate Issues

- Regional economic structure and climate.
- Importance of the proposed research focus to Florida's economy (either substantially enhancing an existing sector or sectors in Florida's economy or creating an entirely new sector).
- Unique characteristics and potential market share of the target industry that will lead to a stable, prospering, long-term industry in Florida.
- Competitive advantages in attracting new business and employees.
- Demonstrated business and community support for a center with the proposed research focus.

#### Plan and Infrastructure of a Proposed Center

- Plan to stimulate and support the inception, growth, and diversification of technology-based businesses and ventures in Florida, with emphasis on start-ups in the proposed fields.
- Plan for the center and its host institution(s) to identify and manage barriers and disincentives to commercialization at the institution(s).
- Specific tangible outcomes, i.e., examples of potential new products and technologies for which the center's basic research discoveries will lay the essential foundation for economic impact.
- Demonstrated business incubation program with a track record of success in assisting technology-based businesses.
- Opportunities for both first and second stage business incubation affiliated with the center and how they will be enhanced.

- Method to ensure material cooperation with business to accelerate technology transfer and downstream commercialization.
  - Innovative approaches to technology transfer and tech transfer incentives undertaken or planned by the university.
  - Track record of licensing of technologies or other methods of impacting the private sector developed at the university.
  - How will the host campus(es) specifically strengthen and improve their current industry relations and technology transfer operations as it relates to this Center?
  - Record of the institution in promoting the development and commercialization of the science area proposed, and plans for any improvement or enhancement.
- Leadership and Management – The proposal must clearly outline its leadership and management plan to assure success if the center is funded. The plan must show lines of authority and responsibility of the proposed center’s organization. The plan must also clearly identify a Program Manager who is the single point of contact for information regarding program management, execution, and reporting for the proposed center. (10 percent)
    - Comprehensiveness and effectiveness of site plans relating to a proposed center.
    - The existence of a management plan that: identifies the key management & leadership team; defines the strength and quality of the proposed center; defines the roles, responsibilities and reporting structure of key personnel; and defines the roles of key industry participants and collaborative partners.
    - The ability and plan to manage a center for greatest efficiency and impact.
    - The existence of a plan to define the budget and financial projections for the proposed center.
    - The existence of a plan to acquire equipment and facilities necessary to adequately support research and development, including milestones, timelines, etc.
- Leveraging Resources – The proposal must demonstrate the ability and plans to acquire and leverage public and private-sector resources to support the operations and research of the center, including funding, personnel, facilities, and equipment. (10 percent)
    - The ability of a university that proposes to house a center to raise research funds and leverage public and private investment dollars to support advanced and emerging technological research and development projects.
    - Existing amount of university resources dedicated to activities relating to a proposed center.
    - Ability to provide capital facilities necessary to support research and development.
    - Documentation of proposed matching support.
    - Given that the program funding is non-recurring, the ability to sustain a center.
- Center Collaboration with Other Entities – The proposal must demonstrate how the center promotes collaboration among university scholars, research center scientists and engineers, public schools, and private businesses. (5 percent)

- The degree to which a university that proposes to house a center identifies and seizes opportunities to collaborate with other public or private entities for research purposes.
  - A plan to identify and pursue opportunities for university scholars, research center scientists and engineers, and industrial researchers, scientists, and engineers to form collaborative partnerships to foster and promote the research required to develop and commercialize promising, advanced, and innovative technologies.
  - Inclusion of industry in an ongoing manner (particularly emerging, new entrepreneurial small business) in center research.
  - Cluster creation - academic and industrial research, business, and workers within a geographic proximity to others engaged in the same activities. The cluster may also be created “virtually” where appropriate.
  - Cooperation and integration with other institutions and universities in the state of Florida.
  - Unique, established, and envisioned activities at the center that provide a compelling rationale for statewide business development and collaboration.
  - Demonstrated partnerships for scientific research with existing businesses and other universities and federal laboratories in the proposed field or other related fields.
- Workforce Development – The proposal must clearly describe how the Center of Excellence will foster the development of a highly skilled, high-wage workforce. (5 percent)
    - The existence of a plan to increase the number, quality, and retention rate of faculty, graduate students, and eminent scholars in advanced and emerging technology-based disciplines.
    - Demonstrated success in building a skilled work force in the area of research focus or related areas.
    - The existence of a plan to increase the likelihood of faculty, graduate students, and eminent scholars pursuing private-sector careers in Florida.
    - The existence of a plan to enhance academic curricula by improving communication between academia and industry.
    - Enhancing and expanding technology curricula and laboratory resources at universities and research centers in this state.
    - Maturity of existing university programs relating to a proposed center.
    - Ability to develop undergraduate through post doctoral expertise in the target research.

The Emerging Technology Commission received 16 proposals for a center of excellence. The proposals are as follows:

- Florida Atlantic University’s Proposal for a Center for Intermodal Transportation, Safety and Security.
- Florida Gulf Coast University’s Proposal for a Florida Gulf Coast University Triad.
- Florida International University’s Proposal for a Florida Information Security Center.
- The University of Central Florida’s Proposal for a Modeling and Simulation Center of Excellence.

- The University of North Florida's Proposal for a Center for Innovation in Information Technology.
- Florida Agricultural and Mechanical University's Proposal for a Center of Excellence for Atomic, Molecular, and Plasma Physics.
- The Florida Space Research Institute's Proposal for a Center for Spaceport Technology, Biotechnology, Remote Sensing, and Telecommunications.
- The Florida Solar Energy Center's Proposal for a Center of Excellence for Hydrogen Research.
- Florida State University's Proposal for Securing Florida and the Nation's Electrical Energy Systems.
- The University of Central Florida's Proposal for a Florida Photonics Center of Excellence.
- Florida Atlantic University's Proposal for a Center for Biomedical and Marine Biotechnology.
- Florida State University's Proposal for the Bio-Nanotechnology Nexus.
- The University of Florida's Proposal for a Center of Excellence in Regenerative Health and Biotechnology.
- The University of Florida's Proposal for a NanoBio Science and Engineering Center of Excellence.
- The University of Miami's Proposal for a Center for Biotechnology Development in Cellular Therapies, Tissue Engineering, and Reparative Medicine.
- The University of South Florida's Proposal for a Center of Excellence in Bioengineering and Life Science.

Following three public hearings with access to public policy and technology experts, the Emerging Technology Commission recommended the following centers of excellence to the State Board of Education along with its rationale:

- Florida Atlantic University's Proposal for a Center of Excellence for Biomedical and Marine Biotechnology at \$10 million. This center would focus on the discovery and development of compounds and medicines capable of treating various diseases including cancer, cardiovascular disease, and arthritis. Collaborative efforts with industry and other universities would be used in a long-term commercialization strategy, and the center would house faculty capable of attracting research funds at levels necessary for continued research.
- The University of Central Florida's Proposal for a Photonics Center of Excellence at \$10 million. This center would build upon efforts already underway at UCF to make Florida the world leader in optics, lasers, and photonics research and education. The center would also expand its research into the areas of nanophotonics and biophotonics. The center would work closely with existing industry, the High Tech Corridor Council, and the UCF Technology Incubator to commercialize new applications.
- The University of Florida's Proposal for a Center of Excellence in Regenerative Health Biotechnology at \$10 million. The center would house two facilities for microbial fermentation and vector production. Both facilities would be used for developing probiotics and gene therapies for treating cancer and genetic diseases. It would also provide technological advances in gene therapy and adult stem cell transplantation. The



very nature of the research and production being performed at the center would have immediate and long-term economic impact and would serve as a magnet for future state and federal funds.

On March 18, 2003, the State Board of Education accepted the recommendations of the Emerging Technology Commission for the creation of the centers of excellence. As part of its approval, the State Board of Education adopted the Emerging Technology Commission's recommendations with respect to performance and accountability measures. The commission's recommendations are based on general measurement standards and site specific assessments to measure progress and assure success. The accountability measures are as follows:

General Measurement Standards:

- Full financial disclosure of expenditures related to the cost proposal of the center.
- Report on the effectiveness and success of the research being performed within the center.
- Report on the state of research collaboration with other universities or research entities as well as private industry.
- Report generally on the state of personnel additions relative to the center and the core research being performed therein.
- Report on the integration of the mission of the center with all levels of the K-20 education system.
- Report on the number of industry internships granted to graduate and post-doctorate students as a result of interaction with the center.
- Report on the overall economic impact of the center's existence including number of inventions, number of patents, number of licensed technologies, and amount of revenue generated from royalties and licenses.
- Report on the development of start-up businesses as a result of technology research being performed in the center.
- Report on the impact of the center's relationship with out-of-state businesses.
- Report on the leveraging of financial resources including the obtaining of public and private matching funds as well as direct Federal grants or contracts.
- Report on any interest of direct collaboration with Venture Capital entities.

Florida Atlantic University Center of Excellence Specific Standards:

- Report on the status of the construction of a core facility for research.
- Report on the establishment of an analytical lab at Harbor Branch.
- Report on the status and effectiveness of the graduate student and postdoctorate workforce training programs.
- Report on the status and effectiveness of the seminar programs.
- Report on the use of submersibles and other ocean exploration equipment.
- Report on the status of the Marine Biotechnology Executive Education program.

University of Central Florida Specific Standards:

- Report on the development of a state of the art nano-fabrication facility for greater photonics and optics research.
- Report on improvements in a more high quality graduate education in optical science and engineering.
- Report on the enhancement of optics education at all levels including the 2+2 Community College partnership.
- Report on making FPCE research topics part of existing courses in photonics and optics.
- Report on the status of the effort to win a National Science Foundation Engineering Research Center in association with the center.
- Report on the number of publications of scientific research results.

University of Florida Specific Standards:

- Report on the status of the purchase of the buildings to house the center.
- Report on the status of the construction of the Vector Production facility, the microbial fermentation facility, and the cell culture facility.
- Report on the status of the joint program with Santa Fe Community College related to the Biotech training program, the High-Tech training program, and the Regulatory Affairs training program.
- Report on the status of the joint program with the Florida Community College in Jacksonville in a course study in Bioinformatics.
- Report on the status of the development of an IDP track in Biotechnology in the UF College of Medicine.
- Report on whether new companies have begun to initiate plans to move into the new center.

The Emerging Technology Commission is directed to report quarterly to the Commissioner of Education on the progress of the implementation of the final plan and the success of the centers of excellence established under that plan.

Section 1004.225, F.S., expires on July 1, 2004.

**III. Effect of Proposed Changes:**

This bill revises the Florida Technology Development Act to provide for the establishment of additional centers of excellence or the expansion of current centers subject to appropriation by the Legislature. The bill appropriates \$100 million from the General Revenue Fund to the Department of Education for FY 2004-2005 to establish or expand centers of excellence. At least \$10 million must be allocated to each approved center of excellence.

In particular, the bill calls for Florida Research Consortium to review and revise, if necessary, the factors contributing to success of a center of excellence. In turn, the Emerging Technology Commission is required to approve criteria for evaluating proposals for establishing or expanding a center of excellence for submission to the State Board of Education along with a recommended

plan for establishing or expanding centers of excellence. In addition, the Emerging Technology Commission must inform each university in the state concerning the proposal criteria. The State Board of Education must develop and approve a final plan for establishing or expanding centers of excellence along with authorizing expenditures for implementing the plan. The final plan must contain performance and accountability measures to assess plan implementation and each center's progress and must be submitted to the Legislature and the Governor.

In addition, the bill appropriates \$50,000 from the General Revenue Fund to the Executive Office of the Governor for staff and administrative support for the Emerging Technology Commission.

The bill imposes term limits of 4 years on regular members of the Emerging Technology Commission with vacancies filled in the same manner as the original appointment.

The bill extends the expiration of s. 1004.225, F.S., to June 30, 2006, and makes otherwise technical cleanups to s. 1004.225, F.S.

This bill takes effect upon becoming a law.

#### **IV. Constitutional Issues:**

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

#### **V. Economic Impact and Fiscal Note:**

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

If the centers of excellence approved under this bill increase the amount of technology transfer occurring in the state, businesses and individuals could benefit in an indeterminate amount. As the current three centers of excellence were only approved in March, 2003, and research is a methodical endeavor, it is too early to determine what impact the centers are having on technology transfer.

**C. Government Sector Impact:**

The bill appropriates \$100 million from the General Revenue Fund to the Department of Education for the establishment or expansion of centers of excellence. In addition, the bill appropriates \$50,000 to the Executive Officer of the Governor to provide staff and administrative support to the Emerging Technology Commission, and to compensate commission members for per diem and travel expenses.

Technology transfer may be a source of revenue for universities.

**VI. Technical Deficiencies:**

None.

**VII. Related Issues:**

None.

**VIII. Amendments:**

None.

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This Senate staff analysis does not reflect the intent or official position of the bill's sponsor or the Florida Senate.

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