APPENDIX

NJIT New Jersey Institute of Technology

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Joel S. Bloom
President

March 8, 2019

Joint Hearing of the Senate Economic Growth Committee and Assembly Commerce and Economic Development Committee

Joel S. Bloom, President
New Jersey Institute of Technology

Thank you for the opportunity to testify regarding higher education and state economic development at this joint hearing of the Senate Economic Growth Committee and the Assembly Commerce and Economic Development Committee. This is a topic upon which I have spoken and written often, because New Jersey Institute of Technology (NJIT) is somewhat unique in that economic development is an expressed and core component of its university mission, along with education, research, and community service. **The intentional focus of NJIT on the economic development aspect of its mission has resulted in close partnerships with our state's most essential industries and an annual economic impact on New Jersey that some might find surprising—more than $2 billion.** Furthermore, Governor Murphy's economic plan, *The State of Innovation: Building a Stronger and Fairer Economy in New Jersey*, outlined four key themes, three of which—Investing in People, Investing in Communities, and Making New Jersey the State of Innovation—directly connect to the mission and work of NJIT. During my testimony, I will speak broadly of the role that higher education must play in economic growth and will provide examples of success achieved in this area by NJIT.

It has been established that expansion economies are accelerated by knowledge and technological advancement. It also has been demonstrated that higher education, through workforce development, research and development, and innovation, is one of the most significant factors in driving gross domestic product growth. Therefore, higher education policy and economic growth are inextricably linked.

Today, the industries that drive our national and global economies, including health care, military and defense systems, manufacturing, transportation, finance, and every other business sector you can imagine, are technology enterprises. They rely upon both a highly trained workforce and technological innovations that enhance efficiency and yield new and/or improved products and services. That is precisely the reason why job growth is occurring most rapidly in sectors requiring what *The Economist* refers to as "non-routine cognitive thinking." This skill set demands the capability to problem-solve, to adapt, to improvise, and to collaborate—this is what higher education is designed to foster within students.

Not surprisingly, job growth in the technology cluster is booming, so much so that we are not able to meet the demand for talent across technology-driven industries. In fact, the *Wall Street Journal* noted that the United States has 1.3 million vacant jobs in science, technology, engineering, and math (STEM) fields annually and only 600,000 new college graduates within those disciplines. NJIT students are reaping the benefits of this shortage. By the time they reach graduation (NJIT's graduation rate far exceeds the national average), our students have an average of nearly three job offers in hand and starting salaries exceeding the national average by almost 20 percent. This is one reason why **NJIT is now ranked #1 in the nation by *Forbes* for the upward economic mobility of low-income students. One-third of NJIT's students are federally-funded Pell Grant eligible, and over 70 percent of our students receive financial aid. However, upon graduation, they become highly compensated STEM professionals, transforming their lives as well as those of their families, and creating significant revenue for state and local governments.** In addition, economic analysis has shown that **technology jobs have a multiplier effect, with every job created in the tech sector resulting in an additional 4.3 jobs in related and other sectors.**

The impact of higher education on economic growth also extends beyond its important role of educating the workforce of tomorrow. **Colleges and universities can be economic catalysts when they partner with industry on research and development. At NJIT alone, we annually conduct more than $162 million in applied research,** solving real-world problems in areas that include civil infrastructure, advanced

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manufacturing, cybersecurity, transportation, medical devices, nanotechnology, clean energy, resilient design, national defense, financial services, health care, materials science, and many others. **This has earned us the recently announced distinction of being designated an "R1" research university by the Carnegie Classification®, which indicates the highest level of research activity.** NJIT is one of only 131 universities nationally and just three in New Jersey—Princeton and Rutgers are the others—to achieve this recognition. NJIT's R1 designation is in response to our university's growing body of research and will benefit the State of New Jersey in multiple ways. The R1 designation will enhance the ability of NJIT to attract competitive research funding from agencies and private-sector partners to New Jersey. Additionally, **NJIT's $162 million in annual research activity has a multiplier effect on industry research expenditures and results in increased employment across a broad range of business sectors.**

Other higher education/industry partnerships have significant and positive effects on our state economy, as well. For example, **the New Jersey Innovation Institute (NJII) is NJIT's portal to partnership with industry and government. NJII applies NJIT's intellectual and technological resources to challenges identified by private- and public-sector partners and generates more than $80 million in annual revenue with a 17:1 multiplier effect on the economy.** NJII focuses on industry sectors that are foundational to the New Jersey economy—Biotechnology and Pharmaceutical Production, Medical Devices, Civil Infrastructure, Defense and Homeland Security, Financial Services, and Healthcare Delivery—and has built **technology ecosystems** related to advanced manufacturing, healthcare, medical devices brownfields remediation, transportation planning, defense contracting, and the Internet of Things, including working with the City of Newark and multiple technology companies to create "Newark LINK," a smart city program. Today NJII is partnering with **more than 100 companies.** In addition, **VentureLink at NJIT is New Jersey's largest tech and life science incubator**, and **Makerspace** at NJIT is an educational, research, and economic development space for advanced manufacturing that is available to both the campus community and manufacturers who can use the facility's state-of-the-art industrial equipment to design, build, and test prototypes. Each of these efforts at NJIT, as well as similar ones at other universities, has direct and substantial impacts on our state economy.

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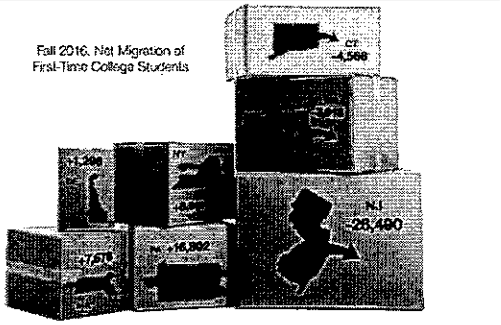
Unfortunately, **New Jersey higher education has endured decades of declining state funding and an absence of state support for ongoing capital repair and replacement.** New Jersey is among the nation's leaders in funding K-12 education but is among the lowest for higher education. **By underfunding higher education, we are reducing the benefit of our state's very worthwhile investment in K-12 education. New Jersey's annual brain-drain,** a net out-migration of approximately 30,000 college students, **represents a loss of approximately $275,000 per student invested in the K-12 education of those students.** We are preparing students as well as any state in the nation but are losing them to other states, where they find post-graduate employment and frequently take up residence after college.

Below taken from NJBIA Indicators of Innovation report.



If New Jersey truly is to become the State of Innovation, higher education must be a central consideration for future investments and policy decisions regarding economic development. As has been done at NJIT, we must cultivate longstanding and emerging partnerships between corporations and institutions of higher education. Policy decisions that detract from or neglect higher education will cause great damage to our state economy. **Conversely, policies that strengthen our ability to provide the type of education, and the access to it, that will prepare students for this rapidly changing economy while enabling us to continuously drive innovation will strengthen our state and improve quality of life for its citizens.**

Sincerely,

Joel S. Bloom
President
New Jersey Institute of Technology

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New Jersey Chamber of Commerce
216 West State Street, Trenton, NJ 08608
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#NJChamberNow

Testimony before the Senate Economic Growth Committee
and the
Assembly Commerce and Economic Development Committee
March 8, 2019

By
Michael Egenton
Executive Vice President
New Jersey State Chamber of Commerce

Future of Incentive Programs in New Jersey

Few companies will ever make a location decision based on economic incentives alone. However, as states position themselves globally to compete for investments, employment and enhanced tax revenue, economic incentives are important tools in helping to influence investment decisions.

Tax incentives—including credits, exemptions, and deductions—are one of the primary tools that states use to try to create jobs, attract new businesses, and strengthen their economies.

Well-crafted economic incentives can help advance important economic development goals including:

- ✓ Job creation and retention
- ✓ Business development and growth
- ✓ Promoting targeted investment
- ✓ Revitalizing urban & rural areas
- ✓ Enhancing quality of life and place
- ✓ Strengthening tax base

A **strategic** incentives program should advance a comprehensive economic development strategy and not be viewed as a **tactic** to win a deal.

The New Jersey State Legislature can help improve incentive programs in 3 ways:

1. Setting clear goals by providing clarity and flexibility in metrics.
2. Supporting regular program evaluation by allocating resources and enabling data sharing.

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3. Collaborating with the Executive Branch to ensure performance and supporting a culture of continuous improvement.

In establishing an incentives framework, the legislature and executive branches should assure that **Incentives** have the following "guiding principles":

- **ROI EFFICIENT**. A good incentive program should generate a well-defined, measurable return on investment to the state.
- **TRANSPARENT**. Incentives should be transparent so that benefits to taxpayers and costs to the state are clear.
- **CERTAIN**. Policy certainty is important in terms of the magnitude and timing of tax relief for business taxpayers and the realization of tax losses that impact the state budget.
- **PROSPECTIVE**. The state should avoid retroactive policy changes that may penalize firms for previous investment decisions.
- **SIMPLE**. Incentives should be easy to administer and easy to comply with.
- **TARGETED**. Incentives should be targeted and provided on a discretionary basis to promote economic activity that might not otherwise take place.
- **PROTECT PUBLIC FUNDS**. Fiscal exposure to the state should be minimized through such constraints as annual financial caps or time limits on the use of credits.
- **LEVERAGE**. Some incentives produce a leveraging effect, drawing in additional resources from local government resources, private sector resources, or federal resources.
- **ACCOUNTABILITY**. Performance-based incentives should be built into the program.
- **EVALUATION**. Incentives should include a built-in framework for evaluation, which should seek to identify the extent to which incentives induced new economic activity rather than rewarding existing economic activity.

Finally, the State Chamber has the who's who on our Board of Directors – several individuals that have expertise in economic development and incentives. I encourage you to reach out to us so that we can provide that guidance to the State Legislature as you begin to analyze, prioritize and reconstruct our incentives going forward.

We thank you for the opportunity to discuss our views.

Testimony
Joint Tax Incentives Committee
March 8, 2019

Chairman Johnson, Chairwoman Cruz-Perez, Members of the Joint Committee,

Thank you for the invitation to testify today. My name is Debbie Hart, and I serve as the President and CEO of BioNJ. We represent the more than 3,200 life sciences facilities and 376,000 employees in our State, annually generating $33 billion in wages and benefits, nearly $1 billion in state taxes and $105 billion in economic output. And I am proud to report that our industry leads the way in therapies and cures for Patients. In fact, New Jersey remains the Medicine Chest of the World representing 50 percent of all novel FDA drugs approvals in 2017 and 35% in 2018.

My invitation asked that I discuss the areas of the economy that I believe should be prioritized to optimize the economic health of the State, to sustain economic growth, to create a robust quality of life and to provide policy strategy suggestions.

Well, clearly you would be surprised if I did not put in a good word for investment in the biotechnology and biopharmaceutical industry.

BioNJ has supported – and will continue to support – efforts aimed at growing our sector. Programs administered by the NJEDA have been key to the development of emerging life sciences companies. The NOL program, NJEDA-supported incubator spaces, and other incentive programs have fostered the development of hundreds of biotech innovators.

We support measures aimed at improving the attractiveness of those programs to investors and others, such as increasing the Angel Investor Tax Credit. Moreover, we support the Governor's Economic Development Plan, such as the proposed Evergreen co-investment fund, that would help spur early investment in emerging companies. That early investment can be the difference in a company keeping its lights on long enough to find a cure.

These programs are more critical than ever given that States throughout our region have in place policies in an effort to eat our lunch. Consider Massachusetts and its $1.5B investment, Pennsylvania and its Ben Franklin and Greenhouse Initiatives, New York's novel Startup program. Meanwhile we are increasingly getting a run for our money from Maryland with its Excel Maryland initiative. These take the form of venture and other up-front capital, abatements and other preferential tax treatment.

I would point you to the BioNJ whitepaper entitled "*The NJ BioPharma Industry: A Prescription for Growth*" of a year ago as well the report of the bicameral, bipartisan Biotechnology Task Force report from June 2018 for other ideas, particularly enhancing the Angel Investor Tax Credit Program as well as the Technology Business Tax Certificate Transfer Program (NOL).

New Jersey must act quickly to ensure that we remain at the forefront of exciting new research areas of research and development in cell and gene therapy, immunotherapy, and rare diseases. We must ensure that we have an arsenal of offerings past June 30 and long into the future.

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Testimony
Joint Tax Incentives Committee
March 8, 2019

Just as critical, we support much needed proposals to improve the business climate in our State, such as streamlining of permitting and other strategies brought to the forefront by the Economic and Fiscal Policy Workgroup.

Over the years, despite our many successes, I have seen so many companies choose *not* to come here, or *not* to build that second facility here, or even relocate themselves or their companies altogether. And while it is difficult enough to consider those that did not come our way, we need to be more concerned than ever at those we might lose if we don't get this right.

In 26 years at my job, I have *never* witnessed so many urgent calls from my Members. Last year in the middle of his term when he calculated his new tax bill after the SALT tax, my Chairman moved his family to Florida. One of our millionaire Members called me recently to express his grave concern and wisely warned: "The problem with the Tipping Point…it's that you don't know until it's tipped."

And as we sit here on March 8, 120 days until the sunset of the Grow NJ program with a budget process looming in between, I shudder to think where our incentive offerings will stand on June 30 and what will happen as a result. How many more residents, companies and tax dollars will we forfeit?

I fear we are at the tipping point. Let's be sure we don't miss it.

To close on a more hopeful note, I am encouraged by what I see and hear from the Governor, the Senate President, the Speaker and by this Committee. I see a willingness to think outside the box…to take a good hard look at ourselves, at what is working and what is not. And when the findings are in, I urge our leaders to come together and do what is best for Patients, for New Jersey and for our economy.

Thank you.

Debbie Hart
President and CEO

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New Jersey Biotechnology Task Force

Final Report & Recommendations

Task Force Members:

Chair:	Debbie Hart, President & CEO, BioNJ
Vice Chair:	Hon. Andrew Zwicker, Assemblyman, District 16
	Hon. Robert M. Gordon, former Senator, District 38
	Hon. Linda R. Greenstein, Senator, District 14
	Hon. Robert W. Singer, Senator, District 30
	Hon. Christopher P. DePhillips, Assemblyman, District 40
	Hon. Gary S. Schaer, Assemblyman, District 36
	Daniel J. O'Connor, CEO, OncoSec Medical Inc.
	Timothy J. Lizura, President & COO, NJEDA (Ex Officio)

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Executive Summary

The New Jersey Biotechnology Task Force, appointed according to P.L. 2016, Joint Resolution No. 5, is pleased to submit a final report of its activities, findings, conclusions, and recommendations for legislation or administrative action to retain and attract new biotechnology companies to New Jersey. The Task Force was created because of the pivotal role this industry plays in the state in terms of economic activity, jobs, and tax revenues.

Since the first meeting in December 2017, the Task Force met with and accepted testimony from representatives in the life sciences industry and in New Jersey's academic institutions. The compelling testimony focused on existing efforts related to industry collaboration and technology transfer (as well as gaps and challenges); government and private resources; and strategic partnerships that have been leveraged to support continued growth of the life sciences industry in New Jersey. This testimony provided a framework for the recommendations contained in this report.

It is important to note that many of those who presented to the Task Force gave evidence of the strength of the industry in New Jersey. Since many of these strengths have been well-documented in prior research and evaluation reports, the Task Force chose to focus its recommendations on improvements that are needed in five key areas that are especially important in moving New Jersey forward.
These five areas and the related recommendations summarized below represent key priorities for action and investment in New Jersey's life sciences ecosystem:

- **Translational Research Culture**
  - Restore the Commission on Science and Technology
  - Provide Support to Better Compete for Small Business Innovation Research (SBIR) and Small Business Technology Transfer Program (STTR) Funding
  - Establish a Tax Credit for Private Investment into University Technology Advancement Funds and State Match of Investments from Technology Advancement Funds into Intellectual Property
- **Entrepreneurial Culture and Capital**
  - Increase Availability of Technical Assistance by Scaling Existing Programs across New Jersey Incubator/Accelerator Network
  - Support Executive Spin-Outs
  - Increase and Enhance the Technology Business Tax Certificate Transfer Program (NOL)
  - Incentivize Investment into New Jersey Venture Funds
  - Enhance the Angel Investor Tax Credit Program
  - Increase Funding for Edison Innovation Fund and NJ CoVest Fund
- **Workforce**
  - Support the I-Corps Model and Specialized Training and Mentoring to Help Bring Discovery to Marketplace

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- **Workforce (continued)**
  - Create New Jersey Talent Retention Internships Program
  - Restore the Technology Fellowship Program
  - Provide State Match of Non-Profit Research Grant Funding
- **Infrastructure**
  - Support Biomanufacturing & Biobanks
  - Create an Inventory of Multi-Tenant Operators and Increase State Support for Innovation Districts
  - Establish a New Jersey "Orphan Drug" Tax Credit
  - Enhance the Research & Development Tax Credit
  - Adopt a State-level Section 1202 Incentive
  - Develop a Capital Gains Incentive Program
- **Ecosystem**
  - Coordinate Marketing Efforts Surrounding Existing Resources and New Jersey Brand
  - Create and Support New Jersey Centers for Excellence
  - Create a State-Supported Forum to Bring Physicians Together to Share Information about New Jersey-Based Clinical Trial Activity
  - Create a Catalyst for New Jersey's Life Sciences Innovation Ecosystem

By leveraging our strengths and addressing these recommendations, we believe that New Jersey can achieve its goal of revitalization and enhancement of the life sciences industry through strengthening of the state's innovation capacity. It is an opportune time to take these important steps. Governor Phil Murphy's commitment to growing New Jersey's innovation ecosystem is noteworthy, and many of the recommendations contained within this report have already been put forward as legislation that is now moving through the Legislature. We believe that a deep understanding of the importance of the life sciences industry to New Jersey already exists.

In conclusion, we would like to thank all those who testified and provided input to the Task Force. We would like to offer special acknowledgement for extraordinary support:

- Dr. Susan Windham-Bannister, President and CEO, Biomedical Growth Strategies LLC.
- The staff of New Jersey Economic Development Authority
- Office of Legislative Services
- The staff of BioNJ

Introduction

Transformations in the global economy, the constant evolution of technology, and fast pace of competition have combined to increase the necessity and urgency that New Jersey invest in strengthening its innovation capacity – "the ability to produce and commercialize a flow of innovative technology, products and services over the long term." States with high innovation capacity encourage entrepreneurship, support the growth of startup companies, attract new companies, compete successfully for investment capital, and grow their state's economies. By building its innovation capacity, New Jersey has an opportunity to become a leading innovation hub -- igniting growth in the biopharmaceutical and medical device sectors, as well as developing the potential for growth in other innovation sectors.

New Jersey is respected globally for its strength in the biopharmaceutical and medical device industry sectors. The state is home to 13 of the world's 20 largest pharmaceutical companies. These companies play a vital role in the state's economy and their critical mass is an asset that can be highly leveraged in promoting innovation.

There is no "magic bullet" for becoming an innovation hub. Building innovation capacity requires a portfolio of activities and investments, including: accelerating the translation and application of academic research, encouraging a "culture of entrepreneurship" and the formation of new companies, providing access to investment capital for startup companies, investing in education and workforce development, enacting supportive policies and legislation, funding infrastructure (which includes an effective transportation system), and coalescing all key stakeholders into a mutually-reinforcing community (an ecosystem). To become a leading life sciences innovation hub, New Jersey needs a strategy for welcoming and enabling startup activity in biopharma as well as other sectors of the life sciences (medical technology, medical devices, bioinformatics, and medical diagnostics).

Timeline and Actions of New Jersey Biotechnology Task Force

In March 2016, the New Jersey Biotechnology Task Force was established pursuant to P.L. 2016, Joint Resolution No. 5. The resolution created a nine-member Task Force that was charged with communicating with members of the biopharma industry and the academic community in order to identify opportunities to strengthen industry sectors. The mission of the Task Force is to develop policy recommendations that inform the state's life sciences innovation strategy and propose action steps that will strengthen New Jersey's life sciences sector. These findings and recommendations are detailed in this report, which will be presented to the Governor and the Legislature, that will strengthen New Jersey's innovation capacity.

The Task Force was comprised of six legislative members, including Senator Linda Greenstein (Legislative District 14), former Senator Robert Gordon (Legislative District 38), Senator Robert Singer (Legislative District 30), Assemblyman Andrew Zwicker (Legislative District 16), Assemblyman Jack Ciattarelli (District 16), and Assemblyman Gary Schaer (Legislative District 36); two public members appointed by the Governor, Debbie Hart, President and CEO of BioNJ, and Daniel O'Connor, Chief Executive Officer of OncoSec Medical Incorporated; and Timothy Lizura, President and Chief Operating Officer of the New Jersey Economic Development Authority (EDA), serving in an ex-officio capacity. Assemblyman Christopher DePhillips (Legislative District 40) was named to the Task Force to replace Assemblyman Ciattarelli, whose term had expired. At its inaugural December 2017 meeting, the Task Force elected Debbie Hart as Chair and Assemblyman Zwicker as Vice Chair. The EDA served as staff to the Task Force.

About this Report

This report presents the recommendations for high priority, short- and long-term action steps and investments that Task Force members believe will be most impactful in laying the foundation for a New Jersey innovation-driven growth strategy. The report is intended to inform deliberations by the New Jersey Legislature and considerations of the Governor, and support policy formulation and investments that will boost our strength in biotechnology, as well as other life sciences sectors. In preparing our recommendations, we continually asked ourselves where New Jersey should focus its activities and investments to improve baseline innovation capacity. The recommendations in this report reflect those priorities.

Our recommendations are based upon in-depth and wide-reaching testimony collected during three public hearings, as well as submitted written testimony. Further research was conducted by Task Force members and EDA staff to identify opportunities to strengthen the state's life sciences innovation ecosystem and to make specific recommendations for legislative and State support to maximize its role in the state's economy. Many of the strengths that were identified by our work have already been well-documented in prior research and evaluation reports. These strengths are briefly summarized in this report because they make a clear case that New Jersey can take a strong leadership role in life science innovation.

But it is imperative that we take steps to achieve this possibility by addressing the important gaps that are hindering innovation in New Jersey despite our strengths. The Task Force has therefore chosen to focus our recommendations on improvements in five areas that are especially important to our goal of becoming a leading life sciences innovation hub:

Translational Research Culture

Entrepreneurial Culture and Capital

Workforce

Infrastructure

Ecosystem

The Task Force hopes that this report will contribute to New Jersey's success in making the best and most efficient use of public resources, enhancing the state's leadership in life sciences innovation, generating jobs for New Jersey residents, attracting investment capital, producing additional tax revenue, and driving economic development.

Appendix A contains a Glossary of the Terms used in this report.

Input to this Report

Pursuant to the resolution, the Task Force conducted public hearings on January 25-26, 2018 at the Commercialization Center for Innovative Technologies (CCIT) in North Brunswick, New Jersey and at the EDA offices in Trenton, New Jersey on April 3, 2018.

During the first day of hearings, the Task Force took testimony from invited guests and asked about commercialization opportunities at the state's academic institutions and collaborations between academia and industry. On the second day of hearings, representatives of New Jersey's biotechnology industry provided testimony and took questions from Task Force members about the enablers and challenges to growing their companies in New Jersey and opportunities for strategic partnerships.

Some of the key themes and findings that emerged from the two days' testimony included:

- New Jersey has an opportunity to better market its strengths as an innovative state with a highly-educated workforce.
- The biotech/biopharma industry remains a vibrant sector in the state's economy, but employment, investment, and growth have declined in recent years relative to peer states.
- New Jersey lags its competitor states in several key areas, including funding for early-stage companies and non-monetary support, such as technical and professional business assistance for academic spin-offs.
- Strengthening the biotechnology/pharmaceutical industry sectors and attracting new startups and spin-outs needs to be part of a comprehensive economic strategy that includes workforce development, and ways to attract millennials to locate and stay in the state.

A number of reports published in recent months were referenced during the hearings and were used as resources to shape the findings and recommendations presented later in this report. These reports include: The New Jersey Biopharma Industry: A Prescription for Growth (BioNJ, January 2018); Reseeding the Garden State's Economic Growth: A Vision for New Jersey (McKinsey, July 2017); Research in Your Backyard: Developing Cures, Creating Jobs (PhRMA, June 2017).

On April 3, 2018, Dr. Susan Windham-Bannister gave a presentation to the Task Force entitled "Accelerating Life Sciences Innovation: A Public-Private Partnership." Dr. Windham-Bannister, President and CEO of Biomedical Growth Strategies LLC, was the founding CEO of the Massachusetts Life Sciences Center (MLSC), an independent investment organization charged with administering the $1 billion Life Sciences fund signed into law by the Massachusetts legislature in June 2008. The MLSC, a quasi-public authority governed by a Board of Directors, is the hub for all sectors of the Commonwealth of Massachusetts' life sciences community – biotechnology, pharmaceuticals, medical devices, medical diagnostics and bioinformatics. During her seven-year tenure at the MLSC, Dr. Windham-Bannister was responsible for the overall implementation of the initiative, including formulating the investment strategy for the fund. Under Dr. Windham-Bannister's leadership, the MLSC invested nearly $700 million of the fund, leveraged another $2+ billion in matching investment capital and made life sciences the fastest job-producing sectors of the Massachusetts economy.

Dr. Windham-Bannister presented data on how Massachusetts' $750 million investment leveraged another $2 billion in funds from other sources. Capital projects accounted for slightly more than half the State's investment, and tax incentives accounted for another 25 percent. At least $43 million was invested in educational programs, internships, and K-12 STEM initiatives. She emphasized several themes, including:

- An innovation economy can be the outcome of focused, strategic investments.
- A rich pipeline of early-stage companies attracts large companies that anchor the ecosystem.
- Academic institutions and faculty benefit from actively participating in translational research, entrepreneurship and industry partnerships.
- Career opportunities are created for workers with a variety of skills and educational levels, including mid-skilled workers.
- Relying on the "wisdom of experts" to identify the relative best use of resources creates shared ownership and promotes a strong return on the investment of public dollars.
- Innovation-driven economic development is a viable goal for policymakers.

Transcripts for these hearings, including written testimony submitted by witnesses, are available on the EDA's website.

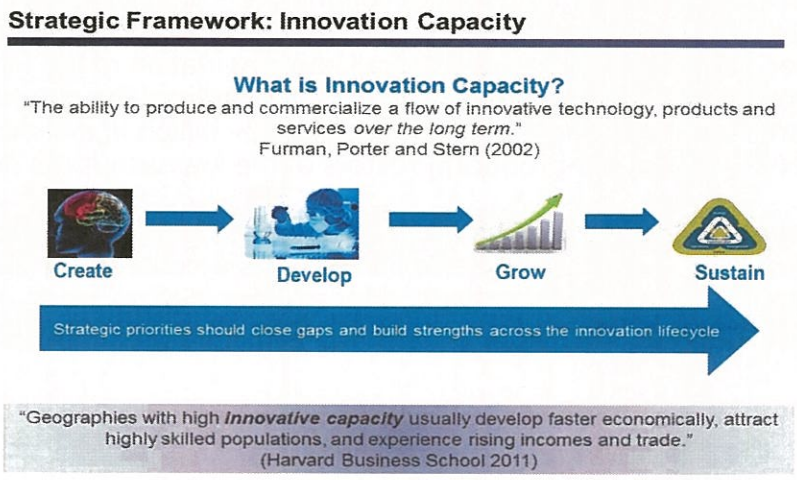
Strategic Framework: Innovation Capacity

Innovation is a process and has a lifecycle that includes "discovery" (or creation), development, growth, and finally, maturity and sustainability. If there are major gaps in the supporting platform that enables innovation to move across its lifecycle, then the process stalls, moves to a geography where it can find the enablers that it needs to progress or, worst of all, may never start at all. By addressing the issues that are most severely hampering our innovation capacity, New Jersey can become a state where a high volume of new companies start, grow and thrive, and where mature companies that rely on innovation want to have a significant presence.

As noted earlier in this report, there is no "magic bullet" for accomplishing this. Building innovation capacity requires a portfolio of activities and investments that are coordinated by a strategic framework. A flurry of uncoordinated, siloed activities and "rifle shots" is rarely effective in delivering impact. Even worse, this approach runs the risk of wasting significant investments of public and private dollars.

With this in mind, an Innovation Capacity framework, shown in the figure below, provides a strategic framework to set priorities and rationalize our decisions about the recommendations to include in this report.

FIGURE 1 - INNOVATION CAPACITY FRAMEWORK



Proprietary to Biomedical Growth Strategies

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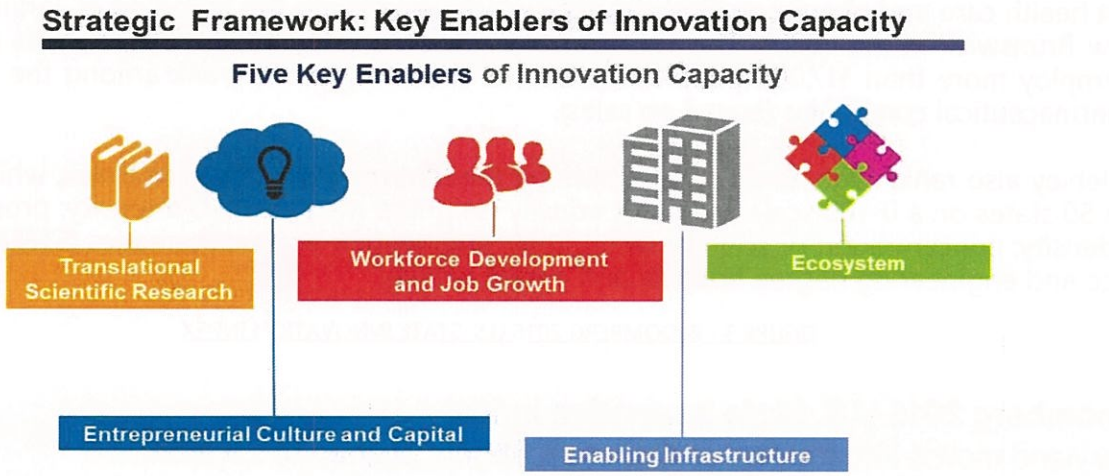
Economists who study innovation capacity have shown that there are five key "enablers" of innovation:

FIGURE 2 - THE FIVE ENABLERS OF INNOVATION CAPACITY



The "enablers" of innovation capacity are interactive – each enabler affects the performance of others along the innovation lifecycle.

Proprietary to Biomedical Growth Strategies

The key enablers provide a framework that helps to understand which gaps and strengths make the greatest impact on innovation capacity and should therefore be the focal points for action and investment. In the context of the Task Force's mission, the key enablers are useful in:

- **Synthesizing the findings from testimony and prior evaluation reports regarding New Jersey's strengths and weaknesses –** Many strengths and gaps may be identified, but it is important to focus on gaps in the five key enablers of innovation that are most frequently reported. These gaps/ strengths play an especially significant role in deterring the State's ability to bolster its innovation capacity.

- **Determining where investments should be targeted for maximum impact --** Legislation, funding or administrative action by the Governor, the Legislature and other key stakeholders should focus on the key enablers. What should be strengthened? Where should resources and investments be enhanced?

- **Setting priorities and staying focused --** What actions and investments should form the basis of the State's strategy to become a leader in biopharma innovation and job creation?

- **Increasing the potential leverage on activities and investments –** What activities and investments will respond broadly to the needs of multiple life sciences stakeholders, but will be sufficiently targeted to "make a difference?"

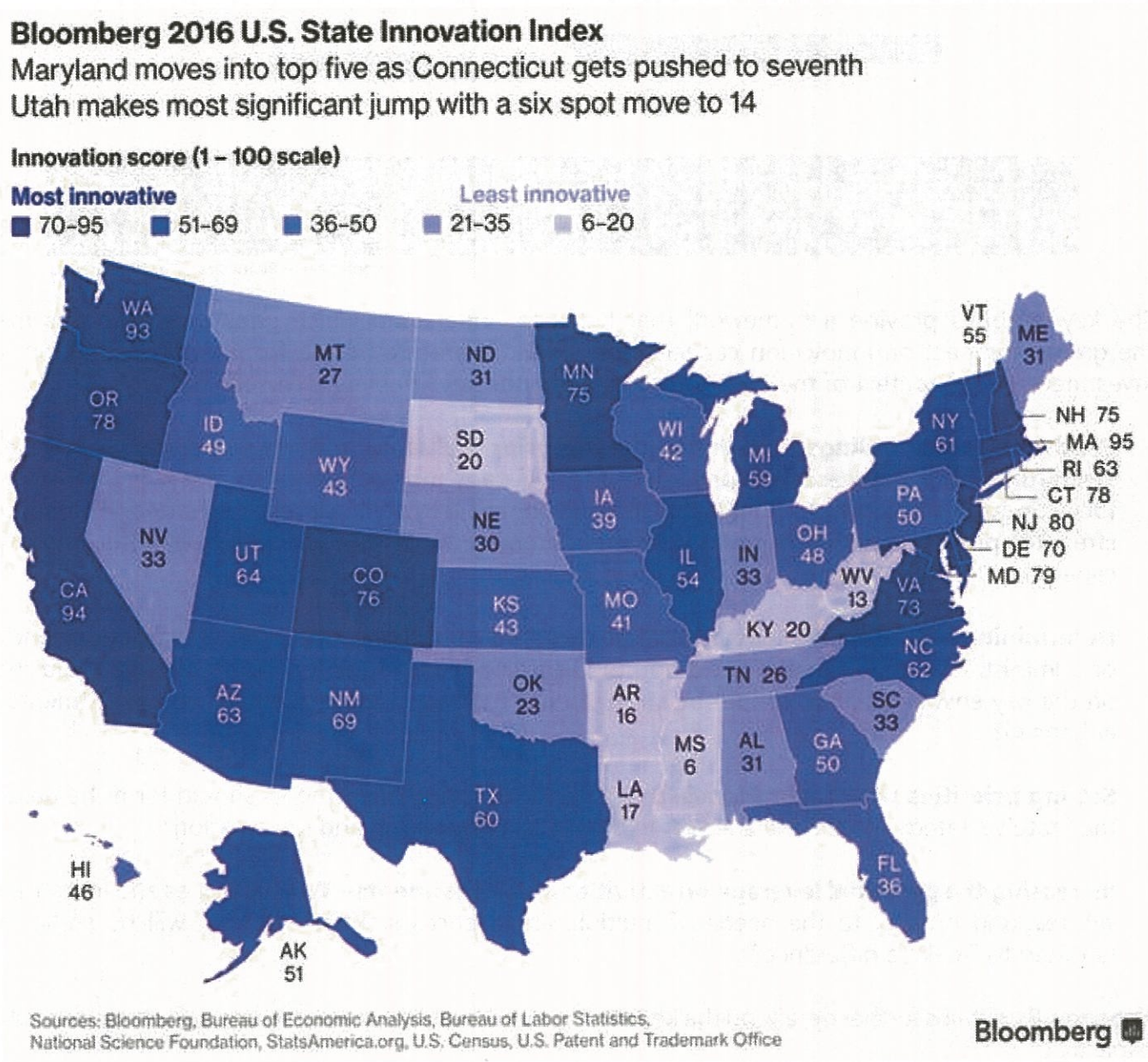
Appendix B contains further details on the key enablers and their importance in strengthening Innovation Capacity.

A Strong Base for Life Sciences Innovation: New Jersey's Existing Resources

For over a century, New Jersey has been considered the "Medicine Chest of the World," owing to its robust health care and pharmaceutical industry, which began with the founding of Johnson & Johnson in New Brunswick in the 1880s. The state currently has more than 3,280 life sciences establishments that employ more than 117,000 people. Thirteen of these companies rank among the world's top 20 biopharmaceutical companies (based on sales).

New Jersey also ranks high among U.S. states on the Bloomberg Innovation Index, which scores each of the 50 states on a 0-100 scale across six equally weighted metrics: R&D intensity; productivity; high-tech density; concentration of science, technology, engineering and mathematics (STEM) employment; science and engineering degree holders; and patent activity:

FIGURE 3 - BLOOMBERG 2016 U.S. STATE INNOVATION INDEX



Bloomberg 2016 U.S. State Innovation Index

2016 rank	2015 rank	Change	State	Total score	R&D intensity	Productivity	Tech company density	STEM concentration	Science & engineering degree holders	Patent activity
1	1	-	Massachusetts	94.82	2	5	4	3	5	2
2	2	-	California	93.80	4	7	3	6	3	1
3	3	-	Washington	92.73	5	9	7	1	2	3
4	4	-	New Jersey	80.17	12	10	5	15	10	12
5	7	+2	Maryland	78.95	3	13	19	2	4	26
6	6	-	Oregon	78.22	9	15	22	9	6	8
7	5	-2	Connecticut	78.17	8	4	24	12	12	7
8	8	-	Colorado	75.58	22	17	16	5	7	10
9	10	+1	Minnesota	75.00	15	19	10	8	23	4
10	12	+2	New Hampshire	74.75	10	39	2	14	9	6
11	11	-	Virginia	73.23	20	16	14	4	1	29
12	9	-3	Delaware	69.80	7	3	34	11	17	16
13	13	-	New Mexico	68.90	1	23	8	18	15	31
14	20	+6	Utah	63.50	14	34	12	13	28	13
15	19	+4	Arizona	62.80	16	42	6	10	24	17
16	14	-2	Rhode Island	62.55	18	26	1	25	21	24
17	16	-1	North Carolina	62.37	17	24	13	23	19	20

However, over the last two decades, the pharmaceutical footprint in New Jersey has contracted, affected by the patent cliff, the recession, mergers and acquisitions, research and manufacturing moving away from the State. The concentration of biopharmaceuticals has helped the state retain its position as a global hub for the medical sciences, but there is strong competition with other states and countries for startups and job creation.

Multiple resources currently support and work to grow biopharma in the state. Several membership associations advocate for the needs of the industry, including BioNJ, BIO, the HealthCare Institute of New Jersey (HINJ), and PhRMA. Additionally, Innovation New Jersey is a diverse coalition of businesses, trade associations and higher education institutions established to strengthen and enhance the culture of innovation in New Jersey.

"Choose New Jersey", a 501c(3), markets the state to companies and entrepreneurs across the country and around the world. The New Jersey Business Action Center (BAC) is a "one-stop resource" for businesses that want to launch, expand, or relocate to New Jersey. EDA provides a continuum of support for the lifecycle of the biopharmaceutical company, beginning with early-stage seed money. The EDA operates the Technology Centre of New Jersey in North Brunswick, which includes the Commercialization Center for Innovative Technologies (CCIT), an incubator dedicated to life sciences and biotechnology startups, and the new Biotechnology Development Center offering expanded office and lab suites for growing research companies.

Governor Phil Murphy has made re-igniting New Jersey's innovation economy a centerpiece of his stronger and fairer economic agenda. As noted in more detail throughout this report, several initiatives have already been introduced by Governor Murphy to expand New Jersey's innovation capacity. This includes "The Hub" in downtown New Brunswick, which represents the opportunity for New Jersey to create incubator and research space for next-generation companies and academic research facilities and attract corporate entrepreneurial tenants, the STEM Loan Forgiveness Program and the NJ Career Accelerator Internship Program, which aim to encourage individuals in STEM fields to make a long-term commitment to building and maintaining a career in New Jersey, and an education policy that seeks to prepare every student for the 21st century with excellent and innovative public schools, including $2 million in the Governor's proposed Fiscal Year 2019 budget to support the "Computer Science for All" initiative, helping New Jersey high schools implement college-level computer science courses.

The Hub initiative, specifically, can serve as an important focal point for the resources necessary to support early-stage companies:

- Translational research/startup culture
- Access to faculty expertise
- Industry-academic collaborations
- Business plan competitions
- Workforce development
- Mentors and Role Models
- Experienced entrepreneurs (Entrepreneurs in Residence)
- Pre-seed capital, both grants and investments:
    - University and other institutional grants
    - State agencies
    - Philanthropists and Foundations
- Bringing together sources of investment capital for more mature startups:
    - Angel networks
    - Venture capital funds
- Accelerator and Incubating space

The Hub project, supported by its key stakeholders, can serve as a support system for startup companies that harnesses the knowledge and experience of faculty, volunteer alumni and other business leaders. One focus of this collaboration should be to help prospective entrepreneurs learn what they need to know to begin and sustain a business. The Hub also can serve as a focal point for investors to get an early look at technology that is emerging from the university. Essentially, the Hub can catalyze a life sciences ecosystem in New Brunswick, establishing a model that may have the potential to be replicated by other New Jersey academic research partners for other key innovation industries in other parts of the state.

Another important effort is being undertaken through the New Jersey Assembly where, in January 2018, Assembly Speaker Craig Coughlin created a new Assembly Science, Innovation and Technology Committee, naming Assemblyman Andrew Zwicker as chair. The new Committee, whose work is ongoing at the time of this report, is charged with helping to build a better and stronger New Jersey by focusing on the state's science and innovation ecosystem as a source of jobs and economic development and finding new and innovative solutions to boost the economy.

Under Governor Murphy's leadership, EDA has also taken recent steps to help New Jersey reclaim its position as the center of invention and innovation. This includes the creation of a new Office of Economic Transformation, which is charged with developing and implementing initiatives that will enhance the state's long-term economic competitiveness within key strategic sectors, including life sciences,

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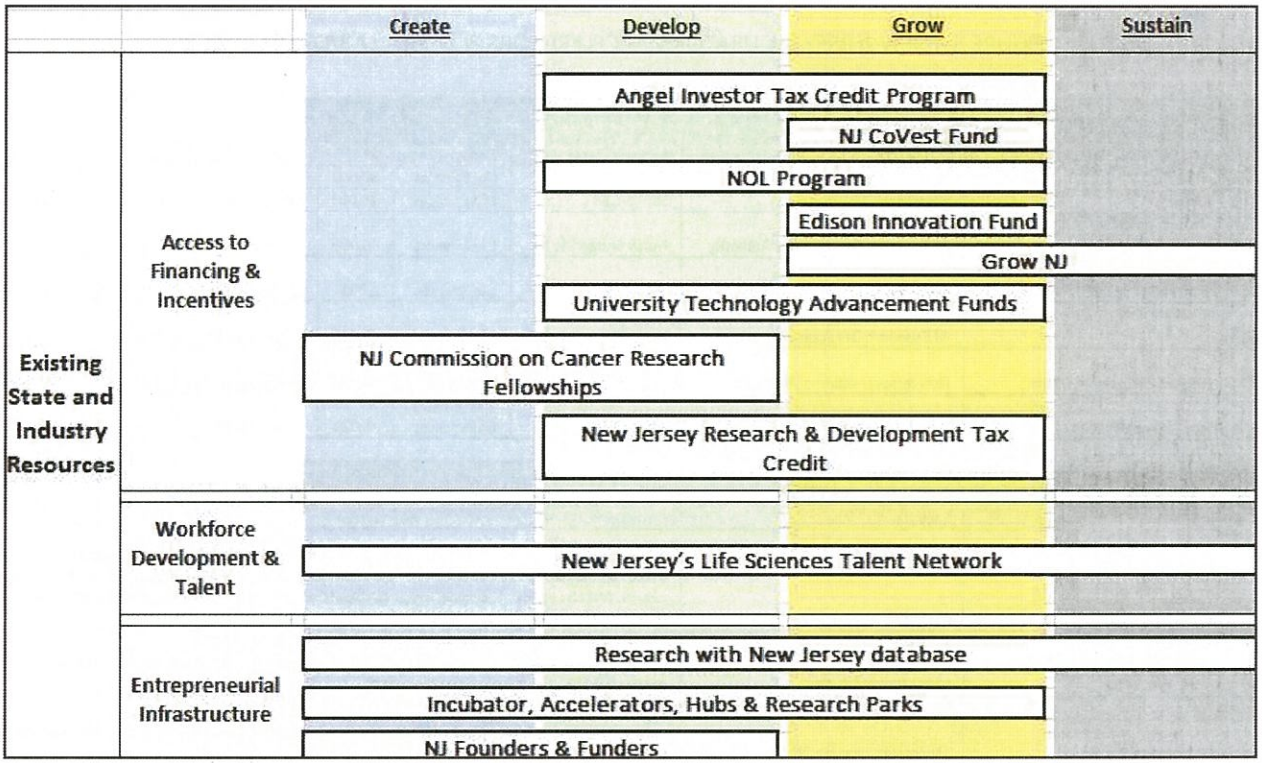
technology, clean energy, and advanced manufacturing. Through this office, the EDA will partner with industry, labor and workforce development leaders, entrepreneurs, and government stakeholders to analyze and remove bottlenecks to growth and support new business formation and expansion.

The EDA also worked with the Office of the Secretary of Higher Education (OSHE) and leaders of the state's private and public universities to launch Research with New Jersey, a free database which will showcase thousands of experts in science, technology, engineering and mathematics (STEM) as well as their professional backgrounds, publications, and achievements. ResearchwithNJ.com will help businesses and entrepreneurs identify and collaborate with our top universities and experts. It will also help users learn about the research departments and specializations of the five participating universities: New Jersey Institute of Technology, Princeton University, Rowan University, Rutgers University, and Stevens Institute of Technology.

With the state's key job creation and retention tax credit incentive, Grow NJ, set to expire in July 2019, the Governor has indicated that comprehensive tax credit reform provides New Jersey with an opportunity to identify ways to focus in on support of innovative, high-growth companies.

The illustration below details the range of programs, including financing mechanisms, technical assistance, and academic partnerships that currently support growing the biotechnology industry in the state, and how these resources align with the innovation capacity framework demonstrated in Figure 1. Following this illustration is a brief description with more detail on each of the existing resources.

FIGURE 4 - EXISTING NEW JERSEY RESOURCES ACROSS THE INNOVATION CAPACITY FRAMEWORK



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Seed Stage Assistance and Programs (Create/Develop)

New Jersey Founders & Funders

The New Jersey Founders and Funders program is a series of events, hosted bi-annually by EDA, that directly connect entrepreneurs with multiple investors in a "speed-dating" environment. New Jersey Founders and Funders enables early-stage New Jersey businesses to meet with investors in 10-minute, one-on-one sessions to discuss strategy, business models and funding opportunities.

New Jersey Commission on Cancer Research

The New Jersey Commission on Cancer Research (NJCCR) promotes significant and original research in New Jersey into the causes, prevention, treatment and palliation of cancer and serves as a resource to providers and consumers of cancer services. NJCCR offers research fellowships and bridge funding to advance research related to the causes, prevention, survival and treatment of cancer.

Incubators, Accelerators, Hubs and Research Parks

As outlined below, New Jersey is home to a number of incubators, accelerators and research parks from which New Jersey biotechnology companies are operating. A notable incubator within New Jersey is the Commercialization Center for Innovative Technologies (CCIT) which is dedicated to biotechnology companies. Many successful companies have graduated from CCIT, including Advaxis, Amicus Therapeutics, Chromocell, GENEWIZ, and more. Notable post-incubation space includes the Biotechnology Development Center (BDC), which offers intermediate lab and office space for emerging life sciences companies that have outgrown incubator space and other early-stage companies looking to expand. Both CCIT and BDC are located in North Brunswick, New Jersey.

FIGURE 5 - NEW JERSEY INCUBATORS, ACCELERATORS & OTHER LAB/OFFICE SPACE

Life Sciences Incubators						
Incubator Name	**Sponsor**	**Location**	**Sector**	**SF**	**Contact Name**	**Contact Email**
Princeton Biolabs	Princeton University	Princeton, NJ	Life Sciences	30,000	Nishta Rao	nishta@biolabs.io
Celgene Incubator	Celgene	Summit, NJ	Life Sciences	16,000	John Anthes	janthes@celgene.com
Commercialization Center for Innovative Technologies (CCIT)	NJ Economic Development Authority	North Brunswick, NJ	Life Sciences	46,000	Lenzie Harcum	lharcum@njeda.com
Institute For Life Science Entrepreneurship	Kean University	Union, NJ	Life Sciences	6,000	Harvey Homan	hhoman@ilsebio.com
New Jersey Biotechnology Development Center	NJ Economic Development Authority	North Brunswick, NJ	Life Sciences	46,000	Lenzie Harcum	lharcum@njeda.com
NJIT Enterprise Development Center	New Jersey Institute of Technology	Newark, NJ	Technology / Life Sciences	40,000	Jerry Creighton	jerry.creighton@njit-edc.org
South Jersey Technology Park	Rowan University	Mantua, NJ	Technology / Life Sciences	45,000	Jeanne Nevelos	nevelos@rowan.edu

Other Selected Lab/Office Space		
Site Name	**Location**	**Description**
ON3 Site	Nutley, NJ	Former former Hoffmann-LaRoche campus: >1.5M sf lab/office under development. 116-acre former Roche campus will be home to Hackensack Meridian Health and Seton Hall University in 477,000-square-foot and 16 acres on the campus. ON3 also includes two immediately available office buildings:the site's iconic, 15-story, 300K sf tower and a 7 story, 255K sf Class A facility and a 5 story 155K sf R&D/Lab building.
Center of Excellence	Bridgewater, NJ	~ 850K sf lab/office — home to Nevakar, Kashiv and Nestle Health Sciences.
Technology Centre of NJ	North Brunswick, NJ	~ 330K sf lab/office/incubator — home to Chromocell, Allergan, Merial, Orthobond, the CCIT Life Sciences Incubator and the Biotechnology Development Center (BDC)
Cedarbrook	Cranbury, NJ	~ 300K sf lab/office — home to Amicus, Endo Pharma and Purdue Pharma.
Princeton Corporate Plaza	Monmouth Junction, NJ	~ 250K sf lab/office — 250K sf plus a new 60Ksf lab/office building is under construction. Home to 80 biopharma tenants including TYRX and Cytosorbents.
College Road East	Princeton, NJ	~ 275K sf lab/office R&D space - home to Sungen, Dr. Reddy's Labs, Princeton Biolabs.

Early-Stage Assistance and Programs (Develop/Grow)

University Technology Advancement Funds

Several of New Jersey's higher education institutions administer technology advancement funds which provide funding to faculty and students to help advance technologies toward commercialization. These funds serve as a catalyst during a stage at which capital can be difficult to obtain through conventional means and increase the likelihood that the technology will receive follow-on funding from private investors.

A few examples of University technology advancement funds include: Rutgers TechAdvance, Princeton University Intellectual Property Accelerator Fund, and Rowan University Venture Fund.

Angel Investor Tax Credit Program

The Angel Investor Tax Credit Program, jointly administered by the EDA and the New Jersey Department of Taxation, provides refundable tax credits against New Jersey corporation business or gross income tax for 10 percent of a qualified investment in an emerging technology business with a physical presence in New Jersey that conducts research, manufacturing, or technology commercialization.

NJ CoVest Fund

Launched in 2017 by the EDA, the NJ CoVest Fund provides up to $250,000 in seed funding to New Jersey technology and life sciences companies to further commercialize their technology and scale revenues. The program is aimed at capital efficient, early-stage companies with proprietary intellectual property that have attracted investors and have previously raised some financing.

Edison Innovation Fund

The EDA's Edison Innovation Fund is a suite of financing instruments designed to develop, sustain, and grow technology and life sciences businesses in New Jersey that are at the revenue stage. The Edison Innovation Fund is structured as subordinated convertible debt, where emerging technology and life sciences companies can access growth capital to directly fund uses such as hiring key staff, product marketing and sales.

EDA Investments in Venture Funds

The EDA helps increase available capital for emerging tech companies by investing as a limited partner in numerous venture capital funds that invest in New Jersey-based businesses. Gains resulting from these investments are utilized to offer new funding opportunities to support New Jersey businesses. Cumulatively, these partner funds have invested approximately 6x the EDA's investment into New Jersey early-stage technology and life science companies.

Next Stage Assistance and Programs (Grow/Sustain)

Research & Development Tax Credit

The New Jersey Research & Development Tax Credit administered by the New Jersey Division of Taxation provides a tax credit against the entire net income component of the Corporate Business Tax. It provides a credit of 10% of the excess qualified research expenses over a base amount plus 10% of the basic research payments.

Technology Business Tax Certificate Transfer (NOL) Program

The NOL Program administered jointly by the EDA and the New Jersey Division of Taxation enables qualified, unprofitable New Jersey-based biotechnology and technology companies to sell a percentage of net operating losses (NOL) and research and development (R&D) tax credits to unrelated profitable corporations for cash. This program provides unprofitable corporations with a path to securing working capital that can be critical to funding growth, operations, and research, and has been particularly valuable to the life sciences sector as it provides a "patient" source of annual cash flow relief that reflects the long lead time for commercialization and clinical trials inherent to the industry.

New Jersey's Life Sciences Talent Network

New Jersey has a highly educated workforce that makes it easy for companies to recruit top talent. In fact, many pharmaceutical and biotech companies choose New Jersey specifically for its concentration of specialized talent in the areas of R&D and commercialization – the highest concentration in the country. In addition to the State's experienced workforce, a steady stream of students graduate from elite higher education institutions in New Jersey each year and join that talent pool. Six of those universities, including Princeton University, offer additional graduate and post-graduate degrees in the biomedical and healthcare fields. The Life Sciences Talent Network is intended to facilitate training and related programs to ensure that New Jersey's talent retains its excellence.

Some key statistics include (Source: Choose New Jersey):

- 225,000 Scientists and Engineers (The world's highest concentration)
- #2 State for Biochemists and Biophysicists
- 22,000 Life Sciences Graduates Annually

Assistance for Mature Companies (Sustain)

Grow NJ Assistance Program

Grow NJ is New Jersey's primary job creation and retention incentive program. Businesses that are creating or retaining jobs in New Jersey may be eligible for tax credits on a per job, per year basis, with bonuses for businesses in the life sciences and technology industries, including businesses operating within a qualified incubator facility and businesses conducting collaborative research with a New Jersey college or university. Per statute, the Grow NJ Program is set to expire in July 2019.

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Investing to Strengthen Life Sciences Innovation in New Jersey: Recommendations and Strategic Priorities

The Task Force's work, as well as prior evaluation reports, indicates important gaps that should be prioritized as targets for investment and action to strengthen New Jersey's innovation capacity. Below, we present opportunities and recommendations that should be considered in the development of a comprehensive strategy to build New Jersey's leadership in life sciences innovation. Many are cost-effective activities that can be implemented in the near term.

We have organized our recommendations to target important gaps in the five key enablers of innovation capacity:

Translational Research Culture

Entrepreneurial Culture and Capital

Workforce

Infrastructure

Ecosystem

Because the enablers of innovation are inter-related and mutually reinforcing, efforts to strengthen innovation capacity must be holistic, organized into an overarching strategy and part of a portfolio of coordinated interventions. The Governor and Legislature should work together with the state's industry and academic leaders to develop this comprehensive strategy, which must include building a culture of innovation and entrepreneurship.

Key Enabler #1: Translational Research Culture

Gap(s) Being Targeted:

We need to foster an academic culture that encourages translational research, along with basic research, in New Jersey's academic institutions. Translational research (also referred to as "applied research") is concerned with facilitating the practical application of scientific discoveries to the development and implementation of new ways to prevent, diagnose, and treat disease. By comparison, basic research -- also called pure research or fundamental research -- aims to improve scientific theories for improved understanding or prediction of natural or other phenomena. Translational research is the starting point for innovation and attracts industry partners and capital for infrastructure at academic institutions. Academic institutions with faculty and students who are actively engaged in translational research are key providers of next generation entrepreneurs and the talent needed to grow young companies.

Innovation hubs usually have a high volume of startups and spin-outs from their universities and this is instrumental in generating excitement in the national and international innovation communities. An academic culture that encourages both basic and translational (applied) research is an important starting point.

Task Force Recommendations:

Restore the Commission on Science and Technology

When considering what steps are necessary to accelerate life sciences innovation in New Jersey, the Task Force recommends, as an initial step, the creation of a catalyzing organization whose primary mission is to serve as the coordinating entity for a public-private life sciences partnership, and to house capabilities, funds and other resources that coalesce a strong life sciences ecosystem. The concept of a catalyzing organization, along with the benefits of establishing such an organization and successful models undertaken by other states are addressed in further detail in the "Ecosystem" section of this report, but a re-established Commission on Science, Innovation and Technology is the ideal entity to serve as this organization.

For over two decades, the Commission on Science and Technology promoted industry-university collaborations with the goal of accelerating commercialization of new technologies and supporting the emergence of science and technology-based businesses to create economic opportunity and job growth.

The Commission provided a number of benefits to the biotechnology industry including:

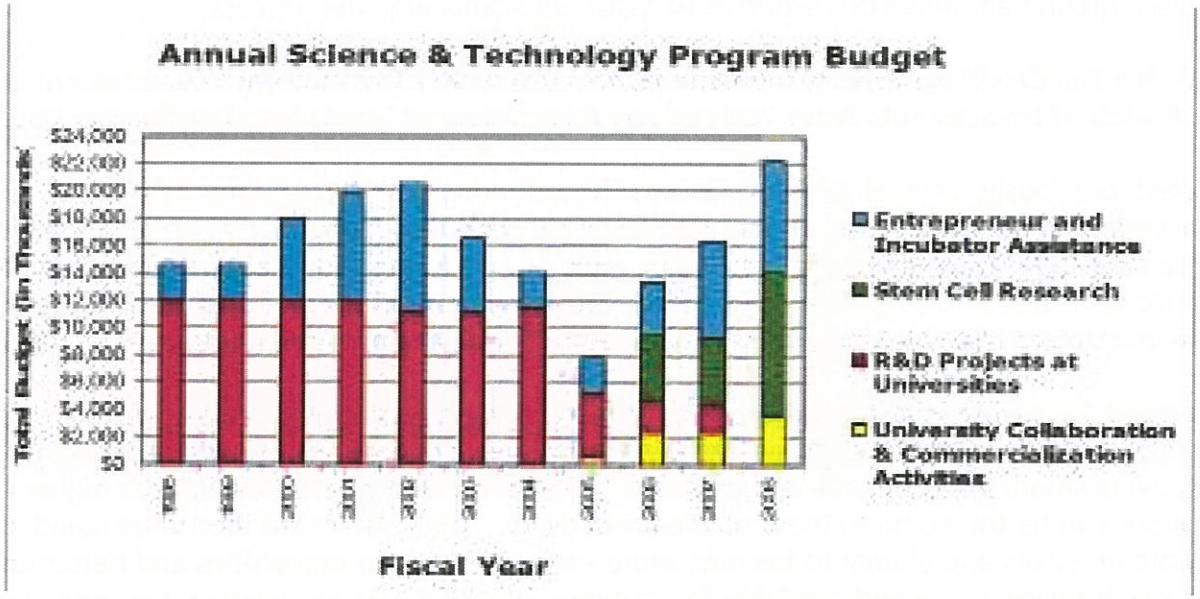
- Technology assistance programs, including programs to better position New Jersey businesses to qualify for SBIR/STTR funding.
- Entrepreneur assistance programs, including technology and entrepreneurial fellowships.
- Technology incubator programs.
- Collaboration with higher education, including University intellectual property programs.

A range of New Jersey biotechnology companies benefitted from Commission programs. This includes 3D Biotek LLC, which graduated from the Commercialization Center for Innovative Technologies (CCIT) life sciences incubator in 2011. Now based in Hillsborough, 3D Biotek is focused on commercialization of novel 3-dimensional (3-D) cell culture devices for use in stem cell, cell biology, tissue engineering, drug discovery, and medical device fields. The company took advantage of the Technology Fellowship Program, employing three fellows between 2008 and 2010, and also received assistance under the Incubator Seed Fund. Of the grants provided by the Commission, 3D Biotek said it helped the company develop a new product line and enhance development of another novel technology.

The Commission was de-funded in the 2010 budget, but technically still exists. There is currently a bill in the Legislature to support the re-establishment/revival of the New Jersey Commission on Science and Technology as the Commission on Science, Innovation, and Technology. The chart on Figure 6 illustrates prior annual program budgets for the Commission.

While the Commission will work closely with EDA to encourage and facilitate science and technology innovation project, the creation of a singularly focused catalyzing organization is critical to coalescing a strong life sciences ecosystem. The Commission had historically served that role in New Jersey and can again serve as the state's "innovation catalyst."

FIGURE 6 - NJCST ANNUAL PROGRAM BUDGET: FY1998 - FY2008



Source: NJ Commission on Science and Technology - 2008 Annual Report

Provide Support to Better Compete for Small Business Innovation Research (SBIR) and Small Business Technology Transfer Program (STTR) Funding

The Small Business Innovation Research (SBIR) and the Small Business Technology Transfer Program (STTR) are highly competitive three-phase award programs, which provide qualified small businesses with opportunities to propose innovative ideas that meet the specific research and development needs of the Federal Government. Per BioNJ's 2018 The New Jersey Biopharma Industry: A Prescription for Growth report, New Jersey has attracted lower amounts of federal biotech investment from these programs than peer states. Between 2010 and 2015, New Jersey companies received only 186 Small Business Innovation Research (SBIR) awards totaling $89 million, as compared to Massachusetts companies which received 949 awards totaling $422 million. To help New Jersey become more competitive in this area, incentives, training or other measures to increase the number of SBIR applications from our state must be made available. Specifically, programs formerly administered by the New Jersey Commission on Science and Technology helped New Jersey better compete for this funding, and a re-established Commission should resume these programs, as well as administer technical assistance tailored specifically to the SBIR/STTR application process.

One example of funding administered by the Commission was bridge grants that provided funding to bridge businesses between the SBIR and STTR programs. The purpose of the funding was to increase the success and maximize the growth of small New Jersey companies in moving from Phase I to Phase II. This program provided $50,000 grants to entrepreneurs who have both applied for Phase II funding and who have been identified as potential Phase II SBIR/STTR awardees. This grant funding sustained small businesses through the funding gap that occurs between completions of the Federal Phase I SBIR/STTR grants and the initiation of a Phase II SBIR/STTR award. In Fiscal Year 2009, the Commission supported a total of five companies under the SBIR Bridge Grant Program, totaling $249,500. An additional $42,240 was utilized for SBIR training.

The re-establishment of these SBIR/STTR bridge grants, along with a training or technical assistance component to help with the SBIR application process, is a critical step to positioning New Jersey to better compete for this federal funding. Additionally, a financial incentive to universities under which

spin outs apply for or are awarded SBIR funding, would engage higher education in the process and may place greater emphasis on resources to assist applicants with the process.

Establish a Tax Credit for Private Investment into University Technology Advancement Funds and State Match of Investments from Technology Advancement Funds into Intellectual Property

As noted previously, several of New Jersey's higher education institutions administer technology advancement funds which provide funding to faculty and students to help advance technologies toward commercialization. A powerful step New Jersey could take to support translational research activities and academic spin-outs is to empower these funds through the establishment of a tax credit to incentivize private investment into the funds, and a State match of a fund's investment into intellectual property.

A tax credit to private investors who invest in technology advancement funds, which would include corporate and individual investors, will support promising technologies by strengthening the benefits these advancement funds provide and cultivating an environment where New Jersey's higher education institutions can be the home to the next great discovery. These tax credit incentives could encourage corporate investors and alumni to become more engaged with the universities and better understand the research taking place and available for commercialization. As an investor, the individual and/or corporation would receive updates on the fund's activities, performance and engagement, thereby addressing the challenge of awareness.

A State match of an advancement fund's investment into intellectual property is another way to bolster the ability of the funds to advance New Jersey-fostered translational research efforts by providing a pathway for promising technologies to achieve commercialization and adding additional value to these technologies to make them more attractive to industry and private investors. State match of these technology advancement funds may also encourage other New Jersey colleges or universities to establish such funds, providing a wider availability of this funding throughout New Jersey higher education institutions.

Key Enabler #2: Entrepreneurial Culture & Capital

Gap(s) Being Targeted:

Entrepreneurship includes culture, capital, and the conditions and support systems that enable young companies to thrive. Innovation hubs are known for starting and growing in high volumes the next generation of companies that commercialize academic discoveries. Although securing funding is one of the most well-known and difficult challenges that a startup company will face in attempting to bring a discovery to the commercialization stage, there are additional challenges that biopharma entrepreneurs must be prepared to encounter in the process of building a business. Therefore, the availability of funding must also be accompanied by access to domain-specific training, mentoring and networking opportunities which can help aspiring entrepreneurs address other challenges and offer the best chance of success.

A rich pipeline of new companies attracts mature companies - which are heavily reliant on "external innovation" - and attracts investment capital and talent. New Jersey's entrepreneurial culture needs to be strengthened: startup activity needs to be encouraged and the state needs to attract more venture capital to support our startup companies.

The Task Force acknowledges that Governor Murphy recently directed the Jobs and Economic Opportunity Council (JEOC) to create a Strategic Plan for reclaiming New Jersey's innovation economy. The members of JEOC include the Lieutenant Governor; State Treasurer; Commissioners of Labor, Workforce Development and Banking and Insurance; the Secretary of Higher Education; EDA Chief Executive Officer; the Director of the John J. Heldrich Center for Workforce Development; and the Governor's Chief of Staff, Chief Counsel, Chief Policy Advisor, and Deputy Chief of Staff for Economic Growth.

Task Force Recommendations:

Increase Availability of Technical Assistance by Scaling Existing Programs across New Jersey Incubator/Accelerator Network

Testimony to the Task Force also illustrated that the availability of business coaching and expertise can be a valuable component of support that might lead a company to accept an investment or incentive from a competing state rather than New Jersey. New Jersey should bolster its efforts to attract and retain companies in the state by providing the types of strategic business planning and consulting that are needed during a business's lifecycle.

New Jersey has several technical assistance programs in place, including some targeted to the biotechnology community, but they are offered in a fragmented way and have not been effectively scaled to businesses across the state.

For example, as a value add to its tenants, the CCIT Life Sciences Incubator in North Brunswick often hosts "office hours", where a professional services provider with demonstrated experience in the biotech space will volunteer and advise tenants by appointment on a 1:1 basis.

The Commission could either use its expertise to establish technical assistance programs, or look at existing programs, like those offered through CCIT, and scale these across the New Jersey incubator and accelerator network by working with the various operators. Collectively, technical assistance programs packaged and presented with the availability of early-stage funding at the State-level would distinguish New Jersey's funding as smarter capital and provide a greater value proposition to businesses considering multiple public investment options and locations.

Support Executive Spin-Outs

As detailed in testimony to the Task Force, many of New Jersey's academic institutions have programs and support in place to encourage the development of "spin-out" companies, and several of these spin-outs have grown into successful New Jersey companies.

While spin-outs are often thought of as a startup business originating from innovation at the academic level, several successful companies have sprung out of research occurring in private industry, through executives or researchers that are seeking to turn a technology or innovation into a business. These startups can be better positioned than many to succeed because these executives have private industry experience and possess significant institutional knowledge about a particular technology, innovation, or other facet of the business.

Given the significant presence of large pharma companies in New Jersey, it would be beneficial to provide support for executive spin-outs to provide another avenue for startup biotech companies in New Jersey. This could serve the purpose of helping to retain this talent and technology in New Jersey, while also providing a way for New Jersey to attract talent and technology from out of state.

One resource that could benefit executive spin-outs is reduced rent within an incubator facility. EDA's CCIT Life Sciences Incubator partners with Rutgers University to offer discounted space for academic spin-off companies. A similar benefit could be established and scaled across New Jersey's incubator network for executive spin-out companies.

Increase and Enhance the Technology Business Tax Certificate Transfer Program (NOL)

The NOL Program continues to serve as a critical resource to biotechnology companies that are not yet profitable but need funding to continue research or operations. However, there are some changes to the program that can further enhance its value.

One change is an increase to the maximum lifetime benefit available to a single company under the program, which currently stands at $15M. Based on studies conducted by the Tufts Center for the Study of Drug Development, the cost of bringing a drug to market can exceed $2 billion. Because the capital needs of early-stage biotech companies are so significant, it is reasonable to expect that a viable company may reach the existing $15 million program cap and still have a need for the resources that the NOL Program offers. Given the time and cost to bring a drug to market, an increase in the lifetime cap to $20M for life sciences companies would be meaningful and is recommended.

Another change would be to eliminate the single sales factor for this program, since its implementation limits the ability of biotechnology companies to fully monetize their net operating losses.

Per P.L. 1997, c. 334, NOL is authorized $60 million annually. In Fiscal Year 2017, $46.2 million was utilized.

50x

Incentivize Investment into New Jersey Venture Funds

As a way to further support the development of private investment entities within the state, private investment into New Jersey-based venture funds could be incentivized, which would ensure that existing funds continue to grow and invest in New Jersey businesses, while attracting new investors to create venture funds within the state.

This could be structured as a tax credit for investments made by both private and corporate investors into New Jersey-based venture funds, with eligible venture funds based on criteria EDA uses in its own venture fund investment policy, including, among other things: strategic focus, geographic focus, performance strategy, and history of investing in New Jersey businesses.

For context, EDA has committed over $48 million to 14 venture capital funds since 1999. Cumulatively, these partner funds invested approximately 6x the EDA's investment into more than 60 New Jersey early-stage life sciences and technology companies. Including other third party investors, companies in the EDA venture fund portfolio have received $2.3 billion of funding and employed almost 2,000 full time employees as of December 31, 2016.

Enhance the Angel Investor Tax Credit Program

In its current form, the Angel Investor Tax Credit Program provides an angel investor with a tax credit of 10% of the qualified investment made in a New Jersey emerging technology business, up to a maximum allowed credit of $500,000 for each qualified investment. While this is and continues to be an attractive incentive for the angel investor, a common critique among the life sciences and technology community is that the program could go further in providing a benefit to the business receiving the angel investment, as well as the investor.

A proposed enhancement to the program would increase the tax credit from its current level of 10% to a proposed level of 25% of the qualified investment, a portion of which (15% of qualified investment) would go to the angel investor as a tax credit and the remainder of which (10% of qualified investment) would go to the business as a refundable tax credit. The enhancement would increase the existing incentive to the angel investor, and the refundable nature of the tax credit would provide an asset that could be monetized for early-stage life sciences and technology companies that are in need of growth capital but are operating at a stage where it is difficult to obtain working capital by conventional means.

This increase would ensure New Jersey is able to remain competitive. Currently, Maryland offers a credit of up to 50%, Massachusetts offers a credit of up to 30%, and New York offers a credit of up to 20%. Given the time required for the investor to go through the application and approval process, the credit must be viewed as valuable, particularly in comparison to other states.

Another recommended step relates to the statutory requirement for 75% of employees to be qualified New Jersey employees at the time of investment. It is common for young companies to not put their employees on payroll until just after the first funding round occurs. A change should be made to the program to allow the EDA to measure employment up to 30 days post-investment.

Per P.L. 2014, c. 14, the Angel Investor Tax Credit Program is authorized $25 million annually. In Fiscal Year 2017, $11.17 was utilized due to the difficulty in qualifying.

Increase Funding for Edison Innovation Fund and NJ CoVest Fund

The Edison Innovation Fund is a suite of financing instruments designed to develop, sustain, and grow technology and life sciences businesses in New Jersey. Through the Edison Innovation Angel Growth, VC Growth and Growth Stars funds, which are structured as subordinated convertible debt, emerging technology and life sciences companies are provided growth capital to directly fund uses such as hiring key staff, product marketing and sales.

Equally as significant as creating jobs and leveraging private capital, EDA's investments through the Edison Innovation Fund have served as a pathway to commercializing significant technologies that have emerged into some of New Jersey's leading companies in the industry.

The NJ CoVest Fund provides seed funding to New Jersey life sciences and technology companies to further commercialize their technology and scale revenues. Through the NJ CoVest Fund, $100,000 - $250,000 is available in the form of convertible notes with warrants. The CoVest Fund was just recently launched in 2017 with a $3 million investment from EDA and has received a significant amount of interest to date.

Only biotechnology companies that can demonstrate commercial revenue would be eligible to apply, as opposed to the NOL Program which only applies to companies that are not yet profitable.

Key Enabler #3: Workforce

Gap(s) Being Targeted:

It is often assumed that a pool of strong STEM talent is sufficient to support innovation. However, the founders of young companies also need access to seasoned talent with experience in commercialization and raising capital. At a certain point in their growth, young companies need to hire executives who possess significant business knowledge and the ability to raise capital or other facets that drive company growth. A dearth of operating and executive talent is frequently a concern for investors, who will pressure the companies they fund to move to geographies where this talent is more readily available.

Entrepreneurs also often struggle to find entry and mid-level workers who are willing to work in early-stage ("risky") companies. Part of this risk aversion is attributable to concerns about lack of other options if startups fail. Entrepreneurs generally are willing to train entry level staff to work in commercial settings. Academic institutions can be valuable partners if they provide students with exposure to courses on entrepreneurship, even for STEM majors, but entrepreneurs are dependent on academic institutions to prepare students who have the right skills and are workforce ready.

Task Force Recommendations:

Support the I-Corps Model and Specialized Training and Mentoring to Help Bring Discovery to Marketplace

The National Science Foundation offers the I-Corps program, which provides real-world, hands-on, immersive learning about what it takes to successfully transfer knowledge into products and processes that benefit society. Through I-Corps, NSF grantees learn to identify valuable product opportunities that can emerge from academic research, and gain skills in entrepreneurship through training in customer discovery and guidance from established entrepreneurs. New Jersey should fully support the I-Corps program and examine the model to consider best practices for incorporating into workforce development and higher education programs throughout New Jersey.

There are currently eight I-Corps nodes nationwide, with two in New York. There is currently a solicitation from I-Corps, with proposals due in March 2019. "Through this solicitation, the National Science Foundation is seeking to expand and sustain the network of Innovation Corps Nodes that work cooperatively to support the development of innovations that will benefit society. NSF plans to build upon the established National Innovation Network (consisting of I-Corps Nodes and Sites) to further support the needs for innovation research, education and training. The interconnected nodes of the network are expected to be diverse in research areas, resources, tools, programs, capabilities, and geographic locations - providing the network with the flexibility to grow or reconfigure as needs arise." The State should lead the effort to respond to the solicitation and work to successfully establish New Jersey's first I-Corps node.

Based on available data, and for context, the I-Corps program estimated providing 100 awards in Fiscal Year 2012 with an anticipated funding amount of $5 million (award size does not exceed $50,000).

Create New Jersey Talent Retention Internships Program

As mentioned above, talent retention and development are critical components of building and sustaining a vibrant biotech industry in New Jersey. An increased number of highly skilled students of New Jersey colleges or universities have recently been migrating out of New Jersey to pursue internships and other opportunities in other states, resulting in a "brain drain" in New Jersey.

One way to counteract this is to grow and maintain a robust offering of biotech internships within the State by providing a financial incentive for New Jersey companies to host New Jersey residents for in-state internships. The increased availability of internships within the state will encourage students to participate in summer internships within the New Jersey business community rather than leaving the state to pursue these opportunities.

Parameters could be placed on this to ensure that the internships benefit New Jersey residents. For example, eligible participants could include New Jersey residents who attend in- and out-of-state colleges/universities but have New Jersey residence, with the ultimate goal of helping New Jersey talent secure permanent employment following graduation with a New Jersey business.

Governor Phil Murphy announced two initiatives in his Fiscal Year 2019 budget message that support talent retention and development – the STEM Loan Forgiveness Program and the NJ Career Accelerator Internship Program. The STEM Loan Forgiveness Program will encourage those in high-growth STEM occupations to work in New Jersey by reducing their student loan obligations. After certification that an employee has worked for at least four years in a designated high-growth STEM occupation in New Jersey, the New Jersey Higher Education Student Assistance Authority (HESAA) will redeem eligible student loan expenses for up to four years. The State would provide eligible employees with $1,000 annually to defray outstanding loans and employers would be required to at least match this award – or otherwise partner with the State – to provide a total benefit worth at least $8,000. The NJ Career Accelerator Internship Program, a paid internship program to be administered through the New Jersey Department of Labor and Workforce Development, will target first-time interns enrolled in New Jersey high schools, colleges, and universities with offers in STEM industries such as IT/Software, Life Sciences and Healthcare, and Energy. Participating employers will be reimbursed for up to 50 percent of wages paid to new interns for up to $1,500 per student. The STEM Loan Forgiveness Program is contingent on the introduction and passage of legislation.

Restore the Technology Fellowship Program

In addition to providing access to financing and incentives, an equally critical component of establishing an environment where the biotech industry can grow and thrive in New Jersey is addressing the issue of talent acquisition, development and retention in this highly specialized industry.

Through the Technology Fellowship Program, which was formerly administered by the New Jersey Commission on Science and Technology, NJCST paid the first two years of salary for recent doctoral graduates to work in small New Jersey biotechnology companies, providing companies with new talent and expertise.

Under the former program, the salary funding level for Technology Fellowships was $65,000 for the first year (competitive) and $75,000 for the second year. Funding for the second year was non-competitive but based on approval of the first year's progress reports by the Commission's Research

Collaboration Committee. The second-year salary was $75,000 – of which, the applicant company was required to pay $25,000 and the remaining $50,000 was provided by NJCST.

In order to be eligible, the recipient must be prepared to receive a Ph.D. degree within six months or have just received a Ph.D. degree within the past six months from any university. Graduates from a New Jersey university or New Jersey residents graduating from universities outside New Jersey are given preference. The Fellowship recipient must continue to live in New Jersey while he or she holds this position. These Fellowships were created to position small, emerging companies to attract talent. For a company to be eligible for the program, it must meet these qualifications: be principally located in New Jersey; 75% of employees must live in New Jersey; total revenue of less than $10 million; minimum of two full-time employees; primary business must be the provision of a scientific process, product or service; must own, have filed for or have a license to use protected, proprietary intellectual property; must be organized as a C Corp or LLC with a business plan; and cannot be a home-based operation.

In Fiscal Year 2009, the Commission supported a total of nine technology fellowships, totaling $590,000.

Provide State Match of Non-Profit Research Grant Funding

The State should provide matching funds to any projects receiving grant funding through non-profit organizations to further the impact of the funding, which generally goes to early-stage companies.

One example of non-profit research grant funding that supports biotech is through the New Jersey Health Foundation - a 501(c)(3) not-for-profit organization that awards grants and investment funding to support health-related research and education programs in New Jersey. The Foundation provides funding opportunities through its Research Grants and Innovation Grants Programs.

The Research Grants Program provides grants of up to $35,000 each for research projects that demonstrate exciting potential and help applicants qualify for larger grants from other organizations to advance their research.

Through the Innovation Grants Program, grants of up to $50,000 each are available to researchers at New Jersey academic institutions affiliated with the Foundation who have promising ideas that may lead to developing patents or other intellectual property.

Funding for both programs must be used to fund only direct program costs, and cannot be used to fund overhead, tuition indirect or investment management fees. Full-time faculty members and personnel at these organizations affiliated with the Foundation are eligible to apply for both programs: Kessler Foundation, Princeton University, NJIT, Rowan University, Rutgers University and Stevens Institute of Technology.

Key Enabler #4: Infrastructure

Gap(s) Being Targeted:

To achieve a vibrant biotech community, multi-tenant facilities are a key part of the necessary infrastructure. Examples of these facilities include incubators, accelerators, centers for excellence, and research parks.

Incubators are programs that help new and startup companies to develop by providing services such as management training or office space. Accelerators provide similar services, but for companies that have advanced beyond the startup phase. Centers for Excellence are shared facilities that provide leadership, best practices, research, support and/or training for a specific focus area. Research parks are strategically planned, purpose-built work environments designed to locate in close physical proximity to university, government and private research bodies involved in a specialized field.

The common benefit shared by these facilities is the ability to maximize office and lab space by providing a facility where multiple companies can work in close proximity, sometimes sharing space and/or resources. This proximity naturally allows for networking, collaboration, and sharing of ideas among tenants. In the case of incubators, this office/lab space is provided at an affordable rate that nurtures promising research and technologies into commercialization and growth stages.

Recent changes in the New Jersey biotech landscape within the past year have enabled more frequent development of incubators and accelerators as academic institutions and private entities have taken greater interest in establishing these types of facilities within the state (see attached listing of resources). As mentioned in testimony to the Task Force, New Jersey should be making its best effort to ensure that the commercial real estate market has facility opportunities available for businesses through all stages of innovation. As these types of facilities increase, there is currently a gap in the marketplace for graduate or "tweener space", defined as space for incubator/accelerator graduates or companies that have outgrown incubator space, but still require some degree of support and are not yet ready to commit to a traditional long-term lease. An insufficient inventory of commercial laboratory space can also be an impediment to growing companies in the life sciences.

Another issue concerns biomanufacturing. The McKinsey & Company report, Reseeding the Garden State's Economic Growth: A Vision for New Jersey, determined that biomanufacturing employment in the State has shrunk 3.6 percent during a recent period in which competing states' employment in that sector has grown.

Testimony to the Task Force emphasized the importance of building a strong and sustainable biomanufacturing ecosystem that will enable established companies to stay and grow in New Jersey, allow for the development and growth of new biomanufacturing companies, and attract and retain a workforce that will populate this rapid growth.

In addition, a state's tax code and regulations can positively or negatively impact innovation. Representatives from Rutgers University testified to the Task Force about the challenges that they face as a public university trying to commercialize technology and create startups. Public universities

generally face greater restrictions compared to private academic institutions. However, Rutgers University is also competitively disadvantaged relative to the public universities in other states. Enabling legislation has provided Rutgers University with greater flexibility to facilitate spin-out companies, but the University needs even greater flexibility to commercialize its technology and support spin-outs led by faculty members. New Jersey public universities should identify any limitations, such as these identified by Rutgers, and revisit them with New Jersey legislators for discussion and, hopefully, resolution.

Task Force Recommendations:

Support Biomanufacturing & Biobanks

Interest has been expressed in different proposals to leverage existing biopharma industry in the state to create a biomanufacturing facility to be used by multiple companies doing pilot manufacturing of their product. The Task Force fully supports this initiative.

One effort spearheaded through the New Jersey Innovation Institute (NJII) formed an Innovative Medicines Manufacturing Institute to serve as a lead facility supporting pilot scale biomanufacturing operations, technology development projects and chemical and biological characterization labs with a focus on three key areas: small molecule, biologic and cell/gene therapy manufacturing.

Another innovative idea was presented to the Task Force through testimony of Dr. Stephen Suh, Director of the Genomics and Biomarkers Program at Hackensack Meridian Health. Dr. Suh highlighted to the Task Force that a significant opportunity for advancing biotechnology and pharma in New Jersey is to eliminate the discarding of patient samples and data, especially as the effectiveness of personalized medicine as a treatment option becomes clearer.

These patient samples are extremely valuable, as the availability of high quality samples is critical to personalized medicine and the development of innovative drug discoveries. Because there has been no coordinated effort to establish an infrastructure to retain these patient samples, important information that could aid in the discovery of new drugs is not retained.

A biobank could be established in New Jersey where patient samples and related clinical data would be preserved, stripped of patient health information, and made available to biotech and pharma companies for their research.

Create an Inventory of Multi-Tenant Operators and Increase State Support for Innovation Districts

Recommendations on initiatives to help spur the development of new, multi-tenant facilities include a State match of federal funding available to Centers of Excellence, funding for feasibility studies regarding the development of new incubators, and other tax credits to incentivize the development of multi-tenant facilities.

Establish a New Jersey "Orphan Drug" Tax Credit

Recent changes to Federal tax law have impacted tax credits available to biopharma companies. Specifically, there was a reduction in the tax credits available to companies involved in clinical testing

of drugs for rare diseases.

Prior to the new law, under the "Orphan Drug Tax Credit", companies could claim a 50% tax credit for qualified clinical testing expenses incurred in testing certain drugs for rare diseases or conditions, generally referred to as "orphan drugs," affecting fewer than 200,000 persons in the US. Under the new law, that tax credit has been reduced to 25% of qualified clinical testing expenses.

Given the prominence of rare disease companies in New Jersey, New Jersey should establish a matching tax credit of up to 25% of qualified clinical testing expenses to New Jersey-based companies claiming the Orphan Drug Tax Credit, to help to offset the reduction of federal resources to this area. This will serve as an attraction tool for rare disease companies.

Enhance the Research & Development Tax Credit

The New Jersey Research & Development Tax Credit provides a tax credit against the Corporate Business Tax. It provides a credit of 10% of the excess qualified research expenses over a base amount plus 10% of the basic research payments. Qualified research is limited to scientific experimentation or engineering activities designed to aid in the development of a new or improved product, process, technique, formula, invention, or computer software programs held for sale, lease, or license, or used by the taxpayer in a trade or business.

Modifications to this program, such as making the tax credit a rebate against payroll taxes, should be implemented to provide startups more access to capital.

Adopt a State-level Section 1202 Incentive

Section 1202 of the Internal Revenue Code provides an incentive for non-corporate taxpayers to invest in small businesses by allowing for small business stock that has been held for at least five years before it is sold to have a portion, or all of its realized gains excluded from federal tax. New Jersey should adopt a version of this as part of the New Jersey Tax Code but targeted specifically for investments made in small biotechnology companies as another way to generate and incentivize private investment in this industry.

Develop a Capital Gains Incentive Program

The State should develop an incentive program that would target founders and employees of biotech companies that have a presence in the state through a significant capital gains reduction. If companies have a liquidity event (e.g., an IPO, acquisition by another firm), the founders and employees would pay reduced state taxes on the capital gains of their income.

Key Enabler #5: Ecosystem

Gap(s) Being Targeted:

One of the most important enablers of innovation capacity is the presence and strength of an innovation ecosystem. Innovation leaders often confuse a "cluster" with an "ecosystem" -- but the physical presence of the resources and institutions required for innovation (a cluster) does not mean that they are working well together as an ecosystem to support the translation of new science and technologies into commercialization. The different components must come together, collaborate and see themselves as having both individual and mutually reinforcing goals to function as an ecosystem. The tools for building an innovation system are described in greater detail in Appendix C.

When the organizations and resources that are present in a cluster do not work as a system, the innovation lifecycle suffers. A good analogy is the drivetrain of a motor vehicle: if the group of gears and components that deliver power to the drive train don't mesh well, there will be no (or limited) forward progress. Testimony and prior research suggest that stakeholders in New Jersey have not yet demonstrated the level of collaboration that characterizes a well-coalesced ecosystem.

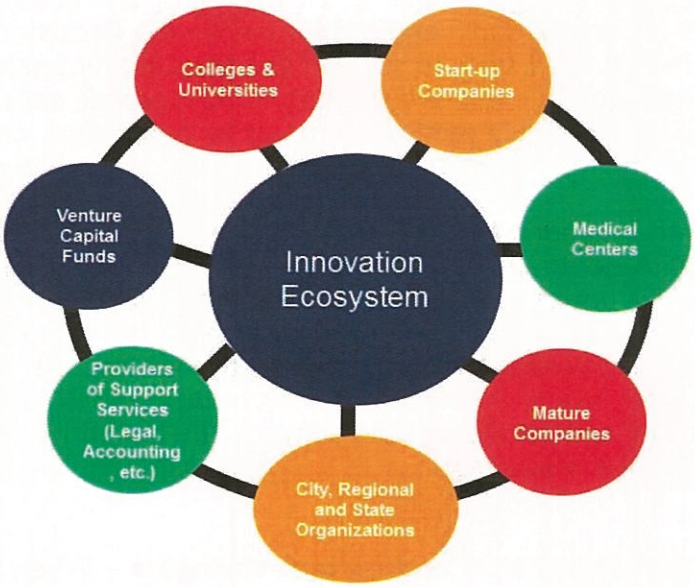
A loosely coalesced innovation ecosystem sub-optimizes the potential for innovation in the state, despite its current strengths and resources:

- **Leverage on resources, investments and current strengths** – When activities and investments that support innovation are disaggregated, this reduces and sub-optimizes the leverage on the state's resources, investments and current strengths.
- **Access** – A loosely coalesced community makes it difficult for entrepreneurs to identify and access the resources they need, including seasoned talent and investors who can serve as mentors, advisors and coaches. Greater access to coaching, mentoring and support increase the overall chances of success for startups.
- **Business culture** – States with vibrant innovation economies have morphed and blended their business cultures to incorporate the different business models of their legacy industries and their innovation sectors.
- **Integration** – Without an ecosystem, it can be difficult for new market entrants to gain traction.
- **Attractiveness to Capital** – A weak ecosystem also can make a geography relatively less attractive to capital than other geographies that are innovation "hubs." This may explain why more venture capital is not available to startups in the state.

As referenced in BioNJ's "Fueling Entrepreneurship: Advancing Innovation and the Life Sciences Ecosystem" report, New Jersey has a significant number of advantages to offer companies at all stages of growth. However, the public perception does not align with these advantages and, as testimony to the Task Force reinforced, there is a lack of awareness and clarity in the marketplace of the advantages and resources the State of New Jersey has available to biotechnology companies, which prevents New Jersey from being at top of mind when key decision makers are considering where to locate and grow their company.

Part of this lack of awareness is because New Jersey's resources have not fully been catalogued and clearly communicated to the marketplace. This places New Jersey at a competitive disadvantage against competing locations such as Cambridge, Massachusetts, and Silicon Valley, California, that have established highly coalesced ecosystems in what are perceived as centralized locations. As a result, these states have built well-known brands and gained awareness within the market. In reality, "Silicon Valley" covers 180 square miles and "Cambridge" has been generalized to include Boston, Waltham, Lexington and a host of other cities and counties in Massachusetts.

FIGURE 7 - A "CLUSTER" OR AN "ECOSYSTEM" ?



A "cluster" is a collection of assets – universities, medical centers, companies, investors, service providers, etc.

An innovation "ecosystem" has a high degree of connectedness and collaboration - all members of the cluster work well individually and together

Task Force Recommendations:

Coordinate Marketing Efforts Surrounding Existing Resources and New Jersey Brand

New Jersey needs a unified story that celebrates the many good things that are happening in technology innovation in New Jersey. The story needs to be told within and outside of New Jersey, celebrating the successes wherever they are in the state to:

- Create more awareness of New Jersey's strengths and successes
- Help strengthen the ecosystem in New Jersey
- Bolster everyone's awareness of the exciting things that are happening in the State
- Give a sense of unity and the importance of innovation and entrepreneurship

60x

An initial and clear step that New Jersey can take to better position itself relative to its competition is to fully catalogue the resources available in New Jersey and reposition the State's marketing focus to take a more aggressive and organized approach in marketing these resources to the biotech community within the state, as well as nationally and abroad.

As part of the overall State campaign, consideration should be given to geographic hubs within New Jersey where academic and industry strengths are most highly concentrated. Additionally, the State should utilize all its marketing partners and resources, including BioNJ, the New Jersey Business Action Center, EDA and Choose NJ to evangelize the strategic location of the state between the regulatory and financial capitals of Washington, DC and New York City, its high quality of life and talented workforce.

To best reinforce this message to the marketplace and ensure that New Jersey's story is being told nationally and globally to the decision makers in the biotech industry, New Jersey's participation in the annual BIO Convention is critical. Currently, financial support for New Jersey's participation at the convention is generally under $200,000, depending on the location of the conference, and is dependent on the availability of sponsorships. By allocating funding for this conference on an ongoing basis, New Jersey can put forth the best possible presentation and ensure that global decision makers are aware of what New Jersey has to offer.

Create and Support New Jersey Centers for Excellence

A need that was frequently communicated to the Task Force in testimony was the availability of seed funding and branding/marketing around a defined cluster. One way to address these challenges on a larger scale is to explore the model of Biotechnology Centers of Excellence, which could be built out over time in New Jersey. A Center of Excellence would operate as a shared facility that provides leadership, best practices, research, support, talent development and workforce training for the biotechnology industry.

An inaugural Center could be established through an initial investment. Funding for additional Centers, such as profit sharing agreements, could then be explored. To establish clusters, these proposed Centers would be based on sites in proximity to universities and awarded through competitive RFPs.

The State's investment in these centers should attract private investment, which naturally lends itself to support in the form of monitoring and training from the investor. The Centers would require contributions from all parties: State, university and center manager. The market respondents would determine the final site and the sector focus, focusing on a market-driven approach.

Create a State-Supported Forum to Bring Physicians Together to Share Information about New Jersey-Based Clinical Trial Activity

According to a 2016 BioNJ study, New Jersey's clinical trial activity supports 3,750 jobs on an annual basis with direct wages of $142 million and a GDP impact of $337 million. New Jersey's clinical trial activity is above the national average in oncology, infection and inflammatory diseases. The creation of a State-supported forum bringing together industry and the physician and academic communities in-person to discuss New Jersey's overall clinical trial activity, as well as specific trials, could facilitate interaction, further develop that activity, and assist the physician community in understanding the clinical trials being conducted in New Jersey as well as the value to them, to patients and to New Jersey. This would be intended to increase both physician and patient participation in New Jersey-based clinical trials and the resulting research and development activity around the trials, contributing to the improvement of patient population health and to New Jersey's economy.

Create a Catalyst for New Jersey's Life Sciences Innovation Ecosystem

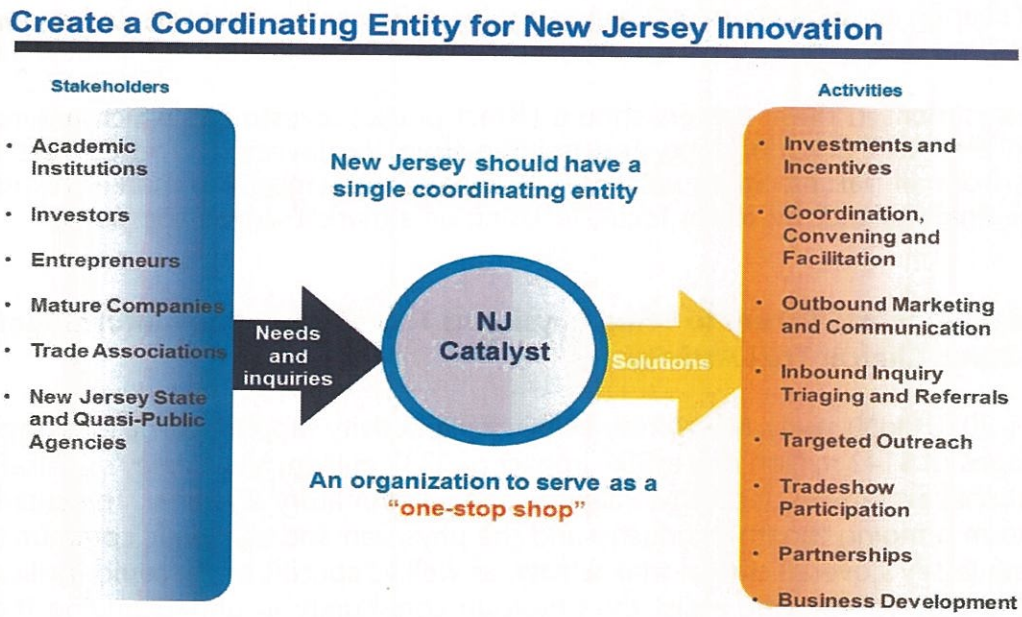
To accelerate life sciences innovation in New Jersey, the Task Force recommends the creation of a catalyzing organization whose primary mission is to serve as the coordinating entity for a public-private life sciences partnership, and to house capabilities, funds and other resources that coalesce a strong life sciences ecosystem. As detailed earlier in the report, the Commission on Science, Innovation and Technology could serve as this organization, provided that it is well funded and independent in a manner that allows the achievement of its goals, such as was achieved through the structure of the Mass Life Sciences Center.

The experiences of highly successful innovation hubs such as Massachussetts, with the establishment of the Mass Life Sciences Center have shown that a key ingredient in building successful innovation ecosystems is an independent coordinating and catalyzing entity or "innovation catalyst". The creation of a catalyzing organization would send a strong, highly visible signal that New Jersey is committed to becoming a major player in commercial life sciences. It is critical that the organization have independence, as this was a key factor in Massachusetts' success

The staff of the organization will be dedicated to building a true ecosystem and creating value for all of the state's life sciences stakeholders. The mission of a single organization that serves as the innovation catalyst will be to ensure that New Jersey has a collaborative, highly coalesced ecosystem that encompasses all aspects of the state's life sciences cluster. The organization will do this by encouraging and incentivizing the development of a highly connected community of the state's researchers, entrepreneurs, industry leaders, venture capitalists and government officials who are all dedicated to the success of life sciences. Beyond a coordinating role, the organization will build selected funds, capabilities, talents, and resources to accelerate the pace of commercial life sciences activity; focusing especially on the growth and retention of startup companies.

Having one "go to" organization that is accepted by the broader community will lessen the possibility of fragmentation of efforts in innovation and entrepreneurship. It also will enable the State to build and promote a unified marketing message and brand. A potential concept for a New Jersey Innovation Catalyst is shown in the figure below:

FIGURE 8 - A COORDINATING ENTITY FOR NEW JERSEY'S INNOVATION ECOSYSTEM



The coordinating entity should have the capabilities and resources to directly address stakeholder needs but also should play a major role in promoting collaborations and making referrals to other organizations and agencies with capabilities and resources to meet stakeholder needs.

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Summary and Conclusions

Historically, New Jersey has been a leading hub in biopharma research and discovery – the "Medicine Chest" of the world. The life sciences sectors (biotech, pharmaceuticals, medical devices, diagnostics and bioinformatics) are poised for significant growth, and are major contributors to the global innovation economy. New Jersey is positioning itself to build its leadership in, and capture the momentum of, these innovation sectors.

This report is another important step in moving New Jersey toward these goals. The Task Force has proposed what we believe are key priorities for action and investment to boost the state's life sciences innovation capacity. Perhaps first and foremost is the creation of an ecosystem, bringing together the array of activities and initiatives from around the state to partner and collaborate.

For easy reference, our recommendations are summarized in the figure below:

FIGURE 9 - THE ROADMAP: A STRATEGIC INVESTMENT PORTFOLIO

Through targeted actions and a collaborative effort between and amongst industry, academia and government, New Jersey can become a major hub for life sciences innovation and entrepreneurship. Creating early wins and publicizing the state's success stories will build our brand as a focal point for innovation. This will not happen overnight. However, by leveraging its strengths and addressing the recommendations presented in this report, New Jersey can achieve its goal of revitalization in life sciences innovation. And by building the state's innovation capacity, other areas of technology innovation will emerge and thrive as the marketplace in New Jersey evolves.

The State's success would be furthered by sustained financial support from the State of New Jersey. This could take the form of a dedicated revenue stream, higher education bonding for capital projects, or a strategic fund that takes advantage of the new Opportunity Zone program allowing for investment into eligible companies through equity or real estate capital. The tax credit enhancements recommended in this report take advantage of underutilization of the annual Angel Tax Credit program cap of $25 million and the Technology Transfer Net Operating Loss Program cap of $60 million.

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Appendix A - Glossary of Terms

Academic (or University) spin-off: A company created for the exploitation of products or services that are developed using knowledge or technologies generated by academic research.

Accelerator: Accelerators are programs, tools or facilities for rapid-growth companies that offers many of the same services that incubators offer to startup companies, including office space, technical assistance, management training and networking opportunities. While there may be overlap between accelerators and incubators in terms of services offered, the difference is that incubators are viewed as a tool for the "childhood" of a startup, while accelerators can guide entrepreneurs from "adolescence to adulthood."

Angel investor: An angel investor (also known as a business angel, informal investor, angel funder, private investor, or seed investor) is an affluent individual who provides capital for a business startup, usually in exchange for convertible debt or ownership equity.

Basic research: Any one of the sciences (such as anatomy, physiology, bacteriology, pathology, or biochemistry) fundamental to the study of medicine. Basic science research—often called fundamental or bench research—provides the foundation of knowledge for the translational research that follows.

Biopharmaceuticals: Any pharmaceutical drug products manufactured in, extracted from, or semi synthesized from biological sources.

Biotechnology: The exploitation of biological processes for industrial and other purposes, especially the genetic manipulation of microorganisms for the production of antibiotics, hormones, etc.

Center of Excellence: A center of excellence (CoE) is a team, a shared facility or an entity that provides leadership, best practices, research, support and/or training for a focus area.

Clinical trial: Clinical trials are research investigations in which people volunteer to test new treatments, interventions or tests as a means to prevent, detect, treat or manage various diseases or medical conditions. Some investigations look at how people respond to a new intervention* and what side effects might occur.

Commercialization: The process of introducing a new product or production method into commerce—making it available on the market.

Ecosystem: A highly coalesced group of organizations, programs, activities and relationships working together to enable innovation.

- All of the necessary ingredients working together to support the production and diffusion of new knowledge, products and services

Entrepreneurship: The process of starting a business that offers (an innovative) product, process or service.

- The willingness to take risks (and fail) to bring new ideas into application.
- Culture, human capital, investment, connections, support systems and places to grow new businesses.

64x

Incubator: A company or program that helps new and startup companies to develop by providing services such as office space, technical assistance, management training and networking opportunities.

Infrastructure: The basic, underlying framework or features of a system or organization; the fundamental facilities and systems needed to support the innovation lifecycle.

Innovation: The set of activities required to translate an idea or invention into a product or service that creates value for which customers will pay.

- Good ideas translated out of the research space and into the hands of caregivers and the bodies of patients.
- The pace and volume of job creation, capital investment and economic development accelerates as we move from research (ideation and invention) to application and commercialization or research (innovation).

Innovation capacity: The ability to produce and commercialize a flow of innovative technology, products and services over the long term. Innovation capacity framework includes:

- Create: The formation of a good idea or discovery translated out of the research space.
- Develop: The development and early marketing of that idea into a new product that is introduced to the market. At this stage, a new business is created to enable the production and proliferation of the new idea. Businesses that operate at this stage tend to be unprofitable, because expenses are incurred to develop and market the offering, but revenues are still low.
- Grow: The market has come to understand the value of the new offering, and demand may grow rapidly Profits usually are not a priority, as companies continue to spend on research and development or marketing. Businesses at this stage may experience rapid growth and geographic expansion.
- Sustain: Period during which growth slows, focus shifts toward expense reduction and achieving economy of scale. At this stage, market share and profitability become the primary goals of the company now that growth is relatively less important.

Innovation district: Geographic areas where leading-edge anchor institutions and companies cluster and connect with startups, business incubators and accelerators.

Innovation economy: Theory of economics is based upon the idea that knowledge, entrepreneurship, innovation, technology and collaboration fuel economic growth.

Innovation hub: Innovation hubs are social communities or work space or research centers that provide subject-matter expertise on technology trends, knowledge and strategic innovation management, and industry-specific insights.

Investment capital: Funds invested in a firm or enterprise for the purpose of furthering its business objectives.

Life sciences: Companies in the fields of biotechnology, pharmaceuticals, biomedical technologies, life systems technologies, nutraceuticals, cosmeceuticals, food processing, environmental, biomedical devices, and organizations and institutions that devote the majority of their efforts in the various stages of research, development, technology transfer and commercialization.

Patent cliff - The phenomenon of patent expiration dates and an abrupt drop in sales that follows for a group of products previously capturing high percentage of a market.

Research Park: A property-based development that accommodates and fosters the growth of tenant firms that are affiliated with a university (or a government and private research bodies) based on proximity, ownership, and/or governance. This is so that knowledge can be shared, innovation promoted, and research outcomes progressed to viable commercial products.

Seed stage - The first stage of venture capital financing. Seed-stage financings are often comparatively modest amounts of capital provided to inventors or entrepreneurs to finance the early development of a new product or service. During this early-stage, entrepreneurs approach investors including friends, family, and angel investors to find financial support for their concept or product.

STEM: Science, Technology, Engineering and Mathematics

Spin-off: A spinoff is the creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company.

Translational research: (Medical) research that is concerned with facilitating the practical application of scientific discoveries to the development and implementation of new ways to prevent, diagnose, and treat disease. By comparison, basic research -- also called pure research or fundamental research -- is scientific research aimed to improve scientific theories for improved understanding or prediction of natural or other phenomena. Applied research, in turn, uses scientific theories to develop technology or techniques to intervene and alter natural or other phenomena.

Venture capital: Financing that is provided by firms or funds to small, early-stage, emerging firms that are deemed to have high growth potential, or which have demonstrated high growth (in terms of number of employees, annual revenue, or both).

Workforce development: Training to produce more workers with the right skill mix. Includes the supply, distribution and inclusiveness of the workforce. Ability to attract and retain the talent needed to start and grow companies.

Sources:

https://www.isc.hbs.edu/research-areas/Pages/innovation-and-innovative-capacity.aspx
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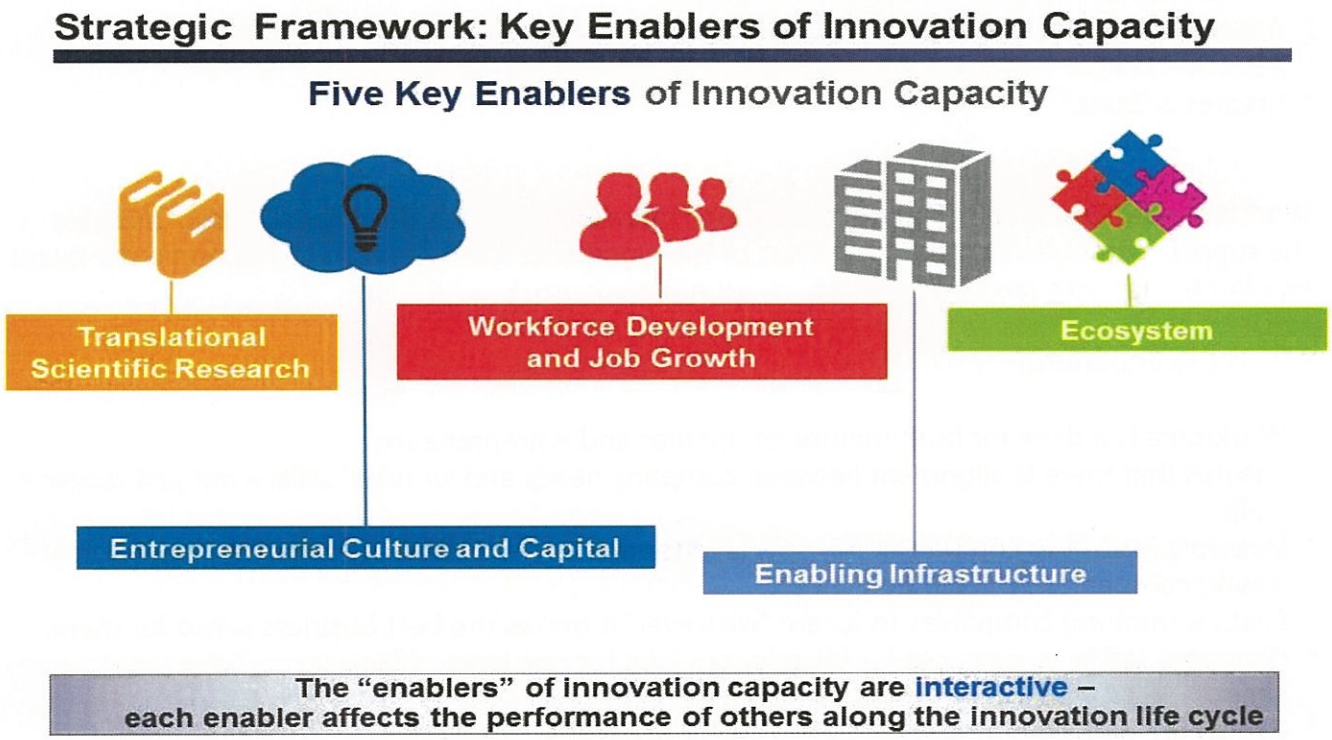
Appendix B - The Five Key Enablers of "Innovation Capacity"

FIGURE 10 - STRATEGIC FRAMEWORK: KEY ENABLERS OF INNOVATION CAPACITY



1. Translational Scientific Research: (Medical) research that is concerned with facilitating the practical application of scientific discoveries to the development and implementation of new ways to prevent, diagnose, and treat disease. By comparison, basic research -- also called pure research or fundamental research -- is scientific research aimed to improve scientific theories for improved understanding or prediction of natural or other phenomena. Applied research, in turn, uses scientific theories to develop technology or techniques to intervene and alter natural or other phenomena.

   Why is this important?

   * Is the starting point for innovation and the formation of new companies ("Discovery").
   * Attracts investment capital.
   * Attracts the interest of mature companies who are looking to find innovation opportunities externally (vs. engaging in extensive and costly research internally).
   * Helps build entrepreneurial culture by promoting interest in starting new companies and rein forces entrepreneurship as a viable and attractive career path.

2. Entrepreneurship (Culture, Capital, Ability to Thrive) - The process of starting a business that offers new/improved products, process or services. The willingness to take risks (and fail) to bring new ideas into application. Entrepreneurship includes culture, human capital, investment capital and support systems. Entrepreneurial culture refers to a mind-set characterized by innovation,

67x

creativity, calculated risk-taking and empowerment.

Why is this important?

* Creation of the next generation of companies that commercialize academic discoveries.
* Mature companies are heavily reliant on "external innovation" -- A rich pipeline of new companies is a magnet for mature companies.
* Attracts investment capital.
* Attracts talent.
* Creates a "buzz."

3. Workforce development - Training to produce more workers with the right skill mix. Includes the supply, distribution and inclusiveness of the workforce. Ability to attract and retain the talent needed to start and grow companies.

   Why is this important?

   * Workforce is a draw for both mature companies and entrepreneurs.
   * Ensures that there is alignment between company needs and workers' skills – not just research skills.
   * Investors in startup companies pay special attention to the availability of talent to grow the young companies in which they invest.
   * Enables (mature) companies to locate "wherever" it makes the best business sense for them.
   * Promotes ability to compete for life sciences jobs for residents of New Jersey who wish to pursue them.
   * Can create pathways into the life sciences for mid-skilled workers.

4. Enabling Infrastructure - The basic, underlying framework or features of a system or organization; the fundamental facilities and systems needed to support the innovation lifecycle.

   Why is this important?

   * Cutting-edge facilities for research institutions supports discovery and may provide unique resources that can be found only in New Jersey.
   * Basic infrastructure helps New Jersey compete to host companies.
   * Can promote expanded economic regional development.
   * Business incubators provide places for young companies to develop their new products and services; Accelerators provide facilities for companies to grow.
   * Convening spaces support collaboration and ecosystem.
   * Web-enabled tools promote collaboration and ecosystem.
   * Transportation, quality of schools, housing stock make the State attractive to the highly skilled talent needed for an innovation economy.

5. Ecosystem - A highly coalesced group of organizations, programs, activities and relationships working together to enable innovation. All of the necessary ingredients working together to support the production and diffusion of new knowledge, products and services.

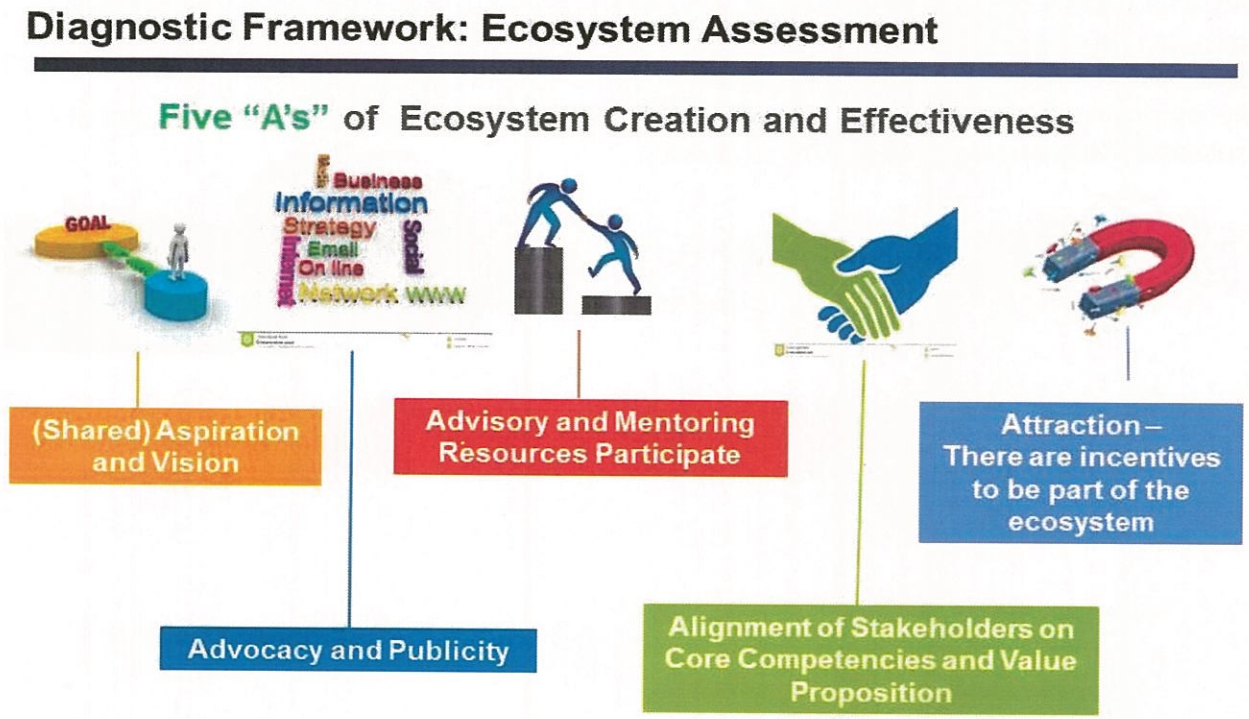
Why is this important?

* Collaboration, new models of partnership and "connecting the dots" accelerates the pace of innovation (1+1=11).
* Increases the leverage on investment dollars.
* Enables easy entry to the community for newcomers -- access to people, organizations, skills, people.
* Attracts mature companies who want "expedited" access; Encourages young companies to remain and grow jobs.
* Includes professional service companies and other supporting players.
* Active partnerships with state agencies enable the development and implementation of successful economic development strategies.

Appendix C - Building an Ecosystem: Tools and Assessment Criteria

Shown in the figure below are indicators that can be used to assess whether an ecosystem exists and, if so, how strongly it is coalesced:

FIGURE 11 - ASSESSING AN ECOSYSTEM



Proprietary to Biomedical Growth Strategies

The individual indicators are described below:

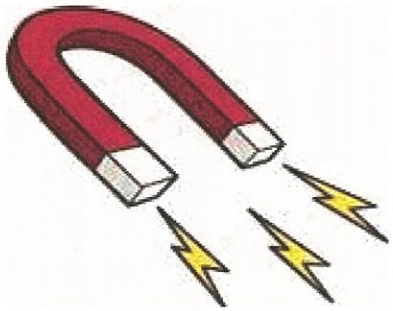
Aspiration and Vision

- Is there an overarching and well-articulated vision that coalesces the innovation activities and strengths across stakeholders?
- Is there a strategy that aligns with the vision?
- Were stakeholders involved in developing the strategy and are they committed to supporting its execution?
- Is there a single entity that advocates for innovation in New Jersey – either statewide or by industry sector – and "owns" the responsibility for publicizing it?
- Is there a specific "innovation story" that is consistently told and actively marketed?
- Are communications a key element of the innovation strategy – both within and outside the state/geography?

70 x

Advisory and Mentoring Resources – Local and Virtual	• Have investors, support, coaching and mentoring service providers, and other professional resources organizations been included in the ecosystem? • Do these advisory services providers recognize their value as members of the ecosystem?

Alignment of Core Competence and Value Proposition with Stakeholders	• Is the value proposition for actively participating and investing in an innovation ecosystem well-articulated? Industry, academic and government partnerships are created based on individual needs and interests ("one-offs"), but should also be coalesced to build the State's innovation capacity. • Are individual activities "aligned" with an overall strategy to build innovation capacity across the State? • Is there a strategy to increase and sustain partnerships at all levels – academic, industry and public sector?



Attraction of an Ecosystem: What are the Incentives?

- Provide a basis for monitoring and measuring the "success" of innovation initiatives?
- Support a strong business case for building and being part of an innovation ecosystem ("what are the incentives?")?
- Demonstrates the compelling reason for stronger linkages among the academic institutions, investors, policymakers, industry leaders and other stakeholders to transform the cluster into an "ecosystem?"

Somerset County Business Partnership
100 YEARS 1919-2019

SOMERSET COUNTY

March 8, 2019

Hon. Nilsa Cruz-Perez
Chair
Economic Growth Committee
New Jersey Senate
State House
PO Box 099
Trenton, NJ 08625-0099

Hon. Gordon M. Johnson
Chair
Commerce and Economic Development Committee
New Jersey General Assembly
State House
P.O. Box 098
Trenton, NJ 08625-0098

RE: Statement Regarding Grow NJ Testimony Delivered at the Joint Meeting of the Senate Economic Growth and Assembly Commerce and Economic Development Committee

Dear Senator Cruz-Perez and Assemblyman Johnson:

Thank you for the opportunity to offer our qualifications, insights, and recommendations with respect to the State's use of economic incentive programs.

Today we delivered testimony about the importance of the Grow New Jersey Assistance Program—the State's main incentive for business attraction and job retention, and offered insight into how to improve the current program moving forward.

Following is a more detailed request related to our testimony.

We appreciate your commitment to advancing the economic health of our State and to fostering an environment that will sustain economic growth and create a robust quality of life for the residents of New Jersey.

Cont..

Somerset County has a long history of engaging in efforts that promote job creation and private sector economic investment. These efforts have benefitted both our community and the State as a whole.

Anticipating the expiration of the Economic Opportunity Act of 2013, of which Grow NJ is a part, and the need for legislative action on this important program, we conducted an in-depth analysis of the impacts of Grow NJ on Somerset County. While our analysis provided important insight on the success of the program, it also highlighted some critical public policy challenges.

Copies of our reports "Ensuring the Economic Competiveness of Somerset County" and "The Suburban Disadvantage-The Grow NJ Program" are attached for your reference.

It is important that I recognize our partners in this effort, including the Somerset County Board of Chosen Freeholders, the Regional Center Partnership of Somerset County, the Township of Bridgewater, and the boroughs of Raritan and Somerville. The advice, guidance and support of these partners has been critical to our efforts.

We also need to thank representatives of the 6 state legislative districts representing parts of Somerset County who took the time to listen to our concerns and challenged us to identify and communicate solutions that would benefit all of the residents of New Jersey.

Our research on Grow NJ led us to some important conclusions, which in turn led us to recommendations that we believe will improve the economic competitiveness of New Jersey from a job creation and private sector economic investment perspective.

We believe our findings are emblematic of the situation faced for the vast majority of communities throughout New Jersey.

We also believe our recommendations, if implemented, will enhance and sustain economic growth throughout our state.

Our research led to three specific recommendations for improving the Grow NJ program:

First, we respectfully ask that the current "90 percent limiter" provision be removed from any new or revised business incentives legislation. This provision places 500 of the 565 municipalities in New Jersey at a disadvantage in the competition for jobs and private sector investment.

Cont...

Second, we ask for recognition of regional and local priority areas, and specifically designated areas in need of redevelopment, as Garden State Growth Zones. By definition, locally designated areas in need of redevelopment are meant to be transformative in nature and of special economic and community importance.

Third, it is imperative that any new or revised state business incentives legislation have a robust business retention component. We note Somerset County's experience with Grow NJ, where 10 out of 11 Grow NJ awards were for business retention. In other words, Grow NJ enabled Somerset County to retain nearly 5,000 jobs that were in jeopardy of leaving the state.

The "90 percent limiter" provision in Grow NJ affects 500 of the 565 municipalities in New Jersey and serves to reduce incentive awards in these communities by approximately 75 percent.

Further, the 90 percent limiter applies only to areas deemed to be "Priority Areas" or "Other Eligible Areas".

While the term Priority Area may lead some to believe that projects in these areas would qualify for significant incentives, Priority Areas are in fact the second lowest level of designation.

While not all of the 500 communities affected by the 90 percent limiter provision are suitable for or interested in new job creation and private sector economic investment, using Somerset County as an example; 20 of our 21 municipalities are subject to the 90 percent limiter.

Under the currently legislation, the Grow NJ program establishes 5 levels of "Qualified Incentive Areas". In order of their prioritization, they are:

- Garden State Growth Zones;
- Urban Transit Hub Municipalities;
- Distressed Municipalities;
- Priority Areas; and
- Other Eligible Areas.

Grow NJ also establishes a per job tax credit incentive amount that escalates from $500 in an "Other Eligible Area" to $5,000 in a "Garden State Growth Zone".

Grow NJ also establishes maximum tax credit amounts per new or retained job ranging from $6,000 in "Other Eligible Areas" to $15,000 in "Garden State Growth Zones".

Cont...

75x

We support varying incentive levels based on local economic conditions and community needs, and note that none of our recommendations would reduce incentive awards in distressed municipalities or other targeted areas of our state.

Our specific interest is in regards to "Priority Areas". 20 Of 21 municipalities in Somerset County meet the definition of Priority Area. The Borough of Manville being the only exception as a Distressed Municipality.

Moreover, Projects in Priority Areas, while being subject to lower overall tax credit amounts, are also subject to the lesser of the calculated tax credit amount OR 90 percent of withholding taxes withheld from the wages of full time employees—the "90 percent limiter".

We find this limiter disconnected from state development and redevelopment planning, New Jersey Municipal Land Use Law, and New Jersey Housing and Redevelopment law.

Grow NJ defines Priority Areas as Planning Areas 1 and 2 within the NJ State Development and Redevelopment Plan. The State, counties, and municipalities have agreed, through a formal cross acceptance process that Planning Areas 1 and 2 should provide for much of the state's future redevelopment and development.

This begs the question as to why projects in Priority Areas—agreed to as areas where much of the state's future development and redevelopment should occur—are subject to job growth and private sector economic investment incentive limitations through the 90 percent limiter.

The net effect of the 90 percent limiter is a roughly 75 percent reduction in Grow NJ award amounts when compared to Distressed, Urban Transit Hub, and Garden State Growth Zone municipalities.

Those of us in the economic development profession recognize that company location decision making is not a site selection process, but rather a site location elimination process.

When a company analyzes potential locations, a cursory review of available incentives all but eliminates Priority Areas from consideration due to the tremendous disparity in potential incentive award amounts.

This means that state policies have placed communities such as Bound Brook, Raritan, and Somerville at a significant competitive disadvantage.

Cont...

Moreover, it means that we rarely, if ever, are provided an opportunity to speak with companies or their representatives about our vibrant communities. We are often eliminated from consideration at the earliest stages of the site location decision making process due to the disparity in potential incentive award amounts.

In summary, elimination of the 90 percent limiter will significantly increase the number of possible locations in our state that companies consider. This will provide greater opportunities for New Jersey to be a location of choice for job creation and private sector economic investments.

Focusing on additional disconnects beyond state planning, we request that New Jersey business incentives legislation recognize locally designated areas in need of redevelopment as high priority locations and thus the highest level of incentives.

By definition, projects anticipated within a locally designated area in need of redevelopment are meant to be transformative in nature and of special economic and community importance.

New Jersey Housing and Redevelopment Law prescribes rigorous processes by which local planning and governing bodies can engage in redevelopment planning and redevelopment area designation.

Local redevelopment efforts provide for significant community input with formal redevelopment area plans being adopted publicly.

The time and effort invested in redevelopment planning by local elected and appointed officials, as well as residents, ensures broad agreement on a vision for the community's future.

To the extent that local redevelopment planning includes a vision for job growth and private sector economic investment, state business incentive programs should support these efforts to the maximum extent possible.

Lastly, we encourage the continuation of business retention incentives.

If we view companies located in our state as our customers, the old adage of it being less expensive to keep your existing customers than it is to find new ones certainly applies.

At a parochial level, the business retention provision of Grow NJ is the only aspect that has benefitted Somerset County.

Of 11 Grow NJ awards granted in Somerset County over the 5 years of the program, 10 involved business retention projects.

Cont...

These 10 Grow NJ business retention awards kept over 4,800 jobs in Somerset County.

As we reported to the Somerset County Board of Chosen Freeholders and the Somerset County Planning Board, if it were not for the business retention aspects of Grow NJ we would be having an entirely different conversation about the economic future of our region.

We commend the legislature and the joint committee for your commitment to an analysis of existing business incentive programs and your openness to new ideas and strategies.

In closing, while there is room for improvement, the Grow NJ program has led to the creation and retention of thousands of jobs throughout the State of New Jersey. In an effort to remain competitive throughout the region, it is essential that the State use every tool at its disposal, including robust business attraction and retention program.

We thank you for your time and look forward to continuing to be part of the conversation.

Respectfully,

Michael V. Kerwin
President & CEO

John P. Maddocks
Vice President, Economic Development

Ensuring the Economic Competitiveness of Somerset County

December 12, 2018

THE REGIONAL CENTER
BRIDGEWATER • RARITAN • SOMERVILLE
A partnership for a better tomorrow
IN SOMERSET COUNTY, NJ

Executive Summary

The Regional Center Partnership of Somerset County, Inc., the Somerset County Board of Chosen Freeholders, and the Somerset County Business Partnership have come together around an effort to ensure New Jersey business incentive programs serve job growth and private sector economic investment in our region.

Somerset County Freeholders

Somerset County Regional Center Partnership

Somerset County Business Partnership

The Economic Opportunity Act, of which Grow NJ is a part, will expire in June of 2019. We request, based on our analysis, that any new or revised business incentives legislation at the state level:

90%

Remove the "90 percent limiter", which creates a competitive disadvantage for suburban areas of our state.

Continue business retention incentives, the only component of Grow NJ that has benefitted Somerset County, NJ.

Recognize designated redevelopment, and other locally defined areas, for the highest level of incentives, so they are treated similar to urban areas of our state from an incentives perspective.

Ensuring Our Competitive Position

- Grow NJ is the state's key economic business retention and expansion program
- Over the past 5 years Grow NJ has helped stimulate job creation and private sector economic investment throughout the state
- The Grow NJ program, as part of the Economic Opportunity Act, will expire in July of 2019
- Legislative discussions have begun on reauthorizing an amended version of the Economic Opportunity Act

With reauthorization of the Grow NJ program imminent, there is an opportunity to advocate for business incentive reforms

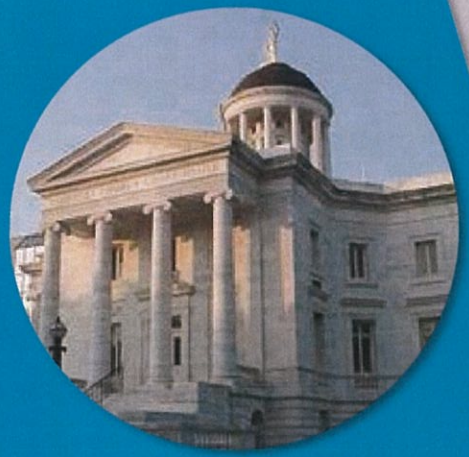
- Document our competitive position within NJ's business incentives programs
- Detail specific program changes (requests) that would increase our competitive position
- Seek the support of state elected representatives and others in furthering legislative changes to existing incentive programs

Grow NJ: the State's Key Economic Development Incentive Program

*Upon completion

Somerset County Business Partnership
Your Chamber of Commerce and more

SOMERSET COUNTY



Grow NJ economic development incentives are not evenly distributed throughout the state…

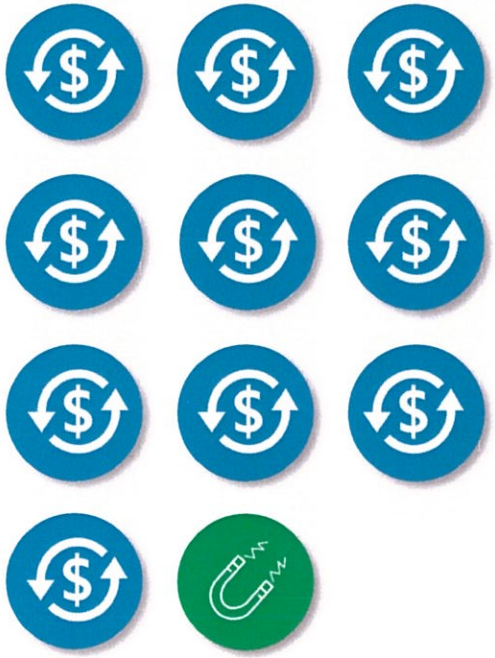
Total Somerset County projects:

11

Total Jersey City projects:

41

Retention Incentives Have Been Key for Somerset County



- 10 of 11 Grow NJ awards in Somerset County have been retention projects
- 1 of 11 awards was a job attraction project

Grow NJ Projects are not evenly distributed among the state…

	Somerset County	Jersey City
Grow NJ Projects	11	41
Jobs Retained	4,877	4,391
Jobs Attracted	50	7,566
Private Capital Investment	$390 million	$386 million

Somerset County Business Partnership
Your Chamber of Commerce and more

SOMERSET COUNTY

Somerset County's Competitive Position in a Similar Market Size

	Office Buildings	Existing Office Space
Somerset County NJ	1,056	30,500,000sf
Hudson Waterfront	1,062	29,400,000sf

x'88

Somerset County Business Partnership
Your Chamber of Commerce and more

SOMERSET COUNTY

Comparative Analysis of Somerset County

Vacancy Rate

Somerset:
13.2%

Hudson Waterfront:
10.0%

Gross Rent per SF

Somerset:
$22.45

Hudson Waterfront:
$31.65

Months on Market

Somerset:
21.8

Hudson Waterfront:
13.4

The Suburban Disadvantage

Case Study #1:
Financial technology company relocating to save costs

Site facility search narrowed to 2 facilities…

Jersey City Waterfront

Downtown Somerville

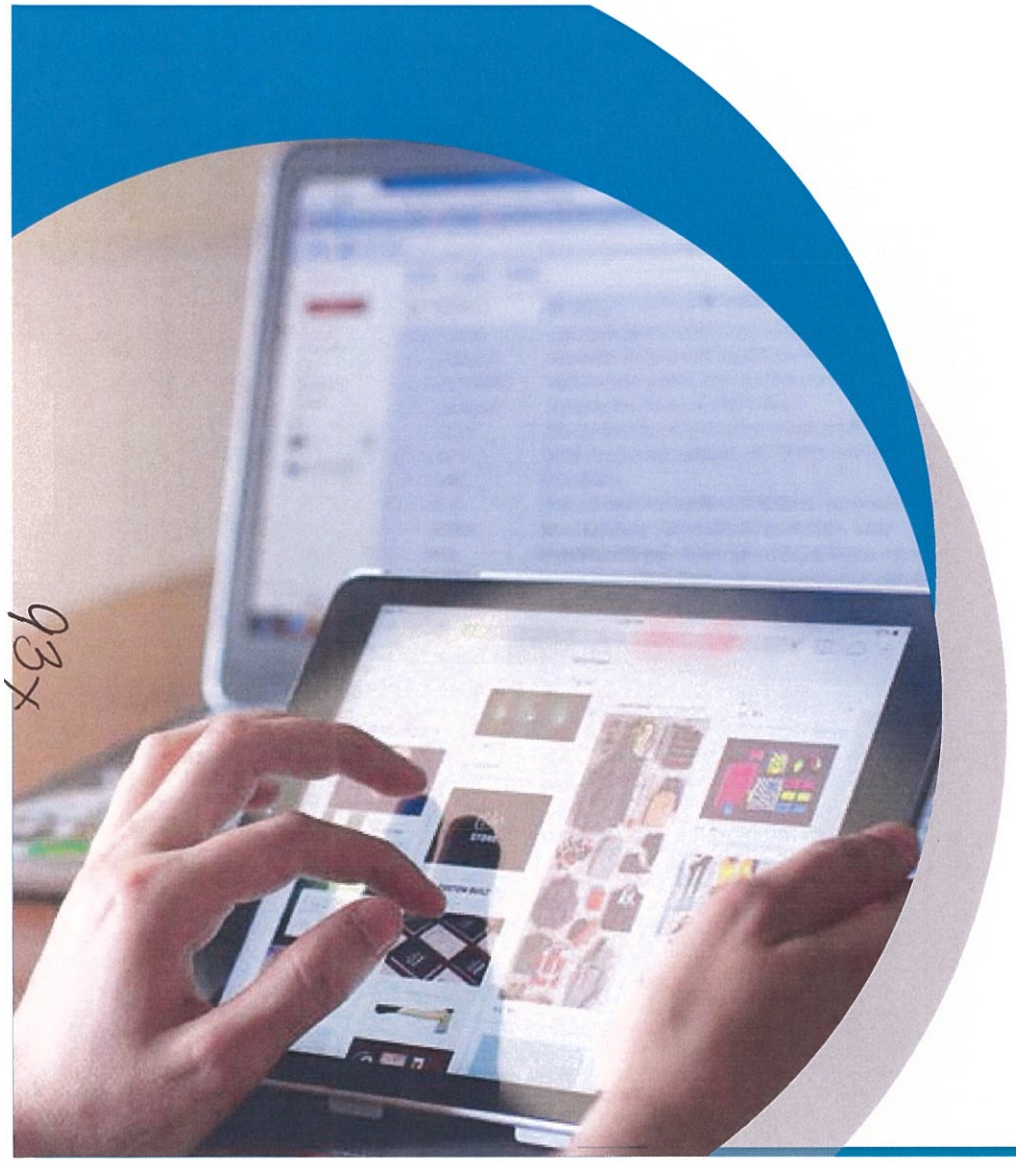
x16

Grow NJ Incentives Significantly Disadvantage Somerset County, NJ Projects

200 Full time jobs
$2 million capital investment
20,000 sq. ft. commercial office

	Jersey City Waterfront	Somerville
Base Credit	$5,000 (distressed municipality)	$3,000 (priority area)
Bonus Credit (transit oriented development)	$2,000	$2,000
Bonus Credit (targeted industry)	$500	$500
Annual Credit per job	$7,500	$5,500
Total Grow NJ Award over 10 years	$15.5 million	$4.12 million

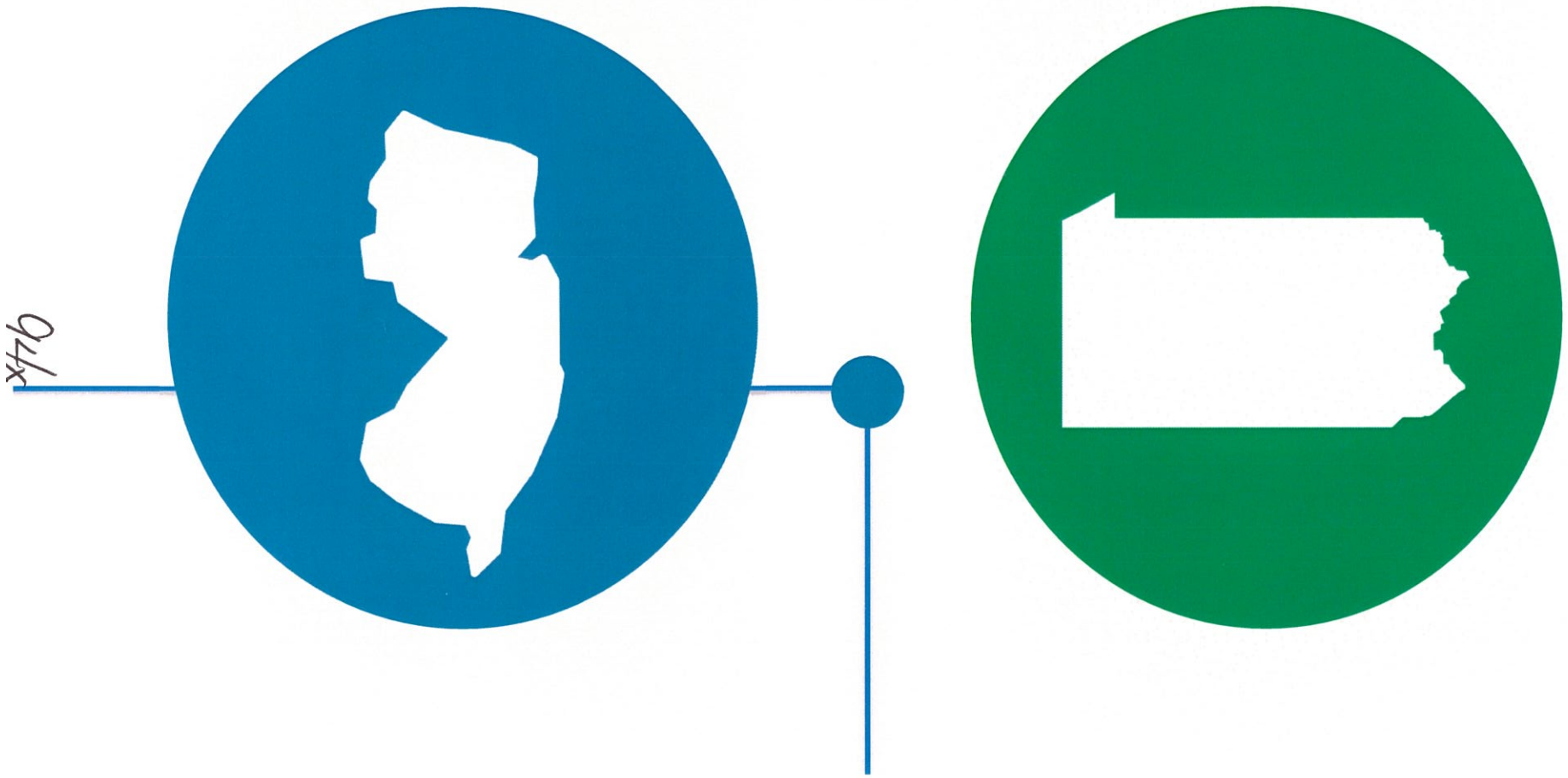
*For a project located in a priority area, the award will be the lesser of the gross calculated amount (i.e., $11MM or 90% of the withholding taxes generated at the facility. Based on a median salary of $75,000, 90% of the withholding taxes for 200 jobs would be approximately $4.12 as opposed to $11,000,000.



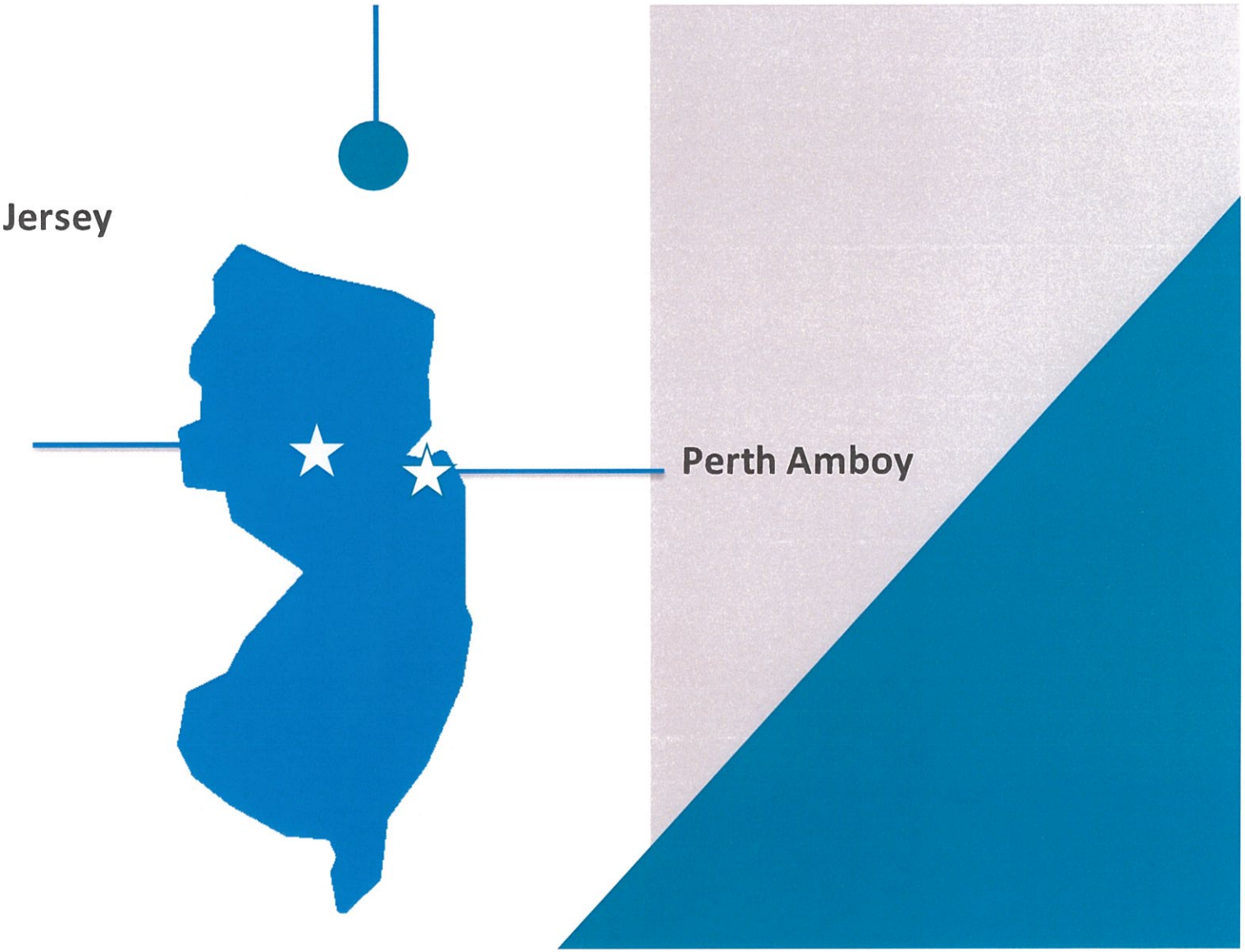
The Suburban Disadvantage

Case Study #2:
E-commerce company in site selection for a fulfillment center

New facility will be in New Jersey or Pennsylvania…



With locations in New Jersey identified as:



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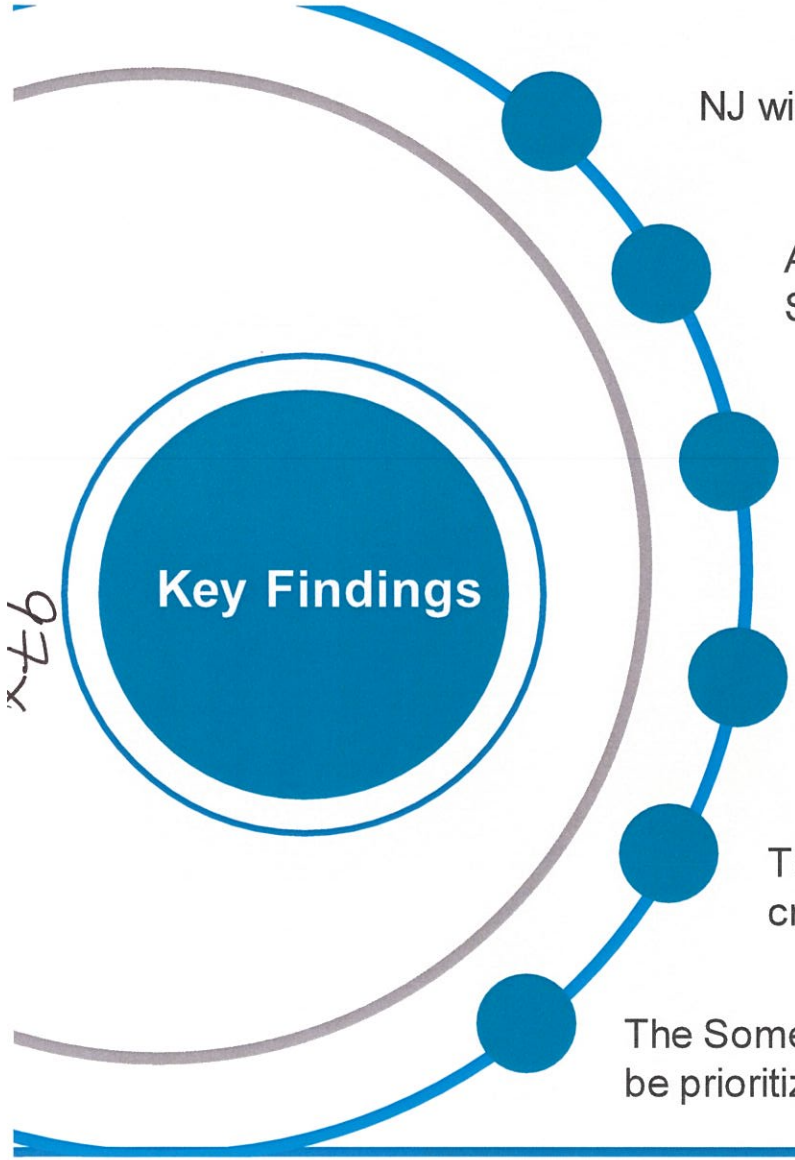
This e-commerce project would result in:

700 Full time jobs
$40 million capital investment
300,000 sq. ft. distribution center

	Perth Amboy	Bridgewater
Base Credit	$4,000 (distressed municipality)	$3,000 (priority area)
Bonus Credit (large # new jobs)	$1,000	$1,000
Annual Credit per job	$5,000	$4,000*
Total Grow NJ Award over 10 years	$35 MILLION	$6 MILLION

*For a project located in a priority area, the award will be the lesser of the gross calculated amount (i.e., $28MM or 90% of the withholding taxes generated at the facility. Based on a median salary of $45,000, 90% of the withholding taxes for 700 jobs would be approximately $5,985,000 as opposed to $28,000,000.



NJ will have some sort of business incentives program after July 2019

Any new business incentives program should not disadvantage Somerset County, NJ

Business retention incentives should be a major component of any new state program

Business incentives should be focused on jobs and private sector economic investment

The Somerset County Regional Center should be prioritized for job creation/retention and private sector economic investment incentives

The Somerville Transit Village and Landfill Redevelopment Area should be prioritized the state's business incentive program

Contact Us

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The Suburban Disadvantage

The Grow NJ Program

SOMERSET COUNTY
EST. 1688
MAKING VIBRANT CONNECTIONS
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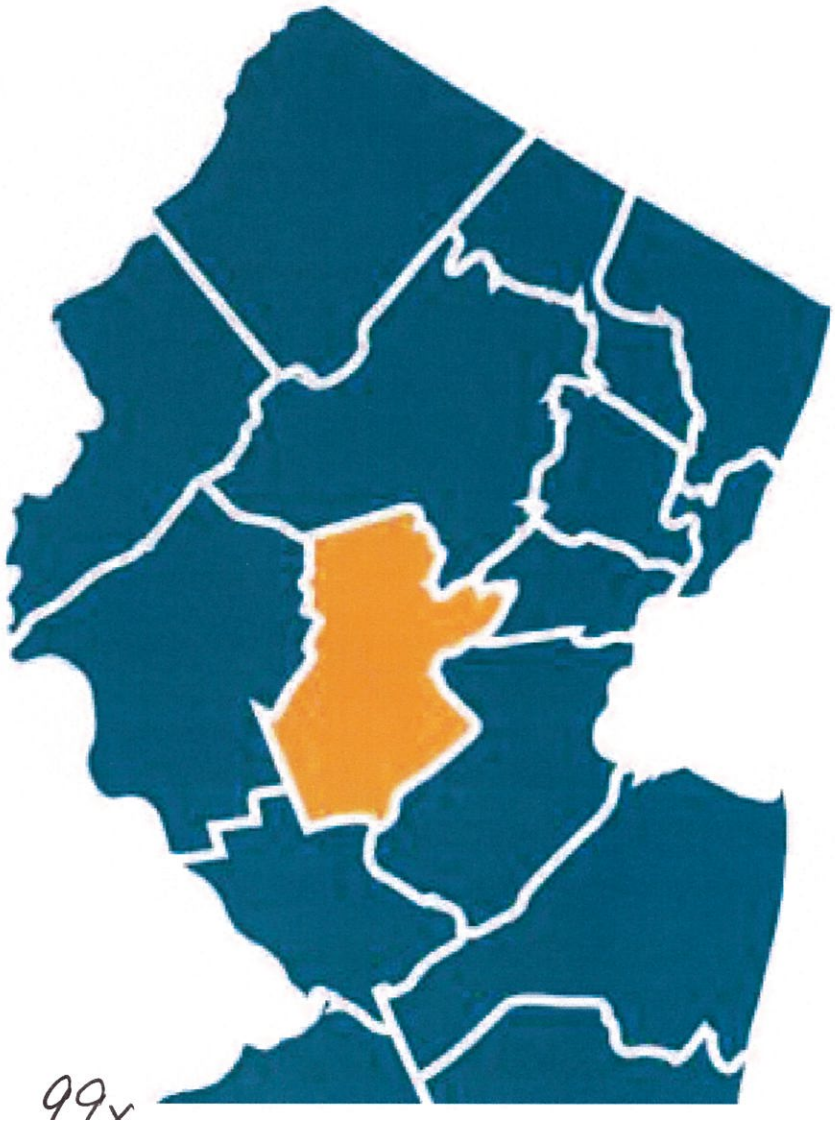

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Regional Center Partnership of Somerset County

2018 Officers

Troy Fischer, Chair
Jason Dameo, Vice-Chair
Freeholder Director Patrick Scaglione, Treasurer
James Ruggieri, Secretary (non-voting position)

At-large Private/Institutional Sector Representatives

Troy Fischer, Chair, Senior General Manager, Bridgewater Commons
Jason Dameo, Vice-Chair, Dameo Trucking, Inc.
Victoria Allen, Vice President, Strategic Marketing, Southern Region, RWJBarnabas Health
Anthony Tufaro, Site Facilities Manager-Ethicon Somerville

2018 Somerset County Board of Chosen Freeholders

Patrick Scaglione, Freeholder Director
(Freeholder Patricia L. Walsh, Alternate)

Somerset County Planning Board

Bernie Navatto, Chair, Somerset County Planning Board
Walter Lane, Director of Planning, Somerset County Planning Division

Bridgewater Township

Mayor Daniel J. Hayes, Jr.
Filipe Pedroso, Council
Scarlett Doyle, Township Planner
James Franco, local private/institutional sector representative

Raritan Borough

Mayor Charles McMullin
Don Tozzi, Council
Nicolas Carra, Council
Angela Knowles, Borough Planner

Somerville Borough

Mayor Ellen Brain
Dennis Sullivan, Council
Lisa Werner, Vice-Chair, Somerville Planning Board
Rick St. Pierre, local private/institutional sector representative

Somerset County Business Partnership

Michael Kerwin, President & CEO
(John Maddocks, Alternate)

Somerset County Park Commission

Geoffrey Soriano, Interim Secretary-Director
(Cynthia Sullivan, Alternate)

100 ✓

2018 Somerset County Board of Chosen Freeholders

Patrick Scaglione, Freeholder Director
Brian D. Levine, Freeholder Deputy Director
Patricia L. Walsh, Freeholder
Mark Caliguire, Freeholder
Brian G. Gallagher, Freeholder

Project Advisory and Management Team

Catherine Ricker, Chair, Somerset County Business Partnership
Troy Fischer, Chair, Regional Center Partnership of Somerset County, Inc.
Michael Amorosa, Administrator, County of Somerset, NJ
Michael Kerwin, President & CEO, Somerset County Business Partnership
Walter Lane, Director of Planning, County of Somerset, NJ
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Executive Summary

The Regional Center Partnership of Somerset County, Inc., the Somerset County Board of Chosen Freeholders, and the Somerset County Business Partnership have come together around an effort to ensure New Jersey business incentive programs serve job growth and private sector economic investment in our region.

Our analysis and recommendations related to the Grow NJ incentive program mirrors our past successful initiatives to secure Hurricane Floyd infrastructure and public works investments, funding to improve traffic safety and congestion mitigation along the Route 22 corridor, and our federally approved Comprehensive Economic Development Strategy: A Collaborative Blueprint for Economic Growth.

The Regional Center Partnership of Somerset County, Inc., a designated Center under the NJ State Development and Redevelopment Plan, brings together the Township of Bridgewater and the boroughs of Raritan and Somerville to improve the quality of life and further public and private investments in a vibrant area of our county featuring unique assets and amenities.

The Somerset County Board of Chosen Freeholders has demonstrated their leadership by making strategic investments and endorsing initiatives consistent with our Comprehensive Economic Development Strategy consistent with local planning and redevelopment objectives. Recognizing the importance of business incentives to development and redevelopment in the Somerset County Regional Center, the Board is committed to working with state legislators to ensure the Grow NJ program serves the interests of our residents, communities, and the region.

The Somerset County Business Partnership, a public-private partnership, serves as both the regional Chamber of Commerce and the principle economic, tourism, and workforce development entity in Somerset County, NJ. The Business Partnership is uniquely qualified to engage business on their needs, representing over 800 employers with 70,000 employees. The Business Partnership has an in-depth understanding of the needs of business including talent recruitment and attraction challenges; cultural, the historic and recreational amenities that make our county unique, and the factors influencing corporate site location, including economic and workforce incentives.

These partners are pleased to present the final analysis and recommendations related to the Grow NJ business incentive program, and we look forward to engaging state elected and appointment officials in this critical discussion.

102x

Key Findings & Recommendations

Findings

Expiration, and anticipated renewal, in some form, of the Grow NJ program provides a unique opportunity to improve business incentives in a way that benefits all geographic areas of the State of New Jersey with a focus on jobs and private sector economic investment.

Commercial offices house workers who generate personal income and sales tax revenue to the State of New Jersey. These office properties also generate real property tax revenue to counties which supports important public investments. It is revenue generated through real property taxation that allows Somerset County, NJ to support educational institutions such a Raritan Valley Community College and the Somerset County Vocational and Technical High School, as well as human resources investments in mental health and other services.

The commercial office market in Somerset County, NJ is significantly underperforming that of similar competing areas and there has been only 1 Grow NJ business attraction award in the county representing only 50 jobs.

To the extent that Grow NJ business incentives influence corporate site location decisions, and that, as McKinsey and Company observed in an analysis, the program is geography, not merit based; there is ample opportunity for legislative reforms which will level the playing field across areas of our state.

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Recommendations

- There must be an employment retention component of any new business incentive program. Without a business retention component there is significant risk to intra-state business relocations that disadvantage one area over another.
- The "90 percent limiter" within the current Grow NJ program must be removed. The 90 percent serves only to create further disparities based on project geography as opposed to project merit.
- The Somerset County Regional center, the only multi-jurisdictional Regional Center under the State Development and Redevelopment Plan, should be recognized as a priority area for incentives related to job creation and private sector economic investment. In terms of the existing Grow NJ program, the Somerset County Regional Center should be classified as a Garden State Growth Zone.
- Each municipality in Somerset County, NJ having a rail station along the NJ Transit Raritan Valley Line should be recognized as an "Urban Transit Hub Municipality" as defined in the current Grow NJ program.

Somerset County, NJ has made significant investments in identifying and implementing strategies with a focus on job creation and private sector economic investment. The requested reforms will create a greater connection between local and state efforts.

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Overview

In an ever-changing economy, state governments are forced to utilize every tool necessary to attract and retain jobs within their borders. While the State of New Jersey has utilized business attraction and retention incentives for years, the Great Recession[1] increased the need to develop creative business incentive programs in an effort to remain competitive, both globally and amongst neighboring states. As businesses faced added pressure to explore ways to cut costs and maximize efficiencies, the need for an aggressive business attraction and retention incentive program was necessary.

On September 18, 2013, then-Governor Chris Christie signed into law the Economic Opportunity Act of 2013, N.J.S.A. 34:1B-1 et seq. (the "EOA"). The EOA overhauled the State's existing business incentive programs by expanding the Grow New Jersey Assistance Program ("Grow NJ") and the Economic Redevelopment and Growth ("ERG") Program, while phasing out the Business Retention and Relocation Assistance Grant ("BRRAG"), the Business Employment Incentive Program ("BEIP"), and the Urban Transit Hub Tax Credit Program. The Grow NJ program was redesigned to become the State's main job attraction and retention incentive, while the ERG program would become the State's sole incentive for developers.

The EOA received broad bipartisan support in both houses of the legislature, ultimately passing the Senate by a vote of 35-1 and the Assembly by a vote of 71-6. Following

[1] The Great Recession was a period of general economic decline observed in world markets during the late 2000s and early 2010s

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the Governor's signature, Senate President Steve Sweeney (D-Gloucester, Cumberland, and Salem) praised the EOA as a tool for economic growth, saying "this law will help create jobs and generate long-term growth throughout New Jersey."[2] Similarly, Assemblyman Jon Bramnick (R-Union, Morris, and Somerset) extolled the EOA as "a commonsense way to make New Jersey a more business-friendly state."[3] It also received support from both the New Jersey Business & Industry Association and the New Jersey State Chamber of Commerce, the leading business industry groups in the State.[4] Notably, of the 17 legislators currently representing Somerset County, support for the EOA was mixed–with 7 "yes" votes and 4 "no" votes.[5]

Since the implementation of the EOA, the Grow NJ program has been wildly popular and incredibly successful. To date, 250 projects have been approved, totaling over $4.7 billion in eligible tax credits. Once completed, the 250 projects will drive over $4.5 billion in private capital investment, create over 30,000 new jobs, and help retain over 36,000 jobs at risk of leaving the State.

The Grow NJ program has two main components. First, the program creates an incentive for businesses seeking to relocate to New Jersey. This makes up the new job attraction component of the program. The program also offers an incentive for businesses threatening to leave the State. This makes up the retained jobs component of the program. Notably, of the 11 total Grow NJ awards in Somerset County since 2013, only 1 project has been a new job attraction project (i.e., an out-of-state business relocating to New Jersey with the help of an incentive under the Grow NJ program). The remaining awards (i.e., 10 projects) have been some form of retention project.[6]

[2] Press Release, "Sweeny Statement on 'NJ Economic Opportunity Act' Becoming Law," 9/18/13

[3] Press Release, "Bramnick New Jersey Economic Opportunity Act now Law," 9/18/13

[4] Press Release, "NJBIA Applauds Enactment of the Economic Opportunity Act," 9/18/13, "Tax incentive overhaul arguments: More subsidies, or more opportunities," PolitickerNJ, 9/18/13

[5] LD16: Senator Christopher Bateman (Co-Sponsor) – YES, Assemblyman Roy Freiman – New to Legislature, Assemblyman Andrew Zwicker – New to Legislature. LD17: Senator Bob Smith – YES, Assemblyman Joe Danielsen – New to Legislature, Assemblyman Joseph Egan – YES. LD21: Senator Tom Kean – YES, Assemblyman Jon Bramnick (Prime Sponsor) – YES, Assemblywoman Nancy Munoz (Co-Sponsor) – YES. LD22: Senator Nicholas Scutari – NO VOTE, Assemblyman James Kennedy – New to Legislature, Vacant Assembly Seat. LD23: Senator Michael Doherty – NO, Assemblyman John DiMaio – NO, Assemblyman Erik Peterson – NO. LD25. Senator Anthony Bucco – NO VOTE, Assemblyman Anthony Bucco (Prime Sponsor) – YES, Assemblyman Michael Patrick Carroll – NO.

[6] While a portion of the 10 retention projects have had a new job component (i.e., the business would retain a certain number of jobs and add additional employees, for the purpose of this analysis, projects have been classified as new or retained. The issue examined here is whether the 90 percent limiter creates a disadvantage in the ability to attract new businesses to Somerset County (i.e., new job projects).

While the new job attraction component of the Grow NJ program has not been an effective tool for attracting new businesses to the County, the retention component of the program has played a significant role in helping the County retain numerous businesses and thousands of jobs.

As outlined below, the size of an award under the Grow NJ program is largely based on a project's location. Urban municipalities throughout the State (classified as Garden State Growth Zones,[7] Urban Transit Hubs,[8] and Distressed Municipalities[9]) qualify for larger base credit amounts and additional bonus credits, while most of the State's suburban municipalities are classified as Priority Areas,[10] in which awards are limited to the lesser of a smaller base credit and additional bonus credits ("Gross Calculated Amount") or 90 percent of the withholding taxes generated at the project location ("90 Percent Limiter"). While the term "Priority Area" may lead some to believe that projects in these areas would qualify for significant incentives under the program, as shown below, they are, in fact, the second lowest designation, ahead of only "Other Eligible Area." This seemingly minor clause within the statute creates a significant disadvantage for most suburban municipalities' ability to attract new businesses and new jobs, as awards subject to the 90 Percent Limiter can be greatly reduced, and therefore, less attractive to businesses seeking to relocate. Importantly, Somerset County is made up almost entirely of municipalities designated as Priority Areas (Manville Borough, a Distressed Municipality, is the only municipality in the entire county designated as anything other than a Priority Area).

[7] G arden State Growth Zone Municipalities: Paterson, Passaic, Trenton, Camden, and Atlantic City.

[8] Urban Transit Hub Municipalities: Bridgeton, East Orange, Elizabeth, Hoboken, Jersey City, Mount Holly, New Brunswick, Newark, Salem City, West New York.

[9] "Distressed municipality" means a municipality that is qualified to receive assistance under P.L. 1978, c. 14 (N.J.S.A. 52:27D-178 et seq.), a municipality under the supervision of the Local Finance Board pursuant to the provisions of the Local Government Supervision Act (1947), P.L. 1947, c. 151 (N.J.S.A. 52:27BB-1 et seq.), a municipality identified by the Director of the Division of Local Government Services in the Department of Community Affairs to be facing serious fiscal distress, an SDA municipality, or a municipality in which a major rail station is located. Currently, there are 65 Distressed Municipalities throughout the State.

[10] "Priority area" means the portions of the qualified incentive area that are not located within a distressed municipality and which: are designated pursuant to the State Planning Act, P.L. 1985, c. 398 (N.J.S.A. 52:18A-196 et seq.), as Planning Area 1 (Metropolitan), Planning Area 2 (Suburban), a designated center under the State Development and Redevelopment Plan, or a designated growth center in an endorsed plan until June 30, 2013, or until the State Planning Commission revises and readopts New Jersey's State Strategic Plan and adopts regulations to revise this definition; intersect with portions of a deep poverty pocket, a port district, or were Federally owned land approved for closure under a Federal Commission on Base Realignment and Closure action; are the proposed site of a disaster recovery project, a qualified incubator facility, a highlands development credit receiving area or redevelopment area, a tourism destination project, or transit oriented development; or contain a vacant commercial building having over 400,000 square feet of office, laboratory, or industrial space available for occupancy for a period of over one year; or a site that has been negatively impacted by the approval of a "qualified business facility," as defined pursuant to section 2 of P.L. 2007, c. 346 (N.J.S.A. 34:1B-208).

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Clearly, there was a specific policy rationale behind designing the Grow NJ program to drive new job growth to urban municipalities. By definition, incentives are meant to affect behavior, and the Grow NJ program has done exactly what it was intended to do, with great success. By offering larger incentives to businesses willing to locate in urban municipalities, the State has driven new jobs and capital investment into these areas. While encouraging the growth of urban municipalities throughout the State is a rational policy objective, it can be argued that suburban municipalities have not had a chance to compete for new businesses and new jobs due to the overwhelming disparity in the size of incentive awards.

While some may argue that suburban municipalities do not need incentives to attract new businesses, data obtained through CoStar suggests that commercial office vacancy rates are high throughout the State. In fact, the vacancy rate for commercial office space in Somerset County is 13.3 percent, one percentage point higher than the vacancy rate for commercial office space along the Hudson County Waterfront (i.e., Jersey City, Hoboken, etc.). Notably, when looking at the 5-year average, the Hudson County Waterfront has a vacancy rate of 9.5 percent, which is 3.8 percent lower than that of Somerset County (which based on the 5-year average has a vacancy rate of 13.3 percent).[11]

This memorandum will focus solely on the Grow NJ program. The program has been the focus of critique in recent years. While the current governor has generally voiced support for targeted incentives, he has indicated a need to reexamine the EOA (specifically, the Grow NJ program) and make changes to reflect the administration's desire for sustainable economic growth throughout New Jersey. In light of this, it is likely that the current administration will encourage the legislature to modify the Grow NJ program when the EOA expires in July of 2019.

The purpose of this memorandum is to provide a broad overview of the Grow NJ program and communicate options for making a good program even better. This overview will further provide details related to the calculation of awards in all areas of the State, and will discuss the 90 Percent Limiter for suburban municipalities, which greatly restricts the ability of suburban counties (including Somerset County) to attract new businesses and new jobs through the use of incentives.

[11] CoStar Report, Commercial Office Vacancy in Somerset County and the Hudson County Waterfront, Q2 2018.

To highlight this issue, the memorandum will then provide two hypothetical site selection scenarios. Lastly, the memorandum will outline two specific recommendations for Somerset County-based legislators to consider when the legislature begins to debate the next round of incentives, including the elimination of the 90 Percent Limiter for projects involving new businesses relocating to the State, irrespective of location, and the importance of maintaining the retention component of the Grow NJ program, which has been an important tool in Somerset County's ability to retain businesses.

I. Grow New Jersey Assistance Program (Overview)

Created under the EOA and administered through the New Jersey Economic Development Authority ("NJEDA"), Grow NJ is New Jersey's main job creation and retention incentive program. Determination of the size of an award is based on the project's location, the corresponding capital investment, and the jobs created and/or retained at the proposed New Jersey project site. N.J.A.C. 19:31-18.2. Importantly, applicants also must generally demonstrate that the project will yield a net positive benefit to the State of at least 110% of the requested tax credit amount. N.J.A.C. 19:31- 18.3(a)3ii.

Businesses meeting the Program's eligibility criteria may be eligible for tax credits, to be applied against New Jersey Corporate Business Tax and Insurance Premium Tax liability for no more than 10 years, with base credits ranging from $500 to $5,000 per job, per year;

and bonus credits ranging from $250 to $5,000 per job, per year. The business must agree to maintain employment levels in the New Jersey project site for 1.5 times the eligibility period. N.J.S.A. 34:1B-243. Thus, if a business receives a 10-year award under the program, the business would be required maintain the incentivized jobs in New Jersey for 15 years.

If an application is approved by the NJEDA, "the project approval is subject to the terms and conditions of the approval letter and incentive agreement, and any benefits under the program are subject to the completion of the project and satisfaction of the capital investment and employment qualifications required for the Grow New Jersey tax credits." N.J.A.C. 19:31-18.7(d)(1). In other words, Grow NJ is a performance-based program. Businesses do not receive tax credits from the State until they have certified the award (i.e., they have satisfied the employment and capital investment benchmarks outlined in contract between the business and the State, also known as an Incentive Agreement. In general, the certification with respect to capital investment and employment must be submitted within three years following the date of approval of the application. N.J.A.C. 19:31-18.7(f)(3). In limited cases, the Authority may grant two six-month extensions. *Id.*

Program Eligibility

To qualify under the Grow NJ program, a project must (a) be located in an area eligible for incentives, (b) create and/or retain a certain number of full-time jobs, and (c) spend the applicable capital investment required under the program.

a. Qualified Incentive Area, Tax Credit Amounts, and Limiters

An eligible project must be located in "Qualified Incentive Area." N.J.A.C. 19:31-18.2. While the program applies to projects statewide, the size of the incentive award is largely based on the project's location. The project location will determine the eligible base tax credit. The chart below outlines the Qualified Incentive Areas, the base tax credit and bonus credits available, and tax credit limits associated with the project location.

Qualified Incentive Area	**Base Tax Credit (per job, per year)**	**Bonus Credits (per job, per year)**	**Max Amount** *(per new or retained FT job, per year)*	**Annual Amount** *(applied annually)*
Garden State Growth Zone	$5,000	$250-$5,000	$15,000	$30 million ($35M for projects in Camden and Atlantic City)
Urban Transit Hub Municipality	$5,000	$250-$3,000	$12,000	$10 million
Distressed Municipality	$4,000	$250-$3,000	$11,000	$8 million
Priority Area	$3,000	$250-$3,000	$10,500	$4 million
Other Eligible Area	$500	$250-$3,000	$6,000	$2.5 million

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Notably, as discussed briefly above, for a project located in a "Priority Area" or "Other Eligible Area," the tax credit award will be the lesser of the calculated gross amount (base + bonuses) ("Gross Calculated Amount") or 90 percent of the withholdings taxes withheld by the business from the wages of full-time employees located at the New Jersey project site ("90 Percent Limiter"). The 90 Percent Limiter withholding calculation is based on estimated median annual salaries of employees to be located at the New Jersey project site, but in reality, the actual withholding taxes can vary based on multiple factors.

For projects involving the retention of a New Jersey-based business, for each retained full-time job, the business's tax credits will be limited to the lesser of 50 percent of the Gross Calculated Amount for each retained full-time job or one-tenth of the capital investment, which will be the lesser of actual capital investment or the business's proposed amount approved at application, divided by the number of retained and new full-time jobs per year over the grant term of ten years ("Capital Investment Limiter"). N.J.A.C. 19.31-18.8(e)(2). For a retention project located in a Priority Area, the award will be further limited to the lesser of the Gross Calculated Amount, the Capital Investment Limiter, or the 90 Percent Limiter.

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b. Job Creation

To be eligible, the program requires that the applicant business must create and/or retain a minimum number of full-time jobs. To qualify as a "full-time job" under the Program, an employee must generally work thirty-five (35) hours per week, spend at least 80 percent of his or her time at the proposed New Jersey project site, and be offered health benefits. N.J.A.C. 19:31-18.2. The minimum threshold of full-time jobs varies based on industry. N.J.S.A. 34:1B-244(c)(1-3). The chart below outlines the minimum full-time employment requirements:

Minimum Requirement Full-Time (FT) Employment	New/Retained Jobs
Tech Start Ups and Manufacturing Businesses	10/25
Other Targeted Industries[12]	25/35
All Other Businesses/Industries	35/50

Finally, the minimum employment requirements are reduced by twenty-five percent (25%) for projects located in Garden State Growth Zone municipalities or projects located within Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean, or Salem counties. N.J.A.C. 19:31-18.3(a)(2).

c. Capital Investment

In addition to the job creation/retention requirement, the premises which the business occupies (owns or leases) must meet the following capital investment requirement per square foot of gross leasable space. N.J.S.A. 34:1B-244b(1)-(4). Please note, in a Garden State Growth Zone, determination of what qualifies as a capital investment is greatly expanded.

[12] Targeted Industries: Transportation, Manufacturing, Defense, Energy, Logistics, Life Sciences, Technology, Health, and Finance.

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Minimum Requirements Capital Investment	Investment/Square Foot
Industrial, Warehousing, Logistics, R&D-Rehabilitation Projects	$20 per square foot
Industrial, Warehousing, Logistics, R&D-New Construction Projects	$60 per square foot
Office-Rehabilitation Projects	$40 per square foot
Office-New Construction Projects	$120 per square foot

Minimum capital investment requirements are reduced by one-third for projects located in Garden State Growth Zone municipalities or projects located within Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean, or Salem counties. N.J.A.C. 19:31-18.3(a)(1).

2. Conditions of Approval

a. Material Factor

The award of tax credits under the program must be a "material factor" in the business's decision to create and/or retain the minimum number of full-time jobs at the proposed New Jersey project site. In making this determination, the NJEDA takes into consideration the geographic or regulatory constraints of a project and a full economic analysis (provided by the business) of the in-State and out-of-State alternatives under consideration. N.J.A.C. 19:31-18.3(a)3iii.

b. Duty to Maintain Jobs

Following certification, if, in any tax period during the eligibility period (1.5 times the length of the award), the number of certified full-time employees employed by the business at the New Jersey project location drops below 80 percent, then the business will forfeit its credit amount for that tax period and each subsequent tax period until the first tax period for which documentation demonstrating the restoration of the number of full-time employees has risen above the 80 percent threshold.

Moreover, should the business fail to maintain 80 percent of the certified full-time employees for two consecutive years, such failure will constitute an event of recapture, potentially leading to the business's forfeiture of the award. N.J.A.C. 19:31-18.15(b).

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In addition to the requirement that the business maintain 80 percent of the certified full-time employees employed by the business at the New Jersey project site, the business is also required to maintain 80 percent of its statewide workforce. In the event that the business fails to do so, the business will forfeit its credit amount for that tax period and each subsequent tax period, until the first tax period for which documentation demonstrating the restoration of the number of full-time employees to at least the statewide minimum (80 percent).

II. Site Selection Hypothetical(s)

The purpose of this section is to provide two hypothetical site selection scenarios. As you will see, the disparity in incentive awards available for new job attraction projects is significant.

a. Corporate Relocation - Jersey City Waterfront vs. Somerville

For purposes of this example, we will assume the following:

A financial technology firm is currently located in Midtown Manhattan (NYC). In an effort to minimize costs, the business has decided that it will relocate from its current location to a new space in either Long Island City, New York or one of multiple locations in New Jersey. After a significant amount of due diligence, the business has narrowed its New Jersey site selection search to two facilities. The first is located on the Jersey City Waterfront. The second is located in Somerville.[13] At either location, the business plans to hire 200 new full-time jobs with a median annual salary of $75,000. The business plans to spend approximately $2,000,000

[13] For the purposes of this analysis, we will assume that the Somerville facility is within ½ mile from the Somerville train station.

to customize 20,000 square feet of commercial office space. In an effort to narrow the search down to a final New Jersey location, the business would like to further understand the incentives available for both locations. Based on the current Grow NJ program guidelines, the business would potentially be eligible for the following:

	Jersey City Waterfront	**Somerville (Downtown)**
Base Credit	$5,000	$3,000
Bonus Credit (transit oriented development)	$2,000	$2,000
Bonus Credit (targeted industry)	$500	$500
Annual Credit Per New Job	$7,500	$5,500
Total Grow NJ Award (over 10 years)	**$15,500,000**	**$4,108,500** (90% Limiter applies)

After reviewing the incentives analysis, the business decides to eliminate Somerville as a viable option. While the Grow NJ award in Somerville would have equaled $11,000,000 based on the Grow NJ Gross Calculated Amount, the 90 Percent Limiter decreased the size of the award by over 60 percent. Without the 90 Percent Limiter, the Grow NJ award would have been significant, and would have allowed the business to consider additional factors related to the Somerville facility. However, since an award in Somerville would be more than 73 percent less than a potential award in Jersey City, the business chooses to limit its consideration to the Jersey City location.

b. E-Commerce Distribution Center - Perth Amboy vs Bridgewater

For purposes of this example, we will assume the following:

A national e-commerce business is planning to develop a state-of-the-art fulfillment center to service the Northeast. The business has decided that the new fulfillment center will be located in either Bethlehem, Pennsylvania or one of two locations in New Jersey. After months of due diligence, the business has narrowed its New Jersey search to Bridgewater and Perth Amboy.

Both locations offer significant advantages, including easy access to interstate highways and labor. At either location, the business plans to hire 700 new full-time jobs with a median annual salary of $45,000. The business plans to spend approximately $40,000,000 to develop a 300,000 square foot fulfillment center. In an effort to narrow the search down to a final New Jersey location, the business would like to further understand the incentives available for both locations. Based on the current Grow NJ program guidelines, the business would potentially be eligible for the following:

	Perth Amboy	**Bridgewater**
Base Credit	$4,000	$3,000
Base Credit (Large # of New/Retained Jobs)	$1,000	$1,000
Annual Credit Per New Job	$5,000	$4,000
Total Grow NJ Award (over 10 years)	**$35,000,000**	**$5,985,000** (90% Limiter applies)

After reviewing the incentives analysis, the business decides to eliminate Bridgewater as a viable option. While the Grow NJ award in Bridgewater would have equaled $28,000,000 based on the Grow NJ Gross Calculated Amount, the 90 Percent Limiter decreased the size of the award by over 78 percent. Without the 90 Percent Limiter, the Grow NJ award would have been significant, and would have allowed the business to consider additional factors related to the Bridgewater facility. However, since an award in Bridgewater would be more than 82 percent less than a potential award in Perth Amboy, the business chooses to limit its consideration to the Perth Amboy facility.

c. Next Steps

The Grow NJ program is set to expire in July of 2019. In anticipation of any potential changes to the program, the following recommendations should be considered by elected officials representing Somerset County.

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(a) **Eliminate the 90 percent limiter for projects involving businesses relocating to New Jersey and creating new jobs, irrespective of where the business chooses to locate within the State.**

The 90 Percent Limiter applies to projects located in Priority Areas. Priority Areas make up a large portion of the suburban municipalities throughout New Jersey, including every municipality in Somerset County, with the exception of Manville Borough.[14] It is important to note the "Priority Areas" are the second lowest tier of qualification within the Grow NJ program, ahead of only "Other Eligible Area." As described in detail above, the 90 Percent Limiter can have a significant impact on a business making a corporate site selection decision based on incentives. By eliminating the 90 Percent Limiter for projects involving businesses relocating to New Jersey and creating new jobs, municipalities located within Somerset County would have a chance to compete for these projects. To be clear, the Grow NJ program is working as intended. By creating significantly larger incentives for projects located in urban municipalities, the incentives are affecting behavior–more businesses are choosing urban municipalities for corporate relocation projects. However, the disparity in the size of awards has negatively impacted Somerset County's ability to compete for new businesses and new jobs.

It is worth noting that this recommendation will not eliminate the ability of businesses to qualify for larger incentive awards for projects in urban municipalities, as we understand the rationale behind such a policy. (Notwithstanding the 90 Percent Limiter, projects based in urban municipalities qualify for larger incentive awards based on the Gross Calculated Amount). However, by eliminating the 90 Percent Limiter, the incentive awards available for new job projects in Somerset County would be significantly larger, thus allowing the County (and other Priority Areas throughout the State) to realistically compete for these projects.

[14] Manville Borough is designated as a Distressed Municipality.

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(b) Maintain the retention component of the Grow NJ program in an effort to guard against businesses leaving the State.

The retention component of the Grow NJ program has played a significant role in helping to retain large corporations in suburban areas throughout the State, including Somerset County. In fact, of the 11 Grow NJ projects in Somerset County since 2013, 10 have been retention projects (i.e., businesses threatening to leave the State). These projects have resulted in the retention of 4,877 full-time jobs and over $390 million in private capital investment. It is essential that, regardless of any other changes to the Grow NJ program, the retention component of this program remain intact. Technological advances, along with a recent increase in the State's Corporate Business Tax rate, have made New Jersey less competitive. More than ever, this component of the program is critical. It must remain.

d. Conclusion

Somerset County, NJ has invested significantly in creating opportunities for job creation and private sector economic investment. The requested changes to the Grow NJ program will recognize the work of the Somerset County Planning Board in establishing Priority Growth Investment Areas as part of the County Investment Framework and the federally approved Somerset County, NJ Comprehensive Economic Development Strategy; A Collaborative Blueprint for Economic Growth which are adopted elements of the County Master Plan.

Additionally, the Somerset County Regional Center, a designated center under the NJ State Development and Redevelopment Plan encompassing the boroughs of Raritan and Somerville and the Township of Bridgewater, has adopted a strategic plan connected to the Somerset County Investment Framework with a focus on job creation and private sector economic investment, along with other infrastructure and quality of life components. In summary, our local job creation and private sector economic investment strategies and planning deserve to be connected to State of New Jersey business incentive programs. This connection can only occur with the support of state elected officials representing our region.

The Grow NJ program will expire in less than one year. Now is the time for Somerset County to take proactive steps to ensure that the interests of the County are protected in the next round of incentives legislation. The hope is that this memorandum makes two things clear–Somerset County, and other Priority Areas throughout the State, are at a distinct disadvantage when competing for new businesses and new jobs, due to the 90 Percent Limiter, and the need to maintain the retention component of the program is critical, as it has directly resulted in the retention of nearly 5,000 jobs in Somerset County since 2013.

The State's business attraction and retention incentives should give every municipality throughout the State a chance to compete for jobs. While the Grow NJ program has worked as intended, and has delivered promising results, the current program limits Somerset County's ability to compete and should be changed to reflect the State's desire to increase jobs and private capital investment throughout New Jersey.

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Written Testimony of John Maddocks
March 8, 2019
Senate Economic Growth and Assembly Commerce and Economic Development Committees

Good morning Chairwoman Cruz-Perez, Chairman Johnson and members of the Committee. Thank you for this opportunity to offer our qualifications, insights, and recommendations with respect to the State's use of economic incentive programs.

My name is John Maddocks and I am the vice president of economic development for the Somerset County Business Partnership. I am here today to talk about the importance of the Grow New Jersey Assistance Program—the State's main incentive for business attraction and job retention, and to offer insight into how to improve the current program moving forward.

We appreciate your commitment to advancing the economic health of our State and to fostering an environment that will sustain economic growth and create a robust quality of life for the residents of New Jersey.

Our research on Grow NJ led us to some important conclusions, which in turn led us to recommendations that we believe will improve the economic competitiveness of New Jersey.

We believe our findings are emblematic of the situation faced by the vast majority of communities throughout our state.

First, we respectfully ask that the current "90 percent limiter" provision be removed from any new or revised business incentives legislation. This provision places 500 of the 565 municipalities in New Jersey at a competitive disadvantage in the competition for jobs and private sector investment.

Second, we ask for recognition of regional and local priority areas, and specifically designated areas in need of redevelopment, as Garden State Growth Zones. By definition, locally designated areas in need of redevelopment are meant to be transformative in nature and of special economic and community importance.

Third, it is imperative that any new or revised state business incentives legislation have a robust business retention component. We note Somerset County's experience with Grow NJ, where 10 out of 11 Grow NJ awards were for business retention. In other words, Grow NJ enabled Somerset County to retain nearly 5,000 jobs that were in jeopardy of leaving the state.

We have documented how the 90 percent limiter, the lack of recognition for designated areas in need of redevelopment, and job retention incentives have impacted Somerset County, NJ. A copy of our summary findings has been submitted to the Committees along with our written statement.

We thank you for your time and look forward to continuing to be part of the conversation.

(Somerset Biz Partnership)

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Testimony of Lauren H. Moore, Jr.

Senate Economic Growth Committee and Assembly Commerce and Economic Development Committee
Friday March 8, 2019; 10:00 a.m.; Committee Room 4, State House Annex, Trenton

Testimony Themes

A. Provide testimony "concerning the State's economic development strategy."

B. Focus on "which **areas of the economy should be prioritized** to optimize the economic health of the State and foster an environment that will **sustain economic growth** and **create a robust quality of life** for the residents of the state."

Good morning Chairwoman Cruz-Perez and Chairman Johnson and members of the committees. My name is Lauren Moore and I am here this morning to provide you my thoughts on our state's economic development strategy. I've worked in the field of economic development for 30+ years in New Jersey and it is an honor to be asked to testify as the Legislature considers which areas of the economy should be prioritized to optimize the economic health of New Jersey.

Before I get into the substance of my comments, I wanted to give the members of the committees a little background about myself. I retired from state government in 2017 after completing a 28-year career in economic development. In my nearly three decades in Trenton, I worked for six different governors. I started in 1998 as the Director of the Office of the Business Advocate at the New Jersey Commerce Commission. I concluded my career in Trenton in 2017 as the Executive Director of the New Jersey Business Action Center, housed within the New Jersey Department of State. At the Business Action Center, I oversaw a department of 50 people, focusing on business retention and attraction, planning, and small business, among others.

I started as the Executive Director of the Atlantic County Economic Alliance (ACEA) in June of 2017. The ACEA is a 501 C-3 not-for-profit economic development entity. Prior to creation of ACEA, Atlantic County had no functioning economic development organization.

That all changed when 5 casinos closed and Atlantic County lost 20,000 jobs in 2014. The economic devastation of the gaming industry downfall put a bright spotlight on the lack of diversity within Atlantic County's economy. Housing values plunged, unemployment soared. Former casino employees generally did not have skills and education to compete for high-paying jobs. Worse yet, there weren't many local employers that offered jobs even if someone had the education and skills.

Atlantic County needed a solution and to assist in plotting a course for the future of the County and South Jersey, the County hired Angelou Economics, a well-respected economic development advisor in the United States. In 2015, Angelou Economics created an economic strategy for the county and South Jersey. The detailed strategy is focused on creating and retaining jobs in targeted industries, but it is also centered around workforce development, industry cluster development, and innovation.

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Atlantic County is thinking big to help all of South Jersey become a global leader. We are thinking about opportunity for all. We are thinking education and workforce development. We are trying hard to stop brain drain by creating viable employment opportunities so we can hold on to our high-school, technical school, and college graduates. While our targeted industries include Specialty Manufacturing, Life Sciences, Food & Agriculture, Business Services, and, of course, Tourism and Entertainment, our big push is Aviation.

Why is Aviation our priority? We have existing fantastic aviation assets, including the vastly underused Atlantic City International Airport, which is also home to the Federal Aviation Administration's (FAA) William J. Hughes Technical Center. The William J. Hughes FAA Tech Center employs more than 5,000 people, with an average salary of more than $114,000. Unbelievable in a county that has one of the lowest average household incomes in the state at approximately $55,000.

The FAA's William J. Hughes Technical Center (WJHTC) is the nation's premier air transportation laboratory. FAA's Aviation Research Division oversees dozens of research and scientific laboratories focused on fire safety, aviation fuels, chemical analyses, composite aircraft materials, human factors, electrical systems, cyber security, airport safety, and airport pavement. This is the world's largest research laboratory under one roof and it is located here in New Jersey.

After the tragic events of 9-11, the role of the Tech Center became much more important as a national security asset because the Tech Center also houses important tenants including the Department of Homeland Security's Transportation Security Laboratory; the Department of Homeland Security's Federal Air Marshal Training Program; the U.S. Coast Guard Air Station Atlantic City, and the 177th Fighter Wing of the New Jersey Air National Guard.

We realized that Atlantic City International Airport and the FAA Tech Center are hidden gems and could form the bedrock of an entire AVIATION INNOVATION HUB in the southern New Jersey region.

We are thinking big. We are attempting to create ... almost from scratch and by force of will ... an entire, new industry cluster in New Jersey. An innovation economy based around aviation. I really don't know of anyone else in the country taking on something so ambitious, but we are doing it out of necessity. We have been doing it from the ground up.

Atlantic County backed the debt to finance a $22 million state-of-the-art aviation research and development office park, known as the National Aviation Research and Technology Park (NARTP). We are planning a grand opening of the first 66,000 sq. ft. aviation research building this May.

It has not been easy and we have more to do, but by all indications, we are succeeding. We have active lease negotiations underway with multiple corporate tenants for our first building. We hope to create hundreds of new jobs in this first building. We are now starting to think about financing a second building. But we are not just building an office park. We recognize that modern industries are driven by innovation, especially in states like New Jersey, where costs are higher.

We are also taking a regional approach, drawing in veterans and economic activity at the Joint Base McGuire-Dix-Lakehurst as well as aviation drone research and development activities in Cape May. We are competing on quality ... not just the cost ... providing businesses with access to talent from technical schools, colleges, and research universities. We are building a network unequaled anywhere else in New Jersey of strategic and academic partners, so desperately sought after by today's modern, high-tech, high-paying industries.

12/x

We are succeeding and industry is letting us know. Companies like Lockheed Martin, General Dynamics, and even Boeing are now fully engaged with us and at our door looking for opportunities to join our efforts. In addition to our strategic partners in the region, including the FAA, we are extremely proud of the academic partners we have brought into our AVIATION INNOVATION HUB, including:

- Atlantic County Technical Schools
- Atlantic Cape Community College
- Stockton University
- New Jersey Institute of Technology
- Rowan University
- The National Institute of Aerospace, and
- Embry-Riddle Aeronautical University – the world's leading university for aviation research and education.

Fortunately, our efforts align almost perfectly with what I think we are all trying to achieve and direction I see from the Legislature and Murphy Administration. The questions is: How do we continue making progress?

My focus is the same as yours: *"Which areas of the economy should be prioritized to optimize the economic health of the State and foster an environment that will sustain economic growth and create a robust quality of life for the residents of the state?"* I also ask ... how do we get there? What type of business incentives and programs work best?

From my 28 years of experience in Trenton, the details matter. The programs matter. The types of incentives matter. Projecting business-friendliness matters. The industries I am trying to attract to New Jersey are paying close attention. They know it may cost more to move and do business here but they are willing to come if they feel welcome at all levels ... local, county, and state. The layers of government in New Jersey need to realize that we are all in this together. There is fierce competition from other states and regions all over the country.

The State has been a great partner so far. Tim Sullivan and his staff at the New Jersey Economic Development Authority have been terrific, providing a $100,000 grant to help us develop an Aviation and Wind Energy Technical Training Academy. We've hosted visits and tours with EDA senior staff, Labor Commissioner Robert Asaro-Angelo, and Lieutenant Governor Sheila Oliver.

But members of the aviation industry outside the state remain nervous about our business climate and the uncertainty around New Jersey's business incentive package. I really believe they are closely watching signs from Trenton. Is there anything else the State and the Legislature can do to help? I believe the answer is yes. EDA's current business attraction and retention incentives are due to expire this July 1. Help me show the aviation industry that New Jersey means business.

Our strategy and our programs should be consistent with some of EDA's existing incentive programs, driving businesses into the state's most needy regions, including our Garden State Growth Zones. As you know, the entire one-mile region around Atlantic City International Airport is New Jersey's only formally designated Aviation District and became our sixth Garden State Growth Zone. These designation's, along with a large portion of the Aviation District being recognized as a federal Opportunity Zone, will be extremely helpful in driving business to the area.

But it takes time to develop an innovation ecosystem and we have a truly unique opportunity not only for southern New Jersey but also for the entire state. For the first time, New Jersey can thoughtfully and geographically centralize an entire industry cluster in a relatively small area ... in one of the most distressed parts of the state.

To my knowledge, the Governor is recommending that we let our current suite of business incentives sunset to be replaced by:

- NJ Forward
- NJ Aspire
- Brownfield Tax Credit Program
- Historic Preservation Tax Credit Program
- NJ Evergreen Innovation Fund

I applaud this holistic approach and especially the Governor's interest in making sure all New Jersey taxpayers get the best return from our incentive programs. I applaud NJ Forward's flexibility and commitment to smaller, high-growth companies. I support the concept of donating to a local infrastructure fund instead of "gold plating" office buildings to meet capital investment requirements. But let's consider keeping aspects of the Grow New Jersey program that have worked well in attracting businesses and the jobs they bring to our state. Senate President Sweeney, Assembly Speaker Coughlin, and key members of the Legislature deserve credit for their role in crafting an incentive program that has been a game-changer in many respects. This program has put New Jersey and Atlantic County, especially our Aviation District, in a competitive position to attract a new industry and new wealth to the region.

Let's drive business and innovation to our Aviation District and provide the most significant awards to companies in Garden State Growth Zones. Let's keep maximum awards in Garden State Growth Zones at or near $15,000 a job, instead of $6,400 in the New Jersey Forward Program. Let's consider adding a bonus for businesses who become part of New Jersey's Innovation Economy or an identifiable Industry Cluster. If there is an annual statewide cap on awards, let's consider increasing it significantly from $200 million, assuming the State receives at least 110 percent return on investment. Let's provide a thoughtful, verifiable business retention incentive for New Jersey companies that become part of our Aviation Innovation Hub or who are part of an identifiable Industry Cluster.

Details are important when drafting and implementing legislation. Well intentioned incentive programs can and do become an administrative nightmare for the State. I have even seen some programs become counterproductive – chasing businesses away – when not executed correctly. I encourage the Legislature and the Murphy Administration to set up a mechanism to solicit comments or feedback on incentives legislation prior to AND after enactment. The State may even want to allow some of this feedback to be anonymous.

I encourage the State to give us more time to take advantage of our Aviation District's designation as a Garden State Growth Zone and help us continue building on our tremendous progress. Careful consideration should be given to creating a matching grant fund by the state to be used by local and county economic development entities like mine, who need matching funds to acquire federal grants. Finally, with the way that the aviation, defense and high tech industries are organized today, consideration should be given to including subcontractor benefit language in the state's incentive package similar to what was in the original legislation that established the Garden State Growth Zone for the Atlantic City International Airport.

As you can see, we are thinking big in Atlantic County. Please partner with us to build, market, and sustain New Jersey's Aviation Innovation Hub. I invite all of you to come to our aviation research park for a tour to see our efforts to make Atlantic County and southern New Jersey the world's best Aviation Innovation Hub.

Thank you for your time and I am available to answer questions from members of the committees.

Good morning, David Henderson, Principal HHG Development; we are the developers of Roebling Lofts and Roebling Center in Trenton.

Roebling Lofts the 138 unit residential factory conversion is almost fully leased, but the buildings slated for office uses have not secured tenants to date

- We got close twice, but both times corporate headquarters elected not to risk relocating their employees. Behind this is a concern about what will happen in Trenton in long term as these would have been fifteen year commitments to secure GrowNJ incentives. Parking was also difficult to handle: even with incentives, the cost of structured parking led to crazy above market lease rates.
- To secure the first major private sector employer, we need a commitment from the State for the long haul, that the State will provide the resources to make it work, that if you as a business owner take a chance you will not regret it. And part of that needs to be a commitment to fund needed infrastructure such as parking. Right now, Trenton needs three parking garages to allow development to occur, on our site, on the County's other development sitein the Wire Rope District and downtown.

Bat more is at stake than priming the pump to launch the revitalization of NJ's capital. In the new economy development is occurring in City centers, due to the preferences of millennials for an diverse, authentic, walkable place to live , work and play. The suburban job growth NJ saw in the 1980's will not be repeated. If New Jersey is to attract the job growth that is occurring now, it must create robust incentives needed to support reinvestment in its cities—particularly its cities which remain at best emerging markets. Otherwise the jobs will go to a few cities that border NYC and other states that have figured this out.

There is also a small move that will make an outsize impact in the new economy: a state historic tax credit. Now that development is occurring in traditional centers, redevelopment projects often involve historic structures. Even a modest state historic tax credit which mirrors federal program exactly will have a huge impact in moving projects forward in our underinvested urban centers, which also happen to be historic centers.

- In addition to the return on tax dollars of $4 gained for every tax credit dollar given out per a University of Maryland study, a state historic tax credit that matches the federal program will bring substantial additional federal funding to New Jersey. From 2002-2016, 1,286 projects moved forward with federal historic tax credit funding in Virginia, in New Jersey 151 in the same period.
- A state HTC would achieve many objectives through a very simple mechanism. As long as you match federal requirements, NJ DEP SHPO already vets projects for federal program, and the same review could

determine eligibility for state credit, at no extra administrative burden to the state and hopefully no extra cost to the entrepreneur.

- Historic tax credit would fund large and small projects.
- The program also achieves a workforce development objective naturally, without any oversight or management. Restoration work is labor intensive with lots of entry-level jobs. Our projects have created jobs for local residents, with an employee diversity that reflects the community in which we work.

New Jersey Business & Industry Association

NJBIA

Michele N. Siekerka, Esq.
President and CEO

Christine Buteas
Chief Government Affairs Officer

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Vice President

Andrew Musick
Vice President

Michael Wallace
Vice President

Tony Bawidamann
Vice President

Ray Cantor
Vice President

Nicole Sandelier
Director of Economic Policy Research

To: Members of the Senate Economic Growth and Assembly Commerce and Economic Development Committees

From: Andrew Musick, Vice President, Government Affairs

Date: March 8, 2019

Re: New Jersey's Economic Development Strategy

On behalf of our member companies that provide more than 1 million jobs in the state and make the New Jersey Business & Industry Association the largest statewide business association in the country, we appreciate the opportunity to submit testimony in regards to New Jersey's economic development strategy and its impact on business.

An updated NJBIA study once again finds New Jersey with the most challenging business climate in the region. This is attributed to the Garden State having the highest tax rates in the region; including, the top income tax rate, top corporate tax rate, state sales tax rate, and property tax rate. All of these rates make us the least competitive state in our region.

There are many great qualities that attract businesses to New Jersey, such as our highly educated workforce and accessibility to major markets, like New York City and Philadelphia. However, the high cost of doing business and high cost of living serve as a barrier to entry into our state. As such, tax incentives play a key role in keeping New Jersey competitive with surrounding states.

Across the nation, states utilize economic development incentives to create and retain jobs, and to encourage companies to relocate and expand within their borders. However, comparing state to state tax incentives can be a difficult task, as states tailor and create incentives based on their individualized economic characteristics, and the cost of doing business in their particular state. Ultimately, these investments create additional employment opportunities for residents, who, in turn, support a healthy, growing economy.

New Jersey is no different. Our innovative economic development incentive programs position the state to "come out on top" in an extremely competitive environment by enticing companies to relocate, expand and invest within our borders versus a regional competitor. New Jersey is a very costly state. Therefore, economic development incentives are an essential tool to help level the financial playing field between states. These incentives help to offset economic obstacles, such as high taxes and a high cost of living, to make New Jersey more competitive and affordable.

The State revamped its programs with the "Economic Opportunity Act of 2013," taking great care to make sure that the incentives provided would deliver the promised benefits. As a result, New Jersey's incentives are all performance-based. Companies have to earn their benefits by generating new tax revenue and satisfying all job and capital investment requirements. If the jobs created or retained drop below the required amount, the company is no longer awarded the credit. Furthermore, the program has a strict net benefits test which requires that revenues raised as a result of incentives generate at least 110 percent of the cost of the tax credit.

Nonetheless, as economic conditions continue to improve and past investments continue to take shape, there is always room to analyze and redefine the state's economic development incentives. Policymakers are currently examining the Grow New Jersey Assistance (Grow NJ) and Economic Redevelopment and Growth (ERG) programs that expire on June 30, 2019.

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NJBIA believes that responsible tax incentives play a key role in our economic development strategy to attract and retain both large and small businesses. It should be our goal as a state to become a regional, national, and world leader in retention and attraction of business. Additionally, NJBIA continues to support transparency, along with sufficient monitoring and oversight of these programs to ensure that the state is getting the most back for its investments.

As policymakers move forward and design the economic development incentives of tomorrow, NJBIA submits the following recommendations:

- Concentrate incentives primarily on new jobs, rather than for "retained" existing jobs at risk of relocating from New Jersey or being eliminated;
- Further increase the State's return on investment on incentives in terms of new employment, capital investment, and overall economic and fiscal benefits;
- Continue to strengthen program governance, increasing the documentation required on the amount of incentives needed for New Jersey to be successful in winning on a project-by project basis;
- Further expand access to small business and rapidly growing technology companies;
- Focus a percentage of future investments on high-growth sectors (Life Sciences, Information Technology, Financial Services, Pharmaceuticals, Manufacturing and Transportation/Logistics), leveraging large economic development impacts for New Jersey;
- Exercise caution on the use of caps on total awards, as market and economic conditions may shift.

Additionally, NJBIA has been a leader in helping New Jersey reclaim its stature as the innovation state. Earlier this year, NJBIA released a report titled Indicators of Innovation, which shows New Jersey at a challenging crossroads in its efforts to reclaim itself as the "Innovation State." In order to help jump-start and sustain an innovation ecosystem, NJBIA sets forth the following recommendations:

- Analyze the impact a policy will have on New Jersey's overall regional business climate prior to implementation;
- Increase thresholds for those investing in R&D and small emerging technology businesses, specifically the Research and Development Tax Credit and the Angel Investor Tax Credit;
- Increase venture capital investment throughout the state to attract startup companies that spur economic development and create jobs;
- Support New Jersey colleges/universities to drive increased federal R&D funding to their institutions;
- Increase incubators and accelerator presence at/near our research institutions;
- Provide employers with the flexibility to structure their workforce in a way that is reflective of the innovation economy.

Moving forward, NJBIA is committed to creating a business climate that drives economic growth and job creation here in New Jersey and we look forward to working with you in this endeavor. We thank you for the opportunity to submit testimony and for your consideration of our views. Should you have any questions or need further information, please feel free to contact me directly at 609-858-9512.

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& Industry Association
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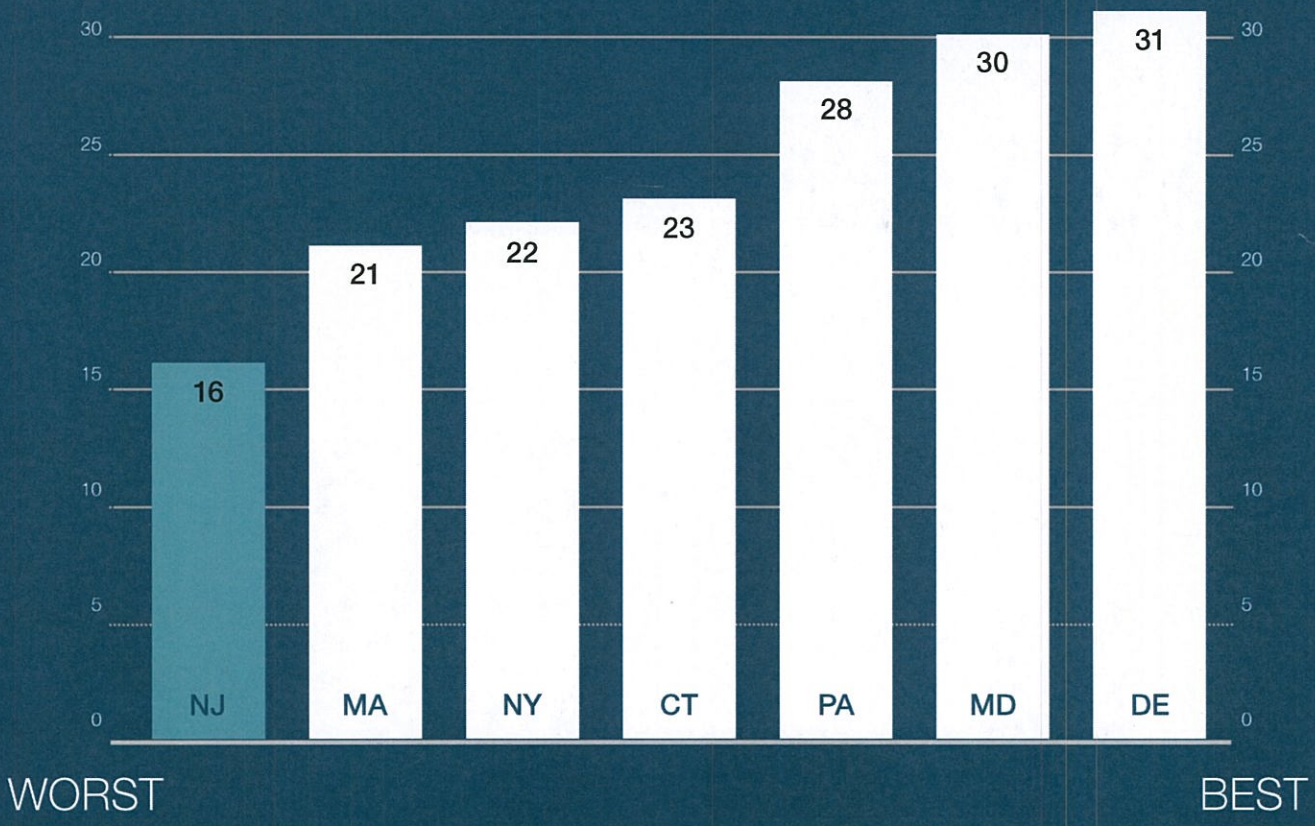
2019 Regional Business Climate

New Jersey Remains Worst in Region

Overall Regional Business
Climate Score



For more information, contact
Nicole Sandelier @ nsandelier@njbia.org

March 2019

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2019 Regional Business Climate

An NJBIA State Level Analysis

METHODOLOGY: NJBIA tracked six individual business costs – minimum wage rate, top income tax rate, top corporate tax rate, sales tax rate, property taxes as a percentage of personal income, and the top unemployment tax rate – and compared New Jersey's rates with those of Connecticut, Delaware, Maryland, Massachusetts, New York and Pennsylvania.

NJBIA scored the regional rates from 1 (least competitive in the region) to 7 (most competitive). Overall, the higher the total points, the more competitive a state is. New Jersey's cumulative regional business climate score was 16 after totaling the six rates, ranking seventh in the region. Delaware has the best regional score at 31, followed closely by Maryland at 30. Pennsylvania (28) and New York (22), New Jersey's largest outmigration states, finished third and fifth, respectively.

2019 Regional Rates

State	Minimum Wage Rate	Top Income Tax Rate	Top Corporate Tax Rate	State Sales Tax Rate	Property Tax Paid as a % of Personal Income	Top Unemployment Tax Rate	Overall Regional Business Climate Score
Delaware	$9.25 (6)	6.60% (4)	8.70% (3)	0.00% (7)	1.78% (7)	8.20% (4)	31 (1)
Maryland	$10.10 (T4)	5.75% (5)	8.25% (T5)	6.00% (T5)	2.67% (6)	7.50% (5)	30 (2)
Pennsylvania	$7.25 (7)	3.07% (7)	9.99% (2)	6.00% (T5)	2.92% (5)	11.03% (2)	28 (3)
Connecticut	$10.10 (T4)	6.99% (3)	8.25% (T5)	6.35% (2)	4.12% (3)	6.80% (6)	23 (4)
New York	$11.10 (2)	8.82% (2)	6.50% (7)	4.00% (6)	4.54% (2)	9.10% (3)	22 (5)
Massachusetts	**$12.00 (1)**	5.10% (6)	8.00% (6)	6.25% (3)	3.51% (4)	**12.65% (1)**	21 (6)
New Jersey	$10.00 (5)	**10.75% (1)**	**11.50% (1)**	**6.625% (1)**	**5.01% (1)**	5.80% (7)	16 (7)

Sources:

- National Conference of State Legislatures. (2019). State Minimum Wages- 2019 Minimum Wage by State.
- State Government Websites.
- Tax Foundation. (2018). 2019 State Business Tax Climate Index.

For more information, contact
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March 2019

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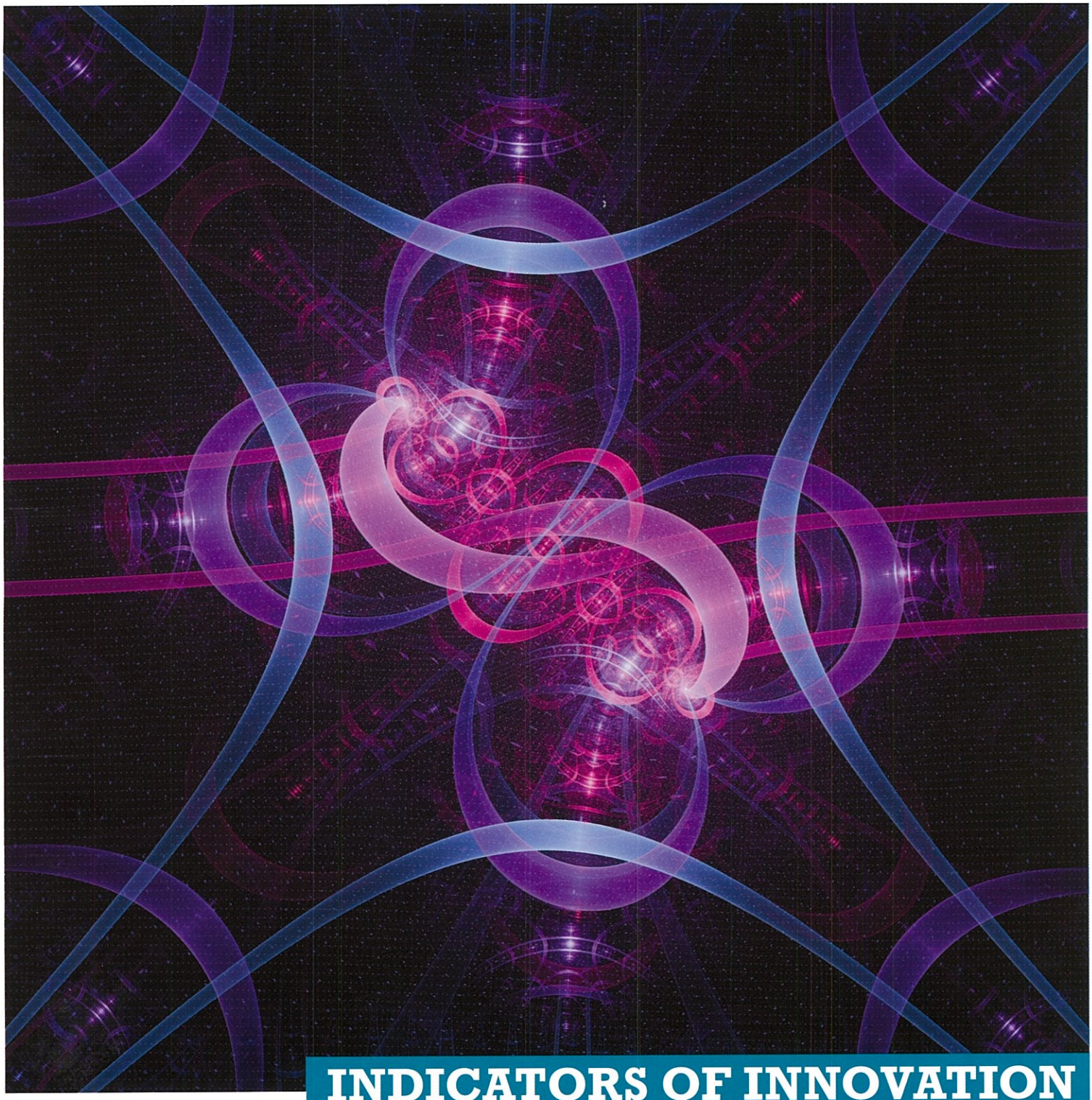

INDICATORS OF INNOVATION

NJBIA
New Jersey Business & Industry Association

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Executive Summary

New Jersey is at a crossroads. Once heralded as the innovation capital, today New Jersey is working to reclaim its stature as the "Innovation State." The competition is fierce and regional competitors are winning. Why?

This paper looks at the "Indicators of Innovation" and ranks them among our regional states in order to understand where New Jersey is ranked today and how to begin to set goals to increase our standings. A deeper analysis is also taken with a direct comparison to Massachusetts, where we learn about additional best practices and ancillary actions that can help jump-start New Jersey's journey. Our findings are supported by our research as well as information gathered from NJBIA's April 2018 program, "A Tale of Tech Cities – Innovation & Urban Revitalization." It is the information gleaned from the latter which supports our Case Study found later in this report.

New Jersey possesses all the qualities that are needed to reinvent and grow an innovation ecosystem: an ideally centralized location, nationally recognized K-12 academics, quality higher education institutions, and a highly educated, highly skilled workforce. If the state leverages these assets, it can reclaim its competitive edge. This will require the Garden State to attract top-tier talent to New Jersey's postsecondary institutions, build "live, work and play" communities, increase venture capital investment, and target industry clusters for growth.

However, achieving these initiatives alone will not address today's reality that New Jersey is lagging in regional competitiveness and affordability. As such, a sustainable plan will balance these initiatives with plans for tax and regulatory reform, as well as smart infrastructure investments.

This can be done with the coordination and willingness to make tough decisions in the short term that will reap great returns to the state in the long run. We cannot expect to leave this task to government alone. Coordination with academia, business and government will be necessary to make this a reality.

New Jersey possesses the qualities that are needed to reinvent and grow an innovation ecosystem: an ideally centralized location, nationally recognized K-12 academics, quality higher education institutions, and a highly educated, highly skilled workforce.

Reclaiming NJ's Stature as the Innovation State

BY NICOLE M. SANDELIER | NSANDELIER@NJBIA.ORG

In the days of Thomas Edison, Nikola Tesla, and Alexander Graham Bell, the Garden State reigned as the "Silicon Valley" of the East, acting as a model of growth and innovation for other states.

However, New Jersey now lags behind our regional competitors in the innovation realm.

Over the course of the last few years, NJBIA has studied the concept of innovation in depth. This study analyzes 12 indicators of innovation and compares New Jersey with regional competitor states. The innovation indicators are broken into three major categories that NJBIA has determined as imperative to recreating a successful innovation ecosystem: capital, talent, and business.

Once heralded as the innovation capital, today New Jersey is working to reclaim its stature as the "Innovation State." The competition is fierce. Regional competitors are winning – and winning big.

CAPITAL

Capital is the lifeblood of any business. Venture and innovation projects are no different. The amount of cash flow in and to a state dictates the opportunities available to individuals and to businesses. In this report, capital is measured four ways: venture capital investment; Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) award obligations; research & development state expenditures; and National Science Foundation awards.

TALENT

A highly educated, highly skilled workforce plays a significant role in creating an innovation ecosystem. Top-tier institutions serve as incubators for innovation. In order to understand statewide talent networks, this category analyzes: the number of colleges/universities ranked in the Top 100 in each state; net migration of first-time college students; percentage of the population with a graduate or professional degree; and the rate of new entrepreneurs.

BUSINESS

Without business there is no economy. Having a competitive business climate can make or break a state's ability to attract and retain innovative businesses. A healthy/competitive business climate can spur innovation, while an unhealthy/uncompetitive climate will deter innovation in a state. For the purposes of this report, business includes: the number of patents issued; startup density; percentage increases in total business; and NJBIA's regional business climate score, which encompasses a range of taxation factors.

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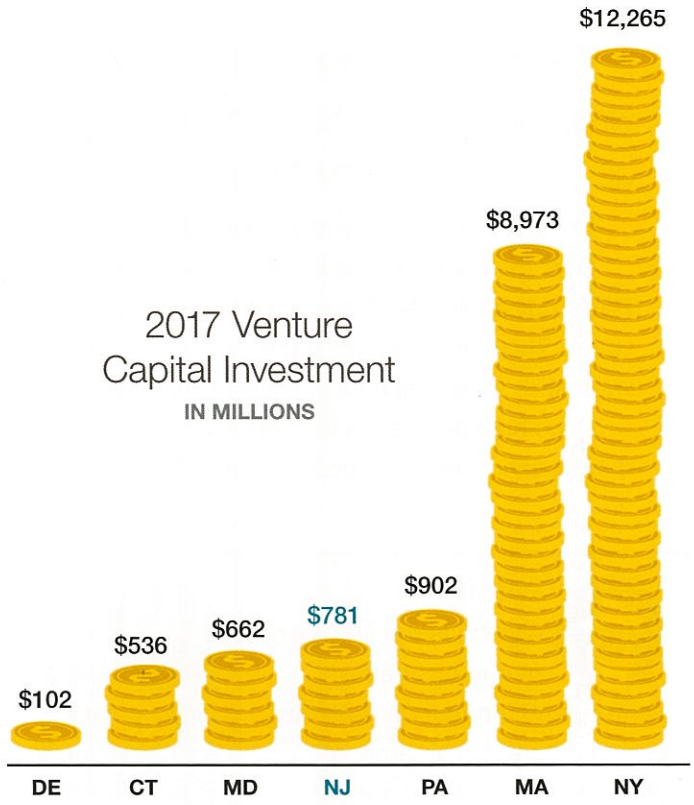
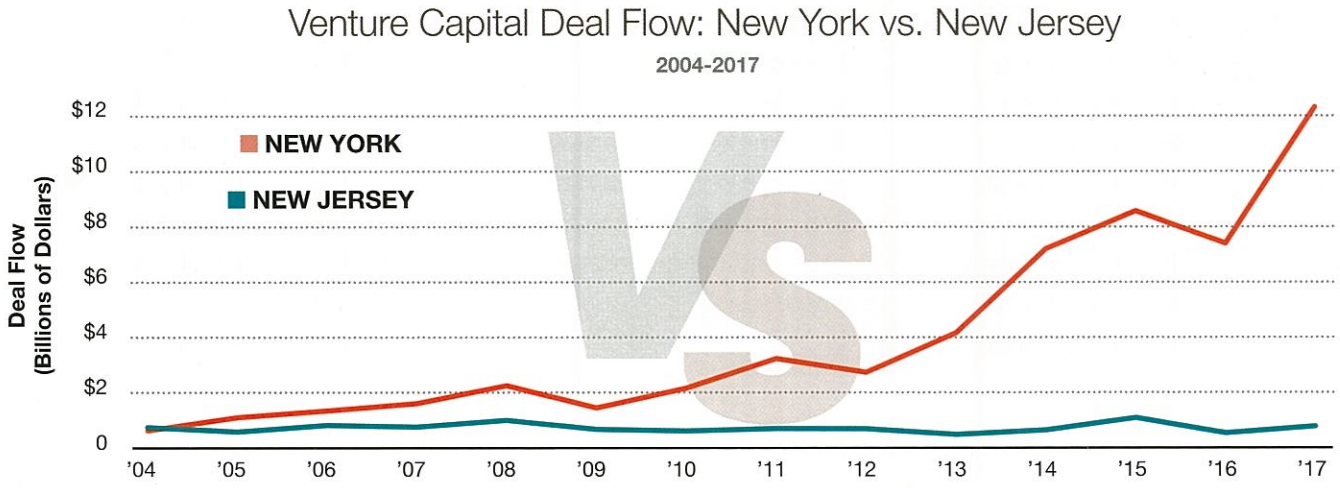
INDICATOR 1

Venture Capital Investment

Today, venture capital plays an enormous role in creating and expanding innovative concepts from startups to commercialization. According to the National Venture Capital Association (NVCA), New Jersey received just $781 million in deal flow investments in 2017. During the same year, Massachusetts and New York received $8.97 billion and $12.27 billion, respectively.

An NJBIA analysis of NVCA data found that overall New Jersey increased its investment levels at a lower rate than every state in its region between 2004 and 2017. New Jersey experienced a 4 percent increase in venture capital investment, while New York led the states in our region by increasing its investment levels by 1,910 percent.

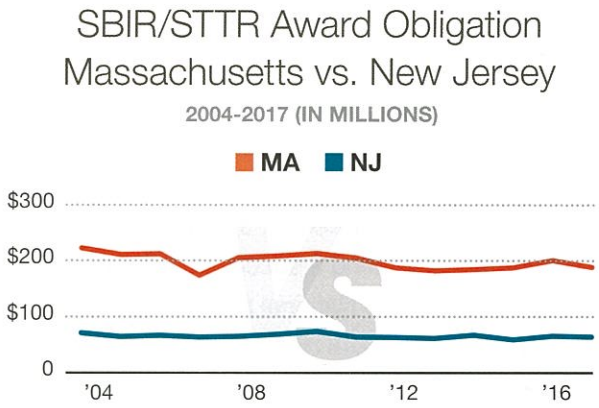




INDICATOR 2

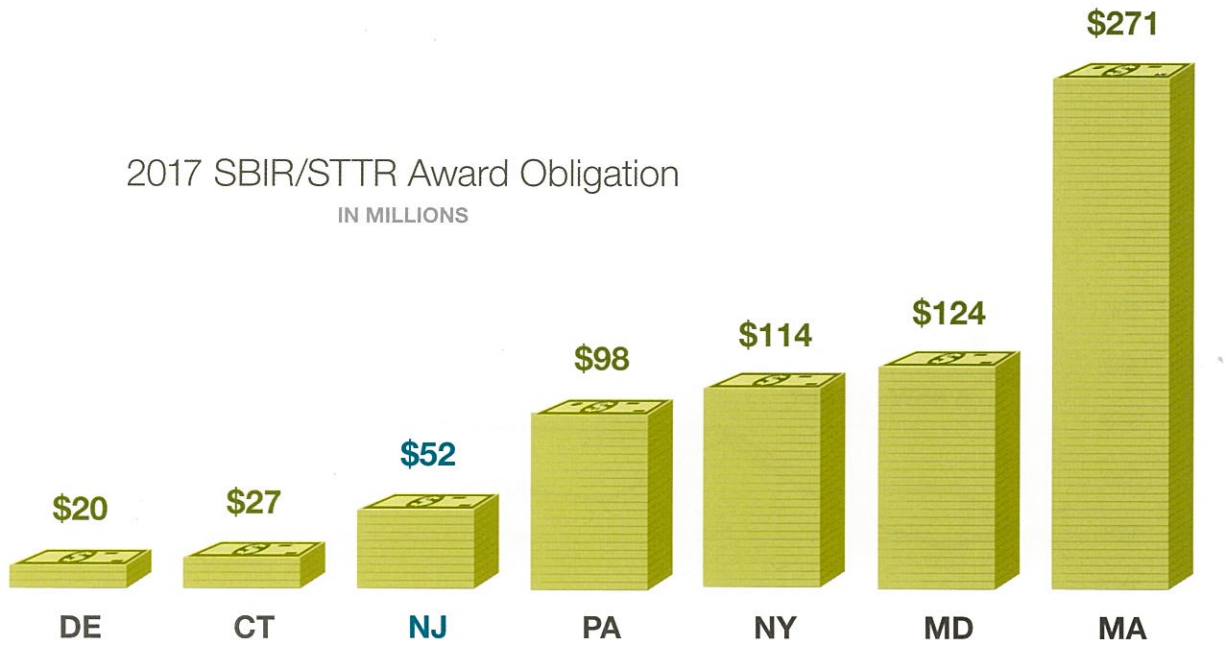
SBIR/STTR Award Obligation

The federal government plays an enormous role in funding research and development (R&D) activities that ultimately foster innovation. The Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs were designed to ensure that small businesses were not forgotten in federal R&D funding efforts.[1] Comprised of 11 federal agencies, the SBIR/STTR programs award funds annually to small businesses on a competitive basis.



According to SBIR/STTR, New Jersey companies received $51.66 million in award obligation in 2017. During the same year, regional leader Massachusetts was awarded $270.97 million, more than five times the award obligation of New Jersey.

An NJBIA analysis found that from 2004 to 2017, regional leader Massachusetts far outpaced New Jersey (and the rest of the region) in total award money received, despite experiencing a 20 percent decrease in federal award obligation.



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INDICATOR 3

R&D State Government Expenditures

While state R&D expenditures are small compared to federal expenditures, state governments should be eager to invest in and promote innovative activities within their borders.[2] According to the National Science Foundation, the primary modes of investment have historically included public financing, tax relief, and subsidies; however, R&D investment at the state level is also a key contributor to creating a successful innovative ecosystem.

According to the National Science Foundation, New Jersey invested $30.48 million in R&D expenditures in 2016. Regionally, three states invested less than New Jersey, while three states invested more. New Jersey invested significantly less than Connecticut and Pennsylvania, which spent $49.46 million and $73.18 million, respectively. In addition, regional leader (and outlier), New York invested in excess of $400 million in 2016, far exceeding the investment of all regional states combined.

In 2010, New Jersey investment in R&D hit a 10-year peak, mirroring the investment totals of Connecticut. However, after 2010 New Jersey never reached or exceeded the state's 10-year high. On the contrary, Connecticut continued to increase investment through 2015.

2016 R&D State Government Expenditures: New York vs. Rest of Region

IN MILLIONS

New York

Rest of Region (Combined DE, CT, MD, **NJ**, PA, MA)

R&D State Expenditures: Connecticut vs. New Jersey

2006-2016*

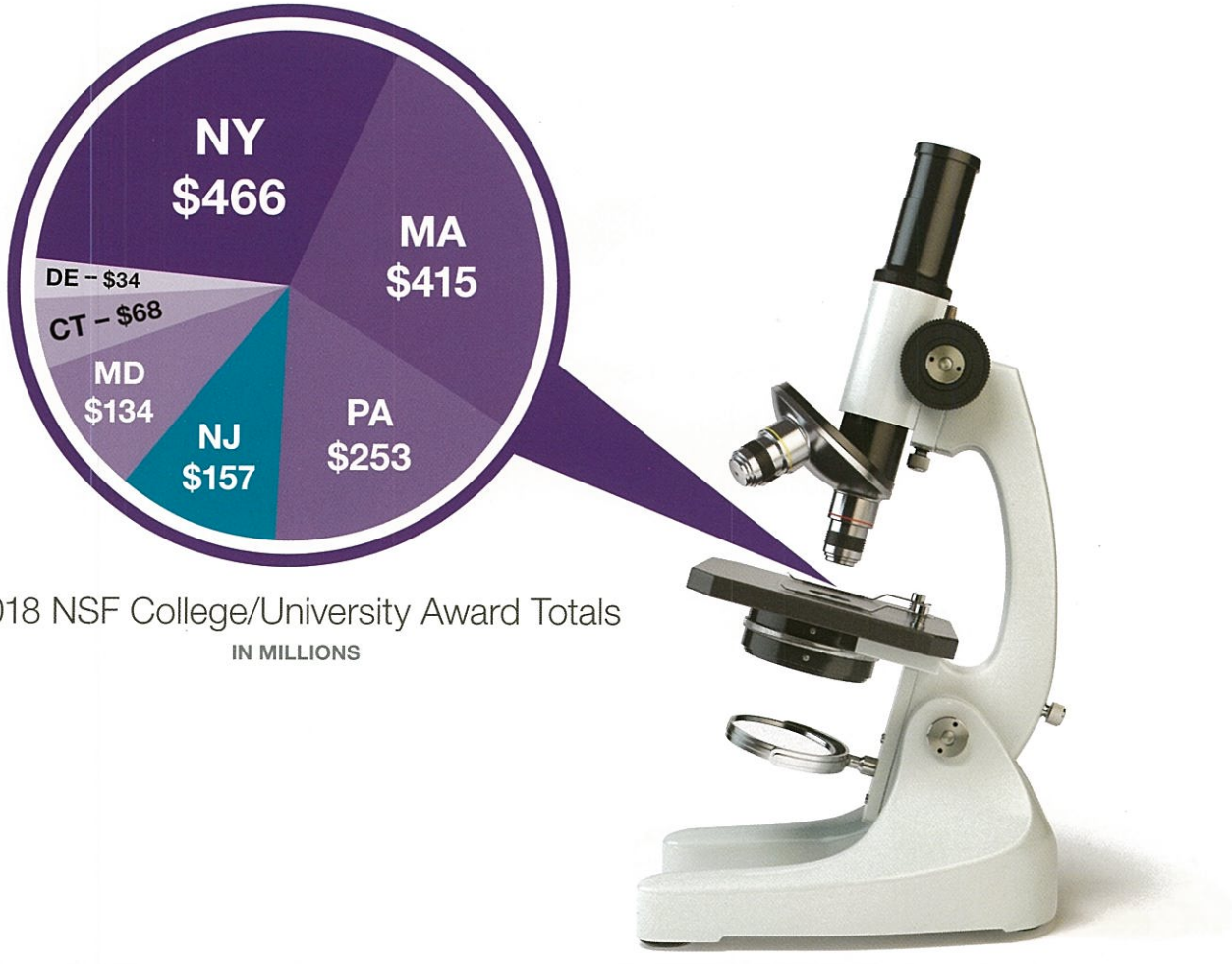
*NO DATA AVAILABLE FOR 2008

INDICATOR 4

National Science Foundation College/University Award Totals

The amount of award money colleges and universities receive from the federal government directly affects an institution's capability to research and develop innovative ideas. Tasked with keeping the United States at the "leading edge of discovery," the National Science Foundation (NSF) funds research and education in the fields of science and engineering and is the leader in agency funding for institutions that support top-tier innovation.[3]

According to the NSF, New Jersey received $157 million in NSF funding in 2018. New Jersey received significantly less money than regional competitors Pennsylvania, Massachusetts, and New York, but more than Connecticut, Delaware, and Maryland.



2018 NSF College/University Award Totals

IN MILLIONS

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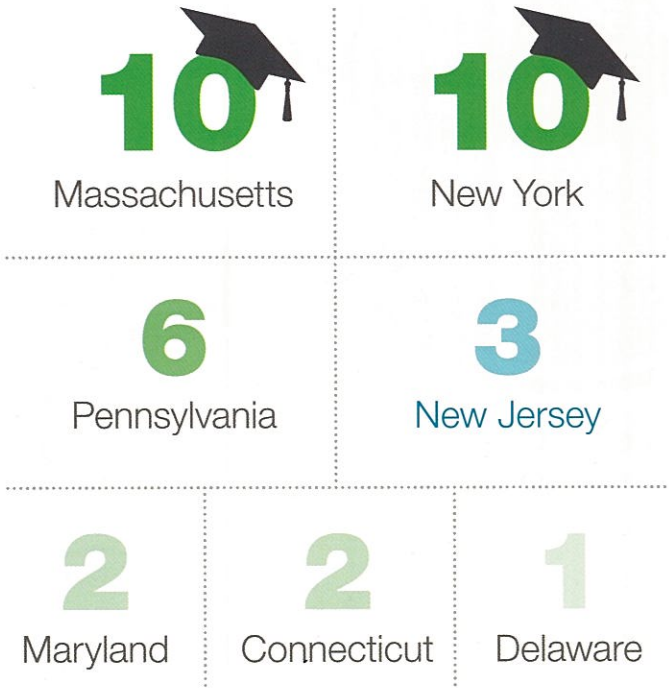
INDICATOR 5

Number of Colleges/Universities Ranked in the Top 100

Whether a student is seeking an undergraduate degree, a master's degree, or a doctorate, attracting top-tier candidates to postsecondary institutions is an essential component in creating an innovation ecosystem. After analyzing the 2018 overall university rankings from *U.S. News & World Report*, it can be concluded that Massachusetts and New York both house 10 "Top 100" colleges/universities within their borders, the most in the region. New Jersey is home to three.

Of the 10 ranked universities in Massachusetts, seven are located within a 10-mile radius of Boston and are ranked within the Top 40 universities in the country. The close proximity of numerous Massachusetts universities located within a major urban city provides an ideally centralized location for competition to spur and thrive, ultimately stimulating an innovation ecosystem. By comparison, New Jersey's three top-ranked universities are geographically dispersed.



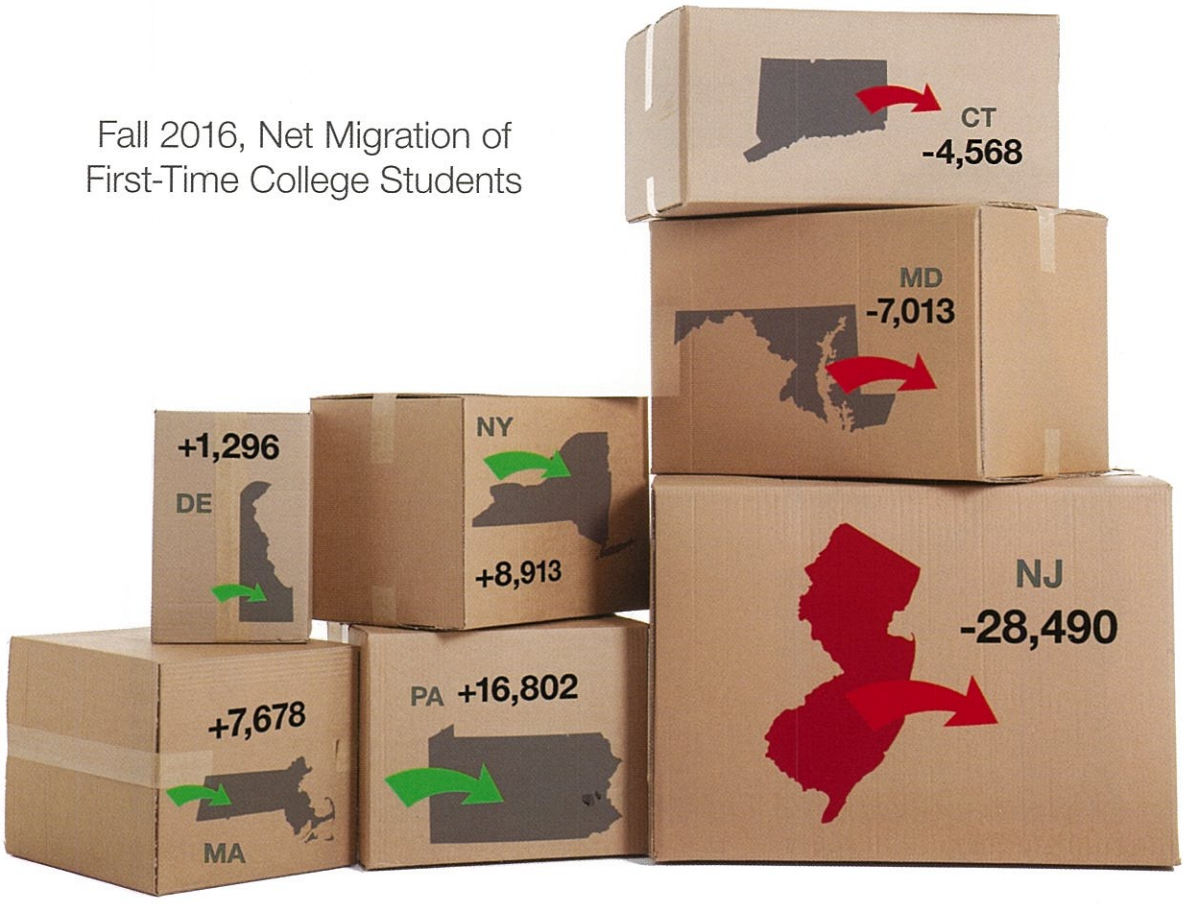
INDICATOR 6

Net Migration of First-Time, Full-Time College Students

Given that New Jersey offers top-tier K-12 education, the migration of New Jersey's first-time college students is an integral component to the state's innovation ecosystem. As such, a net loss in migration patterns signifies a loss in top-tier talent. Typically, two primary factors motivate the migration decisions for individuals ages 18-34: where to continue their postsecondary education and where to begin their careers.

According to the National Center for Education Statistics, in the fall of 2016, New Jersey experienced the largest net loss of first-time students both regionally and nationally, losing a net total of over 28,000 students. In comparison, regional leader Pennsylvania experienced a net gain of nearly 17,000 students.

Fall 2016, Net Migration of First-Time College Students



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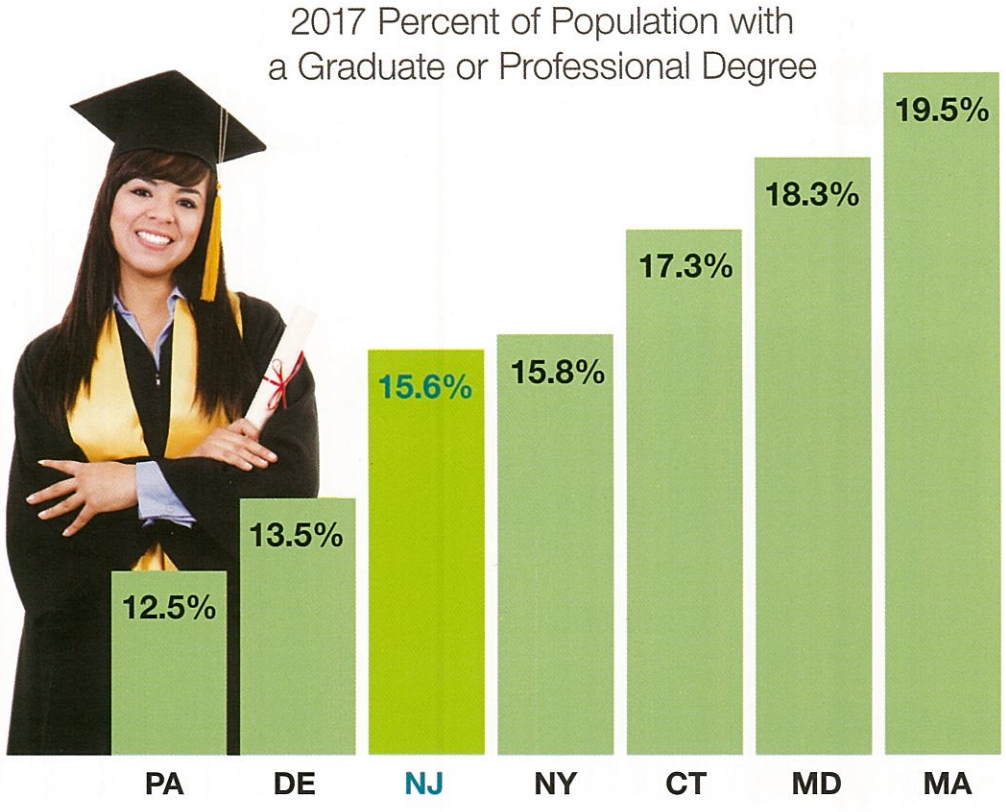
INDICATOR 7

Percentage of Population with a Graduate or Professional Degree

A highly educated, highly skilled workforce is a significant aspect of an innovation ecosystem. According to McKinsey & Company, the demands of innovators have never been greater; thus, innovative leaders need to hire individuals who possess diverse skill sets and are able to work on multiple projects simultaneously. Oftentimes those possessing the qualities needed to work within innovation industries are individuals with graduate and professional degrees, including, but not limited to, a master's degree or a doctoral degree.

According to the U.S. Census Bureau, 15.6 percent of New Jersey's population possessed a graduate or professional degree in 2017. In comparison, regional leader Massachusetts's graduate and professional degree holders represented 19.5 percent of the state's total population.



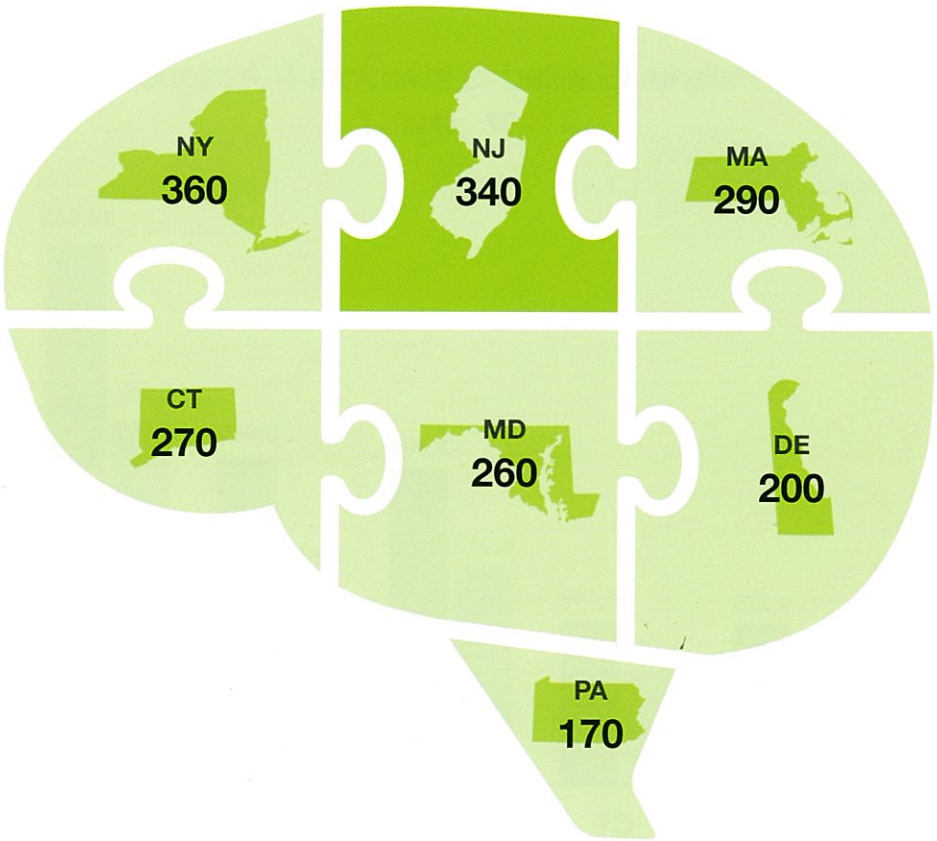
INDICATOR 8

Rate of New Entrepreneurs

Another indicator of innovation is the rate in which new businesses are formed within a state. Every year the Kauffman Index produces the Rate of New Entrepreneurs as a component of its Startup Activity State Trends report. The Rate of New Entrepreneurs is a measure of startup activity that reflects the percentage of adult population in each state that starts a new business, "regardless of incorporation status and the number of employees."[4]

According to the Kauffman Index released in 2017, 340 adults started a business for every 100,000 people in New Jersey. The only state in the region to surpass New Jersey was New York, totaling 360 for every 100,000 adults starting a business.

RATE OF ENTREPRENEURS PER 100,000 ADULTS



14/x

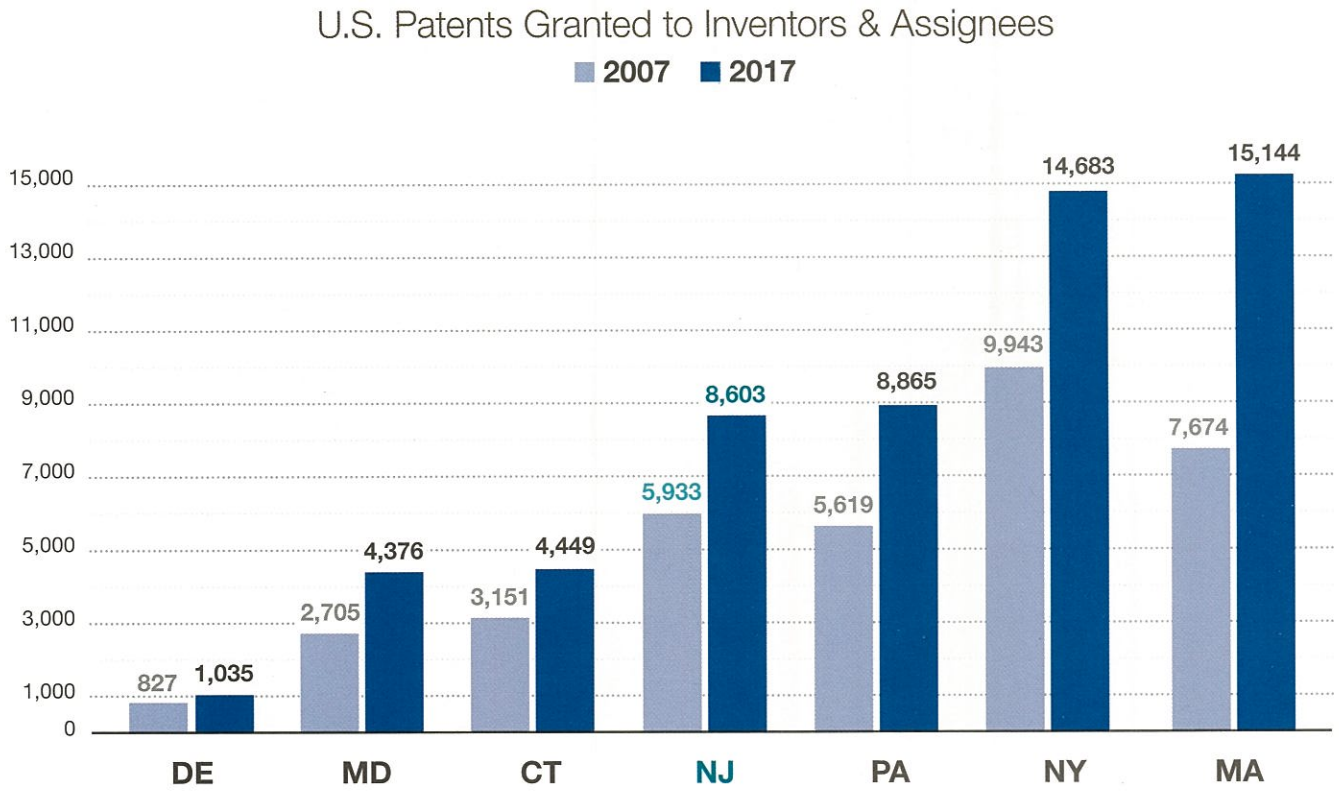
INDICATOR 9

U.S. Patents Granted to Inventors & Assignees

High levels of patent activity indicate a healthy and active innovative ecosystem. Patent activity signifies a successful translation from research ideas to commercialization. Perhaps not surprisingly, today patents are the primary form of "legal codification and ownership" of innovative ideas and its application.[5]

In 2017, New Jersey ranked 4th in the region, having been granted 8,603 patents. Border state Pennsylvania narrowly surpassed New Jersey, earning about 200 more patents. Massachusetts and New York far surpassed the Garden State, earning 15,144 and 14,683 patents, respectively.

From 2007 to 2017, Massachusetts experienced a 97 percent increase in U.S. patents granted, surpassing New York to take the regional lead. In 2007, New Jersey earned a greater number of U.S. patents in comparison to Pennsylvania. However, Pennsylvania experienced a larger percentage increase in patents overall between 2007-2017, ultimately surpassing New Jersey.



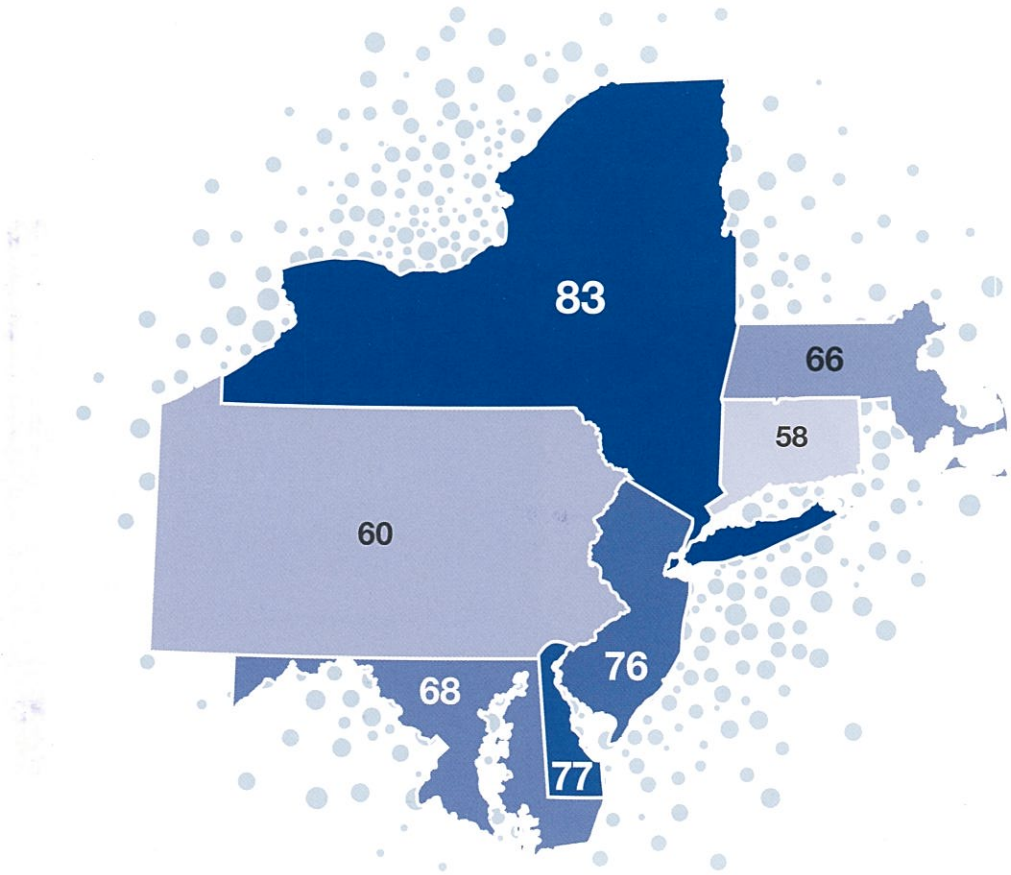
INDICATOR 10

Startup Density

The Kauffman Index also measures the number of startups per 1,000 employer businesses.[6] A startup occurs when an entrepreneur begins to secure financing, to create business structure, and to initiate operations.[7] Startups are a key component of a successful innovation ecosystem because they signify that entrepreneurs are working toward the commercialization of new products, ultimately increasing economic activity in a state.

According to the Kauffman Index, New Jersey's startup density was 76.1 per 1,000 employer firms in 2017. New Jersey ranked 3rd in the region behind New York and Delaware, which experienced a startup density rate of 83.3 and 77.0 per 1,000 firms, respectively.

STARTUP DENSITY FIRMS PER 1,000 EMPLOYER FIRMS



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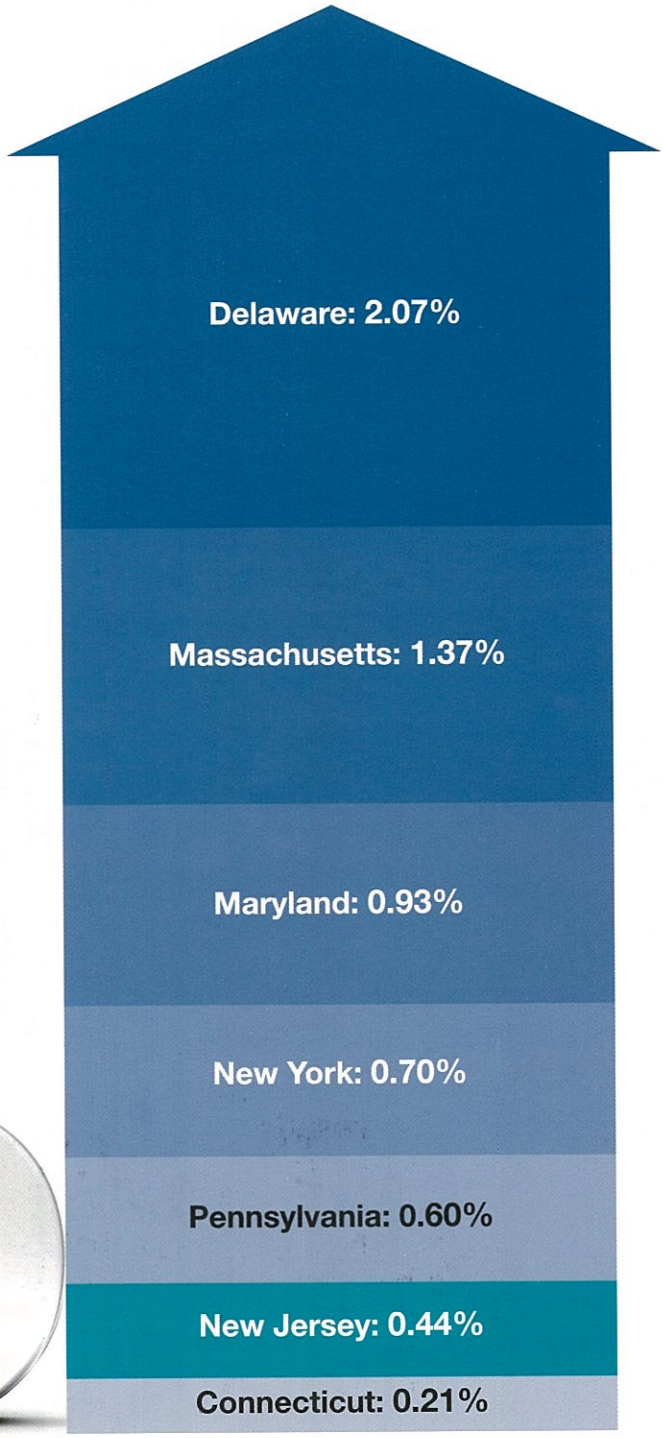
INDICATOR 11

Percentage Increase in Total Business

Centrally located between Philadelphia and New York City, New Jersey has the distinct advantage of location; thus, it should be easy to attract and retain business in New Jersey. An increasing number of businesses in a state signifies a growing economy that enhances an innovative ecosystem. Bottom line, businesses attract talent and talent spurs innovation.

From 2015 to 2016, New Jersey experienced a 0.44 percentage increase in total businesses, according to an NJBIA analysis of U.S. Census Bureau data. During this time the Garden State experienced a net increase of approximately 1,000 businesses throughout the state. Despite an increase in businesses, New Jersey ranked 6th in the region. In fact, only Connecticut fared worse in the region.



% OF NEW BUSINESSES FROM 2015 TO 2016

1444

INDICATOR 12

Regional Business Climate

Whether a startup or large corporation, companies need a healthy business climate to thrive and grow; one that supports job growth and incentivizes investment. Currently, New Jersey's business climate is a challenging one and can hinder the potential re-creation of its innovation ecosystem. According to NJBIA's 2018 Regional Business Climate analysis, New Jersey ranked last in business climate competitiveness.[8] Further, the state's overall tax climate was negatively impacted by the passage of the FY 2019 budget, which included a corporate business tax surcharge and other challenges for businesses.

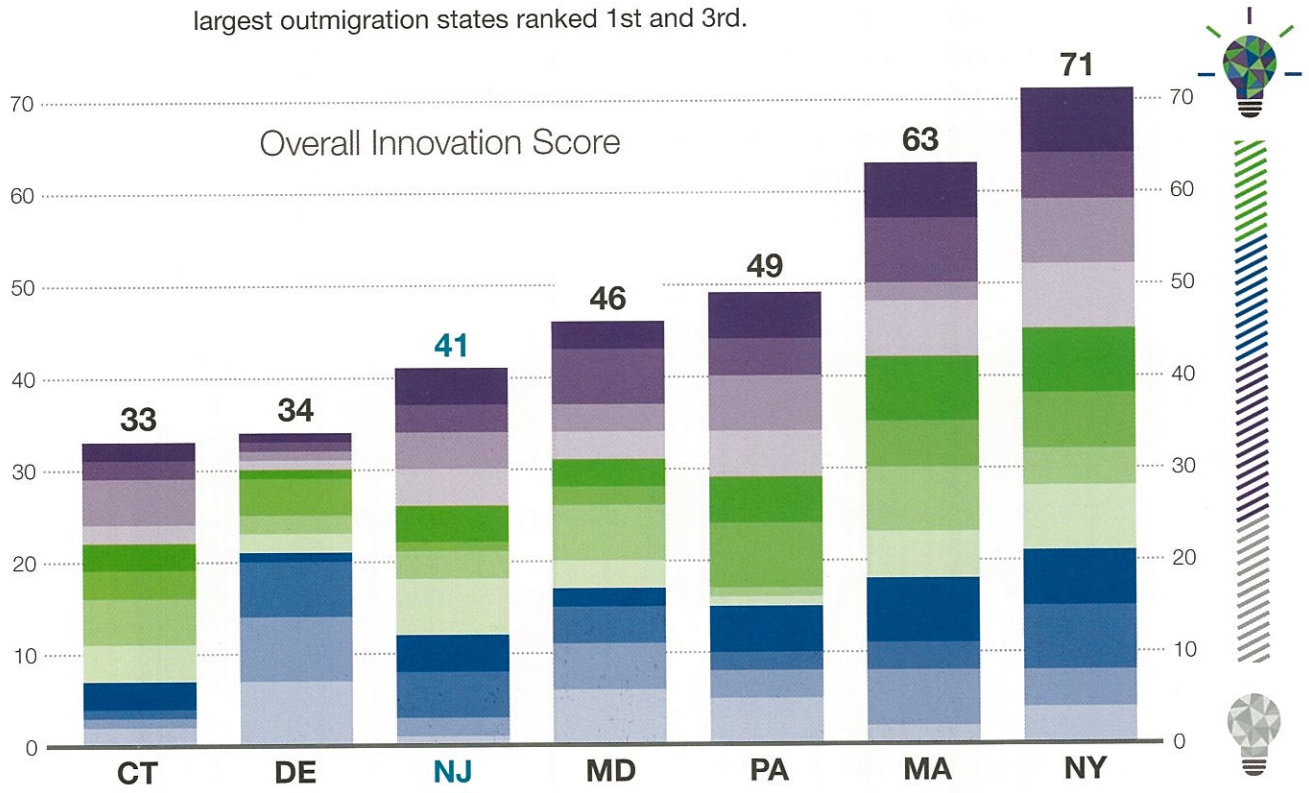
Of equal concern is the state's regulatory structure. According to NJBIA's 2019 Business Outlook Survey, 83 percent of respondents felt that New Jersey has not made progress over the last year in easing regulatory burdens for business and 59 percent said regulatory compliance was more costly in New Jersey than in other states.[9] New Jersey's current structure causes businesses to dedicate unwanted time, money, and energy to satisfy compliance and regulatory issues.

2018 Regional Rates

State	Minimum Wage Rate	Top Income Tax Rate	Top Corporate Tax Rate	State Sales Tax Rate	Property Tax Paid as a % of Home Value	Top Unemployment Tax Rate	Overall Regional Business Climate Rank
Delaware	$8.25 (2)	6.60% (4)	8.70% (5)	**0.00% (1)**	**0.56% (1)**	8.00% (4)	**1 (17)**
Maryland	$10.10 (T4)	5.75% (3)	8.25% (T3)	6.00% (T3)	1.03% (2)	7.50% (3)	2 (18)
Pennsylvania	**$7.25 (1)**	**3.07% (1)**	9.99% (6)	6.00% (T3)	1.48% (5)	10.89% (6)	3 (22)
New York	$10.40 (6)	8.82% (6)	**6.50% (1)**	4.00% (2)	1.40% (4)	8.50% (5)	4 (24)
Connecticut	$10.10 (T4)	6.99% (5)	8.25% (T3)	6.35% (6)	1.62% (6)	6.80% (2)	T5 (26)
Massachusetts	$11.00 (7)	5.10% (2)	8.00% (2)	6.25% (5)	1.15% (3)	11.13% (7)	T5 (26)
New Jersey	$8.60 (3)	10.75% (7)	11.50% (7)	6.625% (7)	2.16% (7)	**5.80% (1)**	7 (32)

Analysis

To put in perspective what these indicators signify in totality, NJBIA scored each indicator from 1 (least competitive in the region) to 7 (most competitive in the region), with a potential high score of 84. Since the study does not determine which category or indicator is the most important component to the innovation ecosystem, the indicators are not weighted. New Jersey's cumulative innovation score totaled 41, which ranks 5th in the region. New York ranked 1st in the region, generating 71 points, followed closely by Massachusetts (63). Pennsylvania earned 49 points, Maryland earned 46, Delaware earned 34 and Connecticut earned 33. New Jersey's largest outmigration states ranked 1st and 3rd.



› CAPITAL

- Venture Capital Investment
- SBIR/STTR Award Obligation
- R&D State Government Expenditures
- National Science Foundation College/University Award Totals

› TALENT

- Top 100 Nationally Ranked Universities
- Net Migration
- Population with a Graduate or Professional Degree
- Rate of New Entrepreneurs

› BUSINESS

- U.S. Patents Granted
- Startup Density
- Increase in Total Business
- NJBIA Regional Business Climate

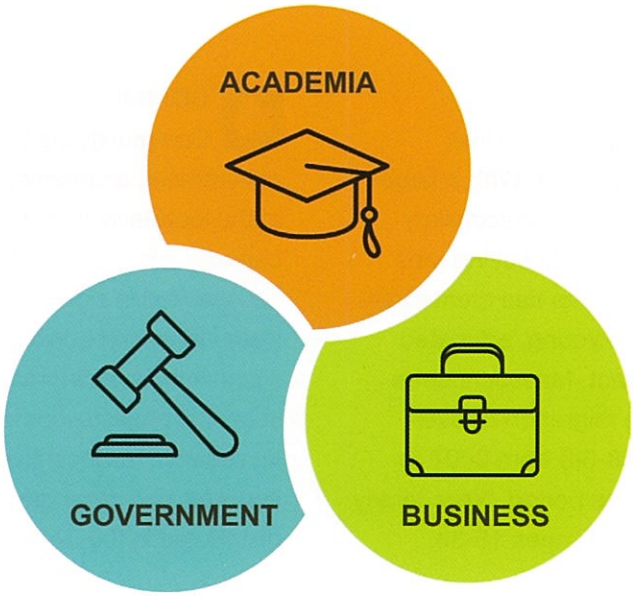
Conclusion

To successfully recreate an innovation ecosystem, there must be a strong presence of all three categorical indicators: capital, talent, and business. According to our analysis, New Jersey ranks in the middle of the pack in all three categories. With this comparative data at hand, New Jersey's leaders can strive to increase the state's innovation score and they must.

This can be done by leveraging and mining our assets: an ideally centralized location, nationally recognized K-12 academics, quality higher education institutions, and a highly educated, highly skilled workforce. In addition, state leaders can address and begin to reform our state's structural deficiencies (property taxes, pension costs and infrastructure investment), which are creating a lag on our state's regional competitiveness and affordability.

Done the correct way, the Garden State can attract top-tier talent to New Jersey's postsecondary institutions, build "live, work and play" communities, increase venture capital investment, and target industry clusters for growth.

To get there we need coordination and a willingness to make tough decisions that, if made today, will reap great short and long-term returns to the state. Together, government, academia and business can make the vision of revitalizing New Jersey's innovation ecosystem a reality.



Takeaways from a New Jersey-Massachusetts Comparison

In addition to the 12 indicators analyzed, a New Jersey-Massachusetts comparison suggests there are additional factors that can help jump-start and sustain an innovation ecosystem.

1 LOCATION

Absent a geographic cluster of research institutions like that of Boston, New Jersey must find unique ways to connect our research institutions to each other as well as build an ecosystem around these institutions to stimulate innovation. One strategy is the recently launched interactive database, ResearchwithNJ.org, which is designed to promote the state's research universities, qualified professors, and their STEM research. This initiative virtually leverages the capacity and capabilities of New Jersey's research institutions and is an excellent solution to the geographic dispersion challenge New Jersey experiences.

2 COLLOCATION OF INCUBATORS AND ACCELERATORS

Incubators and accelerators provide entrepreneurs with advisory and administrative support with the goal of developing a startup/seed into a financially viable business that can survive on its own. The creation of incubator and accelerator spaces near research institutions would provide universities, their researchers and their students with spaces to create, expand, and enhance their ideas into products. In Greater Boston alone there are nearly 50 startup accelerators and incubators. Throughout New Jersey there are only 15.

3 PLACE MAKING

Massachusetts exemplifies the live, work, and play concept in Boston. With a large city, home to multiple top-tier postsecondary institutions, and competitive high-paying jobs post-graduation, Massachusetts has created an ecosystem in Boston where young, educated individuals want to be. In fact, Massachusetts experienced a net positive migration of over 200,000 individuals (ages18-34) from 2007 to 2016.[10] During the same time period, New Jersey lost nearly 200,000 individuals ages 18-34.

4 COMMUNITY VISIONING

Community visioning is the joint effort among government, academia, nonprofits and businesses at the local level that focuses on youth, human capacity and capital investment. Boston's vision has resulted in significant investment in its people, institutions, and businesses. As of June 2017, Massachusetts invested more than $650 million dollars in capital projects, company grants/loans, academic research, tax incentives, internships, equipment/supplies, and other grants, much of which has been distributed in the Greater Boston region.[11]

Audible & Newark, NJ

Today, New Jersey possesses all the qualities that are needed to reinvent and grow an innovation ecosystem: an ideally centralized location; nationally recognized K-12 academics and quality higher education institutions; and a highly skilled workforce.

The key is leveraging these assets in a coordinated manner to build innovation ecosystems that place NJ's research institutions at the center, attract top-tier STEM students to these institutions and drive public/private investment into these ecosystems. As noted, this takes many partners, including the private sector. This case study is an example of how private sector industry is playing a key role in lifting an innovation ecosystem in Newark utilizing this three-legged stool as its foundation.

In April 2018, NJBIA hosted "A Tale of Tech Cities - Innovation & Urban Revitalization," in partnership with Audible. The program evidenced Newark's rise and Audible's role as a committed partner in the revival of Newark and shows how "community visioning" and the right partners can begin to revitalize a city. A demographic sketch of Newark follows the case study and is an important foundation piece to understanding how to leverage a community's assets; in the case of Newark, leveraging the location, rich diversity, universities and infrastructure.

AUDIBLE, INC.[12]

The development of a technology cluster in Newark is stimulating its revitalization. How is Audible contributing to the creation and sustainability of this ecosystem?

Audible Founder and CEO Don Katz outlined the importance of collaboration toward a shared vision as the key ingredient to catalyzing the rebirth of a neighborhood. As a core mission, Audible works to improve lives of those in their communities in which it operates. At its global headquarters in Newark, New Jersey, Audible supports students in "low-income, under-resourced communities by providing high-quality literacy programs in schools, comprehensive high school and college internships, a dedicated scholarship program, and large-scale community engagement programs."[13] Audible's partnership with the Newark school system, including all public and charter schools within the city, is a notable example.

- **Reading Pals:** This elementary school literacy program pairs Audible employees with fifth-grade students at BRICK Peshine Academy. Employees and students read and listen to literature on Amazon Kindles and have comprehensive discussions regarding the material they read to help improve reading comprehension and vocabulary skills.
- **Project Listen Up:** Designed to help students increase their vocabulary and their test scores, this program provides 15,000 students and teachers in Newark's districts and charter schools with a free year of Audible membership, a custom library of more than 150 educator-selected audiobooks, a Fire tablet, and headphones.
- **Newark High School Internship & College Scholarship Programs:** To date, nearly 70 Newark high school students have participated in Audible's one-year, year-round, in-depth internship program. Through this program students gain exposure to career-building skills and work directly with Audible leaders throughout various departments and professions. This program has reaped "Audible Scholars" who go on to college and return to work at Audible during breaks and after graduation.

It is through programs like these at Audible that companies can develop students with the exact skillset needed by that company, thereby making an investment in the future workforce that brings great return to the company as well.

Investment in human capital must extend beyond the education system. As noted by Katz, companies should look in their backyard, which, in some cases, means "beyond traditional resources" to fill their workforce needs. Audible has found that hiring local or convincing out-of-area workers to live local through subsidizing housing results in more productive workers overall. This aligns with Mayor Ras Baraka's vision of having local companies hire local.

To attract and retain the modern workforce requires creating communities that deliver on the desired goal of live, work and play. This means that beyond having access to good paying jobs, certain amenities will attract millennials.

Audible programs also include subsidizing an employee's cost of living or education, including

student loan repayment and providing employees with incentives to utilize area amenities, such as subsidizing lunch at local eateries. When companies invest in these ways, they are establishing a pipeline for the utilization of those area amenities and thus, ensuring that the indirect service economy reaps a return as well. Further, subsidizing housing keeps employees closer, improving productivity and providing the economic return on investment.

Audible provides employees additional opportunities to engage with the City of Newark through its Audible Cares program. Major volunteer events include the Martin Luther King and Earth Day community service days at Newark public schools, as well as STEM workshops at Newark high schools, and a "build day" located in Newark's South Ward in conjunction with Habitat for Humanity.

To drive further direct economic investment into the region, Audible launched Newark Venture Partners (NVP), a venture fund created to "catalyze Newark's technology ecosystem by attracting early-stage companies."[14] NVP is funded from private investment including seven regional corporate investors and is co-located in the Rutgers School of Business, which shares a building with Audible's headquarters in Newark. As a result of this strategic location, NVP offers companies over 200 on-site specialists and other expertise from its corporate investors. The goal is to help these startups grow and retain them within Newark, where they can generate jobs and revenue for the city.

Audible's focus on technology as driving an innovation ecosystem was intentional. Newark has incredible technology infrastructure; its 26 miles of underground dark fiber can sustain the demand of a technology industry. Further, technology reaps high growth companies and Newark's diverse population is already yielding many first-generation immigrants with the type of degrees driving the technology industry. And of course, there is the economics of the industry; as Katz noted, one technology job delivers three service jobs and two professional jobs.

CONCLUSION

This case study has taken the fundamental principles of building an innovation ecosystem and shown how Newark's assets are being leveraged in a coordinated manner to do so. With partners like Audible and the vision of leaders such as Mayor Baraka and Katz, Newark is on the rise. As New Jersey's largest and most diverse city, as Newark goes, so goes New Jersey.

> Audible has found that hiring local or convincing out-of-area workers to live local through subsidizing housing results in more productive workers overall.

Newark at a Glance[15]

Located just outside of New York City, Newark is the largest and second most diverse city in the state. The city is divided into five wards, each with distinct neighborhoods. Residential neighborhoods exist primarily in the North, Central and West wards, while industry is concentrated largely in the East and South wards near the airport and seaport.

Newark is home to the New Jersey Performing Arts Center (NJPAC), one of the largest venues in the country. The city is also home to The Outlet Collection, Jersey Gardens (the largest premium outlet mall in the state), the Prudential Center, the Red Bull Arena, and the GlassRoots Studio.

Degree Granting Postsecondary Institutions Located in Newark

Berkeley College

ESSEX COUNTY COLLEGE

PILLAR COLLEGE

NJIT New Jersey Institute of Technology

+ NJIT Economic Development Center
+ NJIT Procurement Technical Assistance Center (PTAC)

RUTGERS THE STATE UNIVERSITY OF NEW JERSEY

+ Rutgers School of Biomedical & Health Sciences
+ Rutgers Business School
+ Rutgers School of Law

SETON HALL UNIVERSITY 1856

Major Companies Located in Newark

audible

Horizon

IDT

NJIT New Jersey Institute of Technology

Panasonic

Prudential Financial

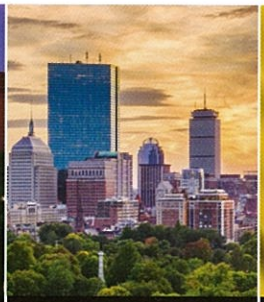
PSEG

RUTGERS THE STATE UNIVERSITY OF NEW JERSEY

UNITED

Demographics[16]

Newark vs Boston vs State of New Jersey, 2016



	Newark, NJ	Boston, MA	New Jersey
Population	280,139	658,279	8,915,456
Median Age	33.0	31.7	39.5
% High School Graduate or Higher	73.3	85.7	88.9
% Bachelor's Degree or Higher	13.7	46.4	37.5
% In Labor Force	62.3	68.7	65.8
% Employed	51.6	63.2	60.5
% Unemployed	10.7	5.5	5.2
% Not In Labor Force	37.7	31.3	34.2
Median Household Income	$33,025	$58,516	$73,702
Mean Household Income	$46,417	$89,236	$101,634
Per Capita Income	$17,198	$37,288	$37,538
% In Poverty	29.1	21.1	10.0

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65 SPRINGFIELD AVENUE, 2ND FLOOR, SPRINGFIELD, NJ 07081
973-630-1010 • FAX 973-630-1013

Building On
Common Ground

March 8, 2019

The Engineers Labor-Employer Cooperative (ELEC) is a labor-management organization representing the combined interests of the over 7,000 members of the Operating Engineers Local 825 and the signatory contractors who employ them. ELEC 825 focuses on creating opportunities by promoting economic development, advocating for investments in infrastructure and supporting specific construction projects throughout our jurisdiction; the entire State of New Jersey and five counties in New York.

Our contractors and members have greatly benefitted from the Economic Opportunity Act (EOA) Grow NJ, Commercial ERGG and other tax incentive programs, having worked on the projects receiving incentives, their related infrastructure improvements and on ancillary projects spawned from the economic development they create.

Critics of these programs have called incentives "corporate welfare", suggesting that the State of New Jersey has not received an adequate return on its investment of "$8 billion in awards since 2010." This criticism is both unfair and misleading. First, these funds are not payments but tax credits. Secondly, it is important to note that the term "awarded" does not mean that the funds were simply handed over in lump-sum cash payments. Rather, these programs are performance based over time; tax benefits are only realized if the capital investment and employment conditions approved by EDA have been met and certified at time of completion and for the full 15-year term of the tax credit incentive.

Grow NJ has provided work opportunities in distressed cities throughout the State for our members and contractors and have improved quality of life for local residents, while

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strengthening our economy and mitigating the flight of wealth from our State. In fact, over 70% of the 247 projects approved by the EDA as of YE 2017, were in NJ's Distressed Municipalities, representing 84.5% of all tax credits to be earned.

Considering the dramatic changes in our economy, the commercial real estate market and the vision and priorities of the new administration, now is the time to recalibrate and reform these successful programs. However, it is important to identify and maintain the quintessential features of the current incentive programs while ensuring that new programs will meet the needs of the current market and can be sustainable as we move NJ into its bright future.

Recommendations

Scale and Scope

Modify overall tax credit amounts, letting the market dictate need, except for the most continuing distressed areas that remain priorities

Focus on high-growth sectors and expanding access to small businesses, start-ups and rapidly growing technology companies

Concentrate incentives primarily on new jobs; Limit but not eliminate tax credits for "retained" existing jobs

NJ's economy has continued to lag behind the nation, partially due to our high costs and burdensome regulations. In order to grow a fairer and stronger economy for all NJ residents, we must continue to provide our most distressed municipalities the tools they

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need to attract investment and ignite the local economy to create jobs and reduce the property tax burden. It is critical that the new incentive programs remain committed to and focused on the municipalities and residents who need it most.

In order to leverage tax incentives into even greater economic returns, it is imperative to invest in emerging and rapidly-growing industries by attracting well-paying-job-creators and providing additional opportunities and greater access for smaller and newer companies, rather than large, legacy corporations.

Market Stability and Consistency

While the economy is recovering and the need for longer term tax credits has waned, the commercial and residential markets still face volatility and insecurity. A 10-year program cap is recommended to both provide stability and consistency needed to attract investment without allowing municipalities to develop a permanent reliance on subsides.

The new programs should be designed with consistency in mind, as developers and investors both within NJ and outside, need to be able to easily understand how the programs work and how to navigate through the process. If the process is too burdensome or radically changed from the current system, it may create confusion and have a chilling effect on the market.

Protecting the Taxpayer

As we look back on the successes of these programs as well as the lessons learned, we must continue to strengthen program governance so that the investment from NJ

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taxpayers is better-protected. This can be accomplished by increasing the documentation required to prove the tax credit "need" to compete with other States and by working with the EDA and other stakeholders to identify, improve, develop and implement best-practices, making any necessary reforms to the administration of the program.

ELEC 825 strongly supports the time-tested labor protections such as Prevailing Wage and PLA (project labor agreement) provisions that are included in the current programs. These conditions ensure that construction work is performed safely and by highly skilled and well trained craftsmen and women, promote and incentivize apprenticeship and vocational training in our workforce and protect the taxpaying investors funding the credits and host communities from fly-by-night contractors and unskilled laborers.

Thank you for holding these hearings and allowing us the time to discuss our perspective on these important job-creating programs.

Sincerely,

Mark Longo

Mark Longo
Director

Chamber of Commerce
Southern New Jersey
Where Business Grows

MEMORANDUM

TO: Members of the **Senate Economic Growth Committee** & the **Assembly Commerce and Economic Development Committee**

FROM: Debra P. DiLorenzo, President & CEO, CCSNJ

RE: Joint Hearing on the NJ Economic Development Authority's Tax Incentive Programs

DATE: March 8, 2019

Thank you for the opportunity for the Chamber of Commerce Southern New Jersey (CCSNJ) to weigh in on a topic crucial to South Jersey – how the New Jersey Economic Development Authority's (NJEDA) various tax incentive programs, including Grow New Jersey and the Economic Redevelopment and Growth (ERG) Program - have impacted the state, as well as what changes can be made to improve these programs in the future.

The CCSNJ believes that there are three economic anchors to the South Jersey region: Atlantic City, the City of Camden and the area in and around the Joint Base McGuire-Dix-Lakehurst in Burlington County. Historically, if these three economic engines are prospering so does the entire region. In 2014, the Economic Opportunity Act was amended to do something not done initially – focus on distressed South Jersey municipalities, including Camden and Atlantic City. This change has led to unprecedented growth in Camden and a diversification of Atlantic City's economic landscape, which has historically been overly dominate on the gaming industry.

South Jersey, and Camden in particular, face realities that make it harder for the region to compete for large-scale business projects, such as population, geography and the popular incentive program in Pennsylvania called the "Keystone Opportunity Zone" that has attracted many companies to the Philadelphia Naval Yard. Of course, on top of these factors, Pennsylvania and Delaware – the region's neighboring states – are far less expensive than New York, so companies do not face the same economic pressure to move to South Jersey.

It is these reasons that Grow New Jersey and the ERG have seen such tremendous success attracting and retaining businesses in South Jersey. Earlier this year, a report prepared by *Econsult Solutions Inc.* highlighted progress the City of Camden has seen since 2006, including how investments in public safety, education, neighborhood and physical environment, health and health care, and economic development have led to positive changes for the entire community.

Specifically, the report touted the Grow New Jersey incentives and the ERG program grants from the NJEDA. The report states, *"Between 2013 and 2017, $1.6 billion in Grow NJ awards have been given to businesses that are likely to relocate to Camden. The same companies have made or will make at least*

$1.3 billion in capital investments in Camden. In addition, these companies have created an economic environment that has provided new non-Economic Opportunity Act businesses intrinsic certainty to open or expand their operation in Camden." This type of investment and growth is undeniable and cannot be understated.

However, the CCSNJ believes there is always room for improvement and a rigorous evaluation of all incentive programs is consistently needed and essential to assuring New Jersey's return on investment is meaningful and legitimate. Simply put, added oversight by state government is something we support as long as it does not add administrative burdens on the employer community to remain eligible and comply with program requirements.

There have been several proposals offered by Governor Murphy, two of which that would replace Grow New Jersey and the ERG in full. These proposals make several changes, including putting restrictive caps on the amount of tax incentives allocated in a given fiscal year. The CCSNJ feels strongly that by placing a cap on incentives the state will be unable to remain competitive versus other states that are offering generous attraction measures to businesses looking to relocate.

It is no surprise that New Jersey is an unfriendly place to do business. This reputation has only been exacerbated by the recent passage of a $15 minimum wage, an earned sick leave mandate on employers, the expansion of New Jersey's Paid Family Leave Act, and a restrictive and confusing equal pay mandate. These measures come on top of the fact that New Jersey has the highest property taxes in the nation, highest Corporation Business Tax in the nation, the second highest top marginal personal income tax rate in the nation and a slew of other taxes and fees that impact business operations. *In short, capping the tax incentive programs will remove the only tool New Jersey has left to appeal to business.*

However, Governor Murphy's focus on making more small businesses eligible for these programs is a welcomed initiative. A strong New Jersey economy cannot be realized without a strong small business community. Any effort to further incentivize small and mid-sized employers to take advantage of tax incentive programs can only be a positive for the state.

Equally welcome is the Administration's desire to target specific industries for tax incentives such as life sciences, information and high tech, clean energy, advanced manufacturing, advanced transportation, logistics and aviation, finance and insurance, food and beverage, and film and digital media. With Atlantic County's focus on the aviation industry and Cumberland County's emphasis on food manufacturing, Governor Murphy has hit the mark on identifying two of the growing economic sectors in the southern portion of the state. The CCSNJ would offer that the tourism community should also be added as a targeted industry as it remains essential to New Jersey's prosperity.

The CCSNJ is incredibly fortunate for the success the South Jersey region has seen from Grow New Jersey and the ERG. As we near the June 30 expiration date, the CCSNJ recommends simple tweaks to the existing programs as opposed to a complete overhaul that includes caps on incentives, with an added emphasis on oversight and compliance, as well as targeted industries and the small employer community.

The CCSNJ appreciates the opportunity to share our thoughts with the Joint Committee on this critical issue to the New Jersey business community.

New Jersey's Connected Economy

How Business Competitiveness Impacts NJ's Industry Clusters, Supply Chains and Main Street

NJPRO

ESI ECONSULT SOLUTIONS INC.

May 2018

REPORT SUBMITTED TO:

New Jersey Policy Research Organization
150 W State Street, Suite 110
Trenton, NJ 08608

REPORT SUBMITTED BY:

Econsult Solutions
1435 Walnut Street, 4th floor
Philadelphia, PA 19102

Table of Contents

1.0 INTRODUCTION

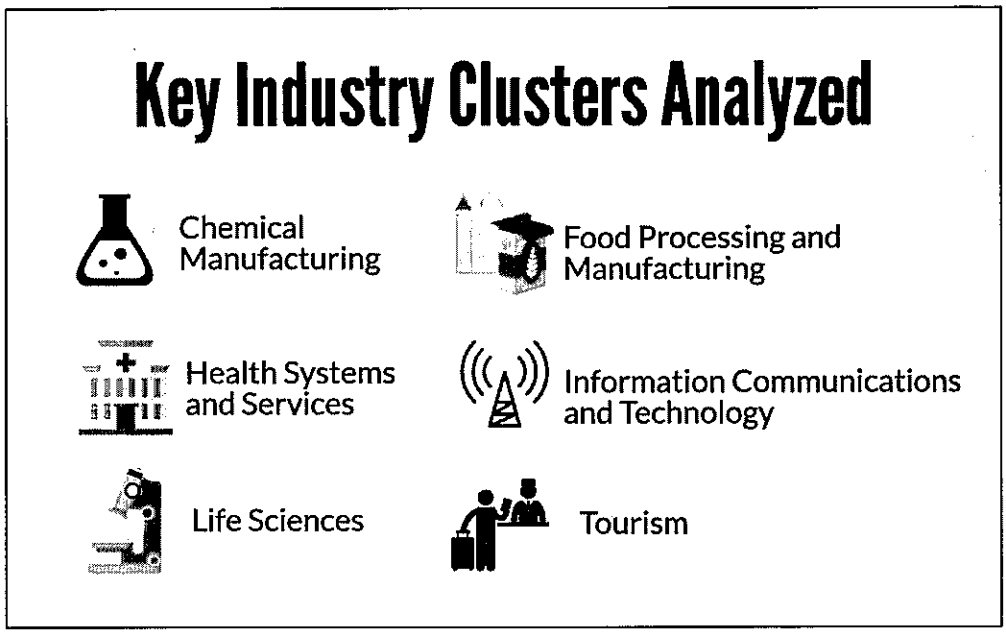
1.1 PURPOSE OF REPORT

As the new administration and legislature considers economic development and tax policy changes, it is important to consider the effects of potential policy changes on the business climate of the state. Some changes may result in a more competitive climate that grows the business base, or alternatively, some may result in a less competitive business climate that shrinks the business base. Specifically, by utilizing economic impact analysis to model the business to business (B2B) interactions in the state's economy, this report describes the broader economic impacts that the gain or loss of jobs in key industry clusters would have on the state economy, as well as the downstream impacts on other industries and regions of the state. It also explores the broader gain or loss in overall statewide economic competitiveness that would result from long-term growth or shrinkage in these key clusters.

The New Jersey Policy Research Organization (NJPRO) Foundation commissioned Econsult Solutions, Inc. (ESI) to undertake this analysis. The report will help lawmakers, business and community leaders better understand the consequences of how economic policy changes in one part of the state's economic ecosystem can have outsized effects and ripple through other parts of the economy. Through economic impact analysis, the report will demonstrate the economic ramifications of a favorable (or unfavorable) business climate and the resulting gains (or losses) of firms and industries on the short-term vitality and long-term competitiveness of the New Jersey economy.

1.2 REPORT STRUCTURE

While this report will speak broadly about the economy as a whole, the analysis takes a deeper dive in six industries of specific interest which hold particular strategic importance to the state's long-term competitiveness. They are: chemical manufacturing, food manufacturing and processing, health systems and services, IT and telecommunications, life sciences, and tourism.



The report contains three primary content sections.

- Section 2 describes, first theoretically and then quantitatively, the outsized economic change that occurs when a firm (or multiple firms) in an industry cluster comes to or leaves the state – outsized because the loss or gain of that firm means not only the loss or gain of its direct spending but also the spillover economic footprint of its employees' spending and its procurement of goods and services.
- Section 3 explores the broader and longer-term loss in economic competitiveness that occurs when firms leave, taking with them human capital and weakening parts of the state's supply chain in ways that can further erode the state's ability to attract a skilled labor force and grow strategically important industry clusters.
- Section 4 will include concluding comments that cross industries and connect the findings to the current and future debates about the best paths for New Jersey to take to improve its economic competitiveness.

Finally, in Appendix 1, we provide individual profiles and economic impact analysis for each of the six industries analyzed.

1.3 ABOUT THE NEW JERSEY POLICY RESEARCH ORGANIZATION FOUNDATION (NJPRO)

NJPRO is a non-profit, non-partisan organization that produces research reports to examine issues of importance to the business community. Whether it be independent research, raising facts for discussion, or examining how New Jersey ranks compared to other states, NJPRO aims to provide the business perspective in the policy dialogue.

1.4 ABOUT ECONSULT SOLUTIONS, INC.

Econsult Solutions, Inc. provides businesses and public policy makers with economic consulting services in urban economics, real estate economics, transportation, public infrastructure, development, public policy and finance, community and neighborhood development, planning, as well as expert witness services for litigation support.

1.5 GLOSSARY OF KEY TERMS

Industry Clusters – As defined by Harvard Professor Michael Porter, clusters are geographic concentrations of interconnected companies and institutions in a particular field or industry.

Tradable industries or clusters – Tradable industries or clusters are those that concentrate in geographic regions but sell their products or services across regions or around the world.

Local industries or clusters – Local industries or clusters sell their goods or services primarily to local companies or consumers, and their presence in a region is proportional to the size of their local region.

Multiplier effect – The multiplier effect of any industry or company is the amount of additional economic activity (indirect impact plus induced impact) that occurs throughout the economy as a result of the initial spending by that company.

Direct impact – The total amount of initial spending by a company or an industry.

Indirect impact – The amount of spending by suppliers or service providers.

Induced impact – The amount of local spending in the community by employees of either the direct company or employees of companies within the supply chain.

2.0 THE IMPACT OF GAINING OR LOSING A FIRM IN NEW JERSEY: SHORT TERM RAMIFICATIONS

2.1 SECTION OVERVIEW

Everyone celebrates when a company decides to locate in a new jurisdiction, because they know that they will be building or renting real estate facilities, hiring new employees, and buying goods and services from other companies both locally or globally. Through their procurement of goods and services, and spending by their employees, the company will have a substantial fiscal impact on the local, regional and state economies.

The reverse happens when a firm downsizes, goes out of business, or leaves the state. The spending they and their employees were doing locally now occurs someplace else, and economic activity is reduced. Vendors lose business which creates a ripple effect throughout the supply chain. Employment is reduced in the community, retail spending in the local economy declines, and local tax bases shrink.

The impact is similar, but maybe not so visible, when there is either steady growth or a gradual decline within an industry sector. As an industry cluster expands or contracts, there may not be a newsworthy moment – a ribbon-cutting on the one hand, or a factory closure on the other hand – but the outsized effect on the state and on local economies is still there. Changes in the amount of direct spending within an industry cluster are accompanied by corresponding changes in spending by vendors and contractors, as well as by employees. Those expansions or reductions have consequences for other industries, whether it is growth in one sector creating ripple effects in other sectors or contractions in one industry adversely affecting other industries.

This analysis examines what happens when business activity grows or shrinks in New Jersey as a result of a favorable or unfavorable business climate: How much economic activity is gained or lost, what is the ultimate consequence on the state economy and the state tax base, and what is the ripple effect on collateral industries and communities when a particular industry cluster either grows or contracts? This report describes the consequences that supportive or detrimental policies can have on New Jersey leading industries, recognized for their historic significance, their prominence globally, or because they are a source of dollars coming into the state economy.

These are also the industry clusters that all communities are competing to attract – and there is no guarantee that these companies will continue to stay or grow in New Jersey. There is a long-term impact that goes along with growth and loss in any industry. Sometimes it is easy to take it for granted that a company will always be there – but there are numerous examples from New Jersey and other states that demonstrate the danger of that type of thinking. Rather, it is future growth or shrinkage in key industry clusters that will be subject to the competitiveness of New Jersey's business climate going forward.

This report is not about evaluating which policies are best for the state economy. Rather it is about the positive or negative consequences of a favorable or unfavorable business climate – and how the resulting expansion or contraction in business activity in one industry sector can have outsized effects well beyond that industry sector.

2.2 THE NEW JERSEY ECONOMY

New Jersey has a large and diversified economy, with a state Gross Domestic Product of nearly $600 billion representing 3 percent of the United States national economy.[1] As of October 2017, the state had total employment of nearly 4.3 million jobs, with just over 3.5 million non-farm, private sector jobs.[2]

This doesn't happen by accident. The state has numerous advantages as a business location, including a strategic position in the center of the Mid-Atlantic region, a highly educated workforce, an integrated multi-modal transportation network, and high-quality urban, suburban and rural communities well regarded for their quality of life. New Jersey has also benefited greatly from a legacy of major industry clusters developed over the past 150 years. The state economy has flourished around these clusters, as suppliers flocked to New Jersey to be near their customers, and global headquarters were established. An ecosystem was thus created whereby companies depended on each other and strengthened one another, and also supported local businesses and community institutions.

However, despite these advantages, New Jersey has struggled to maintain its business competitiveness. Higher costs for labor, taxes, energy, regulatory compliance, and cost-of-living, combined with higher educational demands and intense competition from domestic and international locales, have meant that the state must maintain a focus on improving its business competitiveness in order to support growth. In particular, the state must maintain a strong competitive position in key industries that are central to the state's economy, whether due to historic importance and scale (such as life sciences, chemicals, information and communications technology, or food processing), their role in bringing visitor dollars to the state (tourism), or their importance to quality of life in the state's communities (health systems and services).

We focus on six industry clusters identified as pillars of New Jersey's economy. While clearly not the only important industries in the state, the six industries that are the focus of this report represent a diverse set of industries with reach into all corners of the Garden State and a significant portion of the state's innovation economy. In particular, they represent industries in which New Jersey faces significant competitive challenges and concerns as to whether the state will be able to maintain its advantages into the future. In Appendix A, we provide a brief

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[1] Bureau of Economic Analysis (BEA), Current-Dollar Gross Domestic Product (GDP) by State, 2016:Q1-2017:Q2. (https://www.bea.gov/newsreleases/regional/gdp_state/2017/pdf/qgsp1117.pdf)

[2] New Jersey Department of Labor and Workforce Development, Division of Economic and Demographic Research, Nov. 2017. (http://lwd.dol.state.nj.us/labor/lpa/pub/emppress/pressrelease_index.html)

overview of each industry, prior to demonstrating the impact that the gain or loss of a company in those industries will have on the overall economy, on other industries in the state, and across the state. Appendix C defines the industry clusters that are the subject of this report through a list of the specific business sectors included in each industry cluster.

2.3 THE IMPACT OF COMPANY GROWTH OR LOSS IN KEY INDUSTRY CLUSTERS

The following section will describe how economic impact analysis, using the IMPLAN input-output model can help to model the impact of gaining or losing a company in New Jersey. It will demonstrate the linkages within the New Jersey economy, and show how changes in one part of the economy can have dramatic impacts on another seemingly unrelated industry in the complex New Jersey economic ecosystem.

For this analysis, ESI modeled the gain or loss of jobs within each of 6 key industry clusters. This would represent either the equivalent of one 500-person firm or the economic activity associated with 500 employees across that industry cluster. The models were created using data from the IMPLAN input-output model[3], and represent a pro-rated share of the total economic activity in that cluster. So, for example, if there were 100,000 jobs across the entire cluster, ESI would divide each sector within that cluster by 200 to get the prorated number of jobs for that sector. ESI would then input that number of jobs into IMPLAN to generate the estimated total direct output and direct employee compensation, and then sum all of the subsectors to develop the composite firm within that cluster.

With the creation of the 500-person composite cluster firm, ESI then inputs the information from each sector into the IMPLAN Input-Output model to generate the indirect and induced economic impacts in terms of jobs, output (spending) and employee compensation. With that data, ESI utilizes its New Jersey tax models to calculate state business, income and sales taxes. For more information on this methodology, please see Appendix B.

The **multiplier effect** of any industry or company is the amount of additional economic activity that occurs as a result of the initial spending (**direct**) by that company. A company spends its dollars by purchasing goods and services from other companies and individuals (business to business (B2B) spending, or their "supply chain"), and the spending by those companies and individuals in the state and local economy are the **indirect impacts**. At the same time, the company employs people, and those employees take their wages and benefits and spend those dollars in the local economy ("Main Street") – buying consumer goods and services which are calculated as the **induced impacts.** Taken together, the indirect plus induced impacts comprise the multiplier effect, which is large and has consequences for many other industries and communities.

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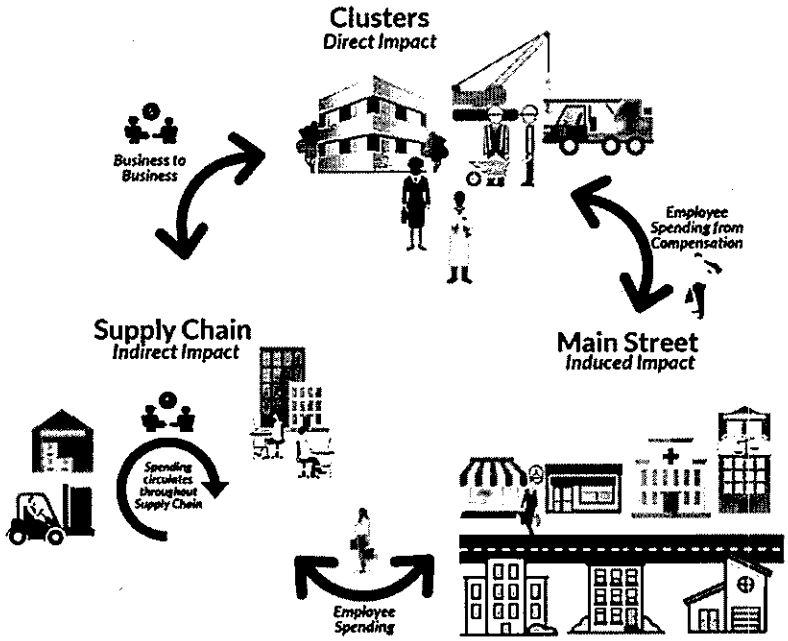
[3] IMPLAN represents an industry standard approach to assess the economic and job creation impacts of economic development projects, the creation of new businesses, and public policy changes. For more detail on the economic modeling, please see Appendix B of the full report.

New Jersey's Economy is Interconnected: Gains and Losses in One Industry are Felt by Many Other Industries



Source: Piktochart (2017)

2.4 COMPOSITION AND SCALE OF ECONOMIC IMPACT IN KEY INDUSTRY CLUSTERS – ALL CLUSTERS

All six industry clusters exhibit the same outsized impact in terms of the multiplier effect, using the gain or loss of 500 jobs worth of activity as a metric and in terms of the fact that that multiplier effect touches multiple industries and has a statewide effect. Detailed analysis for each of the clusters is included in Appendix A.

As noted, each of the six industry clusters analyzed for this report is an important one for the state. Together, they represent a diversity of business activity, reflecting the strengths of different parts of the state and spanning the continuum of labor-intensive versus capital-intensive activities. Hence, it is useful to look at the economic impact of gaining or losing 500 jobs' worth of activity in these industry clusters.[4]

To begin with, all six have outsized impacts on the state economy, in that gaining or losing 500 jobs' worth of activity would actually mean a significant amount of economic activity gained or

[4] For more detailed industry impact summaries, see Appendix A.

lost, with an attendant increase or decrease in state tax revenues generated (see Table 2.1). For example, notice that each job gained or lost in the tourism industry cluster actually represents 1.6 jobs, $200,000 in economic output, and $70,000 in wages (see Table 2.1), as well as $5,000 in state tax revenues (see Table 2.2).

The Business to Business (B2B) Ecosystem: Far-Reaching Effects of Gains and Losses in One Industry

TABLE 2.1 – ECONOMIC IMPACT ON NEW JERSEY STATE ECONOMY OF 500 JOBS GAINED OR LOST IN SELECT NEW JERSEY INDUSTRY CLUSTERS

Impact	Chemical Manufacturing	Food Manufacturing and Processing	Health Systems and Services	Information Communications and Technology	Life Sciences	Tourism
Direct Jobs Gained/Lost	500	500	500	500	500	500
Total Jobs Gained/Lost	2,304	1,180	839	1,405	1,651	810
Total Output Gained/Lost (millions)	$1,321	$334	$114	$321	$426	$104
Total Wages Gained/Lost (millions)	$180	$69	$48	$104	$141	$35
Total Job Impact per Direct Job	4.61 jobs	2.36 jobs	1.68 jobs	2.81 jobs	3.30 jobs	1.62 jobs
Total Output Impact per 500 Direct Jobs (millions)	$2.6	$0.67	$0.23	$0.64	$0.85	$0.21
Total Wage Impact per 500 Direct Jobs (millions)	$0.36	$0.14	$0.10	$0.21	$0.28	$0.07

Source: IMPLAN, Econsult Solutions, Inc.

TABLE 2.2 – Tax Revenue Impact on New Jersey State Economy of 500 Jobs Gained or Lost in Select New Jersey Industry Clusters

Impact	Chemical Manufacturing	Food Manufacturing and Processing	Hospitals and Health Systems	Information Communications and Technology	Life Sciences	Tourism
State Tax Revenues Gained/Lost) (millions)	$14.7	$4.8	$3.1	$7.5	$9.6	$2.5
State Tax Revenues per Direct Job	$29,000	$9,700	$6,300	$15,500	$19,200	$5,000

Source: IMPLAN, Econsult Solutions, Inc.

A significant amount of the total job impact from gains or losses is felt outside of each cluster (see Figure 2.1). The total impact ranges from 78 percent of the job impact for the Chemical Manufacturing industry being found in industries outside of the Chemical Manufacturing cluster to 35 percent of the total job impact being outside of the Health Systems and Services and Tourism clusters.

FIGURE 2.1 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN SELECT NEW JERSEY INDUSTRY CLUSTERS

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By modeling the business to business (B2B) impacts in each of our industries (see Figure 2.2), we see the differences in the purchasing needs of each of our six analyzed industry clusters. For example, in the two primarily manufacturing Chemical and Food Processing clusters, we see that wholesale trade and transportation and warehousing are important to both, but that the state's agricultural industries are crucial to the success of the food processors. Similarly, we see the role of the arts and entertainment industries for the Information Communication Technology (ICT) and Tourism clusters, and food services contractors as important for the Health Systems and Services cluster. We also see some commonalities. Administrative Support/Waste Management Services and Professional services (representing a variety of specialized consulting services) are common to each of these key industry clusters, and show how the long-term development of key industry clusters helps to create strengths in supporting sectors.

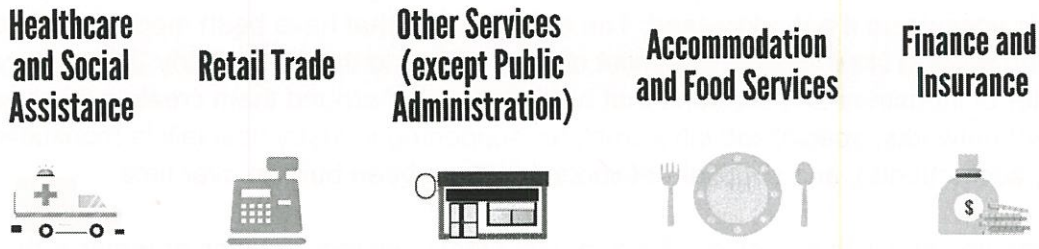
FIGURE 2.2 – TOP INDIRECT NAICS SECTOR EMPLOYMENT, BY INDUSTRY CLUSTER

Chemical Manufacturing	Food Processing/ Manufacturing	Health Systems and Services	Information Communications Technology	Life Sciences	Tourism
Wholesale Trade	Wholesale Trade	Admin and Support and Waste Management and Remediation Services	Administrative and Support and Waste Management and Remediation Services	Professional, Scientific, and Technical Services	Admin and Support and Waste Management and Remediation Services
Transportation and Warehousing	Agriculture, Forestry, Fishing and Hunting	Professional, Scientific, and Technical Services	Professional, Scientific, and Technical Services	Admin and Support and Waste Management and Remediation Services	Transportation and Warehousing
Admin and Support and Waste Management and Remediation Services	Transportation and Warehousing	Finance and Insurance	Information	Management of Companies and Enterprises	Professional, Scientific, and Technical Services
Professional, Scientific, and Technical Services	Professional, Scientific, and Technical Services	Real Estate Rental and Leasing	Arts, Entertainment, and Recreation	Wholesale Trade	Arts, Entertainment, and Recreation
Management of Companies and Enterprises	Admin and Support and Waste Management and Remediation Services	Accommodation and Food Services	Real Estate Rental and Leasing	Real Estate Rental and Leasing	Finance and Insurance

Source: IMPLAN, Econsult Solutions, Inc.

When we look at the induced impacts as a result of employee spending of wages and benefits, we see that what we consider Main Street industries are the prime beneficiaries (see Figure 2.3). Not surprisingly, health care and retail stores are the top industries supported by employee spending, followed by personal services, accommodation and food services (restaurants) and finance and insurance. It should come as no surprise that many of the sectors with the biggest induced impact are high-turnover, low-margin businesses like restaurants and retail, which are the core of Main Streets and shopping centers across the state. Any changes on the margins for these industries will result in corresponding increases or decreases in induced impact and therefore in business activity – and can be the difference between expansion and job creation and decline and business closure.

FIGURE 2.3– TOP INDUCED NAICS SECTOR EMPLOYMENT, ALL KEY INDUSTRY CLUSTERS



Source: IMPLAN, Econsult Solutions, Inc.

2.5 FROM SHORT-TERM IMPACTS TO LONG-TERM IMPLICATIONS

This section has utilized standard input-output modeling techniques to estimate the magnitude, industry composition, and geographic reach of illustrative gains or losses in six key industry clusters in New Jersey. This analysis illustrates the significant impact of a favorable or unfavorable business climate on the state economy. When economic conditions in the state change for the better or worse, they can have the effect of expanding or contracting activity in a strategically important industry cluster, which not only creates direct gains and losses in that industry cluster, but also is felt in other industries and on economic activity levels throughout the state.

This is the short-term impact of a favorable or unfavorable business climate on the state economy, and it is outsized and far-reaching. But there are also long-term impacts to the New Jersey economy from expansions or contractions in key industry clusters, namely in growing or shrinking the overall competitiveness of the state. This is the topic of the next section.

3.0 LONG-TERM CONSEQUENCES OF BUSINESS COMPETITIVENESS IN NEW JERSEY

3.1 OVERVIEW

In the previous section, this report demonstrated the economic impact that the gain or loss of 500 jobs can have on the state of New Jersey. In addition to the direct jobs created, a company's expansion also provides additional economic benefit for its supply chain (indirect impact) and for the local economy through employee spending (induced impact).

However, short-term decisions or inaction can turn into long-term fundamental changes in an economic ecosystem if not addressed. The six industries that have been modeled in this report have deep roots in New Jersey, with most of them dating to the 19th or early 20th century, and the cluster of industries and supports that have developed around them create an ecosystem with talent networks, specialized infrastructure, supporting industry specialists (consultants, lawyers, accountants), and supplier networks that have been built up over time.

But as can be seen with examples of former industrial powerhouse cities or regions, the gradual erosion of companies that choose to leave or shrink beyond recognition can cause those clusters and networks to virtually disappear. Sometimes, the intellectual skills or networks can be transferred to another industry. But in too many cases, the talent, knowledge and financial capital moves to the new cluster location and takes the assets away from the original region.

Another way of stating this point is that these industries and others are not static. In a fast-moving and globally-interconnected economy, tomorrow's growth – in economic activity and in the investment of human and financial capital needed to produce it – can happen in many different places. Perceptions can shift surprisingly quickly, such that a region once seen as strong can, if it is thought to be no longer growing or no longer hospitable, begin to lose the competition for that investment of human and financial capital to other regions.

Given the size, importance and history of the six industry clusters studied in this report in the New Jersey state economy, it can seem incomprehensible that such economic activity could decline precipitously, but in fact it can. The difference between a favorable and unfavorable business climate can create changes in perceptions that shift the movement of financial investment and skilled labor, turning yesterday's winners into tomorrow's losers. The remainder of this section will address the long-term consequences of changes in economic competitiveness, particularly in the six key industry clusters profiled in this report. It will identify important linkages, as well as potential steps that can be taken to ensure that New Jersey retains a competitive advantage in these key industries.

3.2 THE IMPORTANCE OF INDUSTRY CLUSTERS TO THE LONG-TERM COMPETITIVENESS OF THE NEW JERSEY STATE ECONOMY

The New Jersey economy is a complex system of overlapping networks of activity, operating and clustering in a variety of industry groupings. Over time, these groupings of companies from similar or complementary industries form within a region, creating industry clusters that work in a manner similar to an ecosystem that arises in nature. The companies succeed and thrive through their proximity to each other, even if they are competitors for business. By their presence in close proximity to each other, the clusters help to create an environment in which companies in or in close relationship to their industry can grow and thrive.

There are two primary types of clusters, tradable and local, and both are important to regional and state economies:

Tradable clusters are groupings of interconnected companies that develop specialized or high demand products or services and sell them outside their home region. These clusters develop over time, often building and growing on the success of a single company or concentration of companies and the companies that emerge to support or connect with that company. Tradable clusters are not specifically tied to a region, unless there is a specific natural resource attached to that technology or industry, and will often locate where it is most advantageous to their business. Of the six clusters that are the focus of this analysis, five could be considered as primarily tradable – Chemicals, Food Processing and Manufacturing, ICT, Life Sciences and Tourism.

Local clusters are businesses that are dependent on the spending of the local population in order to succeed. They will grow and thrive as the population grows and thrives, and their size and strength will rise and fall with the growth of the local economy. Local clusters are comprised of those businesses and establishments that are designed to provide goods and services to local residents. They include restaurants and food establishments, local merchants and retail establishments and most health care activities. They also can include construction, home and business services (maintenance, plumbing and cleaning, for example), as well as personal services like barbers, mechanics, and tax preparers. A local economic cluster can consist of both local-only establishments and franchises or branches of national or even global companies – but for that national or local firm, their presence in a community depends on the economic viability of that location. Local clusters often provide the bulk of employment in a community, and serve a broad set of companies and individuals. Health Systems and Services are a good example of this, although many of the health care institutions in New Jersey not only serve a local population, but also provide advanced secondary and tertiary care and thus draw in patients from a much wider footprint (in some cases national or global).

Tradable and local clusters intersect in the regional economy. Tradable cluster companies, while making and selling its goods and services to a global marketplace, have a physical location in a community where it builds, outfits and maintains its factory or offices. It purchases professional services, supplies and supports an array of small vendors. At the same time its employees live in and interact with the local economy, spending their salaries and using their

benefits with local restaurants, businesses and service providers. The local business depends on that tradable cluster of businesses for its business, and uses those revenues to pay employees, buy supplies and materials, and grow their business. Local businesses thus rely on tradable clusters to draw in economic activity from the outside, some of which takes the form of salaries and wages which can then be spent locally, allowing local businesses to pay employees, buy goods and services, and grow their ventures. Tradable clusters thus simultaneously produce and in turn rely on a vibrant mix of local businesses offering a wide range of products and services. Hence, both types of businesses are needed to create a vibrant economic ecosystem in a state.

It is important to understand that tradable clusters are not fixed in their location. As noted, it can seem incomprehensible to imagine the decline or disappearance of a bloc of activity that is very large and has had a long legacy in a location. But, on the margins, tradable cluster activity can and does move, to locations that provide a competitive advantage -- whether that is lower costs of doing business, a more favorable regulatory environment, access to talent, or connections to other companies within its cluster. That means that the future success of New Jersey's economy relies upon the success of its tradable clusters and, in turn, its local clusters. The state's future economic success is dependent on its ability to retain existing companies, help them grow their business in New Jersey, and to attract and /or grow new companies that will help to support existing clusters or create new clusters for future growth.

The flip side of this story, however, is that the loss of companies can weaken clusters, and that gradual erosion can have a negative impact both within the cluster and within the local economy. When a company leaves a community, the spending it did locally – through its local purchases and the spending of its employees – also leaves. Unless that company is replaced quickly, local businesses will be forced to reduce their costs as well, creating a cycle of loss that is difficult (and often expensive) to reverse. Making investments and policy decisions to maintain a competitive advantage for an existing company or cluster of companies is almost always preferable to trying to lure a replacement.

3.3 HOW KEY INDUSTRY CLUSTERS CONTRIBUTE TO THE LONG-TERM COMPETITIVENESS OF THE NEW JERSEY STATE ECONOMY

As noted above, there are both short-term and long-term consequences to a favorable or unfavorable business climate leading to the expansion or contraction of economic activity in key industry clusters in the state. In the short-term, gaining or losing 500 jobs' worth of economic activity in Chemical Manufacturing, Food Manufacturing and Processing, Health Systems and Services, Information Communications Technology, Life Sciences and Tourism has an outsized impact on the state economy, with many more jobs at stake as well as a considerable amount of economic output and state tax revenue generation. In the long-term, steady gains or erosions in economic activity in these and other industry clusters strengthen or weaken the state's competitive position in these fast-moving areas, creating broader and more structural gains or losses in the state's long-term economic outlook.

The previous sub-section articulated the economic development theory behind the importance of industry clusters, with a particular emphasis on the gains from concentrating activity in one place, on the interplay between tradable and local clusters, and on the importance of investing in activities that draw in human and financial capital from outside the region. This sub-section picks up on the theoretical framework and applies it to the six specific industry clusters analyzed in this report. Notably, each industry cluster studied in this report is an archetypal example of multiple economic development principles (see Figure 3.1).

FIGURE 3.1 – How Key Industry Clusters in New Jersey Represent Sound Economic Development Principles

	Agglomeration Creates Inter-Dependent Ecosystems	Talent Development/Attraction/ Retention is Crucial	Concentrating Resources Produces Innovation	Key Industry Clusters Produce Outsized Fiscal Impacts
Chemical Manufacturing				
Food Manufacturing and Processing				
Health Systems and Services				
Information Communications Technology				
Life Sciences				
Tourism				

TRADABLE INDUSTRY CLUSTERS PRODUCE OUTSIZED FISCAL IMPACTS

Economic vibrancy cannot truly occur unless a region can draw outside spending in. Internal circulations of spending cannot sustain or grow a region. Therefore, we see that Tourism is crucial to the state because of its ability to attract investment and spending from outside the state that directly supports local economic activity. Visitors come into the state from all over the world, spending money in hotels, casinos, attractions, restaurants and retail stores. By bringing in new dollars from non-residents, these visitors support a wide range of merchants, whose presence in turn creates quality of life gains for local residents who benefit from the increase in quality and quantity in food, retail, entertainment, and recreation options. They also contribute important tax revenues to support state and local governments, particularly in the tourism industry which often has special or higher taxes that are imposed largely on non-residents (e.g. amusement taxes, hotel taxes).

Similarly, the other tradable clusters (Chemical Manufacturing, Food Processing and Manufacturing, Information Communications Technology and Life Sciences) that are based in New Jersey also bring in significant new dollars to the state by bringing revenue into New Jersey from customers outside of the state, which is then redistributed through their New Jersey supply chain and employees.

Agglomeration Creates Inter-Dependent Ecosystems

As a cluster of companies emerges and grows, it attracts other companies that want to build upon or capitalize on the success of the cluster. This effect, called agglomeration, can take many forms. One is that other companies from the cluster may choose to locate or grow near the cluster, to take advantage of the knowledge base and talent networks that are created (see "Talent Development/Attraction/Retention is Crucial" below). The second is that new companies may emerge from entrepreneurs within larger companies, who will choose to start and locate their company in their home community in order to maintain ties and networks (see "Concentrating Resources Produces Innovation" below).

Importantly, a network of specialists will emerge to provide business services to that industry, such as management consulting or accounting specialties focused on that industry. Life Sciences is the best example of an agglomeration effect in New Jersey – the presence of large, multi-national companies have helped to create and support a vibrant and inter-connected ecosystem of specialized consulting, marketing, finance and accounting practices in New Jersey that primarily serve the New Jersey cluster, but also Life Sciences companies around the world. Hence, the inter-dependence of the big and small players in the life sciences and pharmaceutical space and the technical assistance providers that serve them in turn creates a further agglomeration effect that has the effect of drawing in even more economic activity into the state.

Similarly, agglomeration of assets can produce outsized gains for an industry cluster. Specialized equipment can benefit and bring together multiple players in industries such as Health Systems and Services, Life Sciences, Food Manufacturing and Processing, Information Communications Technology, and Chemical Manufacturing, while the Tourism industry is another and different example of multiple assets fulfilling complementary roles (e.g. hotels serving casinos and attractions, multiple destinations in one location serving together to draw more visitors). This is another example of the world not being static: such agglomerations require constant investment, and perceptions of reductions in activity can create a downward spiral while perceptions of optimism can yield upward momentum.

This, then, is the long-term analog to the short-term analysis described in the previous section. When 500 jobs' worth of activity arrives or leaves, the consequence to the state economy goes well beyond those 500 jobs gained or lost, and includes the resulting gain or loss in the supply chain (the indirect effect) and the spillover impact of salaries and wages spent locally (the induced effect). Similarly, when one part of a key industry cluster grows or shrinks, there is a larger effect on the inter-dependent ecosystem that it is contained within, yielding an outsized

gain or loss in the strength of the broader ecosystem and therefore in the overall competitiveness of the state economy.

Talent Development/Attraction/Retention is Crucial

One of the key challenges for any company is attracting and retaining a talented workforce. One of the benefits of economic clustering is that the cluster itself can work together to develop a local pool of talent, identifying needed skills and working with local workforce and higher education institutions to train a qualified pool of applicants – in essence sharing the cost of training across an industry.

In addition, when attempting to attract specialized advanced talent, that individual is often interested in being in a place rich with opportunities beyond that initial job. Companies within a cluster often see movement of talented workers between and among companies, and career growth may come from movements back and forth amongst companies in the same cluster. The historic legacy of Bell Labs can be seen in the highly specialized Information Communications Technology talent that has been developed in New Jersey, and can now be seen in the development of additional tech companies across the state. Similar effects are happening in the Health Systems and Services, Life Sciences, Food Manufacturing and Processing, and Chemical Manufacturing industry clusters.

An additional benefit is that the talent developed in a cluster can also help to support additional industries within the state. This can be important for those companies without the resources to support their own talent development structure, but can provide exceptional opportunities. This can be very important to locally-focused businesses, as they are able to retain an executive or worker in New Jersey who is seeking a new career opportunity. Hence, tradable clusters drawing in talent from the outside play a role in accessing and grooming talent for local clusters.

New Jersey can only be as competitive as its ability to develop, attract and retain talent. A favorable business climate strengthens the state's position with respect to talent, creating a virtuous cycle of talent clustering and talent attraction.

Of course, everything that can be said about the importance of human capital to a firm's success can also be said about a region's success. New Jersey can only be as competitive as its ability to develop, attract and retain talent. A favorable business climate strengthens the state's position with respect to talent, creating a virtuous cycle of talent clustering and talent attraction. Unfortunately, the reverse can occur in response to an unfavorable business climate, as that poor perception works its way into decisions by skilled labor in all industries and at all levels of experience as people consider the best place to use and enhance their talents.

Concentrating Resources Produces Innovation

There is hardly a more important part of global competitiveness than innovation, and so it is fitting that states are doing everything they can to create an economic environment that is as conducive as possible to stimulating innovation. Here the state has a long legacy of developing and cultivating industry clusters that represent fertile ground for ground-breaking innovations, including the Information Communications Technology example described above. Furthermore, the intersection of Chemical Manufacturing, Life Sciences, and Health Systems and Services stimulated the state's robust bio-pharmaceutical industry, while the combination of major food processors like Campbell Soup Company and a robust port network in South Jersey has led to additional Food Manufacturing and Processing companies and new food technologies.

Looking ahead, the state must continue to create a favorable business climate to enable the mixing of inter-disciplinary human capital (researchers, entrepreneurs) and to facilitate the inflow of financial capital (research grants, venture capital funds). In all such cases, the state of New Jersey is competing against the rest of the world, and perceptions of business climate go a long way towards where skilled workers and innovation funding will land, with attendant short-term and long-term effects on the state economy.

A region that ceases to innovate and therefore to draw in outside human and financial capital begins to stagnate and decline, resulting in a vicious cycle of disinvestment, shrinking disposable income bases, and growing public sector costs.

The very important interplay between high-end innovation work and local clusters is not immediately obvious and warrants further elaboration. On the one hand, local clusters depend in large part on the vibrancy of a region's high-end innovation work. A region that ceases to innovate and therefore to draw in outside human and financial capital begins to stagnate and decline, resulting in a vicious cycle of disinvestment, shrinking disposable income bases, and growing public sector costs. Conversely, local clusters thrive when high-end innovation activity is high, for that activity means there is more disposable income for local restaurants, retail, and entertainment.

Interestingly, the reverse dependency is also true. There is an increasing awareness of the role of local amenities – food, retail, entertainment, and recreation – in attracting and retaining high-end knowledge activity. States and regions strategizing how best to compete for tomorrow's innovation activity are realizing that their best approach involves direct investments in innovation assets (research institutions, start-up funding, technology infrastructure),but also ensuring a vibrant local cluster of food, retail, entertainment and recreation options. Hence, merchants of all shapes and sizes play an important role in attracting innovation activity, and in turn stand to gain significantly when that innovation activity is growing.

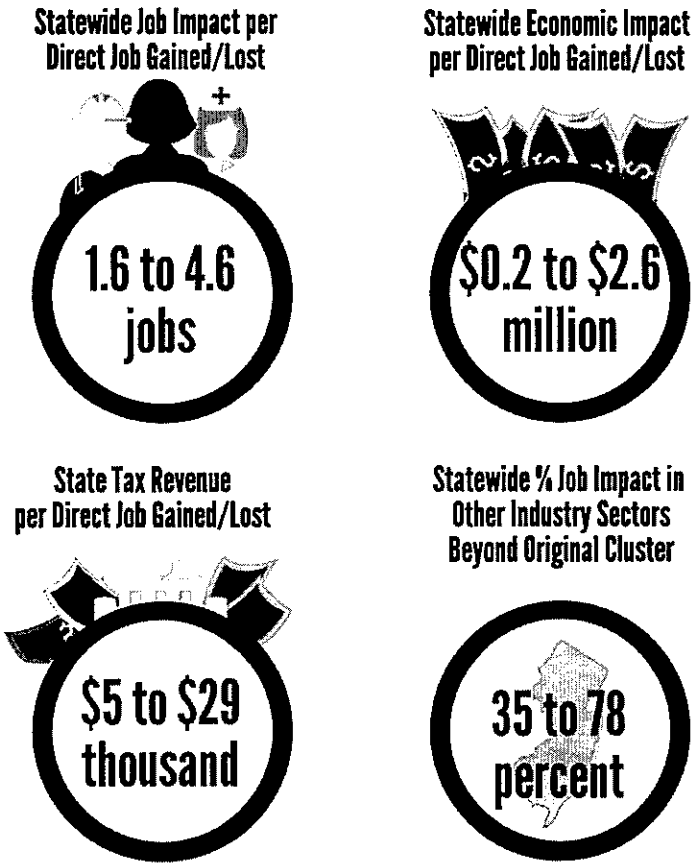
4.0 CONCLUSION

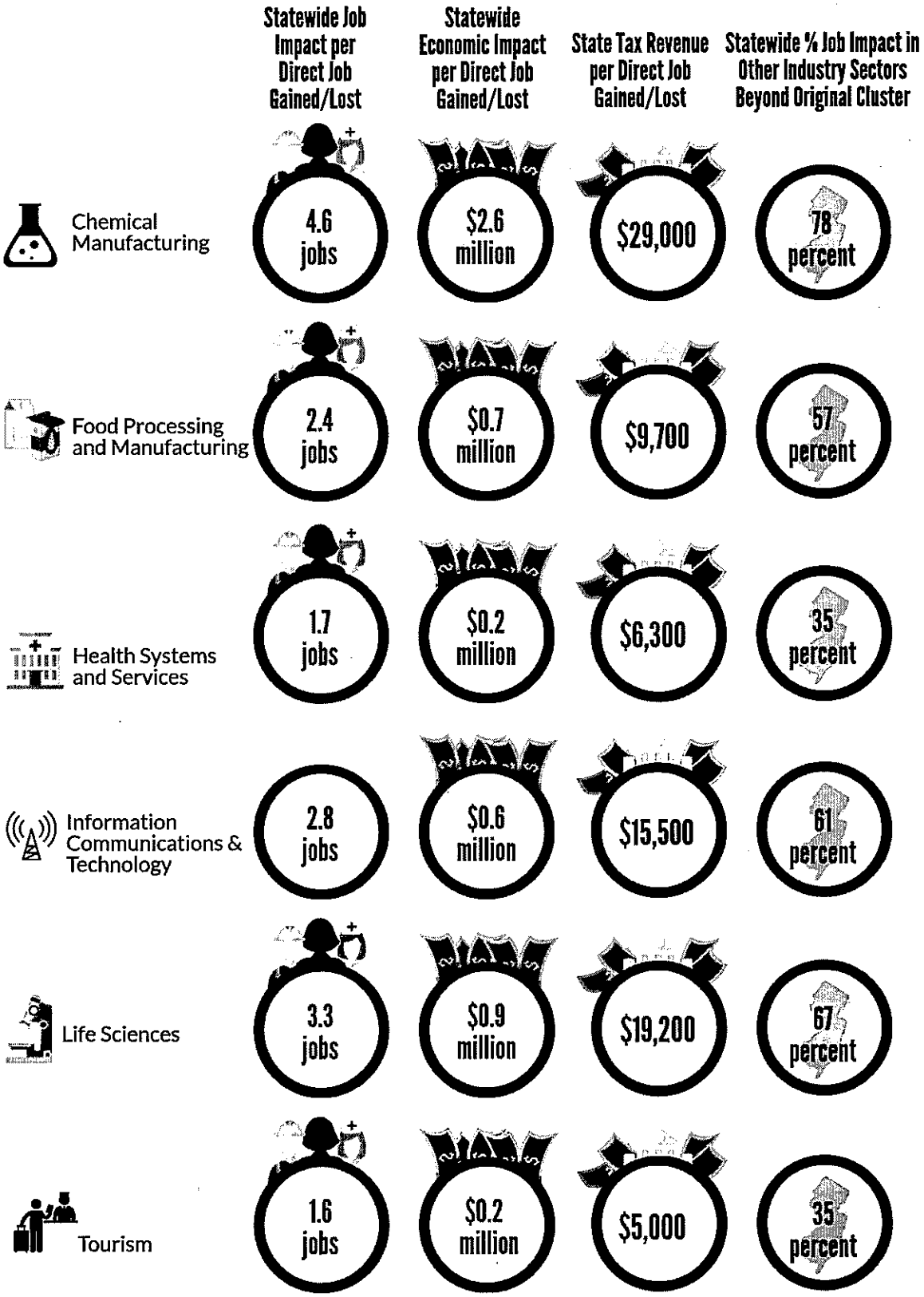
4.1 OVERVIEW

This report demonstrates that there are both short-term and long-term impacts on the state economy as a result of growth or decline within key industry clusters. Sometimes it is easy to take it for granted that a company will always be there – but there are numerous examples from both New Jersey and other states that demonstrate the danger of that type of thinking. Rather, it is future growth or shrinkage in key industry clusters that will be subject to the favorability or unfavorability of New Jersey's business climate going forward.

4.2 SHORT-TERM IMPACTS

In the short-term, growth within a cluster will result in more spending through its supply chain and contractors, as well as spending by its employees in the local community. The benefits of business activity are clear across all six clusters examined:




Statewide Job Impact per Direct Job Gained/Lost
Statewide Economic Impact per Direct Job Gained/Lost
State Tax Revenue per Direct Job Gained/Lost
Statewide % Job Impact in Other Industry Sectors Beyond Original Cluster
Chemical Manufacturing
4.6 jobs
$2.6 million
$29,000
78 percent
Food Processing and Manufacturing
2.4 jobs
$0.7 million
$9,700
57 percent
Health Systems and Services
1.7 jobs
$0.2 million
$6,300
35 percent
Information Communications & Technology
2.8 jobs
$0.6 million
$15,500
61 percent
Life Sciences
3.3 jobs
$0.9 million
$19,200
67 percent
Tourism
1.6 jobs
$0.2 million
$5,000
35 percent

1822x

4.3 LONG-TERM IMPACTS

Over the long-term, gradual losses within a cluster can add up and weaken the cluster as a whole – talent networks are weakened, innovation partnerships can collapse, and professional networks and expertise may leave the state. If enough companies leave or shrink, the cycle can accelerate and ultimately the benefits of a cluster can evaporate. There are four dimensions of risk when a cluster falls into a cycle of decline:

1. **The state loses export opportunities and revenues.** Tradable clusters are crucial to long-term economic success of a state, as they bring new revenues and resources into the state, supporting both the growth of the cluster and local clusters and businesses. Relying only upon local economic activity will result in long-term decline for clusters and local economies.

2. **The state can lose the benefits of clusters**. Clusters serve as magnets for similar and related companies and activities. If there is enough activity and scale to a cluster, talent, expertise and resources are drawn to and around the cluster, helping to fuel additional economic activity and growth. But when that cluster weakens, that talent, expertise and resources will be dispersed among other regions with similar clusters, reducing New Jersey's competitive advantage. We've seen this story elsewhere, whether it is manufacturing shifting from the Rust Belt to the South, or the elimination of textiles in the US to overseas competition.

Four dimensions of risk from cluster decline:
1. The state loses export opportunities and revenues.
2. The state can lose the benefits of clusters.
3. Companies have difficulty attracting talent.
4. Communities lose their innovation advantage.

3. **Companies have difficulty attracting talent**. One of the key challenges for any company is attracting and retaining a talented workforce. One of the benefits of economic clustering is that the cluster itself can work together to develop a local pool of talent, identifying needed skills and working with local workforce and higher education institutions to train a qualified pool of applicants – in essence sharing the cost of training across an industry. If a cluster begins to shrink, attracting and retaining talent becomes more difficult, as they worry about whether the community has enough opportunities. And as that talent pool diminishes, a company can choose to reduce its size at that location through attrition, and add jobs where there is a more abundant talent base.

4. **Communities lose their innovation advantage.** If it wants to lead in innovation, the state must continue to create a favorable business climate to enable the mixing of inter-disciplinary human capital (researchers, entrepreneurs) and to facilitate the inflow of financial capital (research grants, venture capital funds). In all such cases, the State of New Jersey is competing against the rest of the world, and perceptions of business climate go a long way towards where skilled workers and innovation funding will land, with attendant short-term and long-term effects on the state economy. A region that ceases to innovate and therefore to draw in outside human and financial capital begins to stagnate and decline, resulting in a vicious cycle of disinvestment, shrinking disposable income bases, and growing public sector costs. Conversely, local clusters

thrive when high-end innovation activity is high, for that activity means there is more disposable income for local restaurants, retail, and entertainment.

4.4 CONSIDERATIONS FOR POLICYMAKERS

The purpose of this report is to analyze the interconnectivity of business in New Jersey and explore the magnitude and reach of the impact industries have on each other when an industry cluster is favorably or unfavorably impacted by economic forces or public policy. As such, it does not comment directly on what policies the state should implement to create a more favorable business climate in New Jersey. However, this report tries to provide guidance for that very important consideration, and in particular there are five conclusions that can be drawn from the analyses contained in this report.

1. **Evaluate and consider the downstream impacts of changes in approaches to an industry cluster**. It is easy to think that a targeted tax or regulatory change will only impact that industry. But as we have demonstrated in this report, gains or losses will be felt downstream. A favorable climate for the Food Processing industry, for example, will also result in more business for the farmers, wholesalers and truckers that support the industry. If companies within the cluster add more employees or pay them more, the local Main Street will benefit from purchases at stores, home purchases or repairs, and local restaurant traffic. Also, as a cluster develops, specialized expertise will surround it, particularly in the business services sectors like management consulting, legal services, accounting and finance. That expertise can be leveraged to attract other industries with similar or related issues, and help to keep companies close to tap into that local knowledge base.

2. **Objectively evaluate the consequences of policy decisions**. All policy decisions inevitably require tradeoffs – and policies that impact business competitiveness are no different. Sometimes, a policy that is designed to directly improve the business climate for one sector could negatively impact another part of the economy, or another priority of state policymakers. By utilizing sound economic analysis to understand the consequences of a policy choice, that decision can be better informed and the tradeoffs fully understood.

3. **Innovation is enhanced by diversity** -- The way to encourage innovation is to create a climate that is welcoming to a diversity of individuals, businesses, industries, and in turn the ultimate beneficiaries of innovation success are a diversity of individuals, businesses and industries. New Jersey has a long history of openness to new people and new ideas, and creating a climate that supports a diverse set of industry clusters will benefit not just those clusters, but the entire state economy.

4. **Changes to the cost structure of the supplier network or local businesses can result in reduced spending locally**. In our global economy, companies have many choices on where they can source their business or grow their operations. Broad changes affecting the cost of doing business in the state generally can impact decisions on where a company purchases goods or services and/or where it chooses to grow.

Depending on the industry, different changes can make a big difference. For example, in energy intensive manufacturing industries, increased utility fees that are passed on to the customer may mean they seek to reduce their workforce costs, or find other, lower cost-suppliers in another location. For labor intensive services that are typically employing lower skilled workers, increased labor costs may be passed on to their customers, forcing the customer to ultimately decide whether to grow or shrink their footprints in New Jersey due to the increased labor cost of the contracted service.

5. **State investments in talent and infrastructure make a difference**. For important, long-standing industry clusters, state investments in talent development and infrastructure can help to reduce costs of doing business for crucial industries, making them more likely to grow and expand in New Jersey. For example, supporting a workforce initiative to train new lab technicians and scientists for New Jersey biotech companies can allow them to reduce the costs of replacing or finding new workers, and allow them to direct more to employee wages or growth of new products or markets. In a similar way, investments in new port, airport or ground transportation infrastructure can support New Jersey's tradable industries looking to bring revenues back to the state through trade relationships both domestically and internationally.

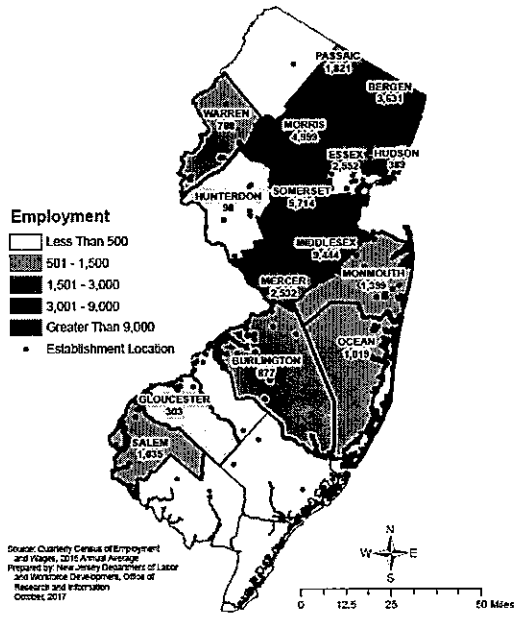
It is clear that If New Jersey is to grow its economy, it is important to maintain a focus on the relationship between its tradable and local clusters. The two go hand-in-hand, and a smart economic development strategy that recognizes and builds on the interesting ecosystems that have developed.

APPENDIX A: INDUSTRY CLUSTER IMPACT SUMMARIES

CHEMICAL MANUFACTURING

New Jersey has a long and distinguished history as a center for the chemical manufacturing industry. The industry is concentrated in the northern and central regions of the state, with the largest concentration in Middlesex County.

Chemical Manufacturing Employment and Establishment Locations New Jersey, 2016



WHY IS THE CHEMICAL MANUFACTURING CLUSTER IMPORTANT TO THE NEW JERSEY ECONOMY?

According to the American Chemistry Council:[5]

- It is the largest manufacturing industry in NJ, at $25.5 billion and nearly 44,000 jobs
- The average annual wage of an industry employee of $126,000 is nearly twice that of the private sector state average and 60% higher than the average manufacturing wage[6]
- Exports $8.3 billion to the rest of the world, making it the state's largest export sector.
- Over 96% of manufactured goods are touched by chemistry, making it a key partner for other manufacturing sectors.

TABLE A.1 – ILLUSTRATIVE CHEMICAL MANUFACTURING COMPANIES BY NUMBER OF EMPLOYEES

Company	Employees
BASF Corp.	2200
Linde North America	905
Solvay USA Inc.	400
Thermwell Products Co. Inc.	900
Alpha Industries	500

Source: Choose NJ

[5] https://chemistrymatters.com/page.asp?content=nj&g=chemistrymatters

[6] http://lwd.state.nj.us/labor/lpa/pub/empecon/advmfg.pdf

Chemical Manufacturing: Economic Impact of Job Gain or Loss

When 500 direct jobs in the Chemical Manufacturing industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us begin with the amount of direct economic footprint represented by 500 jobs' worth of activity in Chemical Manufacturing. The economic activity associated with those jobs would have over $900 million in direct spending (output) and wages of nearly $67 million. At about $1.8 million in output per employee and an average wage of $133,000, this makes the Chemical Manufacturing industry cluster one of the highest value-add industry clusters in the state, and therefore an important one in terms of producing economic output and creating well-paying jobs.

But the impact of gaining or losing 500 jobs in the Chemical Manufacturing industry cluster would be far greater than this, because there is a spillover indirect and induced effect from this direct footprint:

- Indirect: Chemical manufacturing represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $250 million of economic output and supporting 927 additional jobs with total compensation of over $70 million throughout the state.
- Induced: Employee spending will support an induced output of $140 million, supporting an additional 876 jobs and over $42 million in employee compensation throughout the state.

Hence, the total economic impact for 500 jobs in the Chemical Manufacturing industry cluster, combining the direct, indirect and induced impacts, is 2,300 jobs, over $1.3 billion in economic output, and about $180 million in employee compensation (see Table A.2). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs' worth of activity in the Chemical Manufacturing industry cluster. Each of those jobs gained or lost is actually worth 4.6 jobs within the state economy, as well as $2.6 million in economic output and $360,000 in wages.

Table A.2 – Impact on New Jersey State Economy of 500 Jobs Gained or Lost in New Jersey's Chemical Manufacturing Cluster

Chemical Manufacturing	Jobs	Output (in Millions)	Wages (in Millions)
Direct	500	$934.0	$67.0
Indirect	927	$248.9	$70.4
Induced	876	$138.0	$42.5
Total	2304	$1,320.8	$179.8
Total Impact per Direct Job	**4.6 jobs**	**$2.64 million in Output**	**$360,000 in Wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Chemical Manufacturing industry would also have a significant impact on state tax revenues. The total economic impact would result in $14.7 million in total tax revenues, comprised of nearly $6 million in state income tax revenue, $6.7 million in sales tax collections, and just over $2 million in business tax revenues (see Table A.3). This works out to about $30,000 in state tax revenues gained or lost for every job gained or lost in Chemical Manufacturing, much of which is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Chemical Manufacturing.

TABLE A.3 – TAX REVENUE IMPACT ON NEW JERSEY STATE GOVERNMENT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S CHEMICAL MANUFACTURING CLUSTER

Tax	Revenue (in Millions)
Income Tax	$6.0
Sales Tax	$6.7
Business Tax	$2.0
Total Tax Revenues	**$14.7**
Total Tax Revenue Impact per Direct Job	**$29,000**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect but also its composition. After all, gains or losses in one industry cluster touch other industry clusters, through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Chemical Manufacturing cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Chemical Manufacturing, over three-quarters of the total job impacts are outside of the cluster and in other industries (see Figure A-1 and Table A.4). From the original 500 jobs, another 1,803 indirect and induced jobs are supported. Eighteen of those jobs are in Chemical Manufacturing itself, but the other 1,785 jobs are in other industries throughout the state economy. Among the top industry sectors benefitting from Chemical Manufacturing are industries that would typically interact with companies in the cluster like wholesale trade, management of companies and enterprises, truck transportation and extraction of natural gas petroleum. Other leading sectors which would serve both employees and the companies include real estate related sectors, restaurants, hospitals and employment services.

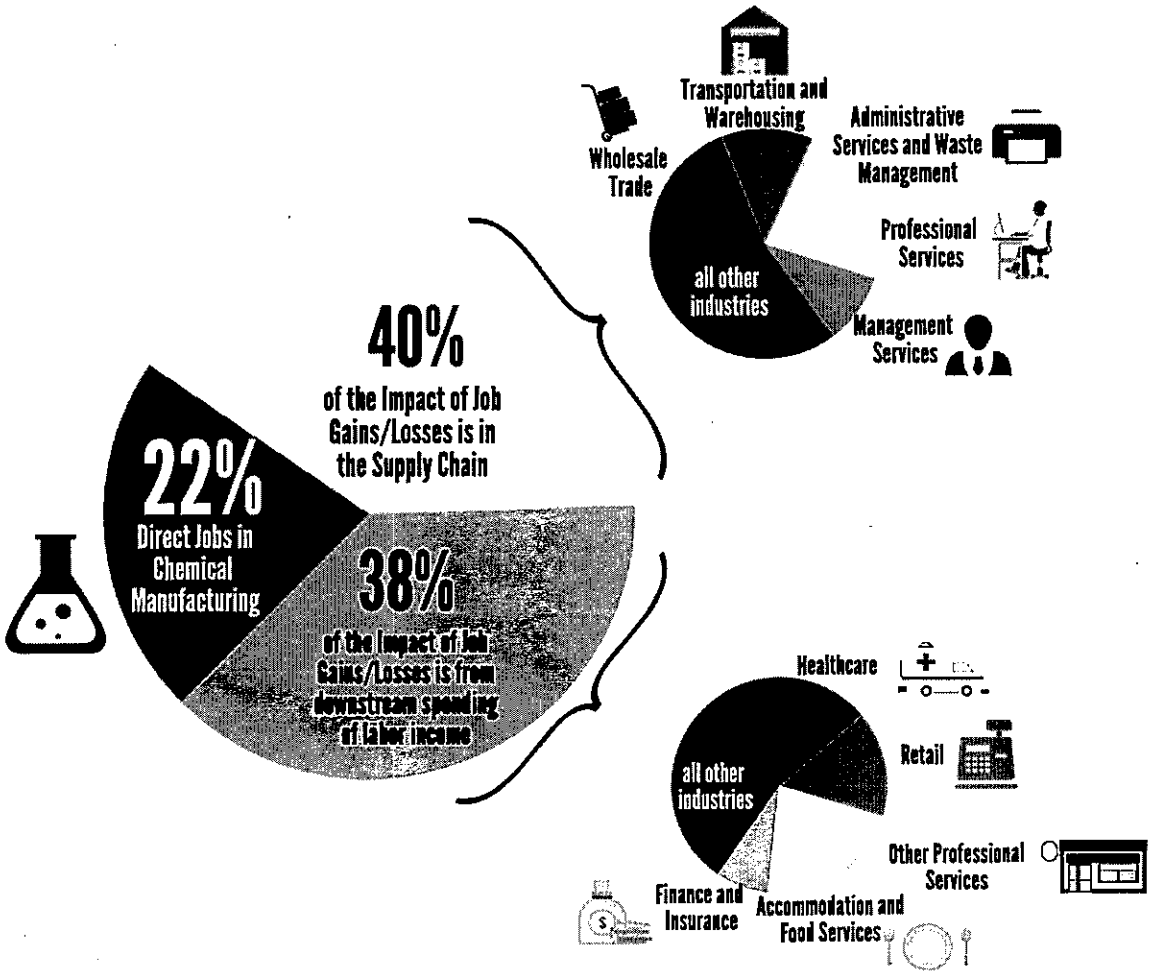


FIGURE A.1 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S CHEMICAL MANUFACTURING CLUSTER ON OTHER INDUSTRIES

TABLE A.4 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S CHEMICAL MANUFACTURING CLUSTER ON OTHER INDUSTRIES

Chemical Manufacturing	Jobs	Sector Jobs
Within Chemicals Cluster	518	
Outside Chemicals:	1785	
Wholesale trade		158
Management of companies and enterprises		93
Truck transportation		57
Real estate		54
Maintenance and repair construction of nonresidential structures		49
Full-service restaurants		48
Hospitals		47
Services to buildings		43
Extraction of natural gas and crude petroleum		42
Employment services		39

Source: IMPLAN, Econsult Solutions, Inc.

FOOD MANUFACTURING AND PROCESSING

Despite being the most urbanized state in the nation, New Jersey is a major center for food processing and manufacturing. New Jersey has always played an outsized role in food production due to its location with over 40% of the nation's population within a one day drive of the state and two major ports serving both as centers for import and export purposes. Despite its small size, New Jersey ranks 20th in food manufacturing employment (33,000) and 7th in establishments.[7]

WHY IS THE FOOD MANUFACTURING AND PROCESSING CLUSTER IMPORTANT TO THE NEW JERSEY ECONOMY?

- The food manufacturing and processing industry serves a dual role, both serving the state's local communities and bringing dollars back into the state as products are shipped beyond the state borders.
- The industry provides a wide diversity of jobs, ranging from food packagers, bakers, machine operators and laborers to inspectors, food scientists and technologists.
- A number of other key industries are linked to food manufacturing and processing, including logistics, warehousing, and retail.

Food Manufacturing Employment and Establishment Locations New Jersey, 2016

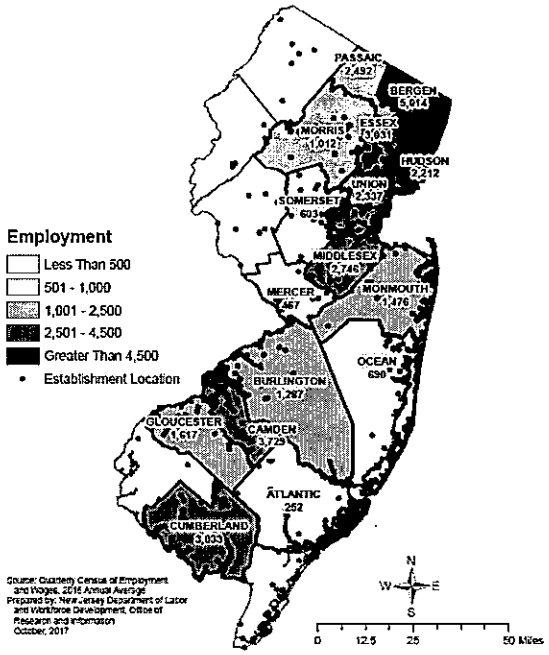


TABLE A.5 – ILLUSTRATIVE FOOD MANUFACTURING AND PROCESSING COMPANIES

Company
Atalanta
Campbell Soup Co.
Goya Foods Inc.
Mars Chocolate North America
Mondelez International

Source: Choose NJ

[7] NJBIA, Food Manufacturing in New Jersey, https://www.njbia.org/wp-content/uploads/2016/05/NJBIAFoodManufacturingReport-VFINAL_WEB.pdf

Food Manufacturing and Processing: Economic Impact of Job Gain or Loss

When 500 direct jobs in the Food Processing and Manufacturing industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us begin with the amount of direct economic footprint represented by 500 jobs' worth of activity in Food Manufacturing and Processing. The economic activity associated with those jobs would have over $200 million in direct spending (output) and wages of nearly $30 million. That translates into about $415,000 in output per employee and an average wage of $59,000.

But the impact of gaining or losing 500 jobs in the Food Processing and Manufacturing industry cluster would be far greater than this, because of the spillover indirect and induced effect from this direct footprint:

- Indirect: Food processing and manufacturing contractors and vendors represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $78 million of economic output, and supporting 371 additional jobs with total compensation of over $24 million throughout the state.
- Induced: Employee spending will support an induced output of nearly $49 million, and 308 induced jobs with nearly $15 million in employee compensation throughout the state.

The total economic impact for 500 jobs in the Food Processing and Manufacturing industry cluster, combining the direct, indirect and induced impacts is nearly 1,200 jobs, over $330 million in economic output, and nearly $69 million in employee compensation (see Table A.6). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs worth of activity in the Food Processing and Manufacturing industry cluster. Each of these jobs gained or lost is actually worth 2.4 jobs within the state economy, as well as $668,000 in economic output and $138,000 in wages.

Table A.6 – Impact of 500 Jobs in New Jersey's Food Processing and Manufacturing Cluster

Food Processing and Manufacturing	Jobs	Output (in Millions)	Wages (in Millions)
Direct	500	$207.6	$29.5
Indirect	371	$77.7	$24.4
Induced	308	$48.6	$15.0
Total	1180	$334.0	$68.9
Total Impact per Direct Job	**2.36 jobs**	**$668,000 in Output**	**$138, 000 in wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Food Manufacturing and Processing industry cluster would also have a significant impact on state tax revenues. The total economic impact would result in a gain or loss of $4.8 million in total tax revenues, comprised of nearly $2.3 million in state income tax revenue, $2 million in sales tax collections, and nearly $600,000 in business tax revenues (see

Table A.7). This works out to about $10,000 in state tax revenues gained or lost for every job gained or lost in Food Processing and Manufacturing, much of which is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Food Processing and Manufacturing.

TABLE A.7 – TAX IMPACT OF 500 JOBS IN FOOD PROCESSING AND MANUFACTURING CLUSTER

Tax	Revenue (in Millions)
Income Tax	$2.3
Sales Tax	$2.0
Business Tax	$0.6
Total Tax Revenues	**$4.9**
Total Tax Revenue Impact per Direct Job	**$9,700**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect but also its composition. After all, gains or losses in one industry cluster touch other industry clusters, through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Food Processing and Manufacturing industry cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Food Processing and Manufacturing, over half of the total job impact is outside of the cluster and in other industries (see Figure A.2 and Table A.8). From the original 500 jobs, another 671 indirect and induced jobs are supported. Nine of those jobs are in Food Processing and Manufacturing itself, but the other 671 jobs are in other industries throughout the state economy. Among the top industry sectors benefitting from Food Processing and Manufacturing are industries that would typically interact with companies in the cluster like wholesale trade, truck transportation, farming sectors, management activities and marketing. Other leading sectors which would serve both employees and the companies include real estate related sectors, restaurants and hospitals.

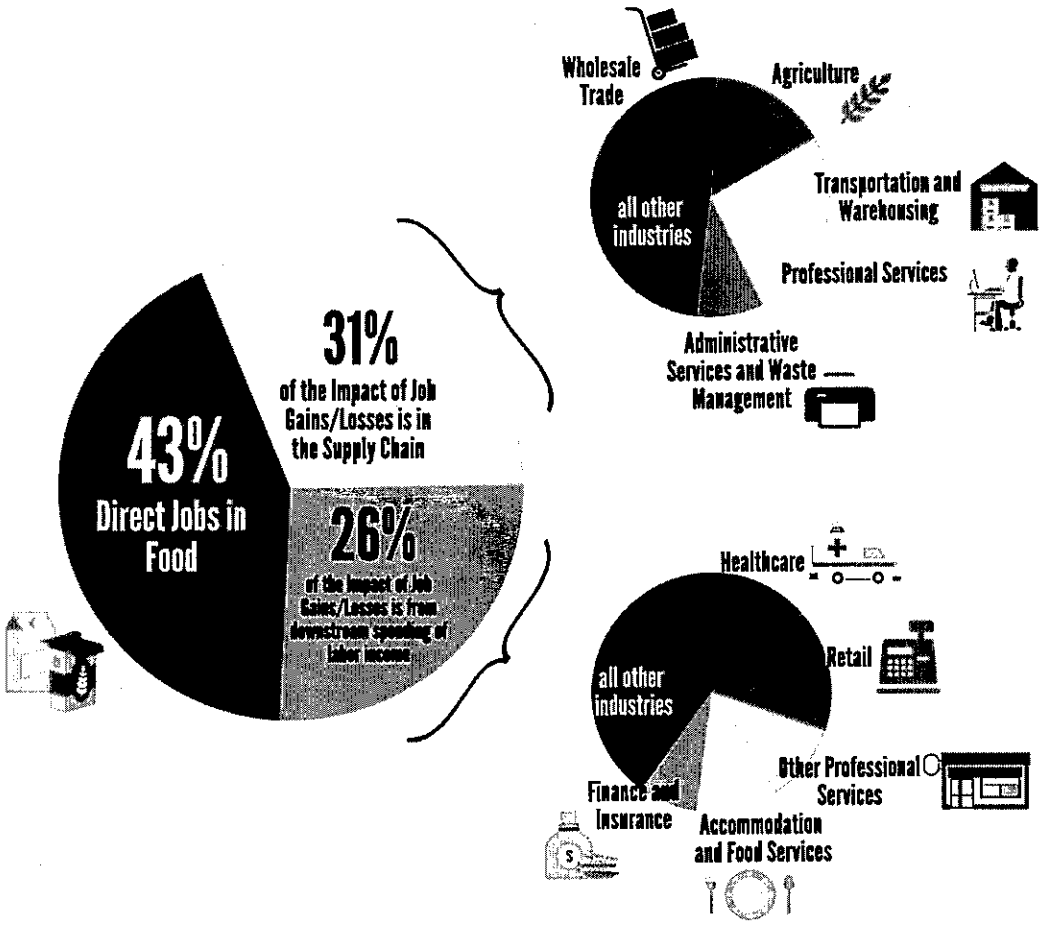


FIGURE A.2 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S FOOD PROCESSING AND MANUFACTURING CLUSTER ON OTHER INDUSTRIES

TABLE A.8 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S FOOD PROCESSING AND MANUFACTURING CLUSTER ON OTHER INDUSTRIES

Food Processing and Manufacturing	Jobs	Sector Jobs
Within Food Processing and Manufacturing Cluster	509	
Outside Food Processing and Manufacturing	671	
Wholesale trade		71
Truck transportation		32
Management of companies and enterprises		26
Fruit farming		20
Real estate		20
Full-service restaurants		18
Hospitals		17
All other crop farming		16
Marketing research and all other miscellaneous professional, scientific, and technical services		15
Limited-service restaurants		15

Source: IMPLAN, Econsult Solutions, Inc.

HEALTH SYSTEMS AND SERVICES

New Jersey's Health Systems and Services cluster has been the fastest growing sector in the state and is the only industry in NJ that has added jobs every year since 1990. That growth is expected to continue due to the aging of the population, but the industry faces significant financial uncertainty due to federal health care and tax policy changes.

WHY IS THE HEALTH SYSTEMS AND SERVICES CLUSTER IMPORTANT TO THE NEW JERSEY ECONOMY?

- Health Systems and Services serve as the anchors of communities across the state, and also support additional health care related offices and enterprises.
  - Health Systems and Services provided $2.75 billion in community benefits;
  - Over 20,000 community health programs served 15.8 million people[8].
- Nearly 22,000 health care establishments (including hospitals, outpatient centers, doctor's offices and other health services employers) employing nearly 469,000 people, with 1/3 of that employment in hospitals.[9]
- Contributed nearly $37 billion to GDP in 2015, and $26.3 billion in total wages (12% of all private sector wages).
- Provides a diversity of jobs, from highly skilled medical professionals, nurses and administrators to medical technicians, home health aides, nursing assistants, food service workers and support staff.

TABLE A.9 – ILLUSTRATIVE HEALTH SYSTEMS AND SERVICES EMPLOYERS[10]

Largest NJ Health Systems	Employees
Hackensack Meridian Health	33,000
RWJ Barnabas Health	32,000
Atlantic Health	16,000
Virtua Health	9,000
Cooper University Health	7,000
Inspira Health Network	5,700
St. Joseph's Health	5,100
Jefferson Health New Jersey (formerly Kennedy Health)	5,000

[8] http://www.njha.com/media/413753/17-community-benefit-infographic-report.pdf

[9] NJ Health Care Industry Cluster; Dept of Labor & Workforce Development, Office of Research & Information 2017 Report

[10] Based on publicly reported data

Health Systems and Services: Economic Impact of Job Gain or Loss

When 500 direct jobs in the Health Systems and Services industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us begin with the amount of direct economic footprint represented by 500 jobs' worth of activity in Hospital and Health Systems. The economic activity associated with those jobs would have nearly $59 million in direct spending (output) and wages of nearly $31 million. That translates into about $118,000 in output per Health Systems and Services employee and an average wage of $61,000 per employee.

But the impact of gaining or losing 500 jobs in the Health Systems and Services industry cluster would be far greater than this, because of the spillover indirect and induced effect from this direct footprint:

- Indirect: Health Systems and Services represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $20 million of economic output, and supporting 115 additional jobs with total compensation of nearly $6.8 million throughout the state.
- Induced: Employee spending will support an induced output of over $35 million, and 224 induced jobs with nearly $11 million in employee compensation throughout the state.

The total economic impact for 500 jobs in the Health Systems and Services industry cluster, combining the direct, indirect and induced impacts is 839 jobs, over $114 million in economic output, and $48 million in employee compensation (see Table A.10). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs worth of activity in the Health Systems and Services industry cluster. Each of these jobs gained or lost is actually worth 1.7 jobs within the state economy, as well as $228,000 in economic output and $96,000 in wages.

Table A.10 – Impact of 500 Jobs in New Jersey's Health Systems and Services Cluster

Health Systems and Services	Jobs	Output (in Millions)	Wages (in Millions)
Direct	500	$58.5	$30.5
Indirect	115	$20.5	$6.8
Induced	224	$35.3	$10.9
Total	839	$114.2	$48.1
Total Impact per Direct Job	**1.68 jobs**	**$228,000 in Output**	**$96,000 in Wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Health Systems and Services industry cluster would also have a significant impact on state tax revenues. The total economic impact would result in a gain or loss of $3.1 million in total tax revenues, comprised of $1.6 million in state income tax revenue, $1.2

million in sales tax collections, and $350,000 in business tax revenues (see Table A.11). This equals about $6,000 in state tax revenues gained or lost for every job gained or lost in Health Systems and Services, much of which is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Health Systems and Services.

TABLE A.11 – TAX IMPACT OF 500 JOBS IN HEALTH SYSTEMS AND SERVICES CLUSTER

Tax	Revenue (in Millions)
Income Tax	$1.6
Sales Tax	$1.2
Business Tax	$0.4
Total Tax Revenues	**$3.1**
Total Tax Revenue Impact per Direct Job	**$6,300**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect, but also its composition. Gains or losses in one industry cluster touch other industry clusters through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Health Systems and Services industry cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Health Systems and Services, one-third of the total job impact is outside of the cluster and in other industries (see Figure A.3 and Table A.12). From the original 500 jobs, another 338 indirect and induced jobs are supported. 48 of those jobs are in Health Systems and Services itself, but the other 290 jobs are in other industries throughout the state economy. Among the top industry sectors benefitting from Health Systems and Services are sectors that would typically interact with companies in the cluster like real estate, employment services, other financial investment activities, wholesale trade and management consulting. Other leading sectors which would serve both employees and the companies include real estate related sectors and restaurants.

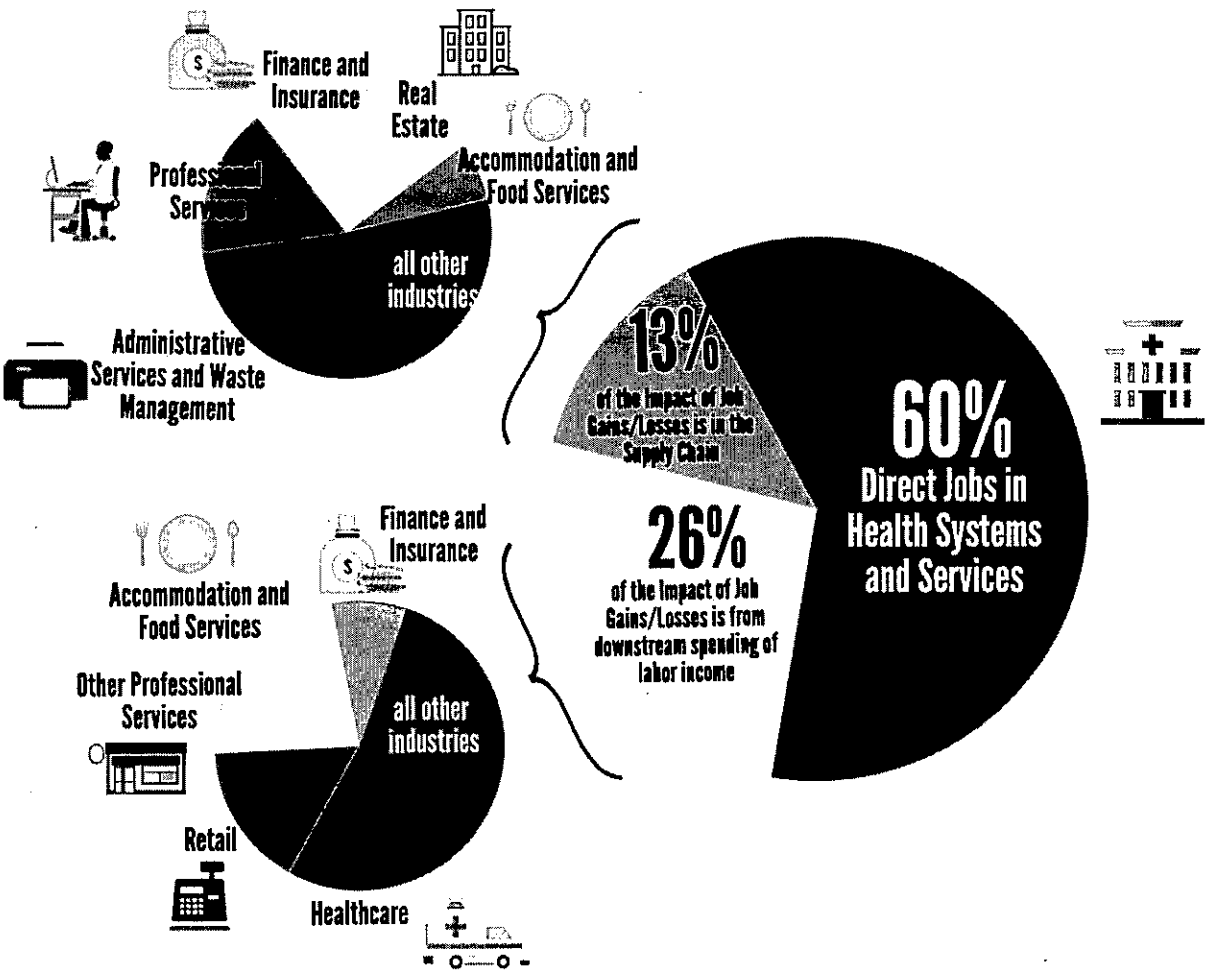


FIGURE A.3 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S HEALTH SYSTEMS AND SERVICES CLUSTER ON OTHER INDUSTRIES

TABLE A.12 – EMPLOYMENT IMPACT OF 500 JOBS IN NEW JERSEY'S HEALTH SYSTEMS AND SERVICES CLUSTER ON OTHER INDUSTRIES

Hospitals and Health Systems	Jobs	Sector Jobs
Within Hospitals and Health Systems Cluster	548	
Outside Hospitals and Health Systems	290	
Real estate		23
Employment services		18
Full-service restaurants		14
Other financial investment activities		10
Wholesale trade		10
Limited-service restaurants		9
Management consulting services		8
All other food and drinking places		8
Retail - Food and beverage stores		7
Services to buildings		7

Source: IMPLAN, Econsult Solutions, Inc.

INFORMATION COMMUNICATIONS TECHNOLOGY

New Jersey is a national leader in the Information Communications Technology (ICT) cluster, reflecting the historical roots of the industry in the state, the state's well-developed technology infrastructure and its geographic location in the center of the Northeast Corridor. The state has been cited as being one of the most connected state in the nation with 100 percent of New Jerseyans having access to mobile broadband service.The ICT cluster, which includes telecommunications, broadcasting, and data processing, hosting and related services, spans the spectrum from legacy telecommunications through the most current internet-based technologies.

WHY IS THE INFORMATION COMMUNICATIONS TECHNOLOGY CLUSTER IMPORTANT TO THE NEW JERSEY ECONOMY?

New Jersey is a global leader in ICT and cybersecurity. Some of the greatest tech advances of the 20th century – the transistor, fiber optics, digital cellular and LCD technology, barcoding, C++ programming and more – were born in New Jersey.[11] There are over 5,000 ICT companies in NJ, with over 80,000 computer programmers and over 110,000 software developers.[12] In addition, New Jersey:

- Ranks 2nd in US for ICT employees
- Ranked 3rd as most connected state in US by BroadbandNow.com
- Ranked 6th by Kauffman Information Technology and Innovation Institute for broadband communications.
- Nearly 99% of businesses can access wired broadband at speeds of 25 mbps or faster, and 96+% also have access to broadband 100 mbps or faster.[13]

TABLE A.13 – ILLUSTRATIVE ICT EMPLOYERS

Largest Employers	
Allied Universal	ICIMS
AT&T	New Jersey Innovation Institute
Audible, Inc.	Tri-County Security NJ
CommVault	Verisk Analytics
Highroad Press	Verizon Communications, Inc.

Source: Choose NJ

[11] http://www.choosenj.com/key-industries/technology

[12] http://www.choosenj.com/key-industries/technology

[13] http://www.nj.gov/njbusiness/industry/communications/

Information, Communications and Technology: Economic Impact of Job Gain or Loss

When 500 direct jobs in the Information, Communications and Technology industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us start with the amount of direct economic footprint represented by 500 jobs' worth of activity in Information, Communications and Technology. The economic activity associated with those jobs would have nearly $180 million in direct spending (output) and wages of nearly $56 million. That translates into about $118,000 in output per employee and an average wage of $61,000.

But the impact of gaining or losing 500 jobs in the Information, Communications and Technology industry cluster would be far greater than this, because of the spillover indirect and induced effect from this direct footprint:

- Indirect: Information, Communications and Technology contractors and vendors represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $71 million of economic output, and supporting 402 additional jobs with total compensation of nearly $23 million throughout the state.
- Induced: Employee spending will support an induced output of over $79 million, and 504 induced jobs with $24 million in employee compensation throughout the state.

The total economic impact for 500 jobs in the Information, Communications and Technology industry cluster, combining the direct, indirect and induced impacts is 1,405 jobs, $321 million in economic output, and $104 million in employee compensation (see Table A.14). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs worth of activity in the Information, Communications and Technology industry cluster. Each of these jobs gained or lost is actually worth 2.8 jobs within the state economy, as well as $642,000 in economic output and $207,000 in wages.

Table A.14 – Impact of 500 Jobs in New Jersey's Information Communications Technology Cluster

ICT Cluster	Jobs	Output (in Millions)	Wages (in millions)
Direct	500	$170.50	$56.4
Indirect	402	$71.10	$22.8
Induced	504	$79.30	$24.4
Total	1405	$320.90	$103.6
Total Impact per Direct Job	**2.81 jobs**	**$642,000 in Output**	**$207,000 in Wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Information, Communications and Technology industry cluster would also have a significant impact on state tax revenues. The total economic impact would result in a gain or loss of $7.5 million in total tax revenues, comprised of $3.5 million in state income tax revenue, $3.1 million in sales tax collections, and $939,000 in business tax revenues

(see Table A.15). This works out to about $15,000 in state tax revenues gained or lost for every job gained or lost in Information, Communications and Technology, much of which is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Information, Communications and Technology.

TABLE A.15 – TAX IMPACT OF 500 JOBS IN ICT CLUSTER

Tax	Revenue(in Millions)
Income Tax	$3.5
Sales Tax	$3.1
Business Tax	$0.9
Total Tax Revenues	**$7.5**
Total Tax Revenue Impact per Direct Job	**$15,000**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect but also its composition. After all, gains or losses in one industry cluster touch other industry clusters, through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Information, Communications and Technology industry cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Information, Communications and Technology, over 60% of the total job impact is outside of the cluster and in other industries (see Figure A.4 and Table A.16). From the original 500 jobs, another 906 indirect and induced jobs are supported. We find that 862 jobs are in other industries throughout the state economy and that 44 of those indirect and induced jobs are in Information, Communications and Technology itself. Among the top industry sectors benefitting from Information, Communications and Technology are sectors that would typically interact with companies in the cluster like employment services, real estate, independent artists, writers and performers, management consulting and wholesale trade. Other leading sectors which would serve both employees and the companies include hospitals, real estate related sectors and restaurants.

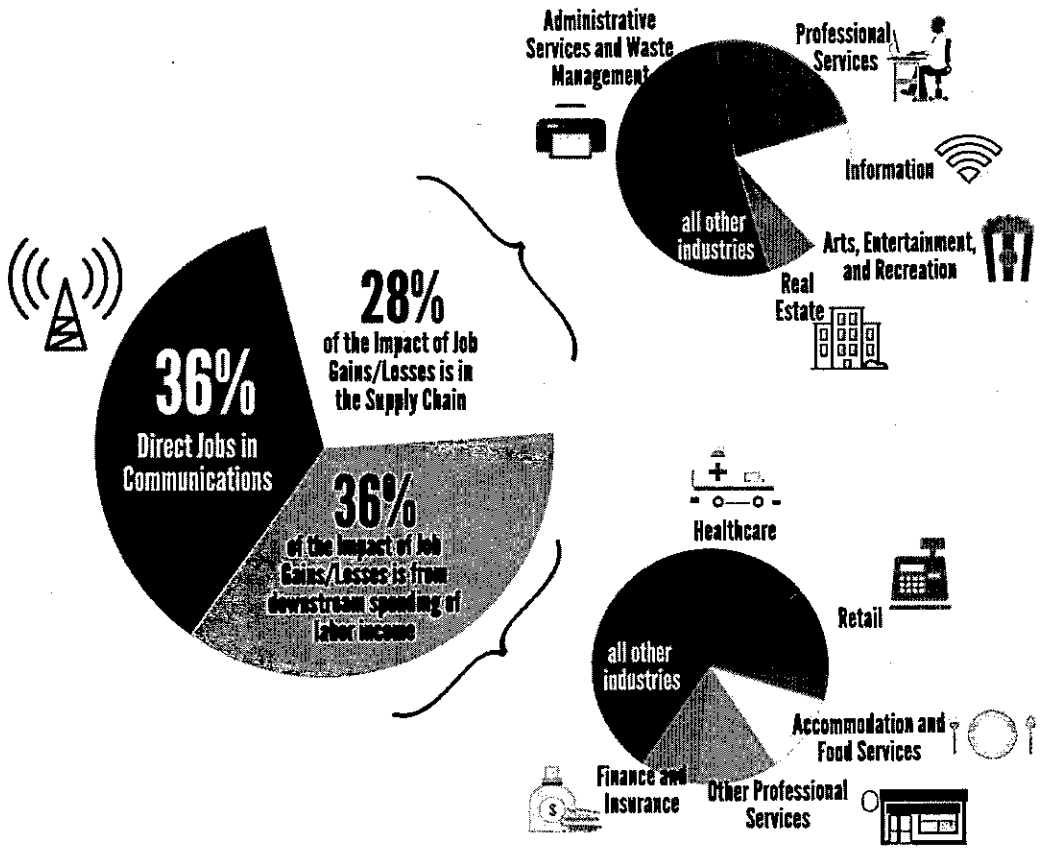


FIGURE A.4 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S INFORMATION COMMUNICATIONS TECHNOLOGY CLUSTER ON OTHER INDUSTRIES

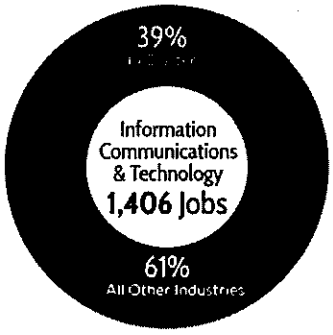


TABLE A.16 – EMPLOYMENT IMPACT OF 500 JOBS IN NEW JERSEY'S INFORMATION COMMUNICATIONS TECHNOLOGY CLUSTER ON OTHER INDUSTRIES

Information Communications Technology	Jobs	Sector Jobs
Within Information Communications Technology Cluster	544	
Outside Information Communications Technology	862	
Employment services		92
Real estate		45
Full-service restaurants		34
Hospitals		27
Independent artists, writers, and performers		26
Limited-service restaurants		22
Management consulting services		21
Wholesale trade		19
Offices of physicians		17
All other food and drinking places		17

Source: IMPLAN, Econsult Solutions, Inc.

LIFE SCIENCES

New Jersey is recognized globally as "the medicine chest of the world" for its world-class Life Sciences industry cluster, encompassing companies recognized as global leaders from the pharmaceutical, biotechnology and medical device sectors. Growing out of the state's chemical industry, New Jersey is home to 13 of the top 20 biopharmaceutical companies in the nation and 12 of the largest 20 medical device companies.[14]

WHY IS THE LIFE SCIENCES CLUSTER IMPORTANT FOR NEW JERSEY'S ECONOMY?

The Life Sciences cluster plays an outsized role in the New Jersey economy, with prime locations running on the corridors between New York and Philadelphia. Here are some reasons why New Jersey Life Sciences companies are important for the state economy:

- Life Sciences companies employ 3.5% of all private sector workers (around 117,000 employees) but account for 7.8 percent of the state's total wages (over $16.5 billion in annual payroll)
- Supports more than 350,000 spin-off jobs throughout the state.
- Wages in the Life Sciences average over 200% of the state's annual average wage.
- There are over 3,200 life sciences establishments across the state, with the largest concentrations in northern and central NJ
- The state is ranked #1 for biotech potential, #2 for biotech strength, and #2 for biochemists and biophysicists.

[14] New Jersey: A Global Hub for Life Sciences. Choose: New Jersey.

TABLE A.17 – ILLUSTRATIVE LIFE SCIENCES EMPLOYERS

Pharmaceuticals	Biotechnology	Medical Devices
Allergan	Amicus Therapeutics	Abbott Laboratories
Bayer Healthcare Pharmaceutical	Celerion, Inc.	Becton Dickinson & Co.
Bristol-Myers Squibb Co.	Chugai Pharma USA	Honeywell International, Inc.
Celgene	Collagen Matrix, Inc.	Integra Life Sciences
Daiichi Sankyo	Immunomedics, Inc.	Micro Corporation
Eisai	Progenitor Cell Therapy	Oticon, Inc.
Eli Lilly	PTC Therapeutics, Inc.	Roche Molecular Systems, Inc
Glaxosmithkline		Safilo USA, Inc.
Johnson & Johnson		Sivantos, Inc.
Merck & Co. Inc.		Stryker Orthopedics
Mallinckrodt		Zimmer Biomet
Novartis Pharmaceuticals		
Novo Nordisk		
Pfizer, Inc.		
Sanofi, U.S.		
Teva Pharmaceuticals		
West-Ward Pharmaceuticals		

LIFE SCIENCES: ECONOMIC IMPACT OF JOB GAIN OR LOSS

When 500 direct jobs in the Life Sciences industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us begin with the amount of direct economic footprint represented by 500 jobs' worth of activity in Life Sciences. The economic activity associated with those jobs would have $220 million in direct spending (output) and wages of nearly $70 million. That translates into about $440,000 in output per employee and an average wage of $140,000.

But the impact of gaining or losing 500 jobs in the Life Sciences industry cluster would be far greater than this, because of the spillover indirect and induced effect from this direct footprint:

- Indirect: Life Sciences contractors and vendors represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $107 million of economic output, and supporting 524 additional jobs with total compensation of nearly $41 million throughout the state.
- Induced: Employee spending will support an induced output of $99 million, and 626 induced jobs with $30 million in employee compensation throughout the state.

The total economic impact for 500 jobs in the Life Sciences industry cluster, combining the direct, indirect and induced impacts is 1,651 jobs, $426 million in economic output, and $141 million in employee compensation (see Table A.18). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs worth of activity in the

Life Sciences industry cluster. Each of these jobs gained or lost is actually worth 3.3 jobs within the state economy, as well as $852,000 in economic output and $281,000 in wages.

TABLE A.18 – IMPACT OF 500 JOBS IN NEW JERSEY'S LIFE SCIENCES CLUSTER

Life Sciences Cluster	Jobs	Output (in Millions)	Wages (in Millions)
Direct	500	$220.1	$69.5
Indirect	524	$107.0	$40.7
Induced	626	$98.7	$30.4
Total	1651	$425.8	$140.6
Total Impact per Direct Job	**3.30 jobs**	**$852,000 in Output**	**$281,000 in Wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Life Sciences industry cluster would also have a significant impact on state tax revenues. The total economic impact would result in a gain or loss of $9.6 million in total tax revenues, comprised of $4.6 million in state income tax revenue, $3.8 million in sales tax collections, and $1.1 million in business tax revenues (see Table A.19). This works out to about $19,000 in state tax revenues gained or lost for every job gained or lost in Life Sciences, much of which is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Life Sciences.

TABLE A.19 – TAX IMPACT OF 500 JOBS IN LIFE SCIENCES CLUSTER

Tax	Revenue (In Millions)
Income Tax	$4.6
Sales Tax	$3.8
Business Tax	$1.1
Total Tax Revenues	**$9.6**
Total Tax Revenue Impact per Direct Job	**$19,000**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect but also its composition. After all, gains or losses in one industry cluster touch other industry clusters, through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Life Sciences industry cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Life Sciences, two-thirds of the total job impact is outside of the cluster and in other industries (see Figure A.5 and Table A.20). From the original 500 jobs, another 1,151 indirect and induced jobs are supported. 46 of those jobs are in Life Sciences itself, but the other 1,105 jobs are in other industries throughout the state economy. Among the top industry sectors benefitting from Life Sciences are sectors that would typically interact with companies in the cluster like management of companies, wholesale trade, employment services, management consulting, marketing research and legal services. Other leading sectors which would serve both employees and the companies include hospitals, real estate related sectors and restaurants.

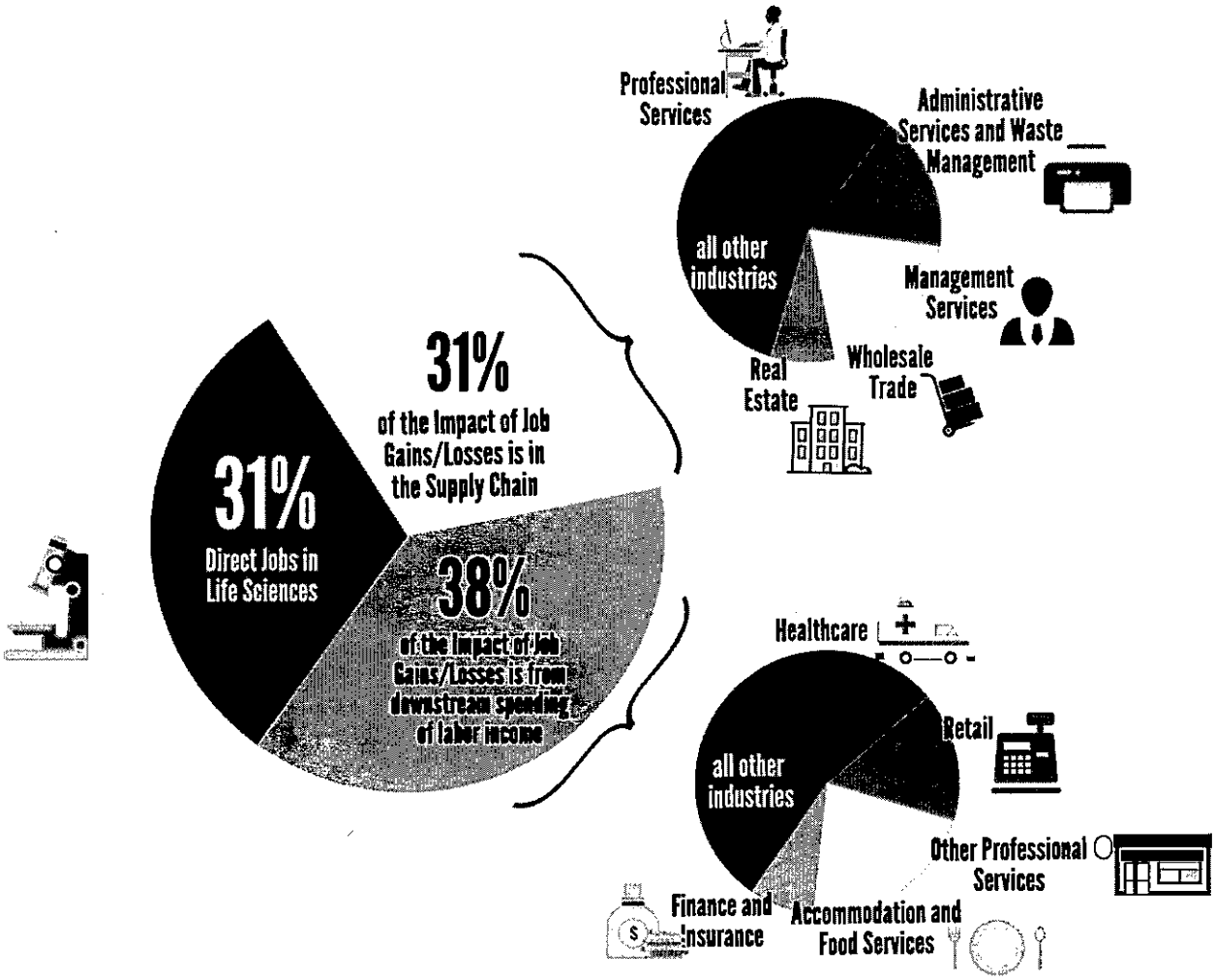


FIGURE A.5 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S LIFE SCIENCES CLUSTER ON OTHER INDUSTRIES

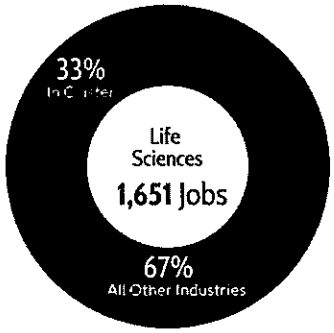


TABLE A.20 – EMPLOYMENT IMPACT OF 500 JOBS IN NEW JERSEY'S LIFE SCIENCES CLUSTER ON OTHER INDUSTRIES

Life Sciences	Jobs	Sector Jobs
Within Life Sciences Cluster	546	
Outside Life Sciences	1105	
Management of companies and enterprises		68
Real estate		61
Wholesale trade		57
Employment services		52
Management consulting services		52
Full-service restaurants		37
Hospitals		34
Marketing research and all other miscellaneous professional, scientific, and technical services		29
Legal services		29
Limited-service restaurants		26

Source: IMPLAN, Econsult Solutions, Inc.

TOURISM

Nearly 100 million visitors came to New Jersey in 2017, fueling the state's seventh largest industry and sixth largest private employer. While the industry is centered in the shore counties, hotels and other entertainment and cultural destinations are important to the economies of communities across the state. New Jersey's location within a one day drive of 40% of the nation's population, multi-modal transportation network and close proximity to major metro regions like New York, Philadelphia and Washington DC make it a prime vacation destination.

WHY IS THE TOURISM CLUSTER IMPORTANT TO THE NEW JERSEY ECONOMY?

- New Jersey has close to $42 billion in total tourism sales, with over half of that coming from the shore counties
- Tourism is an industry that brings new dollars into the state, supporting tax bases and jobs across a wide variety of skill levels, offering opportunities for entry level and advancement.
- Despite fierce competition from neighboring states, New Jersey casinos spend an average of $2.3 billion annually supporting more than 2000 independent vendors in all counties of the state.
- In addition to income and sales taxes, NJ casinos pay the state 15% on internet gross revenues and 8% on casino gross revenues, and 1.25% of revenues on community and economic development projects.
- Casino funds and taxes support a variety of services and projects, including senior citizen services, economic, housing and neighborhood development projects, New Jersey Transit paratransit and community ridership services, respite care and private institutional care and services for citizens with developmental disabilities.

TABLE A.21 – ILLUSTRATIVE TOURISM COMPANIES BY NUMBER OF EMPLOYEES

Employers	Employees
Borgata Hotel Casino & Spa	5,000
Six Flags Great Adventure, Wild Safari	4,000
Resorts Casino Hotel Atlantic City	2,500
Wyndham Worldwide	2,280

Source: Choose NJ

TOURISM: ECONOMIC IMPACT OF JOB GAIN OR LOSS

When 500 direct jobs in the Tourism industry cluster are modeled through the IMPLAN input-output model, the impacts flow through the state economy. Let us begin with the amount of direct economic footprint represented by 500 jobs' worth of activity in Tourism. The economic activity associated with those jobs would have $55 million in direct spending (output) and wages of nearly $19 million. That translates into about $110,000 in output per employee and an average wage of $38,000.

But the impact of gaining or losing 500 jobs in the Tourism industry cluster would be far greater than this, because of the spillover indirect and induced effect from this direct footprint:

- Indirect: Tourism contractors and vendors represents additional economic opportunity for a wide range of contractors and vendors throughout the state, translating into an additional $23 million of economic output, and supporting 141 additional jobs with total compensation of nearly $8 million throughout the state.
- Induced: Employee spending will support an induced output of $27 million, and 169 induced jobs with $8 million in employee compensation throughout the state.

The total economic impact for 500 jobs in the Tourism industry cluster, combining the direct, indirect and induced impacts is 810 jobs, $104 million in economic output, and $35 million in employee compensation (see Table A.22). This, in other words, is the overall consequence on the state economy, positive or negative, from gaining or losing 500 jobs worth of activity in the Tourism industry cluster. Each of these jobs gained or lost is actually worth 1.6 jobs within the state economy, as well as $209,000 in economic output and $70,000 in wages.

TABLE A.22 – IMPACT OF 500 JOBS IN NEW JERSEY'S TOURISM CLUSTER

Tourism Cluster	Jobs	Output (In Millions)	Wages (In Millions)
Direct	500	$54.8	$19.0
Indirect	141	$22.9	$7.8
Induced	169	$26.6	$8.2
Total	810	$104.3	$34.9
Total Impact per Direct Job	**1.62 jobs**	**$209,000 in Output**	**$70,000 in Wages**

Source: IMPLAN, Econsult Solutions, Inc.

A gain or loss of 500 jobs in the Tourism industry cluster would also have a significant impact on state tax revenues. The total economic impact would result in a gain or loss of $2.5 million in total tax revenues, comprised of $1.2 million in state income tax revenue, $1 million in sales tax collections, and $308,000 in business tax revenues (see Table A.23). This works out to about $5,000 in state tax revenues gained or lost for every job gained or lost in Tourism, much of which

is from the income tax on the jobs themselves but a large amount of which is from the gain or loss in indirect and induced activity from Tourism.[15]

TABLE A.23 – TAX IMPACT OF 500 JOBS IN TOURISM CLUSTER

Tax	Revenue (In Millions)
Income Tax	$1.2
Sales Tax	$1.0
Business Tax	$0.3
Total Tax Revenues	**$2.5**
Total Tax Revenue Impact per Direct Job	**$5,000**

Source: IMPLAN, Econsult Solutions

But it is important to understand not only the magnitude of this multiplier effect but also its composition. After all, gains or losses in one industry cluster touch other industry clusters, through effects on supply chains (the indirect effect) and through the spending of wages earned in one industry on goods and services in other industries (the induced effect). When the IMPLAN model is applied to the Tourism industry cluster, it models the typical economic linkages between the cluster and other aspects of the New Jersey economy. With that information we can better understand which industries most benefit from the presence of the cluster in the state.

For Tourism, 35% of the total job impact is outside of the cluster and in other industries (see Figure A.6 and Table A.24). From the original 500 jobs, another 310 indirect and induced jobs are supported. 29 of those jobs are in Tourism itself, but the other 281 jobs are in other industries throughout the state economy. Among the top industry sectors benefitting from Tourism are sectors that would typically interact with companies in the cluster like real estate, employment services, couriers, wholesale trade and legal services. Other leading sectors which would serve both employees and the companies include hospitals, real estate related sectors and restaurants.

[15] This analysis does not include the significant revenues from hotel taxes and casino revenue taxes.

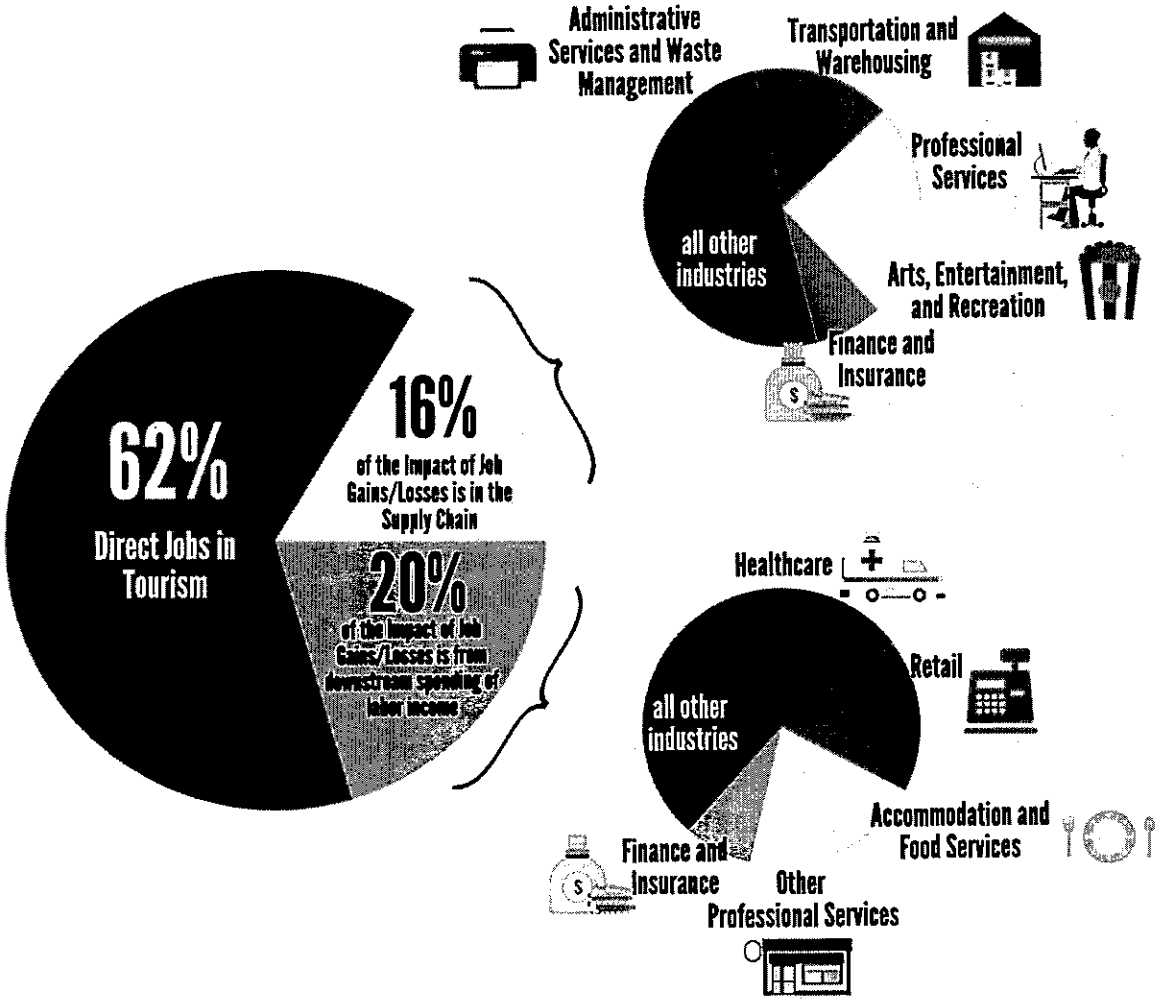


FIGURE A.6 – EMPLOYMENT IMPACT OF 500 JOBS GAINED OR LOST IN NEW JERSEY'S TOURISM CLUSTER ON OTHER INDUSTRIES

TABLE A.24 – EMPLOYMENT IMPACT OF 500 JOBS IN NEW JERSEY'S TOURISM CLUSTER ON OTHER INDUSTRIES

Tourism	Jobs	Sector Jobs
Within Tourism Cluster	529	
Outside Tourism:	281	
Real estate		16
Employment services		11
Couriers and messengers		9
Full-service restaurants		9
Hospitals		9
Services to buildings		9
All other food and drinking places		8
Wholesale trade		7
Limited-service restaurants		7
Legal services		6

Source: IMPLAN, Econsult Solutions, Inc.

APPENDIX B: ECONOMIC IMPACT METHODOLOGY

MODELING FIRMS WITHIN KEY INDUSTRY CLUSTERS

For this analysis, ESI created composite 500-person firms within each of the 6 industry clusters identified by NJPRO. This would represent either the equivalent of one 500-person firm or the economic activity associated with 500 employees across that industry cluster. The firms were created using data from the IMPLAN input-output model, and represent a pro-rated share of the total economic activity in that cluster. So, for example, if there were 100,000 jobs across the entire cluster, ESI would divide each sector within that cluster by 200 to get the prorated number of jobs for that sector. ESI would then input that number of jobs into IMPLAN to generate the estimated total direct output and direct employee compensation, and then sum all of the subsectors to develop the composite firm within that cluster.

With the creation of the composite cluster firm, ESI then inputs the information from each sector into the IMPLAN Input-Output model to generate the indirect and induced economic impacts in terms of jobs, output (spending) and employee compensation. With that data, ESI utilizes its New Jersey tax models to calculate state business, income and sales taxes.

INPUT-OUTPUT THEORY

In an inter-connected economy, every dollar spent by a company 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 the spillover impacts to all industries of a dollar spent in any single industry. Thus, the total economic impact of a firm is the sum of its own direct economic footprint plus the indirect and induced effects generated by that direct footprint.

Input-Output Model Mechanics

Econsult Solutions developed the 6 industry cluster definitions utilized in this report in consultation with NJPRO (See Appendix C for industry definitions). It then utilized the industry definitions used by the IMPLAN economic model to create the models used in this report. Because IMPLAN combines some NAICS economic sectors into larger industry groupings, there are some sectors included with industries which may not seem intuitive, but are representative of a larger grouping within which one subsector fo the cluster may be included.

To model the impacts resulting from the direct expenditures generated by 500 jobs in each of 6 industries, Econsult Solutions, Inc. (ESI) 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.[16]

These economic impacts in turn produce one-time or ongoing increases in various tax bases, which yield temporary or permanent increases in various tax revenues. To estimate these increases, ESI has created a custom fiscal impact model to translate total economic impacts into their commensurate tax revenue gains for New Jersey. Output from the IMPLAN model determines its impact on the relevant tax types and tax bases associated with the jurisdictions in which revenue impacts reside. These include income, sales, and business taxes at the state level.

[16] 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.

APPENDIX C: INDUSTRY DEFINITIONS

The industries for each cluster were identified by Econsult Solutions in consultation with NJPro using the IMPLAN industry definitions. In some cases, IMPLAN combines elements of multiple industry sectors with similar characteristics under one definition.

CHEMICAL MANUFACTURING

- Petroleum refineries
- Asphalt paving mixture and block manufacturing
- Asphalt shingle and coating materials manufacturing
- Petroleum lubricating oil and grease manufacturing
- All other petroleum and coal products manufacturing
- Petrochemical manufacturing
- Industrial gas manufacturing
- Synthetic dye and pigment manufacturing
- Other basic inorganic chemical manufacturing
- Other basic organic chemical manufacturing
- Plastics material and resin manufacturing
- Synthetic rubber manufacturing
- Artificial and synthetic fibers and filaments manufacturing
- Nitrogenous fertilizer manufacturing
- Phosphatic fertilizer manufacturing
- Fertilizer mixing
- Pesticide and other agricultural chemical manufacturing
- Paint and coating manufacturing
- Adhesive manufacturing
- Polish and other sanitation good manufacturing
- Surface active agent manufacturing
- Printing ink manufacturing
- Explosives manufacturing
- Custom compounding of purchased resins
- Photographic film and chemical manufacturing
- Other miscellaneous chemical product manufacturing

FOOD PROCESSING AND MANUFACTURING

- Flour milling
- Rice milling
- Malt manufacturing
- Wet corn milling
- Soybean and other oilseed processing
- Fats and oils refining and blending
- Breakfast cereal manufacturing
- Beet sugar manufacturing
- Sugar cane mills and refining
- Nonchocolate confectionery manufacturing
- Chocolate and confectionery manufacturing from cacao beans
- Confectionery manufacturing from purchased chocolate

- Frozen fruits, juices and vegetables manufacturing
- Frozen specialties manufacturing
- Canned fruits and vegetables manufacturing
- Canned specialties
- Dehydrated food products manufacturing
-
- Fluid milk manufacturing
- Creamery butter manufacturing
- Cheese manufacturing
- Dry, condensed, and evaporated dairy product manufacturing
- Ice cream and frozen dessert manufacturing
- Animal, except poultry, slaughtering
- Meat processed from carcasses
- Rendering and meat byproduct processing
- Poultry processing
- Seafood product preparation and packaging
- Bread and bakery product, except frozen, manufacturing
- Frozen cakes and other pastries manufacturing
- Cookie and cracker manufacturing
- Dry pasta, mixes, and dough manufacturing
- Tortilla manufacturing
- Roasted nuts and peanut butter manufacturing
- Other snack food manufacturing
- Coffee and tea manufacturing
- Flavoring syrup and concentrate manufacturing
- Mayonnaise, dressing, and sauce manufacturing
- Spice and extract manufacturing
- All other food manufacturing
- Bottled and canned soft drinks & water
- Manufactured ice

Health Systems and Services

- Offices of physicians
- Offices of dentists
- Offices of other health practitioners
- Outpatient care centers
- Medical and diagnostic laboratories
- Home health care services
- Other ambulatory health care services
- Hospitals
- Nursing and community care facilities
- Residential mental retardation, mental health, substance abuse and other facilities
- Individual and family services
- Community food, housing, and other relief services, including rehabilitation services

Information Communications Technology

- Radio and television broadcasting
- Cable and other subscription programming
- Wired telecommunications carriers
- Wireless telecommunications carriers (except satellite)
- Satellite, telecommunications resellers, and all other telecommunications
- Data processing, hosting, and related services
- Internet publishing and broadcasting and web search portals
- Custom computer programming services
- Computer systems design services
- Other computer related services, including facilities management

Life Sciences

- Medicinal and botanical manufacturing
- Pharmaceutical preparation manufacturing
- In-vitro diagnostic substance manufacturing
- Biological product (except diagnostic) manufacturing
- Soap and other detergent manufacturing
- Toilet preparation manufacturing
- Surgical and medical instrument manufacturing
- Surgical appliance and supplies manufacturing
- Dental equipment and supplies manufacturing
- Ophthalmic goods manufacturing
- Dental laboratories
- Scientific research and development services
- Automatic environmental control manufacturing
- Industrial process variable instruments manufacturing
- Totalizing fluid meter and counting device manufacturing
- Electricity and signal testing instruments manufacturing
- Analytical laboratory instrument manufacturing
- Irradiation apparatus manufacturing
- Architectural, engineering, and related services
- Environmental and other technical consulting services

TOURISM

- Racing and Track Operation
- Gambling industries (except casino hotels)
- Hotels and motels, including casino hotels
- Transit and ground passenger transportation
- Independent artists, writers, and performers
- Museums, historical sites, zoos, and parks
- Amusement parks and arcades
- Other amusement and recreation industries
- Other accommodations
- Scenic and sightseeing transportation and support activities for transportation
- Travel arrangement and reservation services
- Commercial Sports Except Racing
- Promoters of performing arts and sports and agents for public figures

ADDITIONAL APPENDIX MATERIALS
SUBMITTED TO THE

SENATE ECONOMIC GROWTH COMMITTEE
and
ASSEMBLY COMMERCE AND ECONOMIC DEVELOPMENT COMMITTEE

for the

March 8, 2019 Meeting

Submitted by Christopher Malloy, Ph.D, Chancellor, Rutgers, The State University of New Jersey-New Brunswick:

"Rutgers Grows the Garden State: Our Impact on the Economy of New Jersey,"