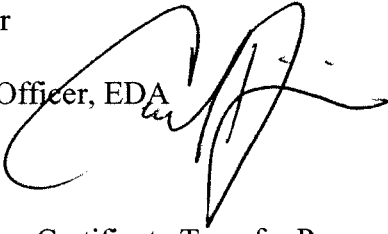




MEMORANDUM

TO: Andrew Sidamon-Eristoff, Treasurer

FROM: Caren S. Franzini, Chief Executive Officer, EDA 

DATE: February 18, 2011

RE: New Jersey Technology Business Tax Certificate Transfer Program

This memo summarizes the activities undertaken by the New Jersey Economic Development Authority (EDA) and Treasury to review the New Jersey Technology Business Tax Certificate Program and to provide EDA's recommendation for FY2012.

Background

The EDA has administered a variety of tools to support the technology industry in New Jersey. Our focus has been on emerging companies with proven concepts seeking to commercialize their innovation and grow their business. Our experience in assisting the industry recognizes that a continuum of assistance is necessary to support the commercialization and growth of the business. The EDA has provided technical assistance, lab and incubator space, direct investments through loans with warrants, venture capital funds and tax incentives.

Since the late 1990's, EDA, in coordination with the Division of Taxation, has administered the New Jersey Technology Business Tax Certificate Transfer Program (aka NOL). Through this program, New Jersey allows qualified biotechnology and technology businesses to sell unused net operating losses and research and development tax credits to unrelated profitable corporations for at least 80% of their value. Qualified technology businesses in New Jersey can raise money to finance growth and operations either as working capital or to fund research.

In his FY2011 Budget Message, Governor Christie reduced the available funding from \$60 million to \$30 million, and called upon the EDA to evaluate the success of the program in meeting its goals.

In the summer of 2010, the EDA engaged the New Jersey Institute of Technology (NJIT) to conduct a comprehensive review to determine the program's economic impact and provide recommendations (attached). The report submitted found that the program is effective in assisting young biotechnology firms in creating and maintaining high wage, high quality jobs in New Jersey, but is not effective in supporting sustainable employment in high technology firms.

Based on the overall findings and the review of technology industry best practices cited in the report, the NJIT report recommends:

- Focusing the program on biotechnology companies in recognition of the “patient” capital this industry requires due to lengthy discovery and trial periods;
- Incorporating the issuance of warrants in connection with the authorization of credits to generate a new source of funds for economic development and technology support;
- Providing for a discounted direct state buyback of the issued credits to increase the efficiency of this program; and
- Enhancing the current application process so that companies would understand more readily what is required for the successful award of benefits and the reasons they may ultimately be rejected for assistance.

Upon your request, Chief Economist Charles Steindel prepared an analysis (attached) of the NJIT report. Dr. Steindel notes his concurrence with the major conclusion that the program should be modified to focus on biotechnology firms only. He also notes his support for NJIT’s recommendation that the State’s assistance through the NOL program be accompanied by the acquisition of warrants allowing the State to share in a firm’s increase in value if the business is successful.

Recommendation

Given the factors cited in the NJIT report and by the Chief Economist, the EDA supports the continuation of the program at the legislatively authorized level for fiscal year 2012. The report recommends several administrative enhancements that the EDA will implement for the next review cycle (applications due June 30, 2011).

Further, EDA proposes to work with technology businesses and industry stakeholders to review the implementation of other recommendations that require legislative changes, in particular, the shift to focus the program on biotechnology companies. Based on this outreach and further analysis, EDA will provide you recommendations for future program changes.

EDA also agrees with both NJIT and the Chief Economist that high technology firms are better served through direct investments, such as those offered through the EDA’s Edison Innovation Fund, which supports companies throughout their growth cycle. Since the launch of the Fund in October 2006, EDA has provided just over \$25.5 million in direct equity-like investment to 42 technology and life sciences companies which are expected to create 1,080 new jobs and leverage \$114.8 million in total investments. This program, which awaits further capitalization, provides the investment vehicles that best serve the high technology industry at their earlier stage, and would be a resource for biotechnology firms as they advance in their growth cycle and move beyond research and development, which is best supported through the NOL program.

cc: Al Koeppe, EDA Chairman



New Jersey's Science & Technology University

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

Prepared for the New Jersey
Economic Development Authority

November 2010

njit.edu

THE EDGE IN KNOWLEDGE

Table of Contents

Executive Summary	Page 2
Recommendations	Page 3
Policy Review	Page 4
Implementation / Process Evaluation	Page 7
Metrics, Modeling and Analytics	Page 18
Appendix	
A: Plan of Action	Page 32
B: NJIT – NJEDA Memorandum of Understanding	Page 36

Executive Summary

Under the NJIT- NJEDA Memorandum of Understanding, NJIT was to evaluate the New Jersey Technology Business Tax Certificate Transfer Program (TECH Program) to determine program effectiveness. Overall, we have determined that the program helps young biotechnology firms to create and maintain high wage, high quality jobs in New Jersey. We have not found that the program is effective in assisting young technology firms (other than biotechnology) to create and maintain high wage, high quality jobs in New Jersey. We have also determined that the cost of the tax transfers is less than the benefit of the New Jersey income tax revenues generated by the beneficiary companies.

As determined in this study, the primary economic development goal of these programs is to cost effectively create high wage and high quality jobs in New Jersey. Secondary goals include the maintenance and development of strong technology and biotechnology industries, and new revenue streams in New Jersey. In order to evaluate the program with respect to these goals, we conducted a process evaluation to aid in understanding how the program's plans and objectives are put into action. This qualitative analysis identifies problems and obstacles so that program performance can be improved. We then conducted a quantitative analysis of the TECH program which allows for specific analysis of costs and benefits. We make recommendations to improve the efficiency of these programs and identify "best practices" from other states that might be adopted by New Jersey.

Program participants and potential participants of the TECH program, typically "new and emerging" technology and biotechnology companies, have been introduced to the program by active promotion by NJEDA and partnering with the incubator networks and other industry groups. The application structure was simplified and some requirements were codified by the 2009 amendments to the authorizing law. Unfortunately, we find that the TECH program application process causes many applicants to fail to get approved for benefits under the program. This has led to a frustrating and time-consuming appeals process and wasted expense by both applicants and NJEDA.

A modification of the law to focus the benefits on biotechnology companies would improve the performance of the overall TECH program. While technology (other than biotechnology) companies are an important opportunity for job creation in New Jersey, other programs like direct grants to promising startups, support of the business incubator networks, and co-investment in startups through the Edison Innovation Fund would be a more effective way to generate and maintain significant technology employment in New Jersey while creating new net tax revenues from wages paid. Supporting new technology startups more directly and at earlier stages will be more effective in encouraging job creation than providing transferable credits for net operating losses for technology companies other than biotechnology.

Recommendations

The following recommendations are based on the analysis done in this report.

Based on our understanding that benefits awarded to biotechnology firms are a cost effective way to encourage the creation and maintenance of jobs in New Jersey, and that the income taxes paid on the wages earned by employees of the beneficiary firms significantly exceed the program costs, ***we recommend a continuation of the biotechnology segment of the New Jersey Technology Business Tax Certificate Transfer Program as an economic development program to help develop and maintain an important industry in New Jersey.*** An amendment that incorporated issuance of warrants to New Jersey in connection with the authorization of credits would generate a new source of funds for economic development. A provision for a discounted direct state buyback of the issued credits could also contribute to increase the efficiency of this program. A sunset provision on this new cap level would allow for a new study of its effectiveness to be conducted in the future.

Due to the apparent adverse selection bias that causes weaker technology firms (other than biotechnology) to apply for this program, ***we recommend making amendments to the current law so that it focuses exclusively on biotechnology firms.*** The evidence presented in this study demonstrates the poor performance of recent non-biotechnology beneficiaries of this program.

The application process is not sufficiently transparent and significant numbers of unqualified companies have applied for benefits under the program. Many companies have gone through a frustrating and time-consuming appeals process that increases costs for both the applicants and NJEDA, therefore ***we recommend that the current application process be restructured into a more transparent process so potential applicants will understand what is required for successful awards of benefits.***

Although the primary goal of the statute is to create new high paying and high quality jobs in New Jersey, some secondary goals might be to encourage stronger industry clusters and partnerships with New Jersey research universities. ***We recommend that one way to encourage further industrial development and corporate-university partnerships would be to renew investment into startup companies through the business incubator network, direct grants to startups and co-investment through the Edison Innovation Fund.*** New Jersey already has a significant investment in business incubators that makes it attractive for new firms. Recent research has strengthened our understanding of the importance of startup firms for job creation. The renewal of grants to and co-investment in technology startups is likely to be effective for creating new high quality technology jobs.

Policy Review

The NJIT-NJEDA Program Evaluation Services Plan of Action (Appendix A) identified a Policy Review as the first milestone. This review is also noted as the second point under the scope of work in the Memorandum of Understanding (MOU) which is attached as appendix B. We have reviewed documents and conducted interviews pertaining to the New Jersey Technology Business Tax Certificate Transfer Program (TECH program) in order to achieve this milestone.

A policy review to determine the intended impacts of the program at inception is crucial in evaluating the success or failure of the programs today. This law, originally written in 1995, has been amended several times with significant changes made as recently as 2009. The policy review helps to identify the criteria that will be used in later evaluation of the program process and implementation and for modeling and analysis of the costs and benefits. Taking into account current policy and fiscal concerns, we have identified criteria that will help us to evaluate this program.

The law authorizing the Technology Business Tax Certificate Transfer Program is carefully focused on a target group of companies that are identified in the law, (P.L. 1995 c. 137 (34:1B-7.42a et al.)), as “new or expanding emerging technology and biotechnology companies.”

These credits are also targeted to benefit the three innovation zones in New Jersey. And recipients are required to maintain their headquarters or base of operations in New Jersey for at least five years following the surrender of tax benefits or face rules for the recapture of some or all of the value of the tax benefit certificates. The private financial assistance gained from the transfer of the tax credits must be used to “assist in funding expenses incurred in connection with the operation of the new or expanding emerging technology or biotechnology company in the State”.

Under the definition of a technology company, the corporation must be based in New Jersey, and own, have filed for, or have a valid license to use protected proprietary intellectual property and employ “highly educated or trained managers and workers, or both, employed in this State who use sophisticated scientific research service or production equipment processes or knowledge to discover, test, transfer or manufacture a product or service.”

While they must be small companies with fewer than 225 employees on the date of the exchange of the tax benefit certificate, they must also be growing and increasing employment. Since the 2009 amendments, the company must have “at least one full-time employee working in this State if the company has been incorporated for less than three years, have at least five full-time employees working in this State if the company has been incorporated for more than three years but less than five years, and have at least 10 full-time employees working

in this State if the company has been incorporated for more than five years”. So the current version of the law is very specific about employment goals and even requires that employees receive “company health benefits under a group health plan”.

The New Jersey Administrative Code, 19:31-12.1 (2010), specifies that these must be companies that have had no profits for the last two years and they cannot have demonstrated a ratio of 110% or greater of the ratio of operating revenues divided by operating expenses for any of the previous two years. But this rule is probably not necessary because if the company had or expected profits in the near term, they would use their net operating losses to offset their own profits directly rather than pay fees to apply for the program (\$2500), a discount for sale of (8-10% of the certificate value) and commissions to the tax credit brokers (2-5% of the certificate value).

The code further requires the NJEDA to evaluate the “actual potential scientific and technological viability of the applicant’s business product(s), service(s) and /or process(es) as demonstrated by its: (i) Uniqueness of concept; (ii) Credibility / plausibility of concept; and (iii) Scientific / technological resources of the applicant”. After explicitly evaluating the viability and competitiveness of the venture, the next point targets job creation, in particular “The degree to which the proposed financial assistance will result in growth in permanent full-time employment”. So the law and regulations are clear on the goal of the creation of high quality jobs for highly educated citizens of New Jersey.

In conversations with John Rosenfeld, Director – Program Services of the NJEDA (23 July 2010) we discussed these goals further. John provided us with “Program Evaluation Guidelines For Making The Statutory Determinations” which were used to set specific standards for companies to demonstrate that they will create “Positive Growth in Full-Time Employment in NJ”. These guidelines were used for applications in the years before the latest 2009 revision which specifies specific employment hurdles. While the goal of creating jobs is clear, the measurement of jobs created over time has not been a formal part of the NJEDA evaluation procedure. We have been able to work with the NJ Department of Labor to gather data on the performance of specific cohorts of beneficiaries over time.

While interviews with legislators who were originally involved with this legislation were not possible, in our meeting with NJ State Senator Paul Sarlo (17 August 2010), he was clear on the jobs objective of these tax credit transfer programs. In a subsequent meeting with NJ State Assemblyman and Deputy Speaker Upendra Chivukula (21 October 2010), we spoke about the intent of the tax credit programs. He described how, in conjunction with the Technology Innovation Zones, tax credit programs can help to create companies that will be a valuable addition to New Jersey. As his motivation, he discussed the challenge of

creating new high paying jobs to take up the slack from the decline in manufacturing in New Jersey.

John Rosenfeld participated in developing some amendments to the law in 2009 that were designed to make the law more predictable for applicants and thereby reduce the uncertainty of obtaining the credits. So in our evaluation of the process and implementation of the TECH credit transfer program, we will look prospectively to evaluate how the program aligns with policy objectives.

SUMMARY

The review of documents and conduct of interviews has led to our clear understanding that the creation of highly compensated, high quality jobs for New Jersey residents is the core goal of the tax credit transfer program. Secondary goals include strengthening industrial clusters and corporate partnerships with New Jersey research universities, and developing new sources of tax revenue for New Jersey. The next section will evaluate how well the process and implementation of the TECH program aligns with this goal. Recommendations to improve the process and implementation will be provided and program enhancements will be explored. While perfect metrics for evaluation may not exist, we will create models that translate related data into the goal of creating high quality jobs for New Jersey residents.

Implementation / Process Evaluation

The NJIT-NJEDA Program Evaluation Services - Plan of Action identified an Implementation / Process Evaluation as the second milestone. This evaluation is also noted as the second deliverable in the NJIT-NJEDA Memorandum of Understanding. We have reviewed documents, held meetings and conducted interviews pertaining to the Technology Business Tax Certificate Transfer Program in order to achieve this milestone.

Implementation or Process Evaluation

An evaluation of the implementation of a program, or process evaluation is designed to aid in understanding how a program's plans and objectives are put into action. An important goal is to identify problems and obstacles in order to improve program performance. Information gained from the previous Policy Review will be used to develop metrics to evaluate program performance. So another important goal is to prepare and lay the groundwork for a more quantitative impact assessment and cost / benefit evaluation. Finally, we expect to provide some recommendations to improve the efficiency of the programs, improve program alignment with policy intentions, and evaluate these programs in the context of programs in other states to help determine "best practices" for these types of programs.

An implementation or process evaluation adds a qualitative dimension to the Metrics, Modeling and Analytics that will be part of the next section and milestone under the MOU. A process evaluation goes beyond the metrics to provide a richer analysis of the more quantitatively elusive aspects of the program. Reviews of the laws, statutory rules, procedural documentation and steps, and interviews and meetings with NJEDA personnel, program applicants and beneficiaries, and other important stakeholders provide the data for our analysis. Understanding, in detail, how the program operates will help us to develop the analytic models. In addition, the qualitative data we develop can help to fill in the blanks where the quantitative metrics are not available.

Process Evaluation Plan

We will break the program implementation or process evaluation into components beginning with program participant or potential participant evaluation. As a first step, we will attempt to identify the target population for each of these programs and assess their program understanding. Are the prospective applicants and beneficiaries aware of the relevant tax credit programs? Do they understand the requirements for eligibility? Do they understand the objectives and usefulness of these programs?

In order to encourage candid and open responses to questions about the tax credit programs we guarantee anonymity to the applicants, potential applicants, and beneficiaries of these programs. Since some of the most important information we solicit will be potentially critical of the current program, process or

administration, we felt that anonymous responses would protect members of the public who might seek to submit future applications to this program or to related programs. Only public officials or individuals who offered use of their names are specifically identified.

Next we will review the application process for each of these programs. We will review requirements and documentation and follow the process from initial marketing and introduction to final awards of tax benefits and monetary subsidies. We will evaluate the assistance and challenges faced by applicants and try to understand why some applicants fail to become beneficiaries. Transparency and fairness will be evaluated through all of the phases including the appeals process. We will consider the problems of asymmetric information and the related problems of adverse selection for these application processes.

We will conclude by identifying obstacles and barriers faced by the applicants and beneficiaries to these tax credit programs. We will provide recommendations to improve efficiency and alignment with policy intentions for these programs and will discuss some “best practice” opportunities to redesign programs to improve performance.

Target Population Awareness and Eligibility Understanding

The law authorizing the Technology and Biotechnology Financial Assistance Program (P.L. 1995 c. 137 (34:1B-7.42a et al.)), allows new and emerging technology and biotechnology companies in New Jersey that have unused research and development tax credits and unused net operating loss carryover to surrender those tax benefits for use by other unaffiliated corporations doing business in the state. The tax benefits can be used by the acquiring corporations in return for private financial assistance they provide to the qualifying technology and biotechnology companies. The New Jersey Economic Development Authority, in cooperation with the Division of Taxation in the Department of the Treasury “shall review and approve applications by new or expanding emerging technology and biotechnology companies”. An annual cap of \$60 million of tax credit transfers per year is authorized under this law.

Applications will only be approved for companies that have “no demonstrated positive net operating income in any of the two previous years of ongoing operations” or “is directly or indirectly at least 50 percent owned or controlled by another corporation that has not demonstrated positive net operating income in any of the two previous full years of ongoing operations” as determined by their financial statements. Though as a practical matter, it seems that since the level of private financial assistance realized by companies that surrender their benefits is only 85-90 percent of the amount of the tax benefits, it would make more sense for them to use them themselves if they expected to have offsetting income within one or two years.

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

If the authorized tax benefits claimed in any year exceed the annual cap of \$60 million, then each company will be able to surrender up to \$250,000 before the remainder of the benefits are surrendered on a pro rata basis, except for a special priority of claims on up to \$10 million of the benefits for companies that are located in one of the three New Jersey innovation zones. The maximum lifetime value of surrendered benefits for a corporation under this program is \$15 million. Taxpayers are required to maintain a headquarters or base of operations in the state for at least five years following their receipt of private financial assistance or face recapture of their benefits.

In order to qualify, the companies must own, have filed for, or have a valid license to use protected intellectual property and either “be engaged in the research, development, production, or provision of biotechnology for the purpose of developing or providing products or processes for specific commercial or public purposes” (biotechnology) or employ “highly educated or trained managers and workers, or both, employed in this State who use sophisticated scientific research service or production equipment, processes or knowledge to discover, develop, test, transfer or manufacture a product or service” (technology). Qualifying companies must have fewer than 225 employees in the U.S. and, since the 2009 amendments, companies must have at least 10 employees if incorporated for more than 5 years.

The rules that determine eligibility, New Jersey Administrative Code, 19:31-12.1 (2010) are much more detailed and extensive than the law and have been amended many times since inception in 1998. Program requirements are more tightly defined than under the law. For example, under the rules 75% of the employees must be employed in New Jersey in addition to the legal requirement of a headquarters or base of operations in the state. The rules define the application process and require a non-refundable \$2500 application fee. Details of the evaluation and approval process are described, but the requirements still must be interpreted. Under the evaluation process, the uniqueness of concept, creditability/plausibility of concept, and scientific/technological resources of applicant are evaluated, but how this evaluation is to be done is not specified. It is not clear that small companies have the resources to read the rules and determine if they are eligible for this program. Simpler guidelines may be required for companies to know that it makes sense for them to participate.

Unfortunately, with such a broad definition of technology and biotechnology companies, the pool of potential applicants is very large and with the requirement that they be “new and emerging” companies with only a few employees, there may be a significant challenge in identifying them. In my conversation with Kathleen Coviello (19 August 2010), Director – Technology and Life Sciences, Edison Innovation Fund, New Jersey Economic Development Authority, we discussed the challenge of promoting this program. She said she and her staff of five are constantly promoting the program. They partner with incubator networks and with industry groups like the New Jersey Technology Council,

BioNJ and Jumpstart NJ to reach out to potential applicants and they hold seminars to explain the program throughout New Jersey. Utilizing new technology, this year they held a live webinar with a Q&A session that they have subsequently posted on-line.

The success of the outreach is difficult to evaluate, but during the first half of the decade (2000-2005) there were nearly 300 applicants per year. We cannot accurately estimate how many potential applicants did not apply, but with such large numbers of applicants, it seems that small technology and biotechnology companies were able to learn about the program.

Understanding of Objectives and Usefulness

In a series of interviews with program applicants, potential applicants, and beneficiaries, we discussed the objectives and usefulness of these tax credit programs. Without exception, the beneficiaries described the funds they received as potentially critical to their survival. The cost of funds for early stage companies can be very high and possibly totally unavailable. Though the research tax credits and net operating losses may be used to offset taxes once the company becomes profitable, some of these companies will not be able to reach profitability without additional sources of capital. This program is designed to help these new and emerging companies to bridge this funding gap.

Often biotechnology projects involve long development times before any revenue may be generated, so the ability to monetize the early net operating losses provides crucial development funding for ongoing development and clinical trials. Most of the participants we interviewed have been involved with the program for 2 to 5 years or more. In order to develop a new drug or device, there are many stages of clinical development and testing to obtain approval to bring the new innovation to market.

However, new companies that can bring their products to market can create tremendous growth in value and employment. One of the early participants in this program was Celgene which grew from a company in 1998 with under 100 employees and losses of over \$50 million per year, to a company with over 2600 employees and over \$750 million in profits last year. Research has shown that new companies are the engines for creating the economic growth and new employment that our economy needs. The general proposition will be more closely evaluated in the later discussion of Metrics, Modeling and Analytics.

Application Process

Awareness of the tax credit transfer program for new and emerging technology and biotechnology companies in New Jersey is primarily driven by the outreach efforts of the NJ Economic Development Authority, but if a company heard about the program through one of incubator networks, industry groups or even another small company, they would likely have to search for more information on how to apply.

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

If a company were to google, “NJ Technology Tax Credit”, “NJ Technology Tax Incentive”, “NJ Biotechnology Tax Credit”, “NJ Biotechnology Tax Incentive” or something similar, they would come upon websites that referred to the program. One site that regularly appears at or near the top of the search query is the state sponsored NJ Business Portal – Taking Care of Business site, but this one refers to several programs and provides summary information and no additional links to the law or application forms and directs interested parties to call the NJEDA for more information. Only further down on the first search page does the NJEDA site with the program details, application forms and frequently asked question links typically appear. Other commercial sites sponsored by tax credit transfer brokers, Tax Transfer Corporation and Tax Credits LLC provide an easier path to information about the law, but commercial sites may be looked at more warily by prospective applicants.

Once a potential applicant has found the NJEDA website with the link to the current application form they can begin the application process. The 14 page application has clear information about which companies should apply and directs questions to either the FAQ site or to call and speak with a Finance Officer. Several additional documents are required as part of the application process and they are clearly indicated on the application form. The 2010 application reflects recent 2009 changes in the law that have simplified the application and evaluation process by setting specific required employment levels for qualified companies. As we continue to review the experience of applicants and beneficiaries during the application process, we may mention past practices that are not strictly relevant under the new and revised law and application process and we will attempt to clarify where a past practice or problem is no longer relevant.

Subsequent to our meeting on 9 July 2010, John Rosenfeld, Director – Program Services of the NJEDA, provided a document, “Outline of Processing a Technology Business Tax Certificate Transfer Program Application Once Received” (Updated 6/29/10). Even under the new simplified process, 31 process/task steps are identified before the application is handed off to Closing Services, though many are preliminary steps undertaken by an Administrative Assistant or Intern (AA/I). The AA/I processes and deposits the application check and contacts applicants who have sent in the wrong amount. This happens frequently since the amount, now \$2500, has been increased several times and prior applicants may not have noticed the new amount or new applicants may have seen outdated application materials with a lower fee specified. The correct fee must be sent in prior to the statutory application deadline of June 30th or “the applicant is out of luck”.

The applicant is then logged onto a worksheet that tracks the applicant name, company type (Tech or Biotech), application date and name of consultant who sent it if applicable. The AA/I is responsible to ensure that all required

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

documentation is included and must contact the applicant immediately if any are missing since they must be obtained prior to the June 30th deadline. After June 30th, only clarifying information may be submitted. The AA/I checks the company website to verify information and then enters all background and contact information into the Tax Transfer Wizard. A copy of the application is mailed to the Division of Taxation for confirmation of the actual amount of benefit available to the applicant to sell. The AA/I creates a manila file folder and a red rope folder with the applicant name and application year and then identifies the Finance Officer responsible.

The AA/I checks the application for statutory eligibility including “receipt prior to June 30th, package is complete, no positive earnings for applicant/parent/affiliates, if applicant meets statutory minimum employee requirement based on number of years since incorporation, and if total U.S. employment < 225.” If applicant appears ineligible then the rationale for ineligibility is presented to the Director for direction on how to proceed. In our interview with Kathleen Coviello (19 August 2010), Director – Technology and Life Sciences, Edison Innovation Fund, New Jersey Economic Development Authority, she expressed some surprise that “clients will try to claim benefits even if they know they probably don’t qualify” and that the non-refundable fee of \$2500 was not much of a deterrent.

The AA/I then checks the application for other non-statutory eligibility issues including the requirement that they possess proprietary intellectual property, submit independent CPA prepared financial statements and include both Federal and State W-3’s. With all information in hand, the AA/I prepares a score sheet and recommends the applicant for approval or disapproval. A printed score sheet is signed to confirm accuracy and attached to the project summary from the Tax Transfer Wizard with the additional documentation in a complete file which is passed on to the assigned Finance Officer for review.

The Finance Officer confirms the application is complete and attempts to contact the applicant to obtain the required information before June 30th if possible. If after June 30th, then only clarifying information for events prior to the June 30th deadline may be submitted. An entry for the account is made or updated in Salesforce.com and the Finance Office signs off on the score sheet after review. The completed file is reviewed by the Director and relevant issues are disclosed, explained, and comments are issued for follow up by the relevant Finance Officer before a final packet is submitted for review by the Director, Executive Staff, and a representative from the Attorney General’s office to prepare for the September NJEDA board meeting. A board memo is prepared outlining projects recommended for approval or disapproval and an email or letter is sent to all applicants to notify them of the recommendation attached to their application. For those applicants where the recommendation is for disapproval, the email or letter will indicate all of the reasons for disapproval as well as the deadline for submitting an appeal.

Applicants and beneficiaries who were critical of the application and review process indicated that they believed the evaluation process changed significantly over time. During our meeting at NJEDA (23 July 2010), NJEDA staff indicated there was a significant change in management of this program from 2005 to the present. Prior years had seen nearly 300 applicants per year with very few recommended for disapproval. In 2005, new reviewers recognized that some of the applications were not conforming to the requirements of the law, so in 2006 where previously as few as 1 out of 280 would be recommended for disapproval suddenly 40 of 280 applicants were recommended for disapproval. With tightened standards, fewer applications were submitted in subsequent years with average applications falling to an average of about 110 per year for 2007 through 2009.

With leadership from the NJEDA staff, the law was amended to help clarify the requirements and to “require tangible/reasonable criteria’ to allow the EDA to make a determination that there was likely to be a future increase in jobs. The Director (23 July 2010) suggested that under the new standards the number of applicants had fallen to 89 in 2010, and he expected few to be recommended for disapproval, perhaps only 4 or 5. For some applicants who had been submitting applications since before 2006, the new 2010 application was “much simpler, less detailed and less complex for everyone”, while other successful beneficiaries felt the “program was made harder over years. More paperwork was required and applications required more backup.” For a previously successful applicant who had only 9 employees in 2010 and therefore was not qualified, some bitterness was expressed as they indicated they were “unlikely to be here next year” and wondered “if the intent was to scrub out small fledgling firms?” Unfortunately, indications as of 10 September 2010 suggest that perhaps 26 of 89 applicants for 2010 were going to be recommended for disapproval. The inefficiency and cost of disapproved applications is undesirable for both applicants and administrators, because of the high expense in time and resources they consume without any corresponding benefits.

Based on a review of NJEDA board memoranda from September 2007, 2008 and 2009 there were 335 applications submitted for the Technology Business Tax Certificate Transfer Program. Of the submitted applications, there were only 74 applications by new applicants during those years. Of the 335 applications, 122 (36.4%) were recommended for disapproval based on their failure to meet the threshold criteria revised in early 2006. Even more discouraging, of the 74 new applications, 38 (51.4%) were recommended for disapproval based on their failure to meet the threshold criteria. The memoranda indicate the disapprovals were coded with one or more of the following reasons:

- 1 = Applicant was deemed not to be a Technology/Biotechnology company by NJ Commission on Science and Technology
- 2 = Applicant had positive Net Income in either of the last 2 years.

- 3 = Parent company had positive Net Income in either of the last 2 years.
- 4 = Applicant had Operating Revenues in excess of 110% of Operating Expenses in either of last 2 years.
- 5 = Applicant failed to provide required documentation demonstrating that 75% or more of its U.S. employees work in NJ.
- 6 = Applicant failed to demonstrate that permanent full-time jobs will be created in NJ.
- 7 = Applicant failed to demonstrate that it has insufficient resources to operate in the short term.
- 8 = Applicant failed to demonstrate that it will experience a positive trend in its net income.
- 9 = Applicant failed to demonstrate that it has Protected Proprietary Intellectual Property (PPIP).
- 10 = Applicant failed to provide adequate documentation supporting its rights to PPIP.
- 11 = Applicant failed to demonstrate that its technology is Scientifically and Technologically Viable.
- 12 = Applicant failed to demonstrate that its technology provides it with a Competitive Advantage.
- 13 = Applicant failed to provide the required independent CPA prepared Financial Statements.
- 14 = Applicant failed to demonstrate that it has fewer than 225 employees in the U.S.
- 15 = Applicant failed to provide all 3 of the most recent 3 year's Financial Statements.
- 16 = Applicant is not currently operating as a Technology/Biotechnology Company.
- 17 = Applicant failed to provide the required independent CPA prepared Financial Statements of its parent.
- 18 = Applicant failed to demonstrate that 75% or more of its U.S. employees work in NJ at application.
- 19 = Applicant failed to submit application by the Jun 30 Statutory deadline.

With such a large percentage of applicants finding their applications recommended for disapproval, the appeals process becomes a critical opportunity for review. For a company to appeal their disapproval they must submit an appeal within 20 days after the NJEDA board meeting. The Finance Officer updates the database with approvals or disapprovals and the CEO appoints an EDA employee that was not involved in the prior review process to act as a Review Officer for all appeals. The Review Officer meets with the Program Director, Executive Staff and a representative of the Attorney General's office to review all appeals that were received within the time limit. An appeals memorandum is prepared for the October NJEDA board meeting. Once a final determination is made, an approval letter is sent to each applicant that was

approved which also contains the dollar amount of the allocation they will receive.

Based on a review of NJEDA board memoranda from October 2007, 2008 and 2009 there were 80 appeals requested of the 125 applications disapproved for the Technology Business Tax Certificate Transfer Program. With 64 percent of disapprovals requiring another examination as above, the resources of the NJEDA are severely strained. In interviews with applicants who experienced the appeals process, frustration levels were high. Of the 80 appeals requested, ultimately 27 (34 %) were recommended for approval. While admittedly this review is for a process that was updated for the applications being submitted for 2010, the pattern that is developing for 2010 looks similar to that seen in the prior years. With an expected 26 of 89 (29.2%) apparently headed for disapproval for 2010, we can expect the appeals process to again create significant frustration and high expense in time and resources consumed without any corresponding benefits for applicants and administrative staff.

Conclusions and “Best Practices”

The Technology and Biotechnology Financial Assistance Program is the oldest (since 1998) and largest (\$60MM annual cap on transfers) tax credit transfer program in New Jersey. The quantitative evaluation of this program will be based on data from the NJ Department of Labor and will be part of the forthcoming section on Metrics, Modeling and Analytics. Qualitatively, the process review, and especially the application and appeals process for the Technology and Biotechnology Financial Assistance Program has been shown to be a significant source of frustration for both applicants and administrative staff. Recommendations to improve the implementation of this program are designed to reduce these costs.

If we agree that research from the Kauffman Foundation has shown that new companies are the engines for creating the economic growth and new employment that our economy needs, then a program that accomplishes these goals is desirable. Even without statistically significant data, it is useful to remember that a single company, the “poster child” beneficiary of the program, Celgene, has created over 2500 new jobs and over \$800 million of incremental net income over the life of the program. From an analytic perspective, the case study begs the question of whether, and to what degree, the success of Celgene can be attributed to the tax credit transfer program.

The laws of New Jersey must be followed by the public employees who administer them and the revised threshold criteria approved by the NJEDA board in early 2006 were appropriate in bringing the administration of the law in line with the intended impacts of the program. Based on our earlier conversations with legislators and other stakeholders, the goal of more high quality, high paying jobs must be met in order to consider the program successful. However, the revisions to the law in 2009 that were implemented for applications in 2010 were

designed to establish more verifiable standards of evaluation. It seems that they were, at least in part, designed to make the application evaluation process simpler and more definitive, reducing the uncertainty of whether applicants were qualified and thereby reducing the number of appeals. Unfortunately, any time the law establishes “bright line” rules for separating winners from losers, it is easy to criticize the obvious inefficiency of these rules. When the previously successful applicant who only had 9 employees in 2010 found themselves disqualified they indicated they might go out of business, but what if they otherwise might be the next “Celgene”? Why was the limit determined to be 10 employees after 5 years rather than 9? It seems, and probably is, somewhat arbitrary where these lines get drawn.

Some of the reasons for companies to be recommended for disapproval seem highly subjective and likely to generate appeals including;

8 = Applicant failed to demonstrate that it will experience a positive trend in its net income.

11 = Applicant failed to demonstrate that its technology is Scientifically and Technologically Viable.

12 = Applicant failed to demonstrate that its technology provides it with a Competitive Advantage.

What are the qualifications of the NJEDA administrative staff to evaluate some of these threshold criteria? For a typical growing company, the entrepreneurship literature describes their expected net revenue as a “J” curve with expected losses increasing for some time as the company feels more confident of their prospects and accelerates their investments in advance of any revenue and even as the first few dollars of revenue are generated. Because of the long, slow and expensive process of meeting the regulatory requirements for approval of a new drug or medical device a biotechnology company might be expected to experience a long and deep “J” curve. Important and potentially revolutionary technologies like those for hydrogen powered automobiles might also be expected to experience a long and deep “J” curve. So a company that is expecting a negative trend in net income for the next few years might be a sign of a company that will grow rapidly in the future, yet reason #8 might disqualify them and ruin their chance of being the next “Celgene”. A balance between somewhat arbitrary but objective threshold criteria and subjective threshold criteria that are subject to conflict in evaluation is difficult to achieve, but crucial for this program.

Providing greater transparency in the evaluation process with examples of what qualifies and what does not will help applicants to understand the process and better evaluate their chances of success. Perhaps an online tool to help companies to evaluate their likelihood of getting approval would help. However, it will always be true that the companies will know more about their technologies than the program administrators and that this asymmetric information can distort

the choices made by both parties. If the EDA were to make the process too formulaic then some applicants would attempt to “game the system” and would design their businesses to benefit from the program rather than trying to maximize the value of their companies and participating in the program if they are qualified. This sort of sample selection bias or “adverse selection” problem would reduce the effectiveness of the program.

Ultimately, the goal of the NJEDA administrators should be to design an evaluation process which is based on a structure where applicants have limited scope to benefit from asymmetric information. Some losses for asymmetric information are going to be acceptable in exchange for a program that generates significant new high quality employment opportunities in New Jersey. This tradeoff will be part of the evaluation of the forthcoming section on Metrics, Modeling and Analytics.

An innovative amendment that would allow successful beneficiaries to give something back to the state in return for the program benefits they receive would be to include equity warrants for New Jersey in conjunction with the authorization of transferable tax credits. This could be structured in a manner that is similar to what the NJEDA already does in the Edison Innovation Fund program where warrants are taken in return for money lent.

Another change that could improve the efficiency of the program for New Jersey would be to institute a discounted state buyback program. Under the current rules, New Jersey pays out \$1 in benefits for every dollar of tax credit transferred, but the beneficiary company only receives the net benefit after selling the credit which is approximately \$.85 - \$.90 for every dollar of tax credit transferred. This “loss” is based on an assumed purchase price of \$.90 - \$.92 by the buyer and a brokers fee of \$.02-\$.05 of credits per dollar transferred. If New Jersey was willing to pay \$.90 for credits directly then the State would benefit because it would only cost \$.90 for a beneficiary company to receive \$.90. State buybacks of this type are common in other states offering transferable tax credits.

Metrics, Modeling and Analytics

The NJIT-NJEDA Program Evaluation Services – Plan of Action identified a report on Metrics, Modeling and Analytics as the third milestone. This report is also noted as the third deliverable in the NJIT-NJEDA Memorandum of Understanding of July 21, 2010. We have reviewed the academic literature, sample reports from other jurisdictions, and held meetings in developing the plan for this report.

Metrics, Modeling and Analytics

This section is designed to provide a quantitative assessment of the performance of the New Jersey Technology Business Tax Certificate Transfer Program. Unfortunately, due to the significant revision to the law in 2009, we are unable to provide quantitative analysis of the outcome of the new requirements, so the remaining analysis of this section will be focused on the earlier version of the program. We will make adjustments to the data to simulate the 2009 rules, but the numbers at the end will only be meaningful if the evaluation uses well chosen and good quality data (Metrics), a well designed process for evaluating the data (Modeling), and reasonable assumptions (Analytics). Therefore, we will discuss each of these sections in detail before trying to arrive at a quantitative assessment.

Metrics

In conversations with John Rosenfeld, Director – Program Services of the NJEDA (23 July 2010), we discussed the importance of appropriate metrics for program evaluation. As we focused on the measurement of jobs, the only data collected by NJEDA were the number of jobs at the time of the application. But in order to evaluate whether jobs were created by the program, we would need to compare the starting employment with employment levels in subsequent years. To determine if these are high quality jobs, we need to examine aggregate wage data. Therefore, outreach to the New Jersey Department of Labor was made on our behalf to obtain additional data on beneficiary companies.

We obtained excellent data from the New Jersey Department of Labor on employment data from cohorts of beneficiaries. For the companies that obtained benefits under the program during the years 2000 through 2004, we were able to look at the employment and wage levels for the same companies five years later. As might be expected for such early stage companies, several of the beneficiary companies did not survive to the fifth year. Some were identified as having successors, but it was unclear whether the successor companies still had employees or if any employees were within New Jersey. Due to this ambiguity, we removed companies identified as having successors from the sample of our analysis. The following tables summarize the raw data.

It should be possible for the NJEDA to work with the NJ Department of Labor to collect annual data as part of the program administration in the future. This

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

would allow for ongoing and current analysis to be maintained for this program and for other similar programs.

Table 1

Year Benefits Approved	Number of Companies Matched	Number With Successor	Number Defunct 5 Years Later
2000	90	3	24
2001	118	8	27
2002	160	11	29
2003	176	10	46
2004	219	21	58

The increase in the number of companies matched represents the number that NJEDA records as having been granted the right to transfer credits that were also matched to the QCEW database of the NJ Department of Labor. This number continued to grow over the first half of the decade. The number of successors was consistently below 10 percent of the matched sample. As indicated above, the implications for wages and employment are ambiguous. We cannot determine if the successors are still operating and employing people in New Jersey or not. Finally, the number of companies that fail to stay in business for five more years at 25-30% is typical for early stage companies.

Table 2

Year Benefits Approved	Total Employment at Benefit Year	Total Employment at Benefit Year + 5	% Change in Employment
2000	3087	3366	9.0%
2001	4245	4213	-0.8%
2002	4601	4843	5.3%
2003	4527	5695	25.8%
2004	4914	5080	3.4%

The job growth figures seem modest with an average job growth rate of only 8.5 percent over the succeeding five years for companies that received benefits under the program. This will be put in better context in the modeling and analytics sections.

Table 3

Year Benefits Approved	Total Wages at Benefit Year (MM)	Total Wages at Benefit Year + 5 (MM)	% Change in Wages	Dollar Increase in Wages (MM)
2000	266	440	65.2%	173.7
2001	350	669	91.3%	319.4
2002	380	798	110.3%	418.7
2003	398	903	126.6%	504.3
2004	459	682	48.4%	222.2

The wage growth dramatically outpaces the job growth and averages 88.5 percent over the five years after receiving benefits under the program. The additional taxable wages can be assumed to generate New Jersey State Income Tax revenues. The average wage increased from \$86,694 to \$150,537 over the five year periods.

Based on a simple analysis of the raw data, companies that participate in the program seem to generate significant wage gains, but further analysis will be required. The section on Modeling will give a framework for the subsequent analysis.

Modeling

There is a broad literature on macroeconomic growth and employment, but only a relatively small subset deals with the issue of small and new companies. Among the leading sources of information about the performance of new and growing companies is the research sponsored by the Ewing Marion Kauffman Foundation of Kansas City, Missouri. Their research reports are publically available on their website, www.kauffman.org, and are an excellent source to inform public policy. We have used their reports and other recent sources to develop the basic modeling for this study.

A flurry of recent research studies have been written that have been based on a new dataset created by the U.S. government, known as the Business Dynamics Statistics (BDS) database. This dataset confirms a well known hypothesis of creative destruction in the labor market, popularized by Joseph Schumpeter in his book, Capitalism, Socialism and Democracy (1942). Firms of all sizes are actively and simultaneously creating and destroying jobs throughout the business cycle. In a dramatic Kauffman study, "The Importance of Startups in Job Creation and Job Destruction" by Tim Kane (July 2010), he shows that "for all but seven years between 1977 and 2005, existing firms are new job destroyers, losing 1 million jobs net combined per year. By contrast, in their first year, new firms add an average of 3 million jobs." Even during recessions, job creation at startups was stable while existing firms were highly sensitive to economic downturns. Firms seem to lose their ability to create new jobs as they age and the Kane study shows that, "on average, one year old firms create nearly on million jobs, while ten-year old firms generate 300,000."

Using a different data set and focusing on young firms rather than startups, Dane Stangler and Robert Litan studied "Where Will the Jobs Come From" (November 2009). Using U.S. Census Bureau data from 2006-2007, they show that even "if one excludes startups ... that young firms (defined as one to five years old) still account for roughly two-thirds of job creation, averaging nearly four new jobs per firm per year." In their conclusions analyzing recovery from the recent recession, they suggest that "Entrepreneurs = Recovery" and note that "government at all levels may be able to help loosen the financial spigots" to foster new company

formation. They further suggest that a bolder strategy might be to grant a “tax holiday for new and young companies”.

Another study based on the BDS database, “After Inception: How Enduring is Job Creation by Startups?” by Michael Horrell and Robert Litan (July 2010) examined how cohorts of companies, sorted by firm age, created and maintained jobs over time. They address the concern that while startups create jobs, are these the same firms that seem to destroy jobs as they exit the market a few years later? In their study they showed that while small and young firms do indeed fail at higher rates than older firms, they “on average retain 80 percent of their initial total employment to age five”. However, extensive exposure to recessions did dampen the vitality and employment of young firms in their study.

In another Kauffman study by Dane Stangler and Paul Kedrosky from September 2010, they return to the BDS database and temper their enthusiastic results regarding startups by noting that “new and young companies ... make up the largest bloc of firms by age category, meaning their considerable job creation record is partly structural.” This does not reduce their importance in job creation and we should not take for granted the structure of the U.S. economy that allows for new startups. From a public policy perspective, they note “Greater volumes of experimentation promise higher probabilities of success (and thus economic growth), but also bring, naturally greater volumes of failure.”

Another important Kauffman study, “High-Growth Firms and the Future of the American Economy” by Dane Stangler (March 2010) returns to the BDS database to examine which startups create the most jobs. Within the startup universe, there are a relative handful of “gazelles” that account for disproportionate job creation. He notes, “In any given year, the top-performing 1 percent of firms generate roughly 40 percent of new jobs.” From a public policy perspective, promoting high-growth entrepreneurship is desirable and the paper suggests steps to facilitate the creation of “gazelle” companies, including reducing taxation and regulation, and encouraging immigration, access to capital and academic commercialization.

In their annual reports, the New Jersey Commission on Science and Technology state in their mission their determination to “promote economic development by keeping New Jersey at the forefront of scientific and technological advances”. In 2008 they report 59 grants awarded and 41 companies directly assisted. They awarded \$10,219,374 in 2008 and were able to leverage an additional \$15,387,148 from other private and governmental sources. They estimated jobs created and/or retained at over 2000. In 2009, they indicate support for 12 high technology business incubators that had 557 companies clients. In the FY2010 analysis of the incubators, they estimate \$435.76 million in revenue for the clients and indicate that 68 incubator graduates employ 292 in New Jersey.

In a March 2010 report commissioned by BioNJ, New Jersey's trade association for the State's biotechnology industry, they strongly support the New Jersey Technology Business Tax Certificate Transfer Program and state that "the program is the single most important investment that the State of New Jersey makes in its biotechnology companies". The report focuses attention on both the historical importance of biotechnology to New Jersey and the increasing competition for this industry from other states, notably North Carolina, Massachusetts, Pennsylvania, Virginia and Maryland which have made significant state funded investments to capture market share. They emphasize that this is a very mobile industry that has been subject to steady merger and consolidation activity. By their estimates, every one dollar invested in the TECH program for biotechnology companies has attracted \$10 in venture capital funding and another \$5 in collaborative research agreements and government grants.

Adverse Selection Bias due to Asymmetric Information

While the TECH program does not distinguish between biotechnology and other high technology companies, there may be significant reasons to do so. Based on reviews of hundreds of small and young high technology (excluding biotechnology) companies that have sought external funding for their businesses over the last few years, we believe that nearly all project that they will be generating significant revenue by year three and nearly all assert that they will be profitable by year five. This pattern is dramatically different for biotechnology companies that have to obtain results from a series of clinical trials to gain approval from the FDA, their primary regulator, before they will be able to earn their first dollar of product revenue. Typically, they project ten or more years before product revenues from new drugs or medical devices come to market. This difference in expectations should encourage firms to self select on whether the program makes financial sense to them. Unfortunately, this self selection process is based on asymmetric information, meaning that the firms applying know more about their prospects than the agents administering the program. There is a risk of developing a skewed sample of applicants knows as adverse selection bias due to this asymmetric information. This sample selection bias was first demonstrated by George Akerlof in his 1970 Quarterly Journal of Economics paper and was later the basis for his 2001 Nobel Prize in Economics.

The adverse selection bias for small and young high technology companies is based on their own learning about the prospects for their companies over the course of their operations. If a new company discovers that it is going to indeed be profitable in year three to five as initially projected, their management should make the calculation that it does not make sense for them to participate in the NOL transfer program. This calculation is based on both the timing of expected profits and the value of the program to monetize their net operating losses. Therefore there is a risk that the high technology (excluding biotechnology) applicants to the program might be self selecting as companies that are expected to underperform other young firms. In an extreme case, one can imagine a

company that knows its technology will never make it to market, that chooses to apply for the program to monetize its losses and then plans to go bankrupt. While the law specifies that the company must have a plan to go forward in order to receive any benefits, the requirements would be hard to enforce against a bankrupt firm.

The delay in timing of the monetization of the credits allows for the asymmetric information to develop. Since the NOL is generated after completing the tax year and filing their tax returns, it would not be before the middle of year two that they could apply for the program and it will take about another year for them to monetize the benefit if they are successful in their application. By this time, they should have a pretty good idea of whether they are going to meet their initial expectations or if they are going to fall behind their initial expectations. If they believe that they are still on schedule to earn profits in years three to five, an economically rational company, they should prefer to use the NOL internally to offset their taxes at 100 cents on the dollar rather than selling the credit, because if they sell the credit they will receive a lower economic value. The current market for transferable tax credits values them at about 90 to 92 cents on the dollar and a firm must also pay a fee to the broker of another 2 to 5 percent for a net gain of only 85-90 cents on the dollar. Even if a firm expects to earn profits in a year or two, the value of the credit is likely to be higher if used internally rather than sold through the program.

This is different for biotechnology firms which would not normally expect profits for ten or more years and who will not develop significant information that might lead them to update their expectations for several more years after completion of at least initial clinical trials. In addition, the tax code which limited the useful life of net operating losses to seven years suggests that nearly every biotechnology firm should want to monetize their NOLs rather than lose them entirely.

In the national studies, they focused on job creation as the relevant metric, while we understand that the metric that should be applied to evaluate this program is the creation of high quality jobs for New Jersey residents. The next section on analytics will try to apply these insights to examine the performance of the corporate beneficiaries of the TECH program and evaluate the costs and benefits of the program for New Jersey.

Analytics

The raw data indicated average job growth of 8.5 percent over the five years after TECH program benefits were awarded. While we do not know the exact age of these companies, we know that they are not startups in their first year because they must have net operating losses in order to qualify for the program. But since they are small and not yet profitable, we believe that we can characterize them as young firms. Based on national data, the Stangler and Litan study estimated that young firms create an average of four new jobs per firm per year, so they would estimate that our 763 sample-year companies

should have created 15,260 jobs (763 companies x 4 jobs/year x 5 years) where their actual performance was only 1823 jobs over the subsequent five years. So immediately we need to question why the firms receiving benefits during this sample period seem to be underperforming expectations.

Adjustment for 2009 amendments

These results are based on an old version of the law which was significantly amended in 2009. In order to estimate the future effects of the law currently in effect, we truncated the sample to more closely conform to the requirements of the new law and then reexamined the job creation performance of the relevant subset. Table 4 reproduces the results from Table 2 for firms that have at least 10 employees at the time they initially receive authorization to transfer their net operating losses. This adjustment approximates the effects of the new law as it replaces the more subjective assessment schema with a requirement of at least 10 employees for firms that have been incorporated for at least five years.

**Table 4
Adjusted for 2009 Amendments**

Year Benefits Approved (firms with at least 10 employees)	Total Employment at Benefit Year	Total Employment at Benefit Year + 5	% Change in Employment
2000 (61)	2984	3243	8.7%
2001 (80)	4110	4084	-0.6%
2002 (102)	4446	4592	3.3%
2003 (111)	4315	5399	25.1%
2004 (120)	4630	4684	1.2%

Unfortunately, the results from this truncated sample show similar results, with an average job growth rate of 7.5 percent and actual job creation of only 1517 jobs versus the Stengler and Litan estimate of 9480 jobs nationally for 474 young firms. This analysis suggests that the law as amended in 2009 will not create more jobs than during the analysis period of 2000 through 2004.

Differentiating between biotechnology and other technology

Since we have at least theoretical reason to believe that the biotechnology companies might behave differently than the other technology companies, we can break the sample into two subsets that reflect biotechnology and other technology and do the same employment analysis. Table 5 reproduces the results of Table 2 for biotechnology companies and Table 6 reproduces the results of Table 2 for technology companies.

**Table 5
Biotechnology Subset**

Year Benefits Approved (# Biotechnology firms)	Total Employment at Benefit Year	Total Employment at Benefit Year + 5	% Change in Employment
2000 (34)	1328	2039	53.5%
2001 (39)	1821	2607	43.2%
2002 (49)	1811	2798	54.5%
2003 (55)	1856	3152	69.8%
2004 (60)	2087	2780	33.2%

**Table 6
Other Technology Subset**

Year Benefits Approved (# Technology firms)	Total Employment at Benefit Year	Total Employment at Benefit Year + 5	% Change in Employment
2000 (53)	1759	1327	-24.6%
2001 (71)	2424	1606	-33.7%
2002 (100)	2790	2045	-26.7%
2003 (111)	2671	2543	-4.8%
2004 (138)	2827	2300	-18.6%

As can be seen in the above tables, the difference between the performance of the biotechnology subset and the technology (excluding biotechnology) subset is stark. For no cohort-year did the growth in employment fall below 30% for the biotechnology firms while no cohort of other technology firms showed a positive growth rate in employment during any year in the sample period.

Biotechnology firms grew employment by 4473 jobs during the same period where technology firms lost 2650 jobs. Based on the Stengler and Litan estimate, we should expect biotechnology firms to grow employment for the 237 firms receiving benefits by 4740 jobs, an estimate that is very similar to the actual performance. By contrast, the 473 technology firms were predicted to produce 9460 jobs when they actually lost 2650 jobs, underperforming by 12,110 or 97.1% of their initial employment level.

To put these numbers in context we can examine the changes in New Jersey non-farm employment prepared by the U.S. Department of Labor – Bureau of Labor Statistics. The year-end employment changes for the five year periods of our analysis were modestly positive and ranged from 0 to 2.9 percent for every period except the last one. From 2004 to 2009, which incorporated the recessionary employment levels of 2009, BLS data showed a drop in employment of 4 percent. Studies from the Kauffman foundation have indicated

that employment at young firms was more resilient than at large firms during recessions, so this period should not be expected to have an important effect on our study. In fact, the results from the above tables would become even stronger if we drop the last period. Overall, we felt that including employment changes from different parts of the business cycle strengthened the determination of average effects.

Based on this analysis, one is drawn to conclude that the program is effective for biotechnology firms, but ineffective for other technology firms. But this does not take into account the cost benefit analysis that is required for program evaluation.

Cost Benefit Analysis

In considering the costs, we assume that the full value of the benefits allowed under the law was actually utilized by the firms that received authorization. This is almost certainly an overestimate of the cost of this program since it is very likely that not every firm used their authorization to transfer their credits. Some firms may have used them internally and others may have not completed the extensive documentation required to execute and finalize a transfer. The annual cap on transfers for each year was \$40 million per year for the years 2000 through 2003 and was raised by amendment to \$60 million for 2004 and subsequent years. The increased limit also established a protected subset of \$5 million and later \$10 million that was designed to benefit companies that operated within the designated Urban Enterprise Zones.

Based on these assumed costs we can see that New Jersey paid out \$40 million for four years and \$60 million for one year for a total of \$220 million over the sample period. However the benefits were not paid out as authorized but instead as used, so if, as we earlier assumed, it took a year for a company to gain the tax benefits, it probably took the company that acquired the transferable credits another year to collect the money as tax savings from New Jersey. Using an approximate discount rate of 2% over the period to account for the after-tax time value of money, we can estimate that the cost in year 2000 dollars to New Jersey was about \$202.6 million.

Calculation of the benefits is going to require more assumptions and estimates. We are not going to consider the benefits to New Jersey of maintaining a prominent position in a high profile industry like biotechnology, nor are we going to consider the long run value of these benefits into the distant future since the uncertainty rises with time. We are instead going to create a simple model of wages over time that will capture the eleven year period after the initial award of benefits. So we are going to conservatively estimate the benefits for the TECH program.

In our simple model, we are going use the total wage figures from Table 3 and start with total wages at benefit year and allow them to grow linearly over the next five years to the level of total wages at the benefit year + 5. For the next five

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

years, from year six to ten, we are going to utilize the estimate of Horrell and Litan, cited above, where they estimated that young firms retained 80 percent of their employment over the succeeding five years, so we are going to assume that they also maintain 80 percent of their total wages and model wages as falling by 4 percent per year for the years six through ten. Graphically, we expect our total wage estimates to behave as in Graph 1.

Filling in the model with data from Table 3 gives the time series estimates of total wages for each of the five cohorts. Table 7 shows explicit estimates of total wages for each cohort. The numbers in bold come directly from Table 3 and the rest are interpolated by our model.

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

Graph 1

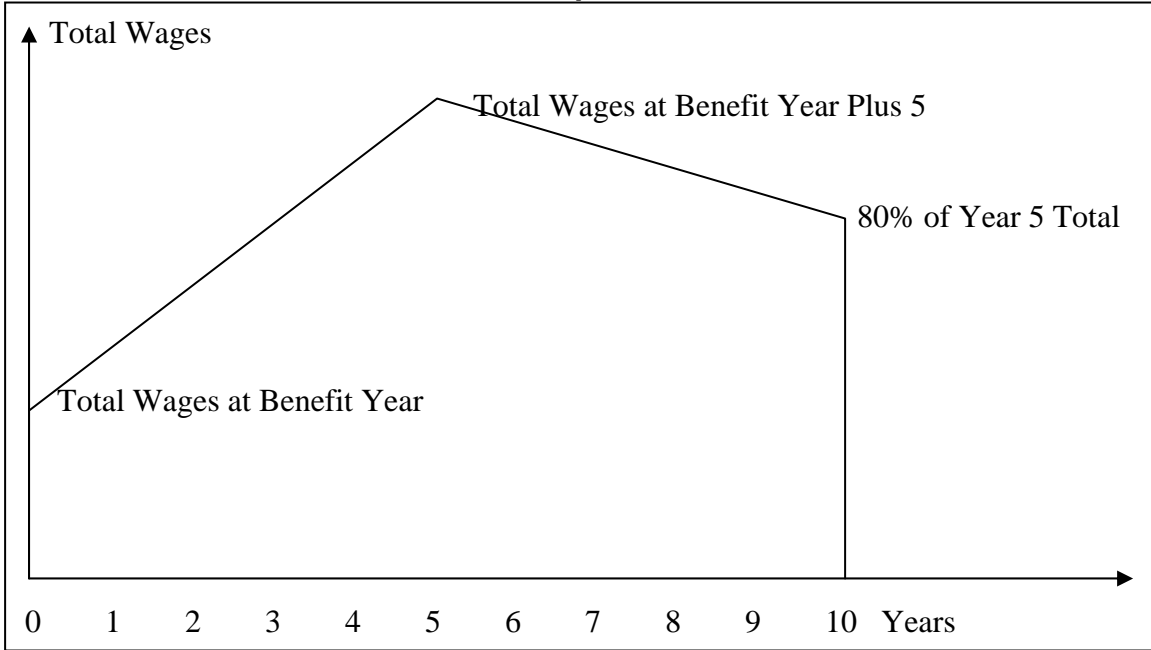


Table 7

Year	Total Wages Cohort 2000 (\$MM)	Total Wages Cohort 2001 (\$MM)	Total Wages Cohort 2002 (\$MM)	Total Wages Cohort 2003 (\$MM)	Total Wages Cohort 2004 (\$MM)
2000	266				
2001	300.8	350			
2002	335.6	413.8	380		
2003	370.4	477.6	463.6	398	
2004	405.2	541.4	547.2	499	459
2005	440	605.2	630.8	600	503.6
2006	422.4	669	714.4	701	548.2
2007	404.8	642.24	798	802	592.8
2008	387.2	615.48	766.08	903	637.4
2009	369.6	588.72	734.16	866.88	682
2010	352	561.96	702.24	830.76	654.72
2011		535.2	670.32	794.64	627.44
2012			638.4	758.52	600.16
2013				722.4	572.88
2014					545.6

Using the same 2% discount rate we used for the cost calculation gives a total wage estimate for the program, in year 2000 dollars, of \$26.834 billion, if we further assume that New Jersey collects an average 5% income tax rate from these wages then New Jersey collects about \$1.342 billion of tax revenues from the employees of these cohort companies.

Now we address the most difficult question and the one which determines whether the program is cost effective or not. What fraction of these companies are in business because the TECH program exists? If one believes that at least 15.1 percent ($\$202.6 \text{ cost} / \$1342 \text{ wage tax revenues}$) of these companies would not be operating in New Jersey without the existence of the TECH program, then the program costs New Jersey zero in net tax revenues and even generates net tax revenues for the State. If one believes that these companies would be operating in New Jersey whether there was a tax credit program or not, then there is no offset from the taxes on wages that is attributable to offset the \$202.6 million cost estimated above.

While in the short run, a change or reduction in the TECH program is unlikely to induce firms to change locations, given the high cost of moving labs and people; it seems likely that future firms will establish themselves in lower cost locations. The existence of the TECH program will lower the costs of biotechnology companies locating in New Jersey and make them more competitive with lower cost locations like North Carolina or Pennsylvania. So an assumption that at least 15.1 percent would not be located in New Jersey in the long run seems reasonable and the program therefore is estimated to generate a net tax benefit for New Jersey. This is particularly true when one considers that the venture capital firms which provide funding can often determine where the new firm will be located.

Analytics Critical Review

There are several possible concerns with the above analysis and we will attempt to address them. First, the methods used for data analysis can induce bias in the results. When we removed firms that had no continuing data, but which had successors and did not simply fail, we may have taken out firms which had excellent prospects but which were taken over by other larger firms. This is a normal exit strategy for many small technology and biotechnology firms, so removal of these firms may have created a downward bias on our estimates of employment. On the other hand, the successor firms may have taken the business and jobs to other states, so that the subsequent employment would not be a benefit to New Jersey residents. Since we are unable to track the progress of the successor firms at this time, this ambiguity is unresolved.

Another potential bias in our results is due to the potential for firms to submit repeat applications and therefore show up in the data in more than one cohort. If a firm was in two cohorts, then we would double count their outcome and overweight their experience. On the other hand, since we do not know their

experience and since repeat applications are independent events, the effects of this potential overweighting are ambiguous.

Since we only have a small sample it is possible that one firm, a gazelle, in the terminology of the Stengler (March 2010) paper cited above, might create an overweight bias. These rare gazelle firms represent only 1 percent of all firms but also create 40 percent of all jobs. In the TECH program, there is at least one firm that might be characterized as a gazelle and that would be Celgene. We repeat the analysis for Biotechnology firms from Table 5 without Celgene and show the results at Table 8.

Table 8
Biotechnology Subset (without Celgene)

Year Benefits Approved (# Biotechnology firms)	Total Employment at Benefit Year	Total Employment at Benefit Year + 5	% Change in Employment
2000 (33)	1220	1621	32.8%
2001 (38)	1686	2078	23.3%
2002 (48)	1633	2128	30.3%
2003 (54)	1616	2303	42.5%
2004 (59)	1767	1770	0.2%

While the results from Table 8 are significantly lower than from the biotechnology subset that included Celgene, they are still dramatically and consistently better than for the “other technology” subset from Table 6. It was perhaps good luck that allowed New Jersey to have a firm like Celgene as an early participant in the TECH program, but with enough time, there is a high likelihood that New Jersey would develop “gazelle” like firms. To fail to include Celgene in the analysis would not be a reasonable alternative, but this test does demonstrate the robustness of the biotechnology versus other technology performance differences.

Conclusions

The biotechnology industry in New Jersey has deep and strong roots in the traditional pharmaceutical leaders like Merck and Pfizer. While these firms continue to reduce employment through mergers and outsourcing, there are opportunities for developing new biotechnology firms and new high quality jobs in New Jersey. The Technology Business Tax Certificate Transfer Program reduces the costs of new firms doing business in New Jersey and therefore helps to attract new investment from venture capital firms and other funding for startups and early stage firms. The evidence from this study supports the conclusion that the program both creates jobs and net tax revenues for New Jersey for biotechnology firms. The job creation is in line with expectations developed from results from other national studies.

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

For technology firms other than biotechnology, the evidence is less clear. There does not seem to be evidence that new firms participating in the program are creating high quality jobs in New Jersey. Due to the possibility of adverse selection bias due to asymmetric information, it seems likely that other programs like the NJCST grant programs, the NJCST support for business incubators in New Jersey, and the NJEDA Edison Innovation Fund matching investment programs are better suited to fund this important sector. The advantage of these other programs is that investments are made at an earlier stage to help firms startup and hire at a time when management and other investors are co-investing with the expectation that these nascent ventures will grow and become profitable relatively quickly. The scope of this study does not extend to these other programs, but further analysis would be warranted.

From a cost and benefit analysis, it seems that the companies that participate in the Technology Business Tax Certificate Transfer Program pay wages that generate New Jersey income tax revenues that exceed the cost of the tax credits transferred. This conclusion is robust since we tended to overestimate the net costs to New Jersey and underestimate the net tax revenues. The only question which has not been answered clearly is what percentage of the firms would not be resident in New Jersey without the existence of the credits. While this number, based on the long run elasticity of firm creation subject to the existence of the program cannot be easily estimated, the continued competition and financial incentives in other states and the erosion of this industry within New Jersey suggest that these incentives work to encourage new firm development.

Appendix A

NJIT – NJEDA Program Evaluation Services Plan of Action

This draft plan of action outlines the proposed activities of the NJIT evaluation team to satisfy the requirements outlined in the Memorandum of Understanding dated July 21, 2010. As such, this plan is the first deliverable under the MOU.

The plan incorporates significant details and also identifies information that still needs to be gathered. The timeline is approximate and is designed to satisfy the agreed timetable. If we begin to diverge from the agreed timetable, we will alert our NJEDA contacts immediately.

We have had two “kickoff” meetings at the NJEDA offices in Trenton and one meeting at the NJ Motion Picture and Television Commission in Newark as well as numerous email exchanges where we have gathered information and documents. We have agreed to create two program reviews, one for the Technology Business Tax Credit Certificate Transfer Program (TECH) and one for the Edison Innovation Digital Media Tax Credit Program and the New Jersey Film Tax Credit Program (FILM). Exchanges where we ask questions and gather more information will continue as we proceed. Most of the documents received are informally referred to under the relevant sections below. Sections are delineated by the scope of work in the MOU.

Policy Review

(Scheduled completion date - August 17, 2010)

The second point under the scope of work indicates NJIT’s responsibilities include:

”Conducting a policy review of each of the NJEDA Programs, which will analyze the impacts the program was intended to achieve at inception and determine if the program is achieving the results it was created to achieve. This review should also take into account current policy and fiscal concerns and determine if the program is meeting these needs.”

So, we have gathered documents and begun a document review. The list of documents is below. Interviews are also planned.

TECH Documents under review:

1) PL 1995, c.137 (34:1B-7.42a et al.): Corporation business tax benefit certificate transfer program

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

- 2) NJ Administrative Code 19:31-12.1 (2010): NJEDA Authority Assistance Programs – Technology Business Tax Certificate Transfer Program.
- 3) 2009 Technology Business Tax Certificate Transfer Program Evaluation Guidelines For Making the Statutory Determinations
- 4) PL 2010 Chapter 20 – An act providing a temporary reduction in the annual cap for benefits under the program

FILM Documents under review:

- 1) PL 2005, c. 345 (54:10A-5.39 et al.): Corporation business tax credit for certain film production, digital media content expenses
- 2) NJ Administrative Code 18:7-3B.1: Rules to implement PL 2005, c. 345 and PL 2007, c. 257
- 3) Proposed amendments (Sen. Sarlo) to PL 2005, c.345 : Increasing annual cap to \$50 million from \$10 million and other changes.
- 4) PL 2010 Chapter 20 – An act providing a temporary suspension of benefits under the program

TECH Interviews proposed:

John Rosenfeld, NJEDA
Kathleen Coviello, NJEDA
Jacob Genovay, NJEDA

FILM Interviews proposed:

Senator Paul Sarlo
Assemblyman Lou Greenwald
Steve Gorelick, NJ Motion Picture and Television Commission

Implementation / Process Evaluation

(Scheduled completion date - August 31, 2010)

The third point under the scope of work indicates NJIT's responsibilities include: "Conducting an implementation/process evaluation that includes portfolio project review, interviews with practitioners and businesses, and provide recommendations to the NJEDA's Senior Leadership Team. This review should look at how each of the NJEDA Programs is being implemented and make recommendations to make the process more efficient and/or align more closely with the policy intentions." So, we have gathered documents and begun a document review. The list of documents is below. Interviews are also planned. Where possible, multiple topics will be covered with interviewee in one session.

Program enhancements incorporating "best practices" designed to encourage capital investments in permanent infrastructure and other new ideas to improve the programs will be explored and evaluated.

Documents under review:

Outline of Processing Steps – TECH

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

Outline of Processing Steps – FILM

Outline of Processing Steps – Digital Media

Tax Credit Transfer Agreement – TECH

Tax Credit Transfer Agreement – FILM

Buy/Sell Information Forms & Certifications – TECH

Documents under review (cont.)

Buy/Sell Information Forms & Certifications – FILM

NJEDA Board Memoranda

9/11/07 (Recommendations), 10/9/07 (Appeals) – TECH

9/9/08 (Recommendations), 9/15/08 (Amendment) – TECH

9/18/09 (Recommendations), 10/21/09 (Appeals), 11/24/09 (Appeals) –

TECH

1/8/09 (Recommendations) – FILM

2/10/09 (Recommendations) – FILM

3/9/10 (Recommendations) – FILM

Interviews proposed:

Steve Gorelick, NJ Motion Picture and Television Commission – FILM

John Rosenfeld, NJEDA - TECH & FILM

Lee Evans, NJ Taxation – TECH & FILM

John Genz, Amper Politziner Mattia – TECH & FILM

Bruce Deichl, Tax Credits LLC - TECH & FILM

Barry Denneler, ADP – TECH & FILM

Brian O’Leary, NBC Universal – FILM and Digital Media

Applicants/Beneficiaries <*3-5 to be identified> - TECH

Successful, Failed, and Successful With Difficulty

Applicants/Beneficiaries <*3-5 to be identified> - FILM

Successful, Failed, and Successful With Difficulty

Metrics, Modeling and Analytics

(Scheduled completion date – September 1, 2010)

The fifth and sixth points under the scope of work indicate NJIT’s responsibilities include:

“Determining value of metrics currently being collected and make recommendations for additional metrics. This review would help NJEDA’s Senior Leadership Team determine the best data to measure future program results. To the extent possible, the NJEDA should be able to replicate these metrics;” and “Providing NJEDA with a template for building program evaluation elements and effective metrics into new products and programs. This template should provide the NJEDA’s Senior Leadership Team with the tools required to better analyze the impact and effectiveness of programs on an ongoing basis.” So, we have identified and gathered data sources and economic analysis tools to assist in the evaluation of metrics and the analysis of the programs. The list of data sources and economic analysis tools is below. Interviews to identify existing metrics and

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

to plan for new ones are also planned. Where possible, multiple topics will be covered with interviewee in one session.

Data sources:

U.S. Bureau of Economic Analysis, Bureau of Labor Statistics, and Census
NJEDA Reports
Survey estimates
New Jersey Department of Labor – Employment Figures

Economic analysis tools:

IMPLAN model for estimation of multiplier effects
NPV Cost Benefit Spreadsheet

Interviews proposed for metrics evaluation and program analysis:

Steve Gorelick, NJ Motion Picture and Television Commission – FILM
John Rosenfeld, NJEDA - TECH & FILM
Brian O’Leary, NBC Universal – FILM and Digital Media
Union representatives - FILM
IATSE, Teamsters -
MPAA representative - FILM

Final Report

(Scheduled completion date – October 1, 2010)

The final report will be a complete program evaluation of each NJEDA Program (FILM & TECH) that includes an executive summary, a detailed report on the current status of the program as well as recommendations for further monitoring of the program.

Appendix B

MEMORANDUM OF UNDERSTANDING for PROGRAM EVALUATION SERVICES

between
NEW JERSEY INSTITUTE OF TECHNOLOGY (NJIT)
and
NEW JERSEY ECONOMIC DEVELOPMENT AUTHORITY (NJEDA)

This Memorandum of Understanding (MOU) effective as of the date of the last signatory hereto (Effective Date), will confirm the mutual understanding and intention between the New Jersey Economic Development Authority (NJEDA) and New Jersey Institute of Technology (NJIT). NJEDA and NJIT are collectively referred to herein as the "Parties."

WHEREAS, NJEDA was created pursuant to N.J.S.A. 34:1B-1 et seq. to promote economic development in the State of New Jersey;

WHEREAS, NJEDA manages a number of economic development programs that are intended to promote and create employment in the State of New Jersey, including the programs set forth in this MOU;

WHEREAS, Governor Christie's Fiscal Year 2011 Budget in Brief called for an evaluation of NJEDA programs to ensure that NJEDA funds and resources are used in a manner that results in the greatest return of economic development benefit;

WHEREAS, NJEDA seeks to undertake a systematic process of formally evaluating the impacts of NJEDA programs and to be better equipped to evaluate elements of NJEDA programs by establishing performance metrics for NJEDA programs;

WHEREAS, NJIT was created pursuant to N.J.S.A. 18A:64E-12 et seq., as a body corporate and politic of the State of New Jersey;

WHEREAS, NJEDA has determined that NJIT has considerable expertise in the areas of entrepreneurship, economic development, and business strategy and is the appropriate body to assist NJEDA with evaluation of its programs; and

WHEREAS, the Parties enter into this MOU as an inter-department governmental agreement pursuant to N.J.S.A. 52:14-1 et seq.

1. Work Summary.

NJIT will conduct evaluations on three (3) selected programs of NJEDA to review policy, implementation/process, value of collected measurements, and best practices; and create/determine performance metrics that can be used by NJEDA to determine program effectiveness. The programs to be reviewed include the Edison Innovation Digital Media Tax Credit Program, New Jersey Film Tax Credit Program and the Technology Business Tax Certificate Transfer Program (herein referred to as the “NJEDA Programs”)

2. Scope of Work.

NJIT’S responsibilities under this MOU (the “Work”) include:

- Creating a plan/schedule to complete recommended evaluations for each of the NJEDA Programs. Present plan to NJEDA Senior Leadership Team for feedback and approval;
- Conducting a policy review of each of the NJEDA Programs, which will analyze the impacts the program was intended to achieve at inception and determine if the program is achieving the results it was created to achieve. This review should also take into account current policy and fiscal concerns and determine if the program is meeting these needs;
- Conducting an implementation/process evaluation that includes portfolio project review, interviews with practitioners and businesses and provide recommendations to the NJEDA’S Senior Leadership Team. This review should look at how each of the NJEDA Programs is currently being implemented and make recommendations to make the process more efficient and/or align more closely with the policy intentions;
- On a select basis, review of best practice cases provided by the EDA for evaluation of EDA program enhancements;
- Determining value of metrics currently being collected and make recommendations for additional metrics. This review should help NJEDA’S Senior Leadership Team determine the best data to measure future program results. To the extent possible, the NJEDA should be able to replicate these metrics; and
- Providing NJEDA with a template for building program evaluation elements and effective metrics into new products and programs. This template should provide the NJEDA’S Senior Leadership Team with the tools required to better analyze the impact and effectiveness of programs on an ongoing basis.

3. Evaluation Team.

The Work will be performed primarily by Michael Ehrlich, Principal Investigator, and Dr. Bruce Kirchoff.

4. Deliverables.

Deliverables under this MOU will include the following:

- Detailed plan of action presented to NJEDA senior leadership team for feedback and approval; A plan, with supporting data and timeline, should also be developed to evaluate other NJEDA programs as necessary;
- Report on implementation process with recommendations to make the process more efficient and to more closely match the legislative intent;
- Draft analysis report with model of costs and benefits that incorporates existing performance metrics and proposed new metrics; To the extent possible, the metrics created should be transferable to other NJEDA programs to allow NJEDA to best track the success/impact of its products and programs and the model should be a template or guide for NJEDA to use to build product evaluation and metrics in to new programs as they are developed;
- Final report will be a complete program evaluation of each NJEDA Program that includes an executive summary, a detailed report on the current status of the program as well as recommendations for further monitoring of the program.

5. Time for Completing Work.

The Work is to be completed according to the following tentative schedule:

- "Plan" document with recommendations – within 2 weeks from Effective Date
- Draft analysis with model of costs and benefits – no later than 9/1/10
- Final reports with executive summary – no later than 10/1/10

NJIT will provide the NJEDA with reasonable notification if any of these milestones cannot be met, with an anticipated completion date.

6. Payment.

NJEDA will pay NJIT a flat fee of EIGHTY THOUSAND DOLLARS (\$80,000) for its performance of the Work. The total MOU Price shall not exceed the aforementioned amount unless an increase is approved in writing by NJEDA. NJIT's performance of the Work is predicated on the NJEDA fulfilling all of its obligations related to the Work (e.g., providing necessary information and cooperation). NJIT shall invoice the NJEDA as follows: \$20,000 immediately following the Effective Date; \$20,000 upon NJIT's submission of the draft analysis with model of costs and benefits and \$40,000 upon NJIT's submission of the final report to the NJEDA. The NJEDA shall pay all invoices within thirty (30) days.

7. Ownership and Use of Work Product.

All reports, surveys, and other information produced or generated by NJIT pursuant to this MOU shall become the sole property of NJEDA and may be used in its entirety or in part by the NJEDA at the sole discretion of NJEDA without additional compensation to or approval from NJIT. Use by NJEDA shall also include sharing and distributing such work product with other New Jersey State offices and personnel. Whenever such information is used, credit shall be given by the NJEDA as to the author/source of the information. Notwithstanding, NJIT may use any of the material it produces or develops under this MOU for teaching and research programs, and inclusion in journal articles and public presentations at academic conferences, after notification to NJEDA. Except for uses expressly permitted by this MOU, copyrights to such articles and presentations shall remain with the authors.

8. Confidential Information of the Authority.

In connection with performing the Work, NJIT and its employees may receive, review and become aware of proprietary, personnel, commercial, marketing and financial information of NJEDA, its employees, members, borrowers or business associates that is marked, identified or reasonably understood to be confidential and/or proprietary in nature ("Confidential Information"). NJIT agrees that the use and handling of Confidential Information by NJIT and its employees will be done in a responsible manner and solely for furtherance of the Work. Other than to its employees who have a need to know Confidential Information in connection with performance of the Work, NJIT agrees not to disclose any Confidential Information, without the prior written consent of NJEDA, which consent NJEDA is not obligated to grant. NJIT will be responsible to assure that its employees do not disclose any Confidential Information without the prior written consent of NJEDA. NJIT will inform each employee that receives any Confidential Information of the requirements of this Section 8 of the MOU and shall require each such employee to comply with such requirements. Confidential Information covered under this clause shall not include information that: (a) is or hereafter becomes known and available to the general public through no act or omission of NJIT; (b) is subsequently disclosed without restriction to NJIT by a third party who had the right to make such disclosure; (c) is required to be disclosed by any applicable judgment, order or decree of any court, governmental body or

agency having jurisdiction or by any applicable law, rule or regulation (e.g., NJ Open Public Records Act), provided that in connection with any such disclosure, NJIT will use its best efforts to give NJEDA reasonable prior notice of the same; and (d) was known by NJIT prior to disclosure or independently developed by NJIT without knowledge of, reliance upon, or use of the NJEDA's Confidential Information.

9 Additional Provisions.

a) Commencement and Duration. This MOU will commence upon the Effective Date. Unless terminated earlier, this MOU shall remain in effect until the Work is completed, but in any event, not longer than twelve (12) months from the Effective Date. This MOU may be extended by a writing mutually executed by the Parties.

b) Amendments. This MOU may be amended in a writing mutually executed by the Parties.

c) Termination. Any Party shall have the right to terminate this MOU upon ten (10) days written notice to the other party. Upon termination, NJIT shall make reasonable efforts not to expend any additional time, expense or administrative cost in connection with this MOU. Notwithstanding any such termination of this MOU, NJEDA shall continue to be responsible to pay NJIT for Work satisfactorily completed by NJIT prior to the termination of this MOU and non-cancelable obligations incurred by NJIT prior to such time (not exceeding the total MOU price).

d) Notices. All notices required to be served or given hereunder shall be in writing and will be deemed given when received by personal delivery, by an overnight delivery service which issues a receipt from delivery, or three business days after having been mailed by certified mail, return receipt requested, and addressed as follows:

If to NJEDA: New Jersey Economic Development Authority
 36 West State Street
 P.O. Box 990
 Trenton, New Jersey 08625-0990
 Attention: Kim Ehrlich

If to NJIT: New Jersey Institute of Technology
 Office of Research & Development
 Fenster Hall – 3rd Floor
 University Heights
 Newark, New Jersey 07102-1982
 Attention: Dr. Donald H. Sebastian,

S.V.P. For Research & Development

- e) Reasonable Diligence. Each of the Parties will act with reasonable diligence for the purpose of satisfying the conditions set forth herein. NJIT makes no other warranties, express or implied, including, without limitation, warranties with respect to the particular results of the Work, or the merchantability or fitness for a particular purpose of the same. NJIT shall not be liable for any direct, indirect, consequential, punitive or other damages suffered by the NJEDA or any other person resulting from the Work and analysis to be performed in connection with this MOU.
- f) Titles and Headings. Titles and headings are included for convenience only and shall not be used to interpret the MOU.
- g) No Assignment. Each Party agrees that it will not assign this MOU or the benefits or obligations contained herein without the prior written consent of the other Party.
- h) Force Majeure. Neither Party shall be liable for any failure to perform as required by this MOU to the extent such failure to perform is due to circumstances reasonably beyond such Party's control, including without limitation, labor disturbances or labor disputes of any kind, accidents, failure of any governmental approval required for full performance, civil disorders or commotions, acts of aggression, acts of God, energy or other conservation measures imposed by law or regulation, explosions, failure of utilities, mechanical breakdowns, material shortages, disease, or other such occurrences.
- i) Third Party Beneficiary Rights. Neither Party intends to create in any other individual or entity the status of third party beneficiary, and this MOU shall not be construed so as to create such status. The rights, duties and obligations contained in this MOU shall operate only between the parties to this MOU.

The foregoing correctly reflects the Parties' understanding and intent.

IN WITNESS WHEREOF, the Parties have caused this Memorandum of Understanding to be duly executed and delivered as of the date and year below written and by so executing, represent and warrant they have the authority to do so.

NEW JERSEY INSTITUTE OF
TECHNOLOGY

Program Evaluation: New Jersey Technology Business Tax Certificate Transfer Program

Attest

By:

Dr. Donald H. Sebastian,
S.V.P. For Research &
Development

Dated: _____

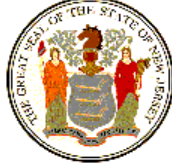
NEW JERSEY ECONOMIC
DEVELOPMENT AUTHORITY

Attest

By:

Caren S. Franzini
Chief Executive Officer

Dated:



State of New Jersey

DEPARTMENT OF TREASURY
OFFICE OF THE CHIEF ECONOMIST
P O BOX 004
TRENTON NJ 08625-0004

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

ANDREW P. SIDAMON-ERISTOFF
State Treasurer

February 4, 2011

MEMORANDUM

TO: Caren Franzini, Chief Executive Officer, New Jersey Economic Development Authority

FROM: Charles Steindel
Chief Economist, Department of the Treasury

SUBJECT: Evaluation of the New Jersey Technology Business Tax Certificate Transfer Program

In response to your request, I have reviewed the New Jersey Institute of Technology's (NJIT) evaluation of the New Jersey Technology Business Certificate Transfer Program. I am in basic agreement with its major conclusion that the program should be modified to focus on biotechnology firms. This notes highlights why state subsidization of this sector of this industry is desirable public policy, and why the sale of tax credits is an effective way to provide such subsidies.

Due to the large size of the existing industry, the state has a large pool of labor and technical skills available to start-up biotech firms. Such firms, if successful, can create large numbers of high-wage jobs, which may be a plausible proxy for their social returns exceeding their private returns.

Biotech startups require "patient" capital, given the typically unusually long lead time before becoming profitable. The highly uncertain and lengthy period before an investment becomes profitable may hamper the raising of private capital through normal channels. The Tax Certificate Transfer program gives these firms a mechanism to raise additional capital,¹ thus, I concur in the basic conclusion of the report. I further agree with suggestions that have been made that the provision of this facility be accompanied by the acquisition of warrants allowing the state to share

¹ In his presentation, the NJIT analyst noted that alternative policies such as lengthening loss carry-forward horizons would likely not prove as effective in attracting private investors.

in the firm's increase in value if it succeeds. Such warrants would allow the state to earn, in case of success, a higher return than normal tax revenues would provide, and would be a compensation for the risk of subsidizing the start-up.