

THE RISE OF ROWAN UNIVERSITY AS A REGIONAL AND STATEWIDE ECONOMIC ENGINE

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TABLE OF CONTENTS

| | |
|--|-----|
| EXECUTIVE SUMMARY | iii |
| 1.0 INTRODUCTION | 1 |
| 1.1 ABOUT ROWAN UNIVERSITY | 1 |
| 1.2 RECENT ACCOMPLISHMENTS AND FUTURE PRIORITIES OF ROWAN UNIVERSITY ... | 1 |
| 1.3 UNIVERSITIES AS REGIONAL ECONOMIC ENGINES..... | 2 |
| 2.0 INPUT-OUTPUT METHODOLOGY | 4 |
| 2.1 OVERVIEW..... | 4 |
| 2.2 INPUT-OUTPUT MODEL THEORY..... | 4 |
| 2.3 INPUT-OUTPUT MODEL MECHANICS..... | 4 |
| 2.4 SCOPE OF ROWAN UNIVERSITY'S IMPACT | 5 |
| 3.0 IMPACTS FROM CAPITAL INVESTMENTS | 6 |
| 3.1 OVERVIEW..... | 6 |
| 3.2 MAGNITUDE OF DIRECT CAPITAL INVESTMENTS | 6 |
| 3.3 ECONOMIC IMPACT FROM CAPITAL INVESTMENTS..... | 7 |
| 3.4 INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM CAPITAL INVESTMENTS . | 7 |
| 3.5 FISCAL IMPACT FROM CAPITAL INVESTMENTS | 8 |
| 3.6 IMPLICATIONS..... | 9 |
| 3.7 LOOKING TO THE FUTURE..... | 9 |
| 4.0 IMPACTS FROM ONGOING OPERATIONS | 11 |
| 4.1 OVERVIEW..... | 11 |
| 4.2 MAGNITUDE OF DIRECT OPERATING EXPENDITURES..... | 11 |
| 4.3 ECONOMIC IMPACT FROM OPERATING EXPENDITURES | 12 |



| | | |
|-----|---|-----|
| 4.4 | INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM OPERATING EXPENDITURES..... | 13 |
| 4.5 | FISCAL IMPACT FROM OPERATING EXPENDITURES..... | 14 |
| 4.6 | IMPLICATIONS..... | 15 |
| 4.7 | LOOKING TO THE FUTURE..... | 16 |
| 5.0 | ECONOMIC AND FISCAL IMPACT FROM ANCILLARY SPENDING..... | 18 |
| 5.1 | OVERVIEW..... | 18 |
| 5.2 | ANCILLARY SPENDING BY STUDENTS..... | 18 |
| 5.3 | ANCILLARY SPENDING BY OTHERS..... | 19 |
| 5.4 | ECONOMIC IMPACT FROM ANCILLARY SPENDING BY STUDENTS..... | 19 |
| 5.5 | INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM ANCILLARY SPENDING BY STUDENTS..... | 20 |
| 5.6 | FISCAL IMPACT FROM ANCILLARY SPENDING BY STUDENTS..... | 21 |
| 5.7 | LOOKING TO THE FUTURE..... | 22 |
| 6.0 | ECONOMIC IMPACT FROM ENHANCING EARNING POWER..... | 23 |
| 6.1 | OVERVIEW..... | 23 |
| 6.2 | WAGE PREMIUM..... | 23 |
| 6.3 | AGGREGATE WAGE PREMIUM FROM ROWAN UNIVERSITY ALUMNI LIVING AND WORKING IN NEW JERSEY..... | 23 |
| 6.4 | ECONOMIC AND FISCAL IMPACT FROM AGGREGATE WAGE PREMIUM FROM ROWAN UNIVERSITY ALUMNI LIVING AND WORKING IN NEW JERSEY..... | 24 |
| 6.5 | PRODUCING SKILLED WORKERS IN STRATEGIC INDUSTRIES..... | 25 |
| 6.6 | EXPORTING GRADUATES IS ALSO GOOD FOR THE STATE OF NEW JERSEY..... | 26 |
| 7.0 | CONCLUSION..... | 27 |
| | APPENDIX A – ECONOMIC AND FISCAL IMPACT METHODOLOGY..... | A-1 |

EXECUTIVE SUMMARY

Rowan University is a public university based in southern New Jersey that is currently undergoing a period of significant growth, opportunity, and achievement. Since the arrival of its seventh president, Dr. Ali A. Houshmand, in 2011:

1. Rowan partnered with Cooper University Health Care to create **Cooper Medical School of Rowan University**;
2. The **School of Osteopathic Medicine** was transferred to Rowan from the University of Medicine and Dentistry of New Jersey;
3. Rowan became the State's second comprehensive public research university, and **quintupled the annual amount of its funded research efforts**; and
4. Rowan grew its **endowment** from \$142 million to \$180 million over the past 5 years and its **student enrollment** to 15,000.
5. Rowan has risen from being the **sixth largest university in the state to the fourth**.

One of the four "pillars" of the 10-year strategic plan developed by the University and Dr. Houshmand, it is clear that the specific intention is that Rowan be an economic engine for the region. The purpose of this report, "**The Rise of Rowan University as a Regional and Statewide Economic Engine**," is to identify and quantify four ways in which Rowan University contributes to the statewide economy (see Table ES.1):

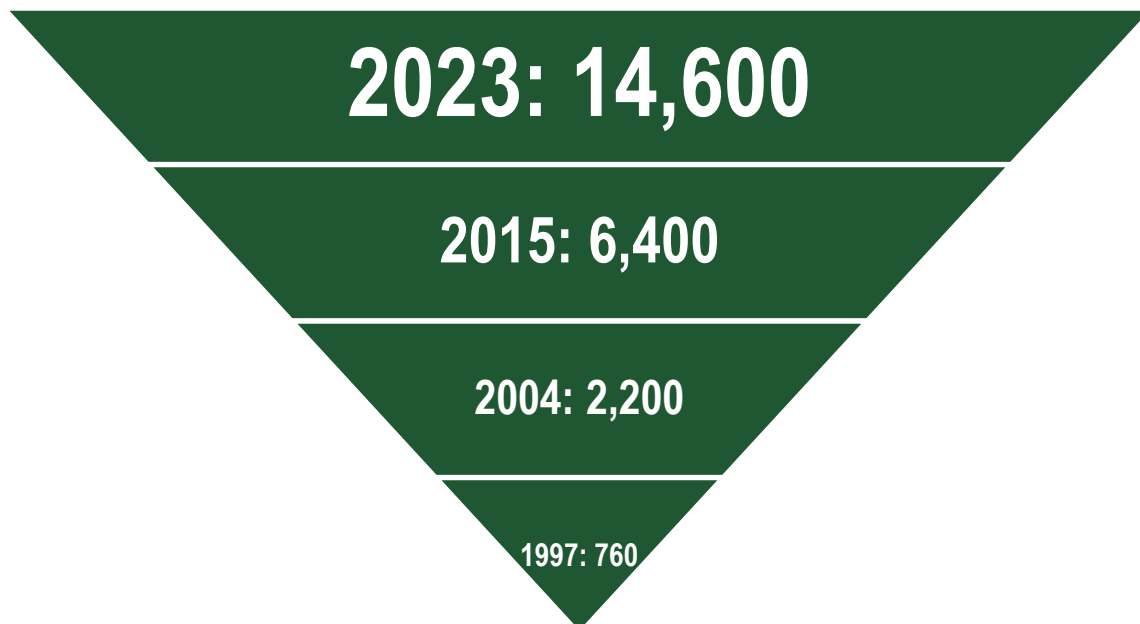
1. Rowan undertakes major capital projects which have represented construction activity and related employment at a time of slack demand. The \$210 million in capital projects undertaken in the past five years have produced a **\$340 million statewide economic impact, supporting 2,700 jobs and generating \$9 million in State tax revenues**.
2. Rowan represents a significant amount of operating activity, and is one of the largest employers and purchasers of goods and services in southern New Jersey. Its annual operating budget of \$440 million results in a **\$900 million statewide economic impact each year, supporting 6,400 jobs and generating \$11 million in State tax revenues**.
3. Rowan University attracts students and visitors to the region and state, whose spending stimulates the regional and state economies. It is estimated that students alone inject more than **\$100 million into the State economy each year, which supports 1,300 jobs and \$3 million in State tax revenues**.
4. Rowan University **educates and credentials students**, translating into an estimated **\$140 million in additional household income within the State**, helping the State retain residents it has invested primary and secondary education resources in, and producing skilled workers in key industries facing growing demand and labor shortages.
5. All told, on an annualized basis Rowan University produces **\$1.23 billion in statewide economic impact, which supports 9,200 jobs and generates \$19 million in State tax revenues**.

TABLE ES.1 – SUMMARY OF ROWAN UNIVERSITY’S IMPACT IN THE STATE OF NEW JERSEY

| Impact from Capital Investments (FY 2010 to FY 2014) | Impact from Operations (FY 2015) | Impact from Student Spending (per year) | Additional Household Income to Alumni (per year) | Annualized Total (per year) |
|--|---|--|---|---|
| \$211 million in direct investment | \$440 million operating budget | \$107 million in annual student spend | \$140 million more in annual earning power | N/A |
| \$338 million statewide impact | \$907 million statewide impact | \$115 million statewide impact | \$138 million statewide impact | \$1.23 billion statewide impact |
| 2,700 jobs supported in construction period | 6,400 jobs¹ supported | 1,300 jobs supported | 1,000 jobs supported | 9,200 jobs supported |
| \$9 million in tax revenues generated | \$11 million in tax revenues generated | \$3 million in tax revenues generated | \$3 million in tax revenues generated | \$19 million in tax revenues generated |

One direct impact of Rowan’s past and projected growth is the rapid increase in jobs throughout the State that are directly and indirectly supported by its ongoing operations. Between 1997 and 2004, this number tripled from 760 to 2,200. From 2004 to 2015 it will have tripled again to 6,400. By 2023, it will more than double, to almost 15,000 (see Figure ES.1). Hence, with Rowan’s growth comes additional positive economic impact for the State as a whole, and an opportunity to play a larger role as an economic engine in southern New Jersey and an innovation hub for the State.

FIGURE ES.1 – INCREASE IN JOBS SUPPORTED BY ECONOMIC IMPACT FROM ROWAN UNIVERSITY OPERATIONS OVER TIME



¹ Note that direct jobs associated with operations are Rowan employees, while most of the jobs supported by other impact categories and with indirect and induced economic impacts are not direct employees of Rowan.

1.0 INTRODUCTION

1.1 ABOUT ROWAN UNIVERSITY

Rowan University is a public university based in southern New Jersey that is currently undergoing a period of significant growth, opportunity, and achievement. Founded in 1923 as Glassboro Normal School, the institution was renamed New Jersey State Teachers College at Glassboro in 1937 and Glassboro State College in 1970.

The school became Rowan College of New Jersey as a result of a \$100 million gift by Henry and Betty Rowan in 1992. The Rowans' donation was made with the stipulation that priority be given to the creation of an engineering school. Today, the College of Engineering is nationally ranked (34th) by US News and World Report.

Rowan University (the school earned university status in 1997) is now a thriving institution of higher learning with 15,000 students (see Figure 1.1). Between 1992 and 2013, its annual operating budget grew six-fold from \$63 million to \$400 million and research and sponsored project activity levels soared from \$100,000 to \$24 million.

FIGURE 1.1 – ROWAN UNIVERSITY AT A GLANCE

14,778 students can select from **59** undergraduate majors, **56** graduate degree programs, **2** doctorate programs, and **2** professional programs

1,143 faculty members, of which **89** percent have terminal degrees

Student body hails from **35** states and **23** countries

Alumni network of **83,000** representing all **50** states plus **32** countries

1 of only 2 universities in the US with two medical schools granting MD and DO degrees

17 students have won Fulbright Scholarships since 2000

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

1.2 RECENT ACCOMPLISHMENTS AND FUTURE PRIORITIES OF ROWAN UNIVERSITY

The past few years have seen **exciting developments** and **explosive growth** for Rowan University. In 2012, Governor Christie, through an executive reorganization, called for Rowan University and Cooper University Health Care to partner and create Cooper Medical School of

Rowan University, a new four-year MD granting medical school in Camden. In 2013, the School of Osteopathic Medicine was transferred to Rowan University from the University of Medicine and Dentistry of New Jersey. Also in 2013, Rowan University became the State of New Jersey's second comprehensive public research university. In 2014, the University entered into a unique partnership with the former Gloucester County College, now named "Rowan College of Gloucester County," to increase access and provide educational alternative to area students. Finally, Rowan Boulevard, a \$300 million mixed-use redevelopment project initiated in 2008, has already had a transformative effect on downtown Glassboro.

Rowan University's dynamic and innovative leader, **Dr. Ali A. Houshmand**, has served as president since 2011, previously serving as Provost and Senior Vice President for Academic Affairs. Under Dr. Houshmand's leadership, Rowan University has aggressively added new degree programs, grown its endowment to more than \$180 million, and positioned itself to be a prominent knowledge center and economic force in southern New Jersey. In fact, one of Dr. Houshmand's four stated strategic pillars is that **Rowan University serves as an economic engine in southern New Jersey.**

1.3 UNIVERSITIES AS REGIONAL ECONOMIC ENGINES

There is a growing awareness of the role of universities as regional economic engines. Known for advancing knowledge and educating students, universities are also often among a region's most prominent initiators of capital projects, its largest employers, its most hospitable business incubators, and its biggest draws for visitor spending. Their economic footprint in turn supports a wide range of industries and economic activity that grows various local and state tax bases and thus generates local and state tax revenues. And, as institutions anchored in a particular location, universities are often among a community's largest sources of community-serving resources and community-sourced purchasing.²

The purpose of this report, "**The Statewide Economic Impact of Rowan University,**" is to identify and quantify the ways in which Rowan University contributes to its regional and state economies. Similar studies were commissioned by Rowan University in 1997 and 2004, but given its rapid growth in the past few years, now is an appropriate time to revisit and restate these impact estimates.

This report looks at four distinct ways in which Rowan University contributes to its regional and state economies:

1. Rowan University undertakes major capital projects that have generated construction activity and related employment during a time of slack demand (Section 3).
2. Rowan University represents a significant amount of ongoing annual operating activity, and is among the largest employers and purchasers of goods and services in southern New Jersey (Section 4).

² Community-serving resources and community-sourced purchasing will be explored in an upcoming report quantifying the local impacts of Rowan University.

3. Rowan University draws students and visitors into the region and state, whose spending stimulates the regional and state economies (Section 5).
4. Rowan University educates and credentials students, whose additional earning power benefits the regional and state economies they then graduate into and participate in (Section 6).

Woven into these four sections of the report are numerous aspects of Rowan University's contribution to its regional and state economies. Together these facets reflect the scale and diversity of Rowan University's impact, an impact which is large and growing.



2.0 INPUT-OUTPUT METHODOLOGY

2.1 OVERVIEW

Economic impact estimates are generated by utilizing **input-output models** to translate an initial amount of direct economic activity into the total amount of economic activity that it supports, which includes multiple waves of spillover impacts generated by spending on goods and services and by spending of labor income by employees. This section summarizes the methodologies and tools used to construct, use, and interpret the input-output models needed to estimate Rowan University's economic impact.

2.2 INPUT-OUTPUT MODEL THEORY

In an inter-connected economy, every dollar spent generates two spillover impacts:

- First, some amount of the proportion of that expenditure that goes to the purchase of goods and services gets circulated back into an economy when those goods and services are purchased from local vendors. This represents what is called the “**indirect effect**,” and reflects the fact that local purchases of goods and services support local vendors, who in turn require additional purchasing with their own set of vendors.
- Second, some amount of the proportion of that expenditure that goes to labor income gets circulated back into an economy when those employees spend some of their earnings on various goods and services. This represents what is called the “**induced effect**,” and reflects the fact that some of those goods and services will be purchased from local vendors, further stimulating a local economy.

The role of input-output models is to determine the linkages across industries in order to model out the magnitude and composition of spillover impact to all industries of a dollar spent in any one industry. Thus, the total economic impact of Rowan University is the sum of its own direct economic footprint plus the indirect and induced effects generated by that direct footprint.

2.3 INPUT-OUTPUT MODEL MECHANICS

To model the impacts resulting from the direct expenditures generated by Rowan University, Econsult Solutions, Inc. developed a customized economic impact model using the **IMPLAN** input/output modeling system. IMPLAN represents an industry standard approach to assess the economic and job creation impacts of economic development projects, the creation of new businesses, and public policy changes.³

³ See Appendix A for more detail on Econsult's economic and fiscal impact methodology

IMPLAN is one of several popular choices for regional input-output modeling. Each system has its own nuances in establishing proper location coefficients. IMPLAN uses a location quotient to determine its regional purchase coefficient (RPC). This represents the proportion of demand for a good that is filled locally; this assessment helps determine the multiplier for the localized region. Additionally, IMPLAN also accounts for inter-institutional transfers (e.g. firms to households, households to the government) through its Social Account Matrix (SAM) multipliers. IMPLAN takes the multipliers and divides them into 440 industry categories in accordance to the North American Industrial Classification System (NAICS) codes.

These economic impacts in turn produce one-time or ongoing increases in various tax bases, which yields temporary or permanent increases in various tax revenues. To estimate these increases, Econsult Solutions, Inc. created a **fiscal impact model** to translate total economic impacts into their commensurate tax revenue gains.

2.4 SCOPE OF ROWAN UNIVERSITY'S IMPACT

For the purposes of this report, four facets of Rowan University's operations were modeled: (1) capital investments, (2) ongoing operations, (3) ancillary spending by students and visitors, and (4) increased earnings through the wage premium associated with degrees conferred. Economic impacts were sized to the following geographies: (1) "**Region**," which is defined as the two-county region consisting of Camden County and Gloucester County, since that is where the bulk of Rowan University's direct operations are located, (2) "**South Jersey**," which is defined as the eight-county region consisting of Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean, and Salem counties, and (3) "**State**," which is the State of New Jersey. Fiscal impacts were calculated solely at the state level, although Rowan University's operations also produce increased tax revenues at various local levels as well.

3.0 IMPACTS FROM CAPITAL INVESTMENTS

3.1 OVERVIEW

An important way that Rowan University is a large and growing contributor to its regional and state economies is through its **capital investments**. These investments represent a significant amount of construction activity, which supports construction-related jobs, creates demand for various goods and services, and generates statewide tax revenues. These investments also stimulate additional nearby private investment, as evidenced most prominently by the \$300 million Rowan Boulevard project that has transformed the downtown retail district of Glassboro. Hence, as Rowan University continues to grow, that growth will be manifested in an expanded campus, new buildings, and aggressive participation in local real estate markets, which results in an even bigger economic impact in the Region, South Jersey, and the State as a whole.

3.2 MAGNITUDE OF DIRECT CAPITAL INVESTMENTS

Between Fiscal Years (FY) 2010 and 2014, Rowan University made **\$211 million in capital upgrades**, including building modernizations, infrastructure investments, and new equipment. This \$211 million includes over \$89 million in construction for the medical school in Camden. These expenditures put construction workers to work, created demand for various goods and services, and generated statewide tax revenues.

TABLE 3.1 – CAPITAL INVESTMENTS BY ROWAN UNIVERSITY FROM FY 2010 TO FY 2014⁴

| Investment Type | Amount (\$M) |
|--|----------------------------|
| Total 2010-2014 Cap Ex Spending | \$211.3 |
| Less: Acquisitions and Other Unmodelable Costs | \$10.8 |
| Modelable Costs | \$200.5 |
| Less: Retail/Wholesale Margins | \$18.0 |
| Modeled Amount⁵ | \$182.5⁶ |

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

⁴ Throughout the report, unless otherwise indicated, dollar amounts are not inflation-adjusted.

⁵ Not all expenditures directly benefit the geography in which they are located. The input-output modeling analyses conducted in this report account for this by excluding dollars spent with non-local vendors which therefore do not circulate locally.

⁶ Throughout the report, totals may not sum exactly due to rounding.

3.3 ECONOMIC IMPACT FROM CAPITAL INVESTMENTS

The \$211 million in capital investments from FY 2010 to FY 2014 by Rowan University in turn produced spillover impacts, as vendors ramped up their activities in response to this demand and as construction and other workers spent a portion of their earnings within the regional and state economies. The scale of this one-time⁷ impact was significant (see Table 3.2). It is estimated that this magnitude of capital investments generated:

- \$312 million in total economic impact within the Region (i.e. Gloucester and Camden counties), supporting 2,600 jobs and \$92 million in labor income.
- \$329 million in total economic impact within South Jersey, supporting 2,700 jobs and \$153 million in labor income.
- **\$338 million in total economic impact within the State, supporting 2,700 jobs and \$157 million in labor income.**

TABLE 3.2 – ESTIMATED TOTAL ONE-TIME ECONOMIC IMPACT FROM CAPITAL INVESTMENTS BY ROWAN UNIVERSITY FROM FY 2010 TO FY 2014⁸

| Economic Impact from Capital Investments | Economic Impact to the Region Economy | Economic Impact to the South Jersey Economy | Economic Impact to the State Economy |
|--|---------------------------------------|---|--------------------------------------|
| Direct Expenditures (\$M) ⁹ | \$182.5 | \$182.5 | \$182.5 |
| Indirect & Induced Expenditures (\$M) | \$129.4 | \$146.7 | \$155.4 |
| Total Output (\$M) | \$311.9 | \$329.2 | \$337.9 |
| Total Employment | 2,600 | 2,700 | 2,730 |
| Total Earnings (\$M) | \$147.6 | \$152.7 | \$156.5 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

3.4 INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM CAPITAL INVESTMENTS

While the construction industry is by far the industry that benefitted the most from these capital investments, many other industries were also stimulated (see Table 3.3). Within the Region, 53

⁷ Capital investment activities represent a discrete, one-time set of economic activities, rather than an ongoing amount of economic activity.

⁸ Because the Region is completely contained within South Jersey, South Jersey's economic impact figures are inclusive of the Region's economic impact figures, and the difference between the two represents the amount of economic impact taking place in the parts of South Jersey outside the Region. Similarly, South Jersey is completely contained within the State, the State's economic impact figures are inclusive of South Jersey's economic impact figures, and the difference between the two represents the amount of economic impact taking place in the parts of the State outside South Jersey.

⁹ Direct expenditures modeled were less than the \$211 million spent by Rowan University because some of those expenditures were in the form of equipment purchases to out-of-state vendors, of which the out-of-state portion did not have an economic impact within the State economy and was therefore excluded.

percent of the employment impact and 54 percent of the expenditure impact took place in industries besides construction. Similarly, within the State, 55 percent of the employment impact and 58 percent of the expenditure impact took place in industries besides construction.

TABLE 3.3 – INDUSTRY DISTRIBUTION OF ESTIMATED TOTAL ONE-TIME ECONOMIC IMPACT FROM CAPITAL INVESTMENTS BY ROWAN UNIVERSITY FROM FY 2010 TO FY 2014

| Employment Impact in the Region (Gloucester & Camden Counties) | % | Employment Impact in the State of New Jersey | % |
|---|-----|---|-----|
| Construction | 47% | Construction | 45% |
| Professional- scientific & tech services | 15% | Professional- scientific & tech services | 14% |
| Administrative & waste services | 12% | Administrative & waste services | 11% |
| Retail trade | 6% | Retail trade | 6% |
| Health & social services | 6% | Health & social services | 6% |
| Other Industries | 15% | Other Industries | 17% |
| Expenditure Impact in the Region (Gloucester & Camden Counties) | % | Expenditure Impact in the State of New Jersey | % |
| Construction | 46% | Construction | 42% |
| Professional- scientific & tech services | 13% | Professional- scientific & tech services | 12% |
| Real estate & rental | 7% | Real estate & rental | 7% |
| Administrative & waste services | 6% | Manufacturing | 6% |
| Manufacturing | 5% | Administrative & waste services | 6% |
| Other Industries | 23% | Other Industries | 26% |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

3.5 FISCAL IMPACT FROM CAPITAL INVESTMENTS

This amount of one-time economic impact also elevated various statewide tax bases, resulting in increased tax revenues for the State from the construction activity itself as well as from spillover activities in support of the construction (see Table 3.4). Between income, sales, and business tax revenues, it is estimated that capital investments by Rowan University between FY 2010 and FY 2014 produced **\$9 million in tax revenues for the State.**

TABLE 3.4 – ESTIMATED TOTAL ONE-TIME ECONOMIC IMPACT FROM CAPITAL INVESTMENTS BY ROWAN UNIVERSITY FROM FY 2010 TO FY 2014

| Tax Type | Fiscal Impact to the State Government |
|---------------------------------|---------------------------------------|
| Income Tax Revenues (\$M) | \$5.0 |
| Sales Tax Revenues (\$M) | \$3.2 |
| Business Tax Revenues (\$M) | \$0.8 |
| Total Tax Revenues (\$M) | \$9.0 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

3.6 IMPLICATIONS

As noted above, Rowan University's capital investments represented a significant amount of economic activity at a time of slack demand and high unemployment. They also signal a commitment to high-quality facilities that is increasingly important for attracting students, faculty, and staff. Finally, they have provided an aesthetic boost to the communities in which the investments took place.

Importantly, they simultaneously **stimulate additional nearby investment**. Most notably, the physical investments made by Rowan University have helped make possible the creation of **Rowan Boulevard**, a \$300 million mixed use redevelopment project that has already transformed Glassboro's downtown retail district. Rowan Boulevard will contain anchor establishments such as a Barnes & Noble, a collegiate superstore, an apartment complex, and a Courtyard Marriot hotel equipped with a conference center. Rowan Boulevard thus has represented a large infusion of private investment into Glassboro, a significant expansion in the local tax base, and a major enhancement in the commercial opportunities and public amenities available to neighboring communities.

3.7 LOOKING TO THE FUTURE

One tangible manifestation of Rowan University's tremendous growth trajectory is the sheer number and scale of **future capital investment projects** being contemplated (see Table 3.5). Over the next few years, Rowan University is eyeing several large-scale new construction projects, which will stimulate the regional and state economies, support employment and generate tax revenues, and yield positive transformations in the communities in which they will be located.

TABLE 3.5 – PROJECTED FUTURE CAPITAL PROJECTS BY ROWAN UNIVERSITY¹⁰

| Project | Cost (\$M) |
|---|--------------------|
| West Campus Technology Park Expansion | \$125 |
| Student Housing Village | \$125 |
| College of Engineering Addition | \$73 |
| College of Business Building | \$63 |
| West Campus Athletic Fields | \$40 |
| Camden Campus (Bank Building Renovations) | \$17.6 |
| Athletic Practice Facilities | \$5.25 |
| Food Service Development | \$3 |
| Outdoor Recreation Facilities | \$2.5 |
| Bole Hall Renovations | \$3.3 |
| 301 High Street (Art Gallery) | \$6.7 |
| Camden Campus (Bank Building Parking Lot) | \$3.9-\$4.9 |
| Stormwater Management | \$2.0-\$3.0 |
| Rowan Hall Renovation | \$8 |
| Central Utility Plant Upgrades | \$8.5 |
| Miscellaneous Capital Projects | \$30 |
| Miscellaneous Land Acquisition | \$1 |
| Total | \$518-\$520 |

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

¹⁰ Some of the projects listed are receiving funding from the State of New Jersey's *Building Our Future Bond Act* Funds. It should also be noted that not all of these projects will be underway within five years.

4.0 IMPACTS FROM ONGOING OPERATIONS

4.1 OVERVIEW

The most consistent and direct way to measure Rowan's large and growing impact on its regional and state economies is through its **ongoing operations**. Especially now that its operations include Rowan University School of Osteopathic Medicine and Cooper Medical School of Rowan University, Rowan University represents a significant amount of direct expenditures and direct employment. This stimulates additional economic activity through the regional and statewide economies, supporting additional employment and generating tax revenues for the State government each year. And, as Rowan University continues to expand its operations, this economic footprint and its attendant multiplier effect through the Region, South Jersey, and State economies will also expand.

4.2 MAGNITUDE OF DIRECT OPERATING EXPENDITURES

Rowan University's FY 2015 operating budget anticipates about **\$440 million in annual operating expenditures** (see Table 4.1). This amount is inclusive of its main campus in Glassboro as well as Rowan University School of Osteopathic Medicine in Stratford (Camden County) and Cooper Medical School of Rowan University in Camden (Camden County)¹¹ (see Figure 4.1).

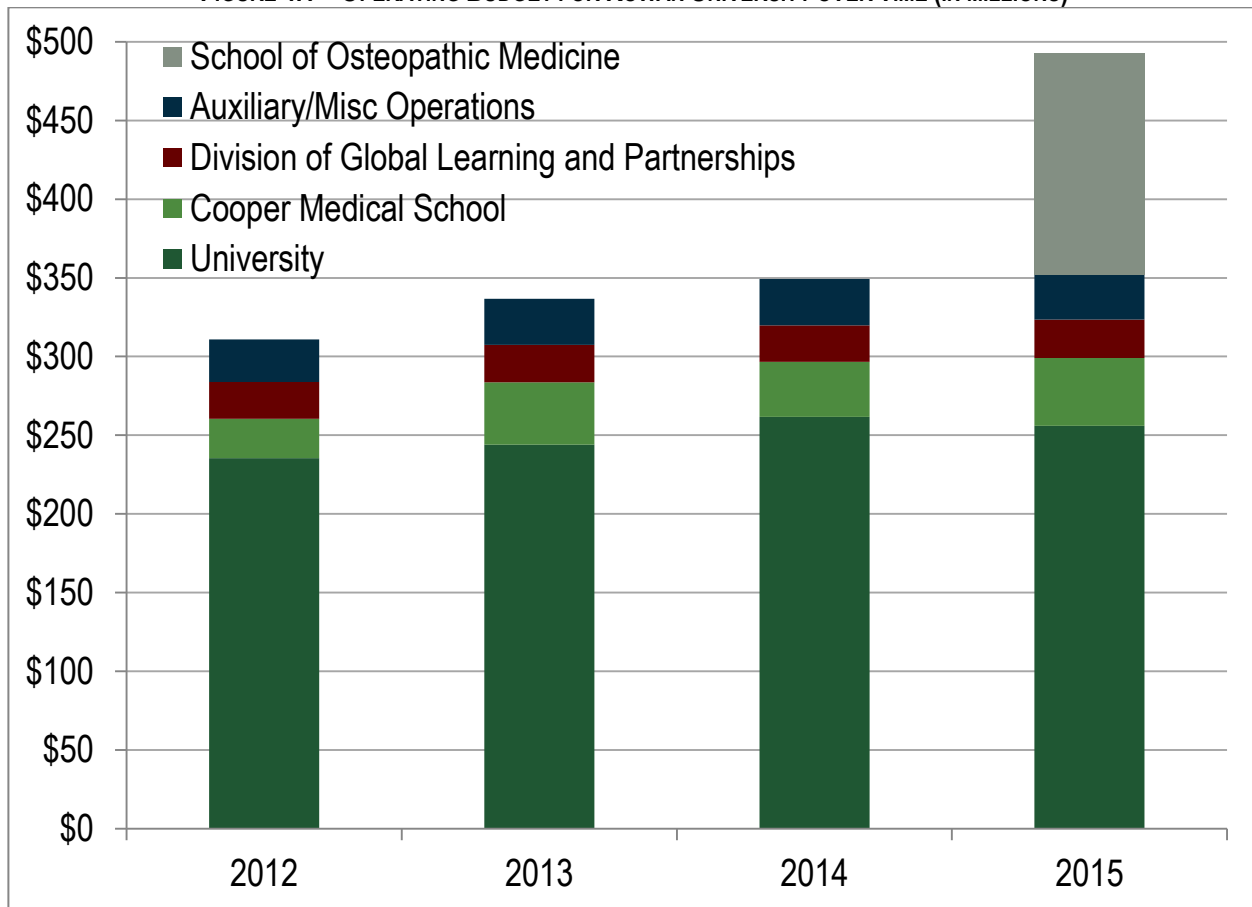
TABLE 4.1 – FY 2015 OPERATING BUDGET FOR ROWAN UNIVERSITY

| Entity | Expenditures (\$M) |
|--|--------------------|
| University | \$202.9 |
| School of Osteopathic Medicine | \$140.8 |
| Cooper Medical School | \$43.1 |
| Division of Global Learning and Partnerships | \$24.4 |
| Auxiliary/Miscellaneous Operations | \$28.6 |
| Total | \$439.9 |

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

¹¹ The local impact of Rowan's Medical Schools remote from its main campus in be further explored in an upcoming report quantifying the local impacts of Rowan University.

FIGURE 4.1 – OPERATING BUDGET FOR ROWAN UNIVERSITY OVER TIME (IN MILLIONS)



Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

4.3 ECONOMIC IMPACT FROM OPERATING EXPENDITURES

The \$440 million in ongoing operations by Rowan University in turn produces spillover impacts, as vendors ramp up their activities in response to this demand and as employees of Rowan University spend a portion of their earnings within the regional and state economies. The scale of this ongoing¹² impact is significant (see Table 4.2). It is estimated that this magnitude of ongoing operations generate:

- \$794 million in total economic impact within the Region (i.e. Gloucester and Camden counties) each year, supporting 5,900 jobs and \$411 million in labor income.

¹² Ongoing operations continue into the future and so this level of impacts is anticipated to take place annually into the future and will actually grow over time as Rowan University grows in scale.

- \$872 million in total economic impact within South Jersey each year, supporting 6,300 jobs and \$429 million in labor income.
- **\$907 million in total economic impact within the State each year, supporting 6,400 jobs and \$446 million in labor income.**

TABLE 4.2 – ESTIMATED TOTAL ONGOING ECONOMIC IMPACT FROM ROWAN UNIVERSITY BUDGETED FY 2015 OPERATING EXPENDITURES

| Economic Impact from Ongoing Operations | Economic Impact to the Region Economy | Economic Impact to the South Jersey Economy | Economic Impact to the State Economy |
|---|---------------------------------------|---|--------------------------------------|
| Direct Expenditures (\$M) ¹³ | \$410.1 | \$410.1 | \$410.1 |
| Indirect & Induced Expenditures (\$M) | \$384.1 | \$462.3 | \$497.3 |
| Total Output (\$M) | \$794.1 | \$872.4 | \$907.4 |
| Total Employment | 5,910 | 6,270 | 6,420 |
| Total Earnings (\$M) | \$411.0 | \$429.1 | \$445.5 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

4.4 INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM OPERATING EXPENDITURES

While the education sector is by far the industry that benefitted the most from these operating expenditures, many other industries were also stimulated (see Table 4.3). Within the Region, 43 percent of the employment impact and 50 percent of the expenditure impact took place in sectors other than education. Similarly, within the State, 48 percent of the employment impact and 56 percent of the expenditure impact took place in sectors besides education.

¹³ Direct expenditures modeled were less than the \$440 million budgeted by Rowan University because non-local proportions of some of the expenditures were backed out (e.g. insurance, financial services).

TABLE 4.3 – INDUSTRY DISTRIBUTION OF ESTIMATED TOTAL ONGOING ECONOMIC IMPACT FROM ROWAN UNIVERSITY BUDGETED FY 2015 OPERATING EXPENDITURES

| Employment Impact in the Region (Gloucester & Camden Counties) | % | Employment Impact in the State of New Jersey | % |
|--|----------|--|----------|
| Educational services | 57% | Educational services | 52% |
| Health & social services | 7% | Retail trade | 7% |
| Retail trade | 6% | Real estate & rental | 6% |
| Real estate & rental | 6% | Retail trade | 6% |
| Administrative & waste services | 4% | Professional- scientific & tech services | 5% |
| Other Industries | 20% | Other Industries | 23% |
| Expenditure Impact in the Region (Gloucester & Camden Counties) | % | Expenditure Impact in the State of New Jersey | % |
| Educational services | 50% | Educational services | 44% |
| Real estate & rental | 13% | Real estate & rental | 14% |
| Health & social services | 6% | Health & social services | 6% |
| Finance & insurance | 4% | Finance & insurance | 5% |
| Professional- scientific & tech services | 4% | Professional- scientific & tech services | 5% |
| Other Industries | 22% | Other Industries | 26% |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

4.5 FISCAL IMPACT FROM OPERATING EXPENDITURES

This amount of ongoing economic impact also elevated various statewide tax bases, resulting in increased tax revenues for the State from Rowan University's operations as well as from spillover activities in support of these operations (see Table 4.4). Between income, sales, and business tax revenues, it is estimated that Rowan University's FY 2015 operating activities will generate **\$11 million in tax revenues for the State.**¹⁴

TABLE 4.4 – ESTIMATED TOTAL ONE-TIME ONGOING FISCAL IMPACT FROM ROWAN UNIVERSITY BUDGETED FY 2015 OPERATING EXPENDITURES

| Tax Type | Fiscal Impact to the State Government |
|---------------------------------|--|
| Income Tax Revenues (\$M) | \$4.9 |
| Sales Tax Revenues (\$M) | \$4.9 |
| Business Tax Revenues (\$M) | \$1.3 |
| Total Tax Revenues (\$M) | \$11.2 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

¹⁴ Because Rowan University is a not-for-profit institution, it is exempt from paying some State taxes. This fact was reflected in the fiscal impact modeling. These fiscal impacts represent State tax revenues generated from increases in economic activity resulting from Rowan University's operations.

4.6 IMPLICATIONS

Rowan University is a major economic engine for and employer in the State of New Jersey. Importantly, over and above its own operations, Rowan University’s core functions – educating students, training medical professionals, and advancing the human body of knowledge – result in additional economic impact within the State, in the form of (1) ancillary spending by students and visitors and (which is the subject of Section 5) and higher earnings by graduates who live and work in the State (which is the subject of Section 6).

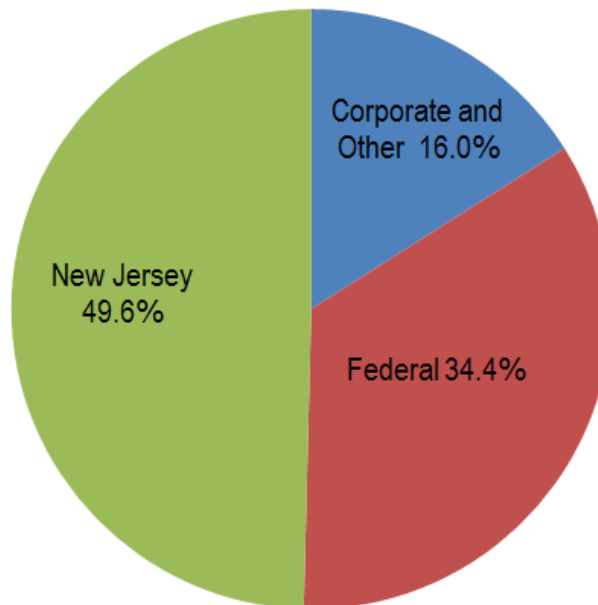
It is useful to note that Rowan University has significantly increased its **research efforts** and is primed for even more growth in the near future (see Table 4.5). This not only signals an enhanced role for Rowan University in initiating basic and applied research innovations, but also represents a growing amount of research dollars that are brought into the State economy from national sources (e.g. National Institutes of Health, National Science Foundation, and other federal research agencies). Already, over half of these research dollars come from outside the State (see Figure 4.2).

TABLE 4.5 – ROWAN UNIVERSITY RESEARCH AND SPONSORED PROJECTS BUDGET OVER TIME

| 1992 | 2011 | 2013 | 2014 | 2023 (Projected) |
|-----------|---------------|--------------|--------------|------------------|
| \$118,000 | \$5.6 Million | \$24 Million | \$29 Million | \$100 Million |

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

FIGURE 4.2 – DISTRIBUTION OF 2014 ROWAN UNIVERSITY RESEARCH AND SPONSORED PROJECTS BUDGET BY SOURCE



Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

4.7 LOOKING TO THE FUTURE

Between 1992 and 2015, Rowan University's annual operating budget will have increased sevenfold, from \$63 million to \$440 million. By 2023, it is estimated that **Rowan University's operating budget will exceed \$1 billion** and that it will have a student enrollment of 25,000.

The regional and state economies have benefitted tremendously from this rapid growth, in terms of economic activity levels and employment supported by Rowan University's operations. Compared to estimates made in economic impact studies commissioned in 1997 and 2004, Rowan University is now orders of magnitude larger in size and impact (see Table 4.6).

TABLE 4.6 –TOTAL ONGOING ECONOMIC IMPACT WITHIN THE STATE OF NEW JERSEY FROM ROWAN UNIVERSITY OPERATIONS OVER TIME

| Economic Impact from Ongoing Operations | 1997 ¹⁵ | 2004 ¹⁶ | 2015 |
|---|--------------------|--------------------|-------|
| Total Output (\$M) | \$146 | \$150 | \$907 |
| Total Employment | 763 | 2,200 | 6,420 |

Source: Rowan University (1998), New Jersey Economics (2004), Econsult Solutions, Inc. (2014)

Should Rowan University grow to its projected \$1 billion in annual operating expenditures by 2023, this would result in a commensurate increase in its economic impact within its regional and state economies (see Table 4.7 and Figure 4.3). At that scale, Rowan University would have an **annual impact on the State economy of over \$2 billion, support almost 15,000 jobs throughout the State, and generate about \$32 million in State tax revenues.**

¹⁵ "An Economic Partnership: Rowan University's Annual Economic Impact on New Jersey & Areas of South Jersey," Rowan University Institute for Urban and Public Policy (January 28, 1998). This report, based on FY 1997 data, modeled economic impacts from payroll, purchasing, construction, and student/visitor spending. Only impacts from payroll and purchasing were included in this table.

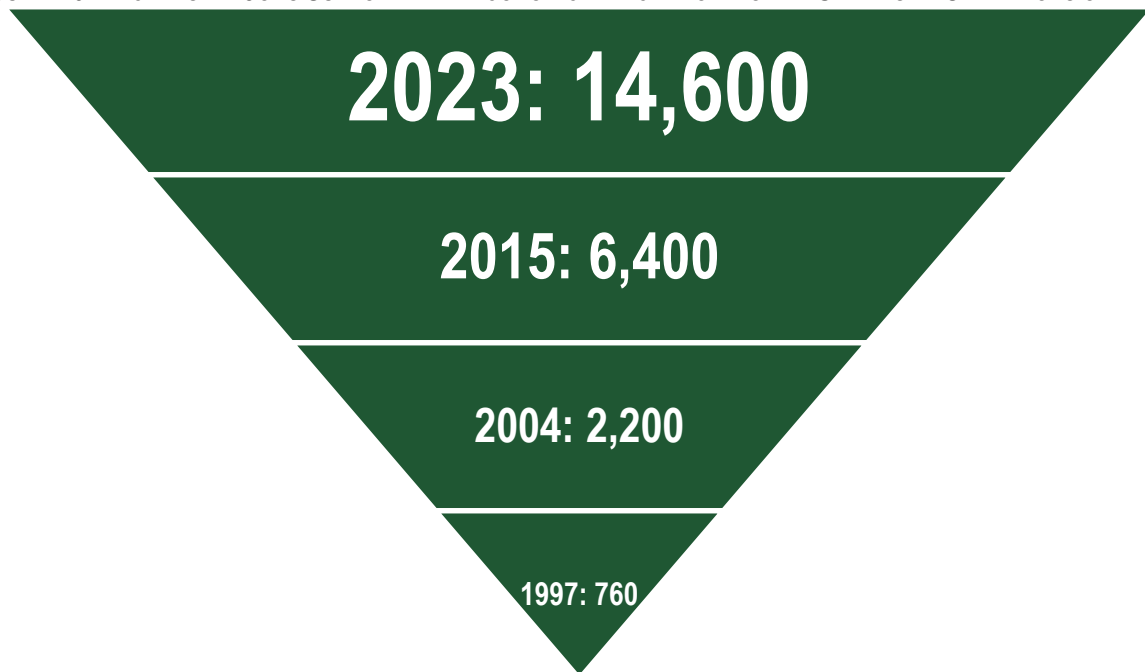
¹⁶ "The Economic Impact of Rowan University," New Jersey Economics (December 2004). This report, based on FY 2004 data, modeled economic impacts from operations and construction. Only impacts from operations were included in this table.

**TABLE 4.7 – ESTIMATED TOTAL ONGOING ECONOMIC AND FISCAL IMPACT FROM ROWAN UNIVERSITY PROJECTED FY 2023
OPERATING EXPENDITURES**

| Economic Impact from Ongoing Operations | Economic Impact to the Region Economy | Economic Impact to the South Jersey Economy | Economic Impact to the State Economy |
|---|---------------------------------------|---|---------------------------------------|
| Total Output (\$M) | \$1,805 | \$1,978 | \$2,062 |
| Total Employment | 13,432 | 14,227 | 14,591 |
| Total Earnings (\$M) | \$934 | \$975 | \$1,013 |
| Fiscal Impact from Ongoing Operations | | | Fiscal Impact to the State Government |
| Total Tax Revenues (\$M) | | | \$32 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

FIGURE 4.3 – INCREASE IN JOBS SUPPORTED BY ECONOMIC IMPACT FROM ROWAN UNIVERSITY OPERATIONS OVER TIME



Source: Rowan University (1998), New Jersey Economics (2004), Econsult Solutions, Inc. (2014)

5.0 ECONOMIC AND FISCAL IMPACT FROM ANCILLARY SPENDING

5.1 OVERVIEW

In addition to its own expenditures on capital investments and on operating activities, Rowan University is responsible for significant amounts of **ancillary spending by students and visitors**. Student spending in particular represents a significant amount of economic activity within the regional and statewide economies, and supports a wide range of industries, jobs, and tax bases. As Rowan University grows, it will attract more students and visitors, further stimulating the Region, South Jersey, and State economies.

5.2 ANCILLARY SPENDING BY STUDENTS

Rowan University students make tuition payments and other payments to Rowan University. These amounts are already reflected in Rowan University's operating figures, which were modeled in the previous section. In addition, students also spend money on off-campus housing, educational supplies, transportation, personal supplies, and entertainment. These expenditures represent additional influxes of economic activity into the Region, South Jersey, and State economies.

Based on information provided by Rowan University as well as survey-based estimates derived from other sources, a spending profile was constructed for different types of students, in order to arrive at an estimate of the aggregate amount of additional spending represented by Rowan University students (see Table 5.1). Where possible, low-end estimates were used to yield a conservatively low figure for aggregate annual student spending. This approach yielded an estimate of **\$107 million in spending by Rowan University students**.

TABLE 6.1 — ESTIMATED AGGREGATE ANNUAL SPENDING BY ROWAN UNIVERSITY STUDENTS

| Student Type | Transportation | Room | Board | Other | # Students | Total Spending (\$M) |
|--|----------------|-------------|-------------|-------------|---------------|----------------------|
| On-Campus Students | | | | \$4,000 | 3,861 | \$15 |
| Commuter Students (living at home) | \$1,800 | | \$4,080 | \$2,000 | 6,675 | \$53 |
| Commuter Students (not living at home) | \$900 | \$7,030 | \$4,080 | \$2,000 | 2,814 | \$39 |
| Total Spending (\$M) | \$15 | \$20 | \$39 | \$34 | 13,350 | \$107 |

Source: Rowan University (2014), Sallie Mae Bank (2014), Econsult Solutions, Inc. (2014)

5.3 ANCILLARY SPENDING BY VISITORS

Students are not the only people who are drawn into the regional and statewide economies as a result of the presence of Rowan University. Rowan University can also take credit for spending by:

1. *Visitors of students.* Whether freshman move-in at the beginning, commencement at the end, or Family Weekend, Homecoming, or social visits in between, students are visited by friends and family throughout their education at Rowan University. These visits generate spending on transportation, food, retail, and (if an overnight stay is involved) accommodations.
2. *Prospective students.* People considering enrollment at Rowan University will often visit campus, and many will do so with friends and family. These visits may also generate spending on transportation, food, retail, and (if an overnight stay is involved) accommodations.
3. *Event attendees.* Rowan University hosts numerous educational, business, social, cultural, and athletic events on its grounds. These events can draw attendees and participants from across the country and around the world.
4. *Faculty and staff.* As they are employees of Rowan University, the impact from faculty and staff spending was already accounted for in the economic impacts from ongoing operations described in the previous section.

Given that Rowan University draws primarily from within the State, it is assumed that the number and aggregate spending amounts associated with visitors of students, prospective students, and event attendees is relatively small, especially when compared to the amount of spending represented by students as calculated in the previous sub-section. Therefore, to be conservative, these additional ancillary spending categories were excluded from this analysis.

5.4 ECONOMIC IMPACT FROM ANCILLARY SPENDING BY STUDENTS

The \$107 million in spending by Rowan University students in turn produces spillover impacts, as vendors ramp up their activities in response to this demand and new labor income is spent within the regional and state economies. The scale of this ongoing¹⁷ impact is significant (see Table 5.2). It is estimated that this magnitude of student spending generates:

- \$105 million in total economic impact within the Region (i.e. Gloucester and Camden counties), supporting 1,230 jobs and \$32 million in labor income.

¹⁷ Ancillary spending continues into the future and so this level of impacts is anticipated to take place annually into the future and will actually grow over time as Rowan University grows in scale.

- \$112 million in total economic impact within South Jersey, supporting 1,270 jobs and \$34 million in labor income.
- **\$115 million in total economic impact within the State, supporting 1,280 jobs and \$35 million in labor income.**

TABLE 5.2 – ESTIMATED TOTAL ONGOING ECONOMIC IMPACT FROM AGGREGATE ANNUAL SPENDING BY ROWAN UNIVERSITY STUDENTS

| Economic Impact from Ongoing Operations | Economic Impact to the Region Economy | Economic Impact to the South Jersey Economy | Economic Impact to the State Economy |
|---|---------------------------------------|---|--------------------------------------|
| Direct Expenditures (\$M) ¹⁸ | \$70 | \$70 | \$70 |
| Indirect & Induced Expenditures (\$M) | \$34 | \$42 | \$45 |
| Total Output (\$M) | \$105 | \$112 | \$115 |
| Total Employment | 1,230 | 1,270 | 1,280 |
| Total Earnings (\$M) | \$32 | \$34 | \$35 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

5.5 INDUSTRY DISTRIBUTION OF ECONOMIC IMPACT FROM ANCILLARY SPENDING BY STUDENTS

While the accommodations and food sector is by far the industry that benefitted the most from this student spending, many other industries were also stimulated (see Table 5.3). Within the Region, 43 percent of the employment impact and 62 percent of the expenditure impact took place in sectors besides accommodations and food. Similarly, within the State, 45 percent of the employment impact and 65 percent of the expenditure impact took place in sectors besides accommodations and food.

¹⁸ Direct expenditures modeled were less than the \$107 million in spending by Rowan University students because non-local proportions of some of the expenditures were backed out (e.g. retail, gas).

TABLE 5.3 – INDUSTRY DISTRIBUTION OF ESTIMATED TOTAL ONGOING ECONOMIC IMPACT FROM AGGREGATE ANNUAL SPENDING BY ROWAN UNIVERSITY STUDENTS

| Employment Impact in the Region (Gloucester & Camden Counties) | % | Employment Impact in the State of New Jersey | % |
|---|-----|---|-----|
| Accommodation & food services | 57% | Accommodation & food services | 55% |
| Retail trade | 18% | Retail trade | 18% |
| Real estate & rental | 11% | Real estate & rental | 11% |
| Administrative & waste services | 3% | Administrative & waste services | 3% |
| Health & social services | 3% | Health & social services | 3% |
| Other Industries | 8% | Other Industries | 11% |
| Expenditure Impact in the Region (Gloucester & Camden Counties) | % | Expenditure Impact in the State of New Jersey | % |
| Accommodation & food services | 38% | Accommodation & food services | 35% |
| Real estate & rental | 26% | Real estate & rental | 25% |
| Retail trade | 13% | Retail trade | 12% |
| Professional- scientific & tech services | 4% | Professional- scientific & tech services | 4% |
| Health & social services | 3% | Finance & insurance | 4% |
| Other Industries | 15% | Other Industries | 20% |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

5.6 FISCAL IMPACT FROM ANCILLARY SPENDING BY STUDENTS

This amount of ongoing economic impact also elevated various statewide tax bases, resulting in increased tax revenues for the State from spending by Rowan University students as well as from spillover activities in support of this spending (see Table 5.4). Between income, sales, and business tax revenues, it is estimated that spending by Rowan University students generates **\$3 million per year in tax revenues for the State.**

TABLE 5.4 – ESTIMATED TOTAL ONE-TIME ONGOING FISCAL IMPACT FROM AGGREGATE ANNUAL SPENDING BY ROWAN UNIVERSITY STUDENTS

| Tax Type | Fiscal Impact to the State Government |
|---------------------------------|---------------------------------------|
| Income Tax Revenues (\$M) | \$1.1 |
| Sales Tax Revenues (\$M) | \$1.1 |
| Business Tax Revenues (\$M) | \$0.3 |
| Total Tax Revenues (\$M) | \$2.6 |

Source: Rowan University (2014), IMPLAN (2013), Econsult Solutions, Inc. (2014)

5.7 LOOKING TO THE FUTURE

As Rowan University grows – in enrollment, reputation, and activity levels – it will be an increasingly important catalyst for economic activity within its regional and statewide economies. Should it reach its stated goal of increasing enrollment from 15,000 students at present to 25,000 by 2023, which will yield a commensurate increase in aggregate annual student spending and therefore a commensurate increase in the economic and fiscal impact generated by student spending. This will represent hundreds of millions of dollars of annual economic impact and support thousands of jobs within the State.



6.0 ECONOMIC IMPACT FROM ENHANCING EARNING POWER

6.1 OVERVIEW

Since one of Rowan University's core missions is to educate students, it is important to capture the economic impact associated with **a more educated and more credentialed populace**. Rowan University graduates, upon receiving a high-quality education and obtaining a degree from a high-quality institution, are able to secure higher-paying jobs commensurate with their increase in skill level and educational attainment. Not only does this signify an enhanced contribution to society, but practically it also means more household income for Rowan graduates. To the extent that some of that increase is in turn spent locally, it has a multiplier effect on the regional and statewide economies, supporting additional jobs and generating additional tax revenues.

6.2 WAGE PREMIUM

In today's knowledge-based economy, more educational attainment means more employment opportunities and higher salaries, whereas less educational attainment means fewer employment opportunities and lower salaries. Therefore, Rowan University's commitment to affordable and accessible higher education is extremely important for society and for the students it serves: by educating students and conferring degrees, Rowan University is ensuring that its students have the skills and credentials to thrive in today's economy.

The difference in earning power between people of differing educational attainment levels is large and growing. According to the US Bureau of Labor Statistics, high school diploma holders earned \$33,800 per year, whereas bachelor's degree holders earned \$57,600 per year, or almost \$24,000 more per year. This difference is often referred to as the **wage premium** associated with higher educational attainment.

6.3 AGGREGATE WAGE PREMIUM FROM ROWAN UNIVERSITY ALUMNI LIVING AND WORKING IN NEW JERSEY

According to Rowan University, about 80 percent of its 83,000 alumni live in the State of New Jersey, and about half of those State residents also work in the State. This represents about 30,000 alumni living and working in the State whose earning potential has been enhanced by their having attended and received a degree from Rowan University.

Rowan University prides itself on providing quality higher education in an accessible fashion and to populations who would not otherwise have such options. So it is likely that but for Rowan University, a relatively high number of those alumni would have diminished educational attainment levels and therefore diminished employment prospects.

Similarly, Rowan University prides itself on producing skilled graduates who then work in and contribute to the State economy. So it is likely that but for Rowan University, a relatively high number of those alumni may have chosen to live and work elsewhere upon graduation.

To be conservative, it is assumed that 80 percent of alumni would have otherwise received a degree and continued to live and work in the State of New Jersey even if they did get a chance to attend Rowan University. Hence, as a result of Rowan University's presence and work in the State of New Jersey, 20 percent of its alumni were able to receive a degree and subsequently chose to live and work within the State. Given the wage premium of about \$24,000, this represents **an additional \$140 million in household income within the State** (see Table 6.1).

TABLE 6.1 – ESTIMATED AGGREGATE ANNUAL WAGE PREMIUM TO ROWAN UNIVERSITY GRADUATES LIVING AND WORKING IN NEW JERSEY

| | |
|---|----------------------|
| # Rowan University Alumni | 83,000 |
| % Living in NJ | 78% |
| = # Alumni Living in NJ | 62,000 |
| % Working in NJ | 45% |
| = # Alumni Living and Working in NJ | 29,000 |
| % That Would Not Have Received Degree and Chosen to Live and Work in NJ But For Rowan | 20% |
| = # Net New Alumni Living and Working in NJ | 6,000 |
| x Annual Wage Premium per Alumni | \$23,800 |
| = Aggregate Wage Premium in NJ | \$140 Million |

Source: Rowan University (2014), US Bureau of Labor Statistics (2013), Econsult Solutions, Inc. (2014)

6.4 ECONOMIC AND FISCAL IMPACT FROM AGGREGATE WAGE PREMIUM FROM ROWAN UNIVERSITY ALUMNI LIVING AND WORKING IN NEW JERSEY

This amount of additional household income enriches Rowan University alumni, but it also has a spillover effect on the State economy because the higher amount of household spending power translates into more employment supported and more tax revenues generated. It is estimated that the \$140 million annual increase in household income results in a gain of \$138 million each year in total output within the State, supporting 1,000 jobs and generating \$3 million in State tax revenues (see Table 6.2).

TABLE 6.2 – ESTIMATED TOTAL ONGOING ECONOMIC IMPACT FROM ANNUAL WAGE PREMIUM TO ROWAN UNIVERSITY GRADUATES LIVING AND WORKING IN NEW JERSEY

| Economic Impact from Aggregate Wage Premium | | Economic Impact to the State Economy | |
|---|--|---------------------------------------|-------|
| Total Output (\$M) | | | \$138 |
| Total Employment | | | 1,000 |
| Total Earnings (\$M) | | | \$47 |
| Fiscal Impact from Aggregate Wage Premium | | Fiscal Impact to the State Government | |
| Total Tax Revenues (\$M) | | | \$3 |

Source: Rowan University (2014), US Bureau of Labor Statistics (2013), IMPLAN (2013), Econsult Solutions, Inc. (2014)

6.5 PRODUCING SKILLED WORKERS IN STRATEGIC INDUSTRIES

The role of Rowan University in educating students and then retaining them in the State is also beneficial for the State in that it helps the State reap the benefit of its educational investment in State residents. By the time they are ready to start college, New Jersey residents have attended at least 12 years of school, so if they leave the State for college, the State has made 12 years' worth of educational investment only to lose that educated person to another state, and the State has lost out on that person paying four years' worth of tuition, room, board, and expenses to a university within the State.

In fact, every year 30,000 New Jersey residents choose to attend college outside of the State. Rowan University calculates that **this leakage of human talent represents a \$7.8 billion economic loss to the State**: \$5.4 billion in educational investment expended on people who leave the State and an additional \$2.4 billion in tuition, room, board, and expenses not spent within the State (see Table 6.3).

TABLE 6.3 – ESTIMATED LOSS TO STATE OF NEW JERSEY WHEN RESIDENTS LEAVE THE STATE FOR COLLEGE

| # New Jersey Residents Who Leave the State for College | Educational Investment per High School Graduate | Tuition et al Paid by College Student | Loss per Person | Annual Cost (\$B) |
|--|---|--|-----------------|-------------------|
| 30,000 | 12 years x \$15,000 per year = \$180,000 | 4 years x \$20,000 per year = \$80,000 | \$260,000 | \$7.8 billion |

Source: Rowan University (2014), Econsult Solutions, Inc. (2014)

In today's increasingly knowledge-based economy, economic success requires an educated workforce. As evidenced by the large and growing wage premium associated with a bachelor's degree, college education is increasingly becoming a prerequisite for financially meaningful employment. Rowan University's role in producing educated graduates is vital to the success of the

State as a whole and particularly of South Jersey, which has high school attainment levels similar to that of the rest of the State but which lags the rest of the State significantly in the percentage of residents with at least a Bachelor's degree (see Table 6.4).

TABLE 6.4 – EDUCATIONAL ATTAINMENT OF NEW JERSEY RESIDENTS

| County/Region | Population 25 years and over | High School or Higher % | High School or Higher Count | Bachelor's or Higher % | Bachelor's or Higher Count |
|-------------------------------|------------------------------|-------------------------|-----------------------------|------------------------|----------------------------|
| South Jersey | 1,666,835 | 88.7% | 1,478,723 | 31.3% | 463,097 |
| All Other New Jersey Counties | 4,419,870 | 88.4% | 3,908,011 | 45.2% | 1,764,637 |
| All of New Jersey | 6,086,705 | 88.5% | 5,386,734 | 36.6% | 2,227,734 |

Source: US Census Bureau (2014), Econsult Solutions, Inc. (2014)

Economic success in the future will particularly require skilled workers in the “STEM” fields of Science, Technology, Engineering, and Mathematics, which makes Rowan University’s work even more crucial to the competitiveness of the State. For example, the Rowan University School of Osteopathic Medicine has grown its class by 50 percent in the past few years alone, in anticipation of an estimated physician shortage of 3,000 in the State by 2020 (according to the New Jersey Council of Teaching Hospitals).

6.6 EXPORTING GRADUATES IS ALSO GOOD FOR THE STATE OF NEW JERSEY

Clearly, the fact that the large majority of Rowan University graduates stay within the State is a good thing for the State economy. Higher earning power means more economic stimulus within the State. Furthermore, qualified graduates help make possible a robust level of economic activity in key sectors within the State economy.

However, Rowan University graduates who leave the State to work elsewhere are also beneficial to the State economy. Though they may find success elsewhere, they will always have a connection back to Rowan University and to the State. Some will become extremely successful and be in a position to make major financial contributions to their alma mater, such as endowing a professorship or being the name donor for a new facility. **Alumni giving** of all sizes and origins is another plus for the State: money earned elsewhere, making its way back into the State, where it supports employment within the State economy and generates tax revenues to the State government.

7.0 CONCLUSION

This economic impact report represents a snapshot of Rowan University's economic influence on the Region, South Jersey, and State economies. This snapshot captures an institution that is markedly different from the one captured in previous economic impact reports. As Rowan University continues to grow – in student enrollment, operating budget, physical footprint, and strategic importance – its contribution to the Region, South Jersey, and State economies will also expand. This will mean more jobs supported within these economies and more tax revenues generated for the State government and local governments.

It is important to note, even and especially in a report that is focused on quantitative analysis and numeric results, that Rowan University's growing impact is reflected in more than just economic activity, jobs, and tax revenues. It is also helping the State recoup its investment in primary and secondary education by retaining and further educating State residents. It is producing **skilled technical talent** in industries that are growing in size and importance and in industries where the State is facing a labor shortage. And, its aggressive agenda to grow its **research efforts** is attracting top talent and new funding to the State, helping the State to stay competitive as a knowledge hub and an originator of new discoveries and commercializable innovations.

APPENDIX A – ECONOMIC AND FISCAL IMPACT METHODOLOGY

A.1 History

The theory behind input-output modeling stretches as far back as the mid-17th century, when Sir William Petty described the interconnectedness of “production, distribution, and wealth disposal.” While Perry can be credited with noticing links between economies, input-output modeling did not begin to take true form until the mid-18th century, when French physician François Quesnay created the Tableau Économique. His work detailed how a landowner spends his earnings on goods from farms and merchants, who in turn spend their money on a host of goods and services. Over the course of the century, an algebraic framework was added by Achille-Nicholas Isnard. Robert Torrens and Léon Walras refined the model by establishing the connections between profits and production.

The modern input-output system can be attributed to Wassily Leontief. In his thesis, “The Economy as a Circular Flow” (1928), he outlined the economy as an integrated system of linear equations relating inputs and outputs. This framework soon gained popularity, and became a widely accepted analytical tool. In 1936, Leontief produced the first input-output analysis of the US. Leontief’s work became the US Department of Commerce’s Bureau of Economic Analysis’s (BEA) standard benchmark for US production in the 1950’s. Leontief received a Nobel Prize for his work in 1973.

In 1976 the USDA Forest Service became required to submit five year management plans to the federal government concerning the socio-economic effects of resource use. Through extensive surveying, the impacts of each industry could be determined at local levels. This directly resulted in the creation of IMPLAN software for measuring economic impacts. By the late 1980’s the University of Minnesota began to offer the software to a wider audience. Seeing the need to update economic databases and improve the existing software, the Minnesota IMPLAN Group (MIG) was formed in 1993. Using a similar methodology to the USDA Forest Service, MIG was able to provide a quality input-output modeling software to a wider range of users with frequent database updates.

A.2 Application

The use and application of multipliers are fairly basic and intuitive. Multipliers, in their most basic form, are the result of an algebraic analysis expressing how two inputs are interconnected in the production of an output. The result of the equation generates a multiplier that is broken down into direct, indirect, and induced effects. In a generalized example: if the multiplier for good “X” to good “Y” is 3, then the direct of good “X” on “Y” is 1, with indirect and induced effects of 2. Essentially, every unit of good “X” supports 2 units of good “Y”.

When implemented on a large complex scale, such as that of the US economy or any subsection of it, multiplier effects across industries can be complicated. However, the same general concept comes into play. Each industry has largely different and varied inputs into other industries. The

quantity of the output is largely decided by the scale and efficiency of the industries involved. As a result, the sum of those inputs equates to an output product plus a value added/component. By arranging these inputs and outputs by industry in a matrix, and performing some algebra to find the Leontief inverse matrix, each industry's effect on final demand can be estimated. Additionally, the direct, indirect, and induced effects can also be determined. Direct effects include direct purchases for production, indirect effects include expenses during production, and induced effects concern the expenditures of employees directly involved with production. Using building construction as an example, the direct effects would include materials, brick, steel, and mortar, the indirect effects would involve the steel fabrication, concrete mixing, and the induced effects would consider the construction workers purchases from their wages. While impacts vary in size, each industry has rippling effects throughout the economy. By using an input-output model, these effects can be more accurately quantified and explained.

IMPLAN is one of several popular choices for regional input-output modeling. Each system has its own nuances in establishing proper location coefficients. IMPLAN uses a location quotient to determine its regional purchase coefficient (RPC). This represents the proportion of demand for a good that is filled locally; this assessment helps determine the multiplier for the localized region. Additionally, IMPLAN also accounts for inter-institutional transfers (eg. firms to households, households to the government, etc...) through its social account matrix (SAM) multipliers. IMPLAN takes the multipliers and divides them into 440 industry categories in accordance to the North American Industrial Classification System (NAICS) codes. A comprehensive breakdown of a region's multipliers by industry can be shown.

Despite the usefulness of input-output modeling, there are some shortcomings to the system. Notably, input-output models ignore economies of scale. Input-output models assume that costs and inputs remain proportionate through different levels of production. Further, multipliers are not generally updated on a timely basis; most multipliers are prone to be outdated with the current economy. If the multipliers are sourced from a year of a recession economy, the multipliers may not accurately represent the flows from an economic boom period. Additionally, the multipliers may not capture sudden legal or technological changes which may improve or decrease efficiency in the production process. Regardless, I-O models still serve as the standard in the estimation of local and regional impacts.

A.3 Economic Impact Model

The methodology and input-output model used in this economic impact analysis are considered standard for estimating such expenditure impacts, and the results are typically recognized as reasonable and plausible effects, based on the assumptions (including data) used to generate the impacts. In general, one can say that any economic activity can be described in terms of the total output generated from every dollar of direct output. If an industry in a given region sells \$1 million of its goods, there is a direct infusion of \$1 million into the region. These are referred to as *direct output*.

However, the economic impact on the region does not stop with that initial direct expenditure. Regional suppliers to that industry have also been called upon to increase their production to meet the needs of the industry to produce the \$1 million in goods sold. Further, suppliers of these same suppliers must also increase production to meet their increased needs as well. These are

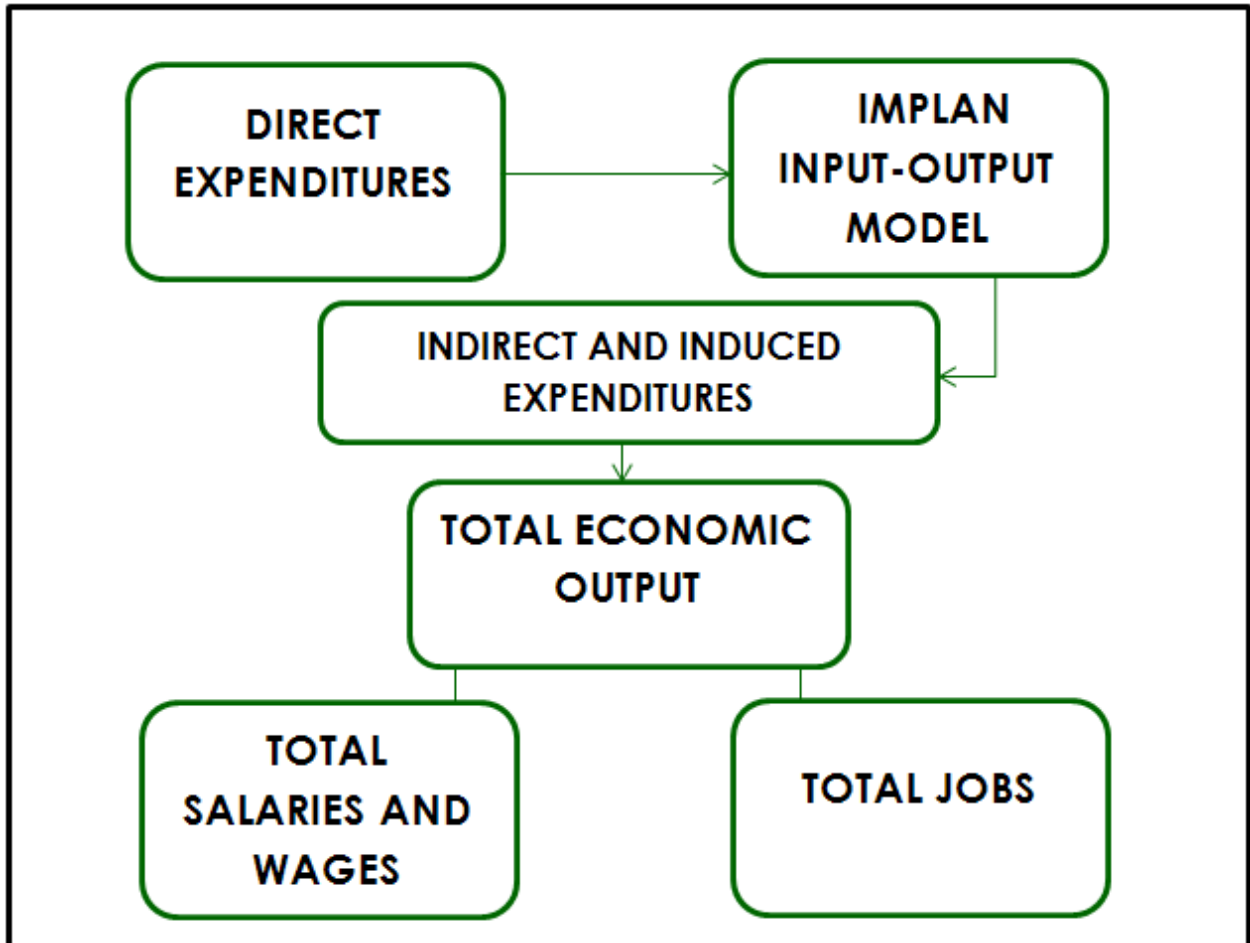
referred to as *indirect output*. In addition, these direct and indirect output require workers, and these workers must be paid for their labor. These wages and salaries will, in turn, be spent in part on goods and services produced locally, engendering another round of impacts. These are referred to as *induced expenditures*.

Direct output are fed into a model constructed by Econsult Solutions and based on IMPLAN data. The model then produces a calculation of the total expenditure effect on the regional economy. This total effect includes the initial direct expenditure effect, as well as the ripple effects described, the indirect and induced expenditure effects.

Part of the total expenditure effect is actually the increase in total wages and salaries (usually referred to as labor income), which the model can separate from the expenditure estimates. Direct payroll estimates are fed into the “household” industry of the input-output model. Impacts of this industry are estimated using the personal consumption expenditure breakdown of the national input-output table and are adjusted to account for regional consumption spending and leakages from personal taxes and savings. The direct, indirect, and induced labor income represent a component of the total economic impact attributable to wages and salaries. Finally, the model calculates the total expenditures affecting the various industries and translates this estimate into an estimate of the total labor (or jobs) required to produce this output.

In short, the input-output model estimates the total economic activity in a region that can be attributed to the direct demand for the goods or services of various industries. This type of approach is used to estimate the total economic activity attributable to the expenditures associated with various types of spending in the region (see Figure A.1 and Table A.1).

Figure A.1 – Flowchart of Input-Output Methodology for Estimating Economic Impact



Source: Econsult Solutions, Inc. (2013)

Table A.1 – Glossary of Terms for Input-Output Models

Multiplier Effect – the notion that initial outlays have a ripple effect on a local economy, to the extent that direct output lead to indirect and induced output.

Economic Impacts – total expenditures, employment, and labor income generated.

Fiscal Impacts – local and/or state tax revenues generated.

Direct Output – initial outlays usually associated with the project or activity being modeled; examples: one-time upfront construction and related expenditures associated with a new or renovated facility, annual expenditures associated with ongoing facility maintenance and/or operating activity.

Direct Employment – the full time equivalent jobs associated with the direct output.

Direct Labor income – the salaries and wages earned by employees, contractors, and proprietors as part of the direct output.

Indirect Output – indirect and induced outlays resulting from the direct output; examples: vendors increasing production to meet new demand associated with the direct output, workers spending direct labor income on various purchases within the local economy.

Indirect Employment – the full time equivalent jobs associated with the indirect output.

Indirect Labor income – the salaries and wages earned by employees, contractors, and proprietors as part of the indirect output.

Total Output – the sum total of direct output and indirect output.

Total Employment – the sum total of direct employment and indirect employment.

Total Labor income – the sum total of direct labor income and indirect labor income.

Source: Econsult Corporation (2009)

A.4 Fiscal Impact Model

The IMPLAN model provides estimates of the economic impact of a new project or program on the regional economy. It does provide only a rough estimate of the combined fiscal impact of the increased economic activity on state and local governments. Consequently, Econsult has constructed a model that takes the output from the IMPLAN model and generates detailed estimates of the increases in state and local tax collections that arise from the new project. Those revenues are in fact a part of the total economic impact of a new project that is often ignored in conventional economic impact analyses.

The IMPLAN model provides estimates of direct, indirect, and induced expenditures, labor income, and employment within the defined region. The Econsult fiscal impact model combines the IMPLAN output with the relevant tax types and tax bases associated with the jurisdiction or jurisdictions for which fiscal impact is being modeled. Specifically, the estimated labor income

supported by the direct, indirect, and induced expenditures generated by the model are used to apportion the net increase in the relevant tax bases and therefore in those tax revenue categories. The resulting estimates represent the projected tax revenue gains to the jurisdiction or jurisdictions as a result of the increased business activity and its attendant indirect and induced effects.

A.5 Sources

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