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Economics Group, Inc. ®

Brief

The FY-2018 Economic Development Impacts
of the Institute for Commercialization
of Florida Technology (formerly known as the Institute
for Commercialization of Public Research)

Submitted to:

Ms. Jane Teague, COO

Florida Institute
COMMERCIALIZATION
OF FLORIDA TECHNOLOGY

October 15, 2018

Overview and Methodology

The Institute for Commercialization of Florida Technology (the Institute) generates **significant and quantifiable** impacts that benefit the economic development of the State of Florida each year. Economic impacts are estimated by making use of the professionally accepted IMPLAN methodology, and the impacts are presented in the form of Employment, Household Income, Gross Domestic Product, Total Economic Impact and Fiscal Revenues. This Brief for FY-2018 updates the previously-presented economic impacts through FY-2017.

The Institute supports innovation-based companies throughout Florida. These ongoing activities, combined with the Institute's operational activities, result in positive and increasing economic impacts to Florida while strengthening the Strategic Plan for Economic Development of the State. **However, the Institute generates economic impacts that extend beyond those _directly_ related to these ongoing activities**. These "spillover" or multiplier impacts are the result of each businesses' supply relationships with other firms operating within Florida, the proportion of business value added[1] that accrues to households in the form of labor and capital income, and the propensity of households to spend income on goods produced within the local area.

Methodology

Economic models that explicitly account for inter-industry linkages (supply relationships), the generation of labor and capital income and the spending of household income have been used since the 1960's to estimate the contribution that a particular business or industry makes to the general economy. These "input-output" models recognize that, as an industry experiences an increase in the demand for its products or services, it in turn needs more goods and services from its suppliers and must increase its purchases from other industries in the economy. The effect on regional production resulting from successive rounds of inter-industry linkages is referred to as the _indirect effects._ The resulting increases in regional production also lead to expansions in employment and Household Income, and the increases in Household Income lead to increases in consumer spending, further expanding sales and production throughout the regional economy. The latter economic impacts are referred to as the _induced effects_. The successive waves of production, spending and more production result in _economic multiplier effects_, where the final or total increase in regional production, income and employment, respectively, is larger than the initial (or "_direct_") increase in production, income

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[1]"Value added" refers to the difference between business revenues and the cost of non-labor and non-capital inputs used to produce goods and/or services.

and employment. The total quantitative economic contribution of these activities, therefore, is comprised of a *direct effect*, an *indirect effect* and an *induced effect*.

The Institute provided information on total expenditures as well as employment data for firms to whom the organization provided initial support and funding, and subsequently, assistance to support their ongoing expansion. Utilizing the *direct* economic impacts from each operating year from FY-2011 to FY-2018, the *indirect* and *induced* economic impacts of these recurring activities were calculated using an extended *input-output (I/O)* model of the State of Florida economy. These comprehensive economic impacts were then totaled and are presented in the sections that follow.

Summary of the Economic Impacts

In its first year (FY-2011), the Institute and funded companies' operations supported 91 jobs throughout the State. Additional companies have been funded each year, and companies funded in prior years have grown as well, especially within the high-wage, high-skill Knowledge-Based Services sector of the Florida economy. This has resulted in an annual Total Economic Impact, which has been steadily increasing since 2011 due to the Institute's efforts in the selection and support of companies established through the commercialization of public research.

Additionally, Institute funding programs require a 1:1 private investment match, and funded companies raised in excess of $255 million between 2011 and 2018, with over $80 million in private funding being raised in FY-2018 alone. This is an over **10:1 ratio** of additional private investment to state funds provided in FY-2017, the most recent year in which the Institute received state funding. By showcasing investment opportunities that were previously "below the radar", Institute programs have increased the amount of capital flowing to Florida businesses. Despite a lack of state funding for the Institute in the most recent fiscal year, previously funded companies continue to hire additional staff and raise private capital each year.

> **Importantly, this has resulted in an annual economic impact that has been steadily increasing since FY-2011.**

The Total Economic Impact of the Institute's operations and growth of funded companies in FY 2018 is **$408 million**, **a 20 percent increase** from the Total Economic Impact of 340 million in FY 2017. **Throughout the seven-year period from FY-2011 through FY-2018, the Institute**

has contributed a cumulative total of close to $1.4 billion in Total Economic Impact to the State of Florida. These results are summarized in Table 1 below.

Table 1. Summary of the Total Recurring Economic Impacts on Florida Arising from Institute Operations and the Funded Companies – FY-2011 to FY-2018

Impact on:	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Employment (Jobs)	91	211	343	683	1,144	1,618	2,214	2,636	**8,940**
Labor (Household) Income ($ Million)	$5	$13	$20	$41	$66	$95	$132	$159	**$531**
Gross Domestic Product (Value Added $ Million)	$8	$19	$30	$61	$88	$129	$176	$214	**$725**
Federal, State & Local Fiscal Revenues ($ Million)	$2	$4	$6	$12	$20	$29	$40	$49	**$162**
Total Economic Impact ($ Million)	$16	$33	$52	$109	$168	$251	$340	$408	**$1,377**

Table may not equal sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

The Institute Contributes Significantly to Employment, Household Income and Gross Domestic Product (GDP) in the State of Florida

The Institute has a significant impact on Employment, Household Income and GDP (Value-Added) throughout the State. A majority of these impacts are created in the Knowledge-Based Services industry, which includes Software, Information Technologies and Life Sciences. The jobs created in the Knowledge-Based Services sector have higher wages than the statewide average ($63,000 a year versus a statewide average of $48,500[2]) and support Florida's Strategic Plan for Economic Development.

Of the 2,636 in annual Employment supported in FY-2018, a significant 1,889 or over 71 percent is created in the Knowledge-Based Services sector, followed by the Manufacturing and the Visitor Industry sectors. In FY-2018, of the annual $159 million generated by the Household Income, $119 million or close to 75 percent are created in the Knowledge-Based Services sector, followed by the Manufacturing and Wholesale Trade & Transportation Services sectors. Of the close to $214 million of Value-Added impacts arising from FY-2018, almost $150 million or 69 percent are generated in the Knowledge-Based Services sector. This is followed by the Manufacturing and Wholesale & Transportation Services sectors. The results of the impacts on

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[2]http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/quarterly-census-of-employment-and-wages

Employment, Household Income and Gross Domestic Product (GDP) are summarized in Tables 2 through 4 that follow.

Table 2. Total Annual Employment Supported by Institute Operations and the Funded Companies FY-2011 to FY-2018

Industry	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Knowledge-Based Services*	62	153	258	495	822	1,133	1,568	1,889	**6,380**
Manufacturing	10	18	23	57	95	151	194	220	**768**
Visitor Industry	4	10	16	33	67	93	129	153	**505**
Wholesale Trade & Transportation Services	5	10	14	31	63	95	124	142	**484**
Retail Trade	6	13	21	42	58	84	116	138	**478**
Government & Other	3	5	8	18	31	49	67	75	**256**
Construction	1	2	4	8	8	12	17	20	**72**
Total All Industries	**91**	**211**	**344**	**683**	**1,144**	**1,618**	**2,214**	**2,636**	**8,941**

Table may not equal sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

Table 3. Household Income Created by Institute Operations and the Funded Companies FY-2011 to FY-2018 ($ Thousands)

Industry	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Knowledge-Based Services*	$3,661	$9,141	$15,261	$29,450	$49,352	$68,448	$97,119	$119,062	**$391,494**
Manufacturing	826	1,509	1,918	4,797	6,186	9,990	12,848	14,805	**52,879**
Wholesale Trade & Transportation Services	323	621	905	2,029	4,097	6,251	8,130	9,307	**31,663**
Government & Other	268	496	716	1,636	2,662	4,329	5,719	6,436	**22,262**
Retail Trade	193	439	695	1,417	1,832	2,675	3,712	4,470	**15,433**
Visitor Industry	108	254	409	817	1,753	2,366	3,202	3,821	**12,730**
Construction	65	120	186	408	424	608	791	924	**3,526**
Total All Industries	**$5,444**	**$12,580**	**$20,090**	**$40,554**	**$66,306**	**$94,667**	**$131,521**	**$158,825**	**$529,987**

Table may not equal the sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

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*Major industries under this category are: Software, Information Technologies, Life Sciences, Professional, Administrative Services and Arts, Entertainment & Recreation, among others.

**Table 4. Gross Domestic Product (Value-Added) Impacts Arising from Institute Operations
and the Funded Companies – FY-2011 to FY-2018** ($ Thousands)

Industry	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Knowledge-Based Services*	$5,464	$13,173	$22,573	$43,000	$61,962	$86,901	$120,961	$149,274	**$503,308**
Manufacturing	1,286	2,449	3,129	7,710	9,273	16,208	21,355	24,741	**86,151**
Wholesale Trade & Transportation Services	548	1,042	1,510	3,410	6,642	10,377	13,557	15,495	**52,581**
Government & Other	420	796	1,175	2,629	4,032	6,585	8,868	10,082	**34,587**
Retail Trade	302	688	1,091	2,221	2,875	4,228	5,877	7,079	**24,361**
Visitor Industry	158	374	602	1,203	2,541	3,481	4,760	5,710	**18,829**
Construction	92	170	265	580	444	735	1,024	1,235	**4,545**
Total All Industries	**$8,270**	**$18,692**	**$30,345**	**$60,753**	**$87,769**	**$128,514**	**$176,403**	**$213,616**	**$724,362**

Table may not equal the sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

The Total Economic Impact of the Institute is Steadily Increasing Each Year: A Positive Outcome Despite Lack of State Support

A comprehensive measure of the Total Economic Impact of the Institute's ongoing operations and commercialization of public research is *Gross Economic Output*, representing the sum of gross revenues (receipts) of private firms plus the value of government services (valued at cost).

> **In FY-2018 alone, more than $408 million of Total Economic Impact was generated by the ongoing activities of the Institute. This is up significantly from $340 million in FY-2017 (a 20 percent increase) despite a recent lack of state funding in FY-2018, as companies funded through FY-2017 continue to hire each year and raise private capital. These total economic impacts have increased strongly since the Institute started deploying seed capital and advisory services in FY-2011.**
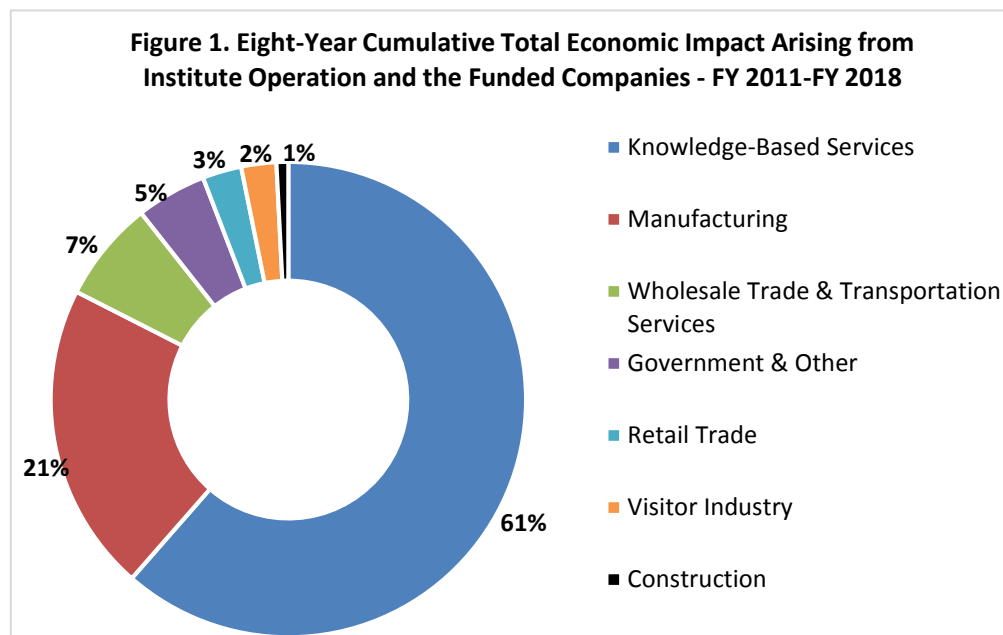
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*Major industries under this category are: Software, Information Technologies, Life Sciences, Professional, Administrative Services and Arts, Entertainment & Recreation, among others.

**Table 5. Total Annual Economic Impact Arising from Institute Operations
and the Funded Companies – FY-2011 to FY-2018** ($ Thousands)

Industry	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Knowledge-Based Services*	$8,638	$20,457	$35,005	$67,149	$103,597	$146,255	$202,212	$250,837	**$834,150**
Manufacturing	4,596	7,965	10,094	25,671	34,174	58,712	76,159	85,899	**303,270**
Wholesale Trade & Transportation Services	876	1,678	2,442	5,489	12,829	19,275	24,762	28,085	**95,436**
Government & Other	669	1,266	1,866	4,182	7,749	12,673	17,036	19,530	**64,971**
Retail Trade	406	924	1,464	2,981	4,515	6,578	9,090	10,843	**36,801**
Visitor Industry	268	634	1,019	2,037	4,319	5,916	8,092	9,727	**32,012**
Construction	194	359	560	1,223	1,315	2,035	2,752	3,288	**11,726**
Total All Industries	**$15,646**	**$33,283**	**$52,450**	**$108,732**	**$168,498**	**$251,445**	**$340,103**	**$408,209**	**$1,378,366**

Table may not equal sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

Figure 1. Eight-Year Cumulative Total Economic Impact Arising from Institute Operation and the Funded Companies - FY 2011-FY 2018
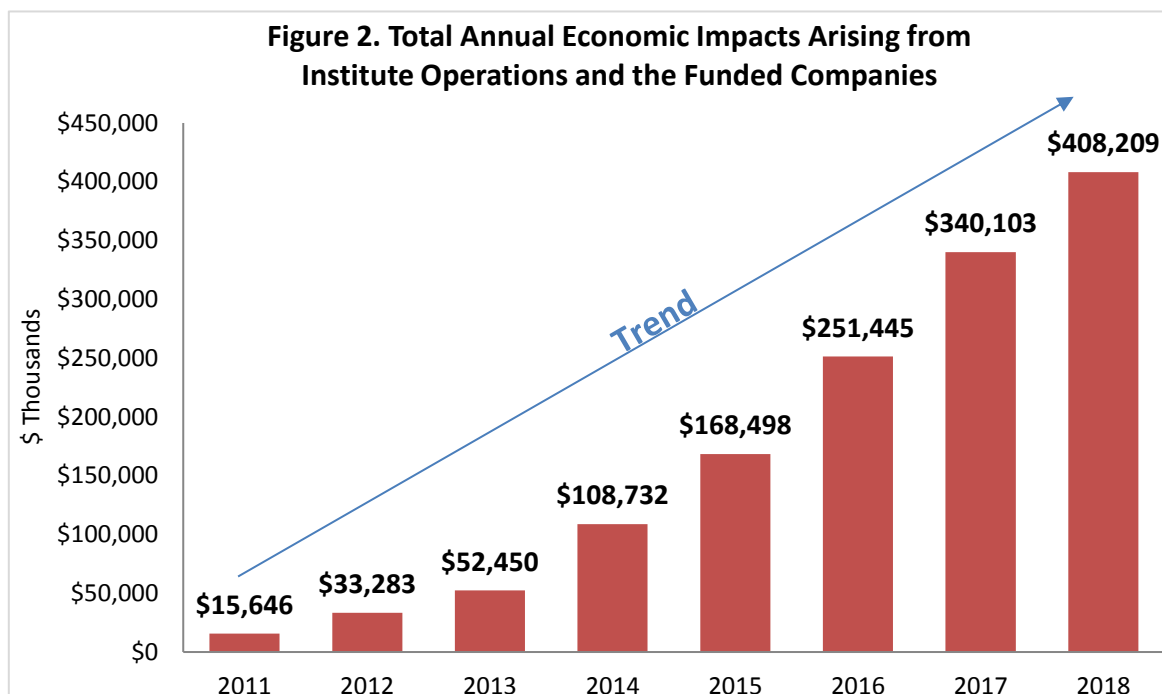
Source: The Washington Economics Group, Inc. (WEG)

Table 5 and Figure 1 show the industry distribution of the Total Economic Impact between FY-2011 and FY-2018, with the Knowledge-Based Services and the Manufacturing sectors being the top economic impact generators.

> **Over the past eight years, the cumulative Total Economic Impact for the Institute and its funded companies totaled close to $1.4 billion, providing important contributions to the creation of an innovation and knowledge-intensive economy.**

At the outset of the Institute's seed funding activities in FY-2011, the Total Economic Impact of the Institute and the funded companies was a modest $16 million. Since then, the Total Economic Impact has grown substantially as the Institute (as well as most of its funded companies) have grown and continued to raise capital and increase their payroll.

In FY-2018 alone, the Total Economic Impact of these ongoing operations on the Florida economy was more than $408 million as shown previously in Table 5. This is more than a **26-fold increase** in annual impacts since the onset of the Institute's activities in FY-2011, and up 20 percent from $340 million in FY-2017. Figure 2 below displays the steady increase in Total Economic Impact since FY-2011.

Figure 2. Total Annual Economic Impacts Arising from Institute Operations and the Funded Companies

Source: The Washington Economics Group, Inc. (WEG)

The Institute Indirectly Generates Significant Contributions to Federal, State and Local Fiscal Revenues

In addition to the principal economic impacts arising from the Institute's activities and the funded companies, the Institute's ongoing activities have resulted in significant recurring Fiscal Revenues for Federal, State and local governments as shown in Table 6 on the next page. At the start of the Institute's seed funding activities in FY-2011, the operations and funding activities generated close to $2 million in total Fiscal Revenues. In 2018, the annual total Fiscal Revenue impacts increased by over 30 times to more than $48 million, with the cumulative 8-year Fiscal Revenue impacts totaling close to $161 million.

**Table 6. Fiscal Contributions Arising from Institute Operations and the Funded Companies
FY-2011 to FY-2018** ($ Thousands)

Taxes Paid by:	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Total
Labor	$511	$1,188	$1,903	$3,842	$7,269	$10,484	$14,646	$17,739	**$57,582**
Capital	$24	$53	$83	$168	$331	$439	$586	$691	**$2,375**
Indirect Business Taxes	$490	$1,077	$1,714	$3,509	$5,310	$7,974	$10,758	$12,852	**$43,684**
Households	$429	$990	$1,582	$3,193	$5,697	$8,345	$11,786	$14,335	**$46,357**
Corporations	$169	$364	$617	$1,206	$1,086	$1,854	$2,507	$3,125	**$10,928**
Total	**$1,623**	**$3,672**	**$5,899**	**$11,918**	**$19,693**	**$29,096**	**$40,282**	**$48,741**	**$160,924**

Table may not equal sum of all due to rounding.
Source: The Washington Economics Group, Inc. (WEG)

The Estimated Economic Return on Investment (ROI) to the State of Florida from the Institute's Operations and Funded Companies

A key challenge facing public policy makers when deciding among competing projects is determining which projects merit the allocation of scarce taxpayer resources. One approach to this decision-making process is to determine the economic Return on Investment (ROI) to the taxpayers of Florida and to rank the projects based on the size of return. In this section, WEG estimates the economic ROI for FY-2018 based on funding levels through FY-2017 using two different methodologies:

1. The State of Florida ROI, that is the more strict and financial-oriented methodology used by the State to allocate resources, and

2. The Economic Development ROI that takes into account the Household Income generated for Florida residents due to Institute activities.

State of Florida ROI

This method of calculating ROI is the same as the one used by the Florida Office of Economic and Demographic Research (EDR) in evaluating potential revenues to the State. **This return compares the estimated State Fiscal Revenues generated to the investment that the State made in the Institute to produce these revenues.** Thus, this excludes Household Income impacts for Florida residents as well as Fiscal Revenues to local jurisdictions within the State.

Based on funding in FY-2017, the latest fiscal year that the Institute received state funding, the ROI calculation for FY-2018 includes **the estimated State Fiscal Revenues ($7.2 million) from the additional economic activity generated by the Institute and funded companies in FY-2018. The EDR "standard" ROI formula and results are as follows**.

$$ROI = \frac{State\ Fiscal\ Revenues}{State\ Investment}$$

$$(FY\text{-}2018) \quad ROI = \frac{7.2\ mil.}{5.5\ mil.}$$

$$ROI = 1.3x\ annually$$

Even under this strict definition of ROI, the benefit to the State is positive at 1.3x. This is largely due to increases in the revenues and employment of funded companies since FY-2011, resulting in greater State revenues. In addition, the ROI is expected to grow year after year as more companies are funded and existing companies funded or assisted by the Institute continue to expand.

Economic Development ROI (EDROI)

It is important to consider that in evaluating ROI to the State of Florida, there are other quantifiable benefits to be considered aside from direct Fiscal Revenues to the State. These include resulting Household Income for Florida residents and Fiscal Revenues that flow to local jurisdictions within Florida.

Based on these variables, WEG estimated the ROI utilizing a standard formula. **This return compares the estimated State and Local Fiscal Revenues plus Household Income generated by the investment that the State made to the Institute to produce these benefits.**

In FY-2018 the Economic Development ROI (EDROI) calculation includes the estimated Household Income ($158.8 million) benefiting Florida residents plus State and Local Fiscal Revenues ($13.1 million) from the additional economic activity generated by the Institute and funded companies. These benefits are then compared to the investment made by the State in FY-2017 ($5.5 million) to support the Institute and funded companies. The EDROI formula and results are as follows:

$$EDROI = \frac{Household\ Income + State\ and\ Local\ Fiscal\ Revenues}{State\ Investment}$$

$$EDROI = \frac{158.8\ mil. + 13.1\ mil.}{5.5\ mil.}$$

$$EDROI = 31x\ annually$$

The ROI of over 31x is an increase from the ROI of 26x calculated for FY-2017, due to corresponding increases in Household Income and State and Local Fiscal Revenues. The Economic Development ROI is also expected to grow, and is more comprehensive relative to economic development impacts than the strict definition used by the State.

Appendix I:
Methodology

IMPLAN Model

The multiplier impacts calculated by the IMPLAN model are based on input-output methodology, which explicitly considers the inter-industry linkages that exist within an economy. Each industry needs labor and inputs from other industries in order to produce economic output. Whenever an industry experiences an increase in the demand for its output, many other industries within that economy *indirect*ly experience an increase in demand as well because of these inter-industry linkages. This increase in demand that results from the need for material inputs is called the *indirect effects*. In addition, an increase in production within a region also leads to an increase in household income through the hiring of workers, which in turn generates further demands for goods and services within the region. Firms also need to expand their base of physical capital to meet higher levels of demand, and this too stimulates regional economic growth. The latter effects are referred to as *induced effects*. The inter-industry linkages and the *induced* effects on consumer and capital spending lead to successive rounds of production, and this process results in an increase in output that exceeds the initial change in demand, or a *multiplier effect*. Similarly, the increase in household income will exceed the initial payroll increase encountered in the industry that experienced the original increase in demand. The total change in employment in the regional economy is a multiple of the *direct* change in employment.

The following represents the system of equations that comprise the regional economy in an extended input-output model like IMPLAN:

$$x_1 = a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + \cdots + a_{1k}x_k + a_{1h}x_h + a_{1i}x_i + f_1$$
$$x_2 = a_{21}x_1 + a_{22}x_2 + a_{23}x_3 + \cdots + a_{2k}x_k + a_{2h}x_h + a_{2I}x_I + f_2$$
$$x_3 = a_{31}x_1 + a_{32}x_2 + a_{33}x_3 + \cdots + a_{3k}x_k + a_{3h}x_h + a_{3i}x_i + f_3$$
$$\vdots$$
$$x_k = a_{k1}x_1 + a_{k2}x_2 + a_{k3}x_3 + \cdots + a_{kk}x_k + a_{kh}x_h + a_{ki}x_i + f_k$$
$$x_h = a_{h1}x_1 + a_{h2}x_2 + a_{h3}x_h + \cdots + a_{hk}x_k + a_{hh}x_h + a_{hi}x_i + f_h$$
$$x_i = a_{i1}x_1 + a_{i2}x_2 + a_{i3}x_h + \cdots + a_{ik}x_k + a_{ih}x_h + a_{ii}x_i + f_i$$

The variables x_1 to x_k represent total production of output in each industry. The coefficients a_{ij} represent the purchases from industry "i" that are needed to produce a dollar of output in industry "j". These are known as the *direct requirement* coefficients. The variable x_h refers to household income and the coefficients a_{ih} refer to the average amount of household income spent on purchases

from industry "i", or the *average propensities to consume*. The coefficients a_{hi} are similar to the inter-industry purchases (a_{ij}'s), but they represent the household income that is generated from each dollar of output produced in industry "i". Similarly the variable x_I represents regional spending on capital goods, and the coefficients a_{Ij} represents the spending on capital goods for each dollar of output produced in industry "j". The coefficients a_{jI} represent the amount purchased from industry "j" for each dollar spent on capital goods within the region. The variables f_j represent the exogenous final demand faced by each industry, respectively.

This system of equation reduces, using matrix notation, to the following solution for industry output and household income:

$$X = (I - A)^{-1} F$$

X is the vector of industry outputs plus household income, and F is a vector of exogenous final demands. The "output multipliers" (i.e., the change in industry output and household income that results from a change in final demand for the output of a particular industry) are given in the columns of the $(I-A)^{-1}$ matrix. The IMPLAN software calculates these multipliers for counties, states and other sub-state regions. These multipliers can be used to provide a sense of the economic importance of an industry or an economic activity in a given region. The multipliers impacts for gross state product, labor and capital income and the government revenue impacts are derived from the basic output multipliers given by $(I-A)^{-1}$.

The IMPLAN model uses historical relationships between public-sector revenues and regional economic output in order to estimate the public-sector revenue impact resulting from the establishment of a new, or expansion of an existing economic activity.

Appendix II:
Economic Glossary

Definitions of Economic Terms Used in the Analysis	
Terms	**Definitions**
Employment (Jobs)	Total of full-time or part-time jobs.
Household (Labor) Income	All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
Gross Domestic Product (GDP)	The increased value of a product as a result of the economic inputs (labor and capital) expended at a given stage. In the IMPLAN Model, GDP is the sum of: Employee Compensation, Proprietor Income, Other Property Type Income (Interest) and *Indirect* Business Taxes.
Economic Impact	Total value of all transactions attributed to an activity.
Direct Effects	The set of expenditures applied to the predictive model (i.e., I/O multipliers) for impact analysis. It is a series (or single) of production changes or expenditures made by producers/consumers as a result of an activity or policy. These initial changes are determined by an analyst to be a result of this activity or policy. Applying these initial changes to the multipliers in an IMPLAN model will then display how the region will respond, economically to these initial changes.
Indirect Effects	The impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying *Direct* Effects to the Type I Multipliers.
Induced Effects	The response by an economy to an initial change (*direct* effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not a leakage to the regional economy. This money is re-circulated through the household spending patterns causing further local economic activity.

**Appendix III:
The Washington Economics Group, Inc. (WEG)
Project Team and Qualifications**

J. Antonio Villamil
Founder and Senior Advisor

Tony Villamil is a nationally recognized economist, with over thirty-five years of successful career as a business economist, university educator and high-level policymaker for both federal and state governments. Tony was selected in 2008 as the founding Dean of the School of Business of St. Thomas University, serving successfully until December 31, 2013 at which time he resigned to return as senior advisor to the growing economic consulting practice that he founded, The Washington Economics Group, Inc. (WEG), a Florida-based firm established in 1993 upon returning to the State from his public service in Washington, D.C.

Dr. Villamil is the immediate past Chairman of the Governor's Council of Economic Advisors of Florida, and during 1999-2000, he was selected by Governor Bush as his first Director for Tourism, Trade and Economic Development. Previously, he was appointed by President George H. W. Bush as U.S. Undersecretary of Commerce for Economic Affairs, receiving unanimous U.S. Senate confirmation. Presently he is active on Corporate Board of Directors, including Mercantil Bank, N.A., Pan American Life Insurance Group (PALIG) and Spanish Broadcasting System (SBS).

Among civic and professional leadership positions, he is currently Chairman of the Economic Roundtable of the Beacon Council-Miami-Dade County's official economic development organization and a member of the Board of Directors. He serves as Senior Fellow of the James Madison Institute (JMI) of Tallahassee, Florida.

He earned Bachelor and Master Degrees in Economics from Louisiana State University (LSU), where he also completed coursework for the Ph.D. Degree. In 1991, Florida International University (FIU) awarded him a Doctoral Degree in Economics (hc), for "distinguished contributions to the Nation in the field of economics." He frequently speaks to business, government and university audiences on the Florida economy, U.S. trade policy and economic development issues.

Tony is a resident of Coral Gables, Florida, where he lives with his family, traveling frequently throughout Florida, the U.S. and globally to conduct research and presentations for clients of The Washington Economics Group, Inc. (WEG)

Charles K. Yaros
Associate Consultant for Economics

Chuck Yaros is an Associate Consultant for Economics at The Washington Economics Group, Inc. (WEG). He serves as economic consultant in the areas of financial economics and economic impact studies. Prior to joining WEG he was a Vice President and Portfolio Strategist at Shay Financial Services in Miami where he specialized in developing, implementing and managing interest rate risk and capital optimization strategies for financial institutions.

Mr. Yaros has over 20 years of experience as a business and financial economist, having worked in a number of positions of progressive responsibility in the South Florida business community. Additionally, he has spoken and taught courses on financial risk management.

Chuck received his undergraduate degree in Economics with Honors from Trinity College and his Master's degree in Economics from Duke University, where he also completed course work for the Ph.D. degree. Chuck and his family are residents of Coral Gables, Florida.

Ivan Noltenius
Associate Consultant for Economic Analysis

Ivan Noltenius is an Associate Consultant for Economic Analysis at The Washington Economics Group (WEG). Ivan conducts data acquisition and economic analysis for the multifaceted projects of the firm.

Ivan has over three years of experience in financial data analysis as well as accounting. Ivan was a hedge fund accountant at Kaufman Rossin (now ALPS), and also worked in operations and managed company financial records at tech startup company 71 Pounds.

Ivan received his Bachelors of Arts degree in Economics with a minor in Mathematics from the University of Memphis. Ivan is a resident of Kendall, Florida.

Haydee M. Carrion
Senior Research Assistant

Haydee M. Carrion has been Executive Assistant to Dr. Villamil since the firm's founding in 1993. She has senior level expertise in multi-media presentations and in the preparation and design of complex reports and documents for clients, utilizing the latest technologies.

In 2012, WEG promoted her to Senior and Project Research Assistant to the firm, given outstanding performance in web-based research and in assistance to the firm's Principal in the preparation of audio-visual presentations for clients and in desktop publishing. Ms. Carrion is fluent in Spanish, with experience in the preparation of economics and business documents in the language.

Ms. Carrion has been with WEG for over 20 years. Ms. Carrion holds degrees in Business Administration and Office System Technologies from Miami-Dade College.

The Washington Economics Group, Inc. (WEG) has been successfully meeting client objectives since 1993 through economic consulting services for corporations, institutions and governments of the Americas. We have the expertise, high-level contacts, and business alliances to strengthen your competitive positioning in the growing marketplaces of Florida, Latin America and the Caribbean.

Our roster of satisfied clients, over the past 20 years, includes multinational corporations, financial institutions, public entities, and non-profit associations expanding their operations in the Americas.

EXCLUSIVE CONSULTING APPROACH:

Each client is unique to us. We spend considerable time and effort in understanding the operations, goals, and objectives of clients as they seek our consulting and strategic advice. We are not a mass-production consulting entity nor do we accept every project that comes to us. We engage a limited number of clients each year that require customized consulting services in our premier areas of specialization. These premier and exclusive services are headed by former U.S. Under Secretary of Commerce, Dr. J. Antonio Villamil, with over thirty-five years of experience as a business executive and as a senior public official of the U.S. and most recently of Florida.

PREMIER CONSULTING SERVICES:

Comprehensive Corporate Expansion Services. Our seamless and customized service includes site selection analysis, development of incentive strategies and community and governmental relations.

Economic Impact Studies highlight the importance of a client's activities in the generation of income, output and employment in the market area serviced by the entity. These studies are also utilized to analyze the impact of public policies on key factors that may affect a client's activities such as tax changes, zoning, environmental permits and others.

Strategic Business Development Services. These services are customized to meet client objectives, with particular emphasis in the growing marketplaces of Florida, Mexico, Central and South America. Recent consulting assignments include customized marketing strategies, country risk assessments for investment decisions and corporate spokesperson activities and speeches on behalf of the client at public or private meetings.

For a full description of WEG capabilities and services,
please visit our website at:
www.weg.com

The Washington Economics Group, Inc.
Representative Client List 1993-2018

Multinational Corporations	
ALSTOM	Lockheed Martin
Ameritech International	Lucent Technologies
Bureau Veritas (BIVAC)	MasterCard International
Carrier	MediaOne/AT&T
Carnival Corp.	Medtronic
Esso Inter-America	Merck Latin America
FedEx Latin America	Microsoft Latin America
Genting Group	Motorola
Hyatt	Phelps Dodge
IBM	SBC Communications
Joseph E. Seagram & Sons, Inc. (Vivendi)	Telefonica Data Systems
KPMG	Visa International

Construction and Real Estate Development Firms	
Areas USA, Inc.	Inland Port Systems, LLC
Barron Collier Companies	Landstar Development
Berkowitz Development Group	LXR Luxury Resorts
Boca Developers	Miami Asset Management Company, Inc.
CDS International	Miapolis, LLC
Century Homebuilders	Odebrecht Construction, Inc.
Codina Realty	Palazzo Las Olas Group, LLC
Chateau Group	Tate Capital
Empire World Towers, LLC	The Allen Morris Company
ESJ Capital Partners	The Related Group, Inc.
Ferro Investment Group, LLC	The Rouse Company
Flagler Development	The St. Joe Company
Florida East Coast Realty Inc.	Trammel Crow Company
Florida Realtors	WCI Development Companies

Engineering, Planning and Design Firms	
AECOM (DMJM Harris)	HNTB
Atkins (PBSJ)	Kimley-Horn and Associates
CDM Smith (Wilbur Smith Associates)	Parsons Brincherhoff
Golder Associates	Redevelopment Management Associates (RMA)

Colleges and Universities	
Alabama State University	Rocky Mountain College of Art and Design
Barry University	San Ignacio College
Eckerd College	Sistema Universitario Ana G. Méndez
Embry-Riddle Aeronautical University	St. Thomas University
Florida Agricultural & Mechanical University	University of Central Florida
Florida International University	Universidad Politécnica de Puerto Rico
Full Sail University	University of Florida
Keiser University	University of Miami
Los Angeles Film School	UM's Rosenstiel School of Marine and Atmospheric Science
Miami-Dade College	University of South Florida/*ENLACE*
Palm Beach Medical Education Corporation	University of South Florida

Law Firms	
Becker & Poliakoff	
Bilzin Sumberg	Gloria Roa Bodin, Esq.
Carlton Fields	Greenberg Traurig, LLP
Colson Hicks Eidson	Holland & Knight, LLP
DLA Piper	Steel Hector & Davis
Dunbar & Dunbar	Tew Cardenas, LLP

Financial Institutions	
ABN-AMRO Bank	First Union National Bank (Wells Fargo)
Advantage Capital	Hemisphere National Bank
Allen & Company	HSBC/Marine Midland
BNP Paribas	International Bank of Miami (First United Bank)
BAC Florida	Lazard Freres & Co.
Bank Atlantic Corp.	Mercantil Bank N.A.
BankUnited, FSB	Pan American Life Insurance Group (PALIG)
Barclays Bank	PointeBank, N.A.
ESJ Capital Partners	Seitlin Insurance
Espirito Santo Bank	Sun Trust Corporation
FBA	The Equitable/AXA Advisors
FIBA	TD Bank, N.A.
Fiduciary Trust International	Union Planters Bank of Florida (Regions)

Florida-Based Companies

All Aboard Florida	Iberia Tiles
AmericanAirlines Arena	International Speedway Corporation (ISC)
Atlantic Sapphire	Jungle Island
BMI Companies	Lake Nona
Communikatz	Mercy Hospital
CoreMessages	Miami Dolphins
Daytona International Speedway	Nopetro LLC
Dosal Tobacco	Palm Beach Premier
Drivers Club Miami	Resorts World Miami (RWM)
Farm Stores	Ron Sachs Communications
Fishkind & Associates	Rolling Loud
Florida Hospital	Sprint of Florida
Florida Marlins	eMerge Americas
Florida Power & Light	The Biltmore Hotel
Flo-Sun Sugar Corp.	The Heat Group
Greater Miami Convention & Visitors Bureau	Ultimate Software
Greater Ft. Lauderdale Alliance	Ultra Music Festival
Homestead-Miami Speedway	VICTUS

Non-Florida-Based Institutions

Darlington Raceway	Richmond International Raceway
Georgia Retail Federation	Talladega Superspeedway
Illinois Retail Merchant Association	The Seed Foundation
Indiana Retail Council	United States Tennis Association (USTA)
Kansas Speedway	Virginia International Raceway
Martinsville Speedway	Washington Retail Association
Progress Energy	Watkins Glen International

Public Institutions and Non-Profit Organizations

Baptist Health South Florida	Greater Tampa Chamber of Commerce
BayCare Health System	Greater Tallahassee Chamber of Commerce
Broward County Public Schools	Independent Colleges and Universities of Florida (ICUF)
Career Source North Central Florida	Indian River County Chamber of Commerce
Chapman Partnership	Inter-American Development Bank
Citizens of Clean Energy	Jackson Health Systems
City of Boca Raton	Jacksonville Chamber of Commerce
City of Coral Gables	Jewish Community Services
City of Doral	Louisiana Committee for Economic Development
City of Plantation	Miami Marine Stadium
City of West Palm Beach	Miami Museum of Science
Economic Development Commission of Collier County	Miami-Dade County Public Schools
Economic Development Commission of Lee County	Miami-Dade Expressway Authority
Economic Development Commission of Mid-Florida	Miami Downtown Development Authority
Enterprise Florida, Inc.	Palm Beach International Agricultural Summit
Farm Share, Inc.	Port of Miami
Florida Bankers Association	SEIU Florida
Florida Citrus Mutual	South Florida Progress Foundation
Florida Chamber of Commerce	Space Florida
Florida International Bankers Association	State of Florida
Institute for Commercialization of Florida Technology (formerly known as the Institute for Commercialization of Public Research	SW Florida Regional Chamber of Commerce
	Sylvester Comprehensive Cancer Center
	Tampa-Hillsborough Expressway Authority
Florida League of Cities	The Beacon Council
Florida Nursing Homes Alliance	The Florida Bar
Florida Outdoor Advertising Association	The Florida Chamber Foundation
Florida Ports Council	The Florida Coalition for Capital
Florida Retail Association	United Nations Economic Development Program
Florida Sports Foundation	United Teachers of Dade
Florida Venture Forum	Visit Florida
Friends of Miami Marine Stadium	Zoological Society of Florida

Latin America-Based Institutions

Allied-Domecq, Mexico	*Mercantil Servicios Financieros*, Venezuela
Association of Peruvian Banks	Peruvian Management Institute (IPAE)
Federation of Inter-American Financial Institutions (FIBAFIN)	The Brunetta Group of Argentina
Fonalledas Enterprises, Puerto Rico	