Economic Impact of the Florida High Tech Corridor Council's Matching Grant Research Program

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Summary

This report details the formal economic impact estimates of ten years' outcomes from the Florida High Tech Corridor Council's (FHTCC) investments into its Matching Grant Research Program (MGRP), the University of Central Florida Advanced Materials Processing and Analysis Center (AMPAC) and the University of South Florida's Nanomaterials and Nanomanufacturing Research Center. The impacts were calculated upon state and private sector investments and "downstream" outcomes recorded by the MGRP inter-university tracking and reconciliation system from 1997 to 2009.

Findings: Impacts of the MGRP

At the date of this report, $53,035,102 of state university funds were documented as invested into MGRP research projects between 1997 to 2009. These research projects collectively generated the following impacts:

- A combined economic impact of over $1.3 billion (revenue / economic output)
- $34.3 million in state tax receipts
- 3,276 jobs
- $314 million contributed to Florida's GDP

For every state dollar invested, the MGRP program has generated:

- $25.43 of activity (revenue / output) in Florida's economy
- $.65 returned in the form of additional state and local tax revenue

Proportionately, the MGRP program is shown to create 1 job in the Florida economy for every $16,189 invested in the program. In 2009 alone, the program had an impact of over $77 million in state economic output and 187 direct, indirect, and induced jobs.

Impact Details

ImpactType	Output	Employment	LaborIncome	TotalValueAdded
Direct Effect	-$822,353,792	167	$11,721,596	-$23,765,568
Indirect Effect	-$408,534,464	-2,516	-$124,552,112	-$221,514,752
Induced Effect	-$117,929,704	-927	-$37,176,948	-$68,657,664
Total Effect	-$1,348,817,920	-3,276	-$150,007,456	-$313,937,920

State and Local Fiscal Impact Detail

Description	Employee Compensation	Indirect Business Tax	Households	Corporations	Combined
Dividends				-$2,373,976	-$2,373,976
Social Ins Tax- Employee Contribution	-$45,715				-$45,715
Social Ins Tax- Employer Contribution	-$196,680				-$196,680
Indirect Bus Tax: Sales Tax		-$13,924,407			-13,924,407
Indirect Bus Tax: Property Tax		-$10,902,008			-10,902,008
Indirect Bus Tax: Motor Vehicle Lic		-$215,498			-$215,498
Indirect Bus Tax: Severance Tax		-$45,708			-$45,708
Indirect Bus Tax: Other Taxes		-$3,398,421			-3,398,421
Indirect Bus Tax: S/L NonTaxes		-$1,242,121			-1,242,121
Corporate Profits Tax				-$1,136,734	-$1,136,734
Personal Tax: Income Tax			$0		$0
Personal Tax: NonTaxes (Fines- Fees			-$520,404		-$520,404
Personal Tax: Motor Vehicle License			-$163,568		-$163,568
Personal Tax: Property Taxes			-$82,471		-$82,471
Personal Tax: Other Tax (Fish/Hunt)			-$10,650		-$10,650
Total State and Local Tax	-$242,395	-$29,728,170	-$777,094	-$3,510,710	-$34,258,369

Top Ten Employment Sectors Impacted, Detail

Description	Total Employment	Total Labor Income	Total Total Value Added	Total Output
Real estate establishments	-401.3	-$9,517,605	-$45,528,532	-$59,670,412
Employment services	-252.5	-$5,814,717	-$6,275,992	-$8,759,155
Food services and drinking places	-233.2	-$5,247,177	-$7,691,168	-$14,929,874
Wholesale trade businesses	-187.6	-$13,387,100	-$23,152,200	-$34,686,452
Services to buildings and dwellings	-122.6	-$2,948,349	-$3,611,899	-$6,943,616
Management of companies and enterprises	-114.2	-$11,285,534	-$15,113,032	-$26,766,366
Architectural, engineering, and related services	-72.7	-$4,683,908	-$5,470,353	-$106,606,96
Telecommunications	-71.6	-$4,804,178	-$24,460,638	-$77,964,736
Management, scientific, and technical consulting s	-71.0	-$4,683,564	-$5,384,694	-$10,188,151
Legal services	-66.2	-$5,129,865	-$6,646,962	-$10,796,495

Background: Research and Methodology

Innovation Insight Inc. is a Florida research consulting firm specializing in analytical and public relations research services for high-technology industries. The firm and its founder, Guy Hagen, have produced dozens of industry studies for Florida economic development agencies, Enterprise Florida, and state and national technology industry organizations. From 1999 to 2000, Guy Hagen co-chaired a state task force to provide guidelines for consistent and transparent application of economic impact studies such as this one (the Florida Governor's Office Cluster Metrics Task Force). Innovation Insight is a private, for-profit corporation. Information of a proprietary or business sensitive nature may be anonymized, aggregated or

withheld in order to protect individual research participants and companies. This study was chartered by the Florida HIgh Tech Corridor Council, Inc.

Economic impact forecasting was performed on the Minnesota IMPLAN Group (MIG) IMPLAN software (version 3, social accounts model) using a 2009 statewide Florida data model. The study structured as subtractive analysis; in other words, the IMPLAN model was structured by *removing* the program's investments and outcomes from the Florida economy. This is the most common and widely accepted method for documenting the impact of an existing economic program, company, or activity. In the case of the MGRP program, the state and private sector investments (match) were entered back into the economy as general revenue ("institutional investment"). The purpose of this is to not only estimate the impacts of removing the documented interactive MGRP jobs and economic outcomes from the economy, but to eliminate "substitution effects" by adding back the positive impact of adding the state investments to other sectors of Florida's economy.

Input data were compiled from the MGRP tracking and reconciliation system, which maintains an updated database of all FHTCC research investments and outcomes. These investments and outcomes were input for the years 1997-2009, which includes the first year the MGRP program was administered through the most recent full program year (note; the MGRP tracking and reconciliation system is based upon Florida university fiscal years which run from July to June, which were converted into calendar years for input into the IMPLAN model). The inputs were structured as follows:

- Each year's investment into the MGRP program was subtracted from general Florida university revenue (IMPLAN sector 392, "Junior colleges, colleges, universities, and professional schools"), and returned to general Florida state government revenue (IMPLAN sector 432, "Other state and local government").
- Each year's investment into the MGRP program by industry partners (the program's per-project required "cash match") was subtracted from general Florida university revenue, and returned to general revenue of the respective industry sectors (discussed in more detail below).
- Each year's MGRP outcomes in terms of attracted university research grants, SBIRs, patent licensing revenue, and contracted research funds resulting from MGRP research were subtracted from general Florida university revenue.
- Each year's MGRP outcomes in terms of attracted private sector research grants, SBIRs, equity and investment funds from attracted investment/venture capital activity, and revenue from commercial products sold that were based upon MGRP research were subtracted from the general revenue of the respective industry sectors (discussed in more detail below).

Inputs to private sector industries were allocated proportionately to the technology categories of MGRP project investments; the MGRP tracking and reconciliation system to date has recorded the "type of technology / research area" of grants in the following categories:

- Aerospace
- Information Technology
- Medical Technology

- Microelectronics
- Photonics
- Other (Energy, Materials, Telecommunications)
- Modeling and Simulation

These research categories were mapped in further detail to IMPLAN sectors based upon the proportional level of employment in each category (Source: *florida.high.tech* 2009). In other words, if the "aerospace" category consisted of two IMPLAN sectors, the inputs were allocated by the relative size of each IMPLAN sector proportional to its 2009 employment in the Florida High Tech Corridor region. The following table lists the proportional allocation of model inputs to private-sector IMPLAN sectors.

IMPLAN Sector		Category	Allocation
249	Search, detection, and navigation instruments manufacturing	Aerospace	1.5%
287	Guided missile and space vehicle manufacturing	Aerospace	1.2%
371	Custom computer programming services	IT	2.1%
372	Computer systems design services	IT	2.0%
352	Data processing, hosting, and related services	IT	1.5%
345	Software publishers	IT	0.9%
305	Surgical and medical instrument manufacturing	Medical Tech	7.1%
248	Electromedical and electrotherapeutic apparatus manufacturing	Medical Tech	4.3%
306	Surgical appliance and supplies manufacturing	Medical Tech	3.5%
308	Ophthalmic goods manufacturing	Medical Tech	2.7%
242	Bare printed circuit board manufacturing	Microelectronics	5.8%
247	Other electronic component manufacturing	Microelectronics	3.2%
246	Printed circuit assembly (electronic assembly) manufacturing	Microelectronics	2.5%
243	Semiconductor and related device manufacturing	Microelectronics	0.9%
369	Architectural, engineering, and related services	Other	17.0%
351	Telecommunications	Other	9.5%
376	Scientific research and development services	Other	3.9%
249	Search, detection, and navigation instruments manufacturing	Photonics	16.9%
251	Industrial process variable instruments manufacturing	Photonics	4.7%
213	Other commercial and service industry machinery manufacturing	Simulation	8.6%

Background: the Matching Grant Research Program (MGRP)

The Florida High Tech Corridor Council (FHTCC) was established by the Florida Legislature in 1996 to attract, retain and grow high technology industries and to help develop the workforces supporting those industries in the 21-county service areas of the University of Central Florida (UCF) and the University of South Florida (USF). In January 2005, the Council welcomed the University of Florida (UF) as a full partner of this unique economic development initiative, merging the strengths of three world-class universities and bringing the number of Corridor counties to 23 (source: floridahightech.com May 1 2007). This 23-county region spanning the middle belt of Florida constitutes the Florida High Tech Corridor region.

The Florida High Tech Corridor Council's primary focus has been to foster applied research collaborations between Corridor universities and their high tech industry partners. The majority of the Council's funding has been allocated to this effort, with its most central program being its Matching Grant Research Program (MGRP).

MGRP grants typically require an external (usually private-sector) partner organization to contribute at least 2-to-1 match relative to the FHTCC investment. These matches have included a combination of cash and in-kind contributions, with increased requirements for cash matches as the program matured. The grant funds themselves were awarded and spent to support university faculty, students, and research activities; no funds were issued to the external partners. Proposals were evaluated by teams of university, economic development, and private sector reviewers, and were selected primarily upon the basis of their potential to foster applied technologies and contribute to the Florida High Tech Corridor Council economy.

Through 2009, the MGRP program has documented the following investments into 1,062 matching grant projects:

	Activity To Date
State Investment (MGRP Match)	$53,035,102
Private Sector Investment (Cash Match)	$100,541,279
Private Sector In-Kind Investment	$46,243,453
Total Investment	$199,819,834

The MGRP's tracking and reconciliation system records documented and estimated outcomes resulting from project-related research and development activity. These outcomes are reported by participating university researchers and private sector businesses as resulting from MGRP research. "Estimated outcomes" are calculated by the system by applying the documented outcomes from projects that have completed final outcome reports *pro rata* (less a statistical confidence/error calculation) to projects which have not yet reported. For a full explanation of this process and estimated outcomes, refer to "A Ten Year Review Of The Florida High Tech Corridor Council's Matching Grant Research Program: July 30 1996 - June 31 2006" (2007, Florida High Tech Corridor Council). Please note that the referenced report refers to *downstream impacts*, which are referred to in this report as *outcomes* to avoid terminological confusion with formally modeled *economic impacts*.

For the economic impact analysis, we combine the reported outcome estimates into just two categories: university, and private sector / industry. We utilize the full estimated (*pro-rata*) outcomes as inputs for the IMPLAN model.

Outcome Category	**Estimated Outcomes - Attracted Revenue**
Commercial contracts / revenue to company	$159,503,840
Corporate research award to University	$6,700,257
Federal contract to company	$240,658,329
Federal research award to University	$122,730,816
Institutional / equity investment attracted	$106,214,095

Outcome Category	Estimated Outcomes - Attracted Revenue
Other Public Sector research award to University	$39,680,192
Other Research Funding	$39,680,192
SBIR Phase I sub to university	$337,613
SBIR Phase I to company	$5,194,671
SBIR Phase II sub to university	$1,427,954
SBIR Phase II to company	$23,398,189
SBIR Phase III to company	$520,101
STTR Phase I to company	$441,771
STTR Phase II sub to university	$166,242
STTR Phase II to company	$3,575,969
Total Combined "Downstream" Outcome (revenue):	**$716,297,154**

Appendix: Definitions and Terms

- **Output**: Output represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For Retail and wholesale trade, output = gross margin and not gross sales.
- **Labor Income**: All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
- **Direct Impacts**: take place only in the industry sector immediately affected, such as direct jobs and investments.
- **Indirect Impacts**: concern inter-industry transactions: if an analyzed sector is removed from the economy, sector companies will no longer have a demand for locally produced materials needed to produce their product. This will affect all of their suppliers.
- **Induced Effects**: measure the effects of the changes in household income: employees laid-off by removing the analyzed sector from the economy may reduce their expenditures in restaurants and shops since they are no longer employed. These changes effect the related industries.
- **GDP**: Industry Gross Domestic Product is the contribution of each private industry and of government to the nation's output, or GDP. An industry's GDP, or its "value added," is equal to its gross output (which consists of sales or receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (which consist of energy, raw materials, semi-finished goods, and services that are purchased from domestic industries or from foreign sources). It can also be measured as the sum of incomes related to production, such as wages and salary accruals and gross operating surplus. (BEA)

Sources: Implan.com; Wikipedia.com