



New Jersey

CSIT

**Commission on Science,
Innovation and Technology**

**Annual
Report
2019**



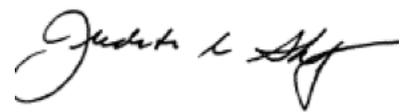
June 5, 2020

Innovation is all about execution and implementation of an idea. It is the process that brings a spark of creativity or invention to life to address real individual or societal needs. As the Executive Director of New Jersey's Commission on Science, Innovation and Technology (CSIT), I am continually inspired by the advances taking place throughout the state, and the people and businesses that make up our robust innovation ecosystem.

New Jersey has a rich history of innovation, more scientists and engineers per square mile than anywhere in world, and numerous globally-recognized universities and medical centers. Combined with the state's large corporate research centers in various industry sectors such as pharmaceuticals/life sciences, telecommunications, and energy, we have much to offer emerging technology and life sciences businesses that set down their roots here in the Garden State.

Reflecting on 2019 and thinking how much has changed in the world since December 31, 2019, I am proud of the synergy that our state's innovation ecosystem creates. And of all the way that New Jersey companies are stepping up to impact the local, state, national global marketplaces. From the largest of pharmaceutical giants to the smallest of biotechnology startups, from the leaders in the clean energy sector to researchers at our fine academic institutions, everyone is playing a vital role in making the innovation economy succeed.

I thank each and every one of you for your contributions to our state's collective accomplishments.



Judith Sheft
CSIT Executive Director

June 5, 2020

In late 2018, Governor Phil Murphy re-established the Commission on Science, Innovation and Technology (CSIT) to bolster innovation within the Garden State and to enhance collaboration across the public sector, academia, and private industry. I was honored to be named Chairman of CSIT in February 2019.

From his first moments in office, Governor Murphy has made creating the most diverse and inclusive innovation ecosystem in the nation and reclaiming New Jersey's role as a national leader in innovation key focal points of his administration. At CSIT, we are committed to furthering these visions and creating opportunities for entrepreneurs, researchers and technology businesses of all sizes.

During 2019, our first full year in operation, CSIT set numerous steps in motion that laid the foundation for supporting New Jersey's innovation economy for years to come.

As you will read within the annual report, highlights included establishing committees, electing a vice chair and treasurer, and launching applications for the New Jersey Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Support Program.

The most significant of these steps came in December, when we hired Judith Sheft as our Executive Director. Judith was the perfect person for this position, as she brings nearly two decades of expertise in New Jersey's innovation ecosystem to CSIT. She spent the past 18 years as an Associate Vice President at New Jersey Institute of Technology (NJIT). Judith has been a vocal champion for innovation within New Jersey, and she will be a great voice for the Commission to push forward the work of the CSIT and drive the innovation economy in New Jersey.

I would like to thank the many business leaders, university leaders, scientists, and public and private sector partners that comprise the CSIT Board for their hard work and dedication.

As we look ahead to 2020, and a post-COVID-19 landscape, CSIT's mission and work will be more important than ever. Stay tuned for new programs and initiatives that will benefit businesses and researchers throughout the industry.



Gunjan Doshi
CSIT Chair

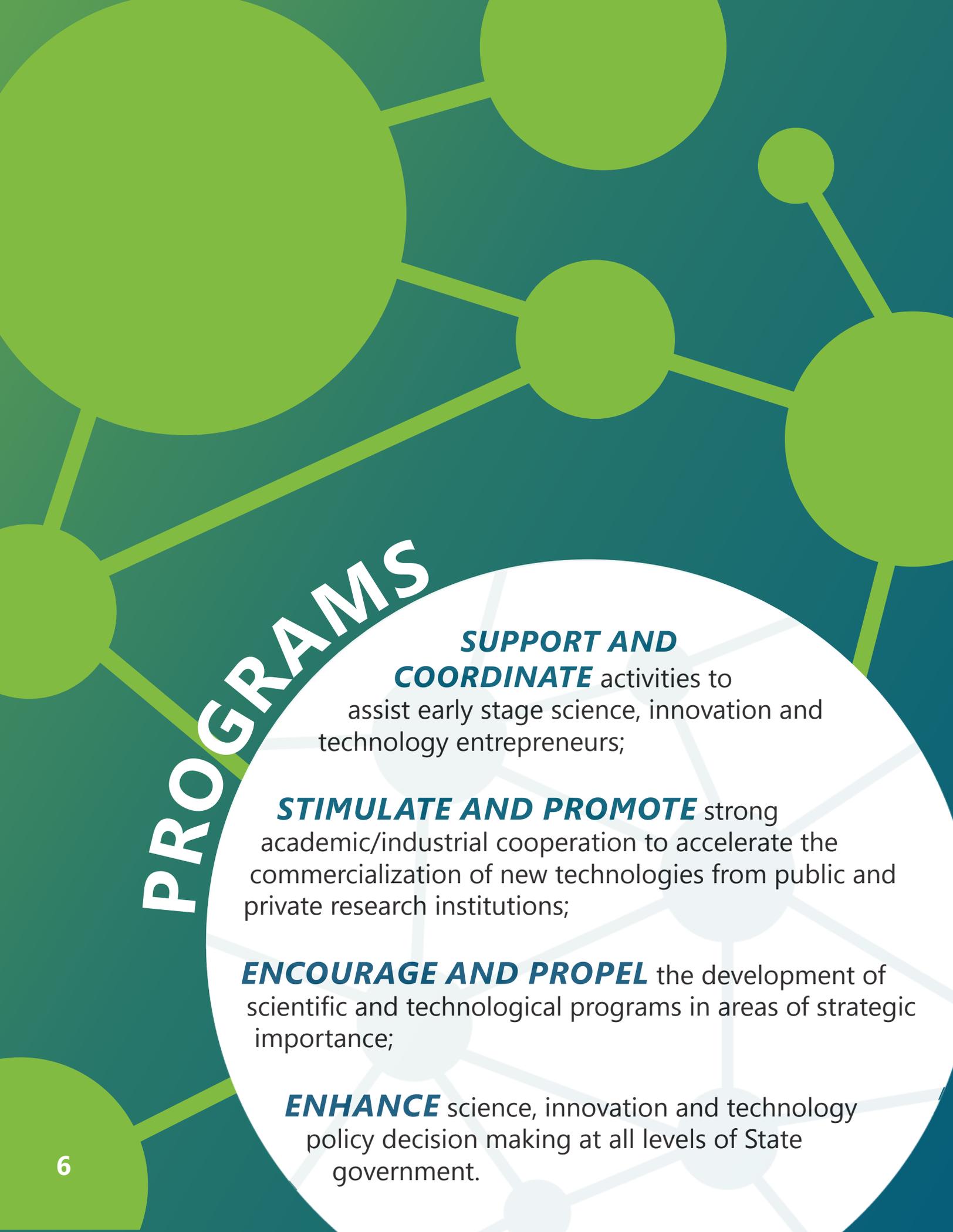
Governor Phil Murphy and the Legislature re-established the New Jersey Commission on Science, Innovation and Technology (CSIT) in August 2018. The Commission is responsible for strengthening the innovation economy within the State, encouraging collaboration and connectivity between industry and academia, and the translation of innovations into successful high-growth businesses.

CSIT members include business leaders, university leaders, and scientists, along with representatives of the New Jersey Economic Development Authority (NJEDA), the Secretary of Higher Education, the Commissioner of Education, and members of the state Legislature.

MISSION

CSIT is committed to advancing innovation-based economic development and job growth, and to creating a stronger, fairer economy for all New Jersey citizens by keeping the Garden State at the forefront of scientific and technological innovations. Innovation alone is not enough to drive sustained economic activity. It requires the translation of innovation into commercial application in the marketplace. This, in turn, results in new firm formation and high wage jobs that can improve and save lives and change the world for the better. Support for early-stage entrepreneurs and innovation-based entrepreneurial companies is a key underpinning to achieving a robust, diverse and inclusive innovation economy.

CSIT links and leverages resources and collaborates with other NJ agencies to implement programs and policies to address the challenges faced by entrepreneurs, especially gaps in services and support for early stage startups focused on technology commercialization with the potential for high growth and further investment.



PROGRAMS

SUPPORT AND COORDINATE activities to assist early stage science, innovation and technology entrepreneurs;

STIMULATE AND PROMOTE strong academic/industrial cooperation to accelerate the commercialization of new technologies from public and private research institutions;

ENCOURAGE AND PROPEL the development of scientific and technological programs in areas of strategic importance;

ENHANCE science, innovation and technology policy decision making at all levels of State government.

VOTING MEMBERS

*PUBLIC MEMBERS APPOINTED BY GOVERNOR, BACKGROUND IN **SCIENCE/TECHNOLOGY***

Gunjan Doshi, Chair | *Founder and CEO, InRhythm*

Debbie Hart, Vice Chair | *President and CEO, BioNJ*

David Pascrell, Treasurer | *Co-Chair, Government and Regulatory Affairs, Gibbons P.C.*

*PUBLIC MEMBERS APPOINTED BY GOVERNOR WITH RECOMMENDATION OF SENATE PRESIDENT, BACKGROUND IN **SCIENCE/TECHNOLOGY, OR BUSINESS RELATED TO SCIENCE/TECHNOLOGY***

Dr. Joel Bloom | *President, NJIT*

Charlene Brown | *Regional Vice President, AT&T External Affairs*

*PUBLIC MEMBERS APPOINTED BY GOVERNOR WITH RECOMMENDATION OF SPEAKER OF ASSEMBLY, BACKGROUND IN **SCIENCE/TECHNOLOGY, OR BUSINESS RELATED TO SCIENCE/TECHNOLOGY***

Dr. Alain Kornhauser | *Professor, Operations Research & Financial Engineering / Director, Transportation Program, Princeton University*

Dr. Zakiya Smith Ellis | *Secretary of Higher Education, Ex-officio, or Designee*

Dr. Lamont Repollet | *Commissioner of Education, Ex-officio, or Designee*

Tim Sullivan | *CEO, NJEDA, Ex-officio, or Designee*

NON-VOTING MEMBERS

MEMBERS OF THE SENATE APPOINTED BY THE PRESIDENT OF THE SENATE, EX-OFFICIO

The Honorable Paul Sarlo | *Democrat*

The Honorable Robert Singer | *Republican*

MEMBERS OF THE GENERAL ASSEMBLY APPOINTED BY THE SPEAKER OF THE GENERAL ASSEMBLY, EX-OFFICIO

The Honorable Andrew Zwicker | *Democrat*

The Honorable Christopher DePhillips | *Republican*

PRESIDENTS OF THE STATE'S PUBLIC AND PRIVATE RESEARCH INSTITUTIONS OF HIGHER EDUCATION, APPOINTED ANNUALLY BY THE GOVERNOR, EX-OFFICIO

Dr. Robert Barchi | *President, Rutgers University*

Dr. Nariman Farvardin | *President, Stevens Institute of Technology*

HIGHLIGHTS

An initial slate of Board members was appointed to CSIT in December 2018, a Chairman was appointed in February 2019, and CSIT held its first meeting in March 2019. In May 2019, CSIT signed a Memorandum of Understanding (MOU) with the NJEDA to support the rapid scale-up of Commission operations. Through this MOU, NJEDA is providing CSIT with programmatic and administrative support to accelerate the launch of new innovation-economy programs.

In June 2019, CSIT established a Program Committee. This Committee conducted a gap analysis of innovation programs within the State, including benchmarking New Jersey's programs against those of peer states such as New York, Massachusetts, Pennsylvania, Maryland, and California. Following this gap analysis, the Program Committee presented to the full CSIT Board a high-level Program Roadmap and initial set of program recommendations. In December 2019, CSIT launched its first program, a federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Support Program technical assistance and small business direct matching grant program.

Expansion of the current SBIR/STTR program and development of subsequent programs on the roadmap was planned for the remainder of fiscal 2020/2021. The first round of the initial SBIR/STTR direct matching grant program is currently undergoing the appeals process. Unfortunately, the COVID-19 pandemic and subsequent uncertainty regarding CSIT FY20 and FY21 budgets has slowed the award of the initial technical assistance support component of the initial SBIR/STTR program.

CSIT executed a broad search for an Executive Director in the second half of 2019, appointing Judith Sheft to the position in December 2019.

KEY CSIT TIMELINE OF ACTIVITIES:



COMMISSION PROGRAMS

CSIT links and leverages resources and collaborates with other New Jersey agencies to implement programs and policies to address the challenges faced by entrepreneurs. These programs and policies particularly address gaps in services and support for early-stage startups focused on technology commercialization with the potential for high growth and further investment.

In June 2019, CSIT established a Program Committee. This Committee conducted a gap analysis of innovation programs within the State, including benchmarking New Jersey's programs against those of peer states such as New York, Massachusetts, Pennsylvania, Maryland, and California. Following this gap analysis, the Program Committee presented to the full CSIT Board a high-level Program Roadmap and initial set of program recommendations.

It should be noted that since the state's Commission on Science and Technology was defunded in 2010, some of its program focus areas were absorbed by other state agencies including the NJEDA and the Department of Labor and Workforce Development. Additionally, several new initiatives to support the Garden State's innovation ecosystem have been developed within the Office of Innovation, the Office of the Secretary of Higher Education, the Department of Labor and Workforce Development and the NJEDA. These programs have focused on the future of work, research fellowships and industry partnerships, rent support for startups moving to collaborative workspaces, venture and angel investment funds, tax credit and incentive programs, support for municipal cluster development and industry development, and New Jersey Founders & Funders speed-matching events.

HOWEVER, THERE REMAINED KEY GAPS IN THE STATE'S INNOVATION ECOSYSTEM THAT THE PROGRAM COMMITTEE ANALYSIS IDENTIFIED AS AREAS THAT CSIT COULD SUPPORT:

FEDERAL SBIR / STTR MATCHING OR GAP FUNDING

DIRECT EARLY-STAGE TECHNOLOGY PROOF OR CONCEPT AND SEED FUNDING GRANTS

UNIVERSITY FUNDING TO SUPPORT COMMERCIALIZATION ACTIVITIES

DIRECT SUPPORT FOR INCUBATORS, ACCELERATORS, AND OTHER COLLABORATIVE WORKSPACES

FEDERAL GRANT-MATCHING SUPPORT

SUPPORT FOR THE NEXT GENERATION OF UNIVERSITY/INDUSTRY CENTERS OF EXCELLENCE

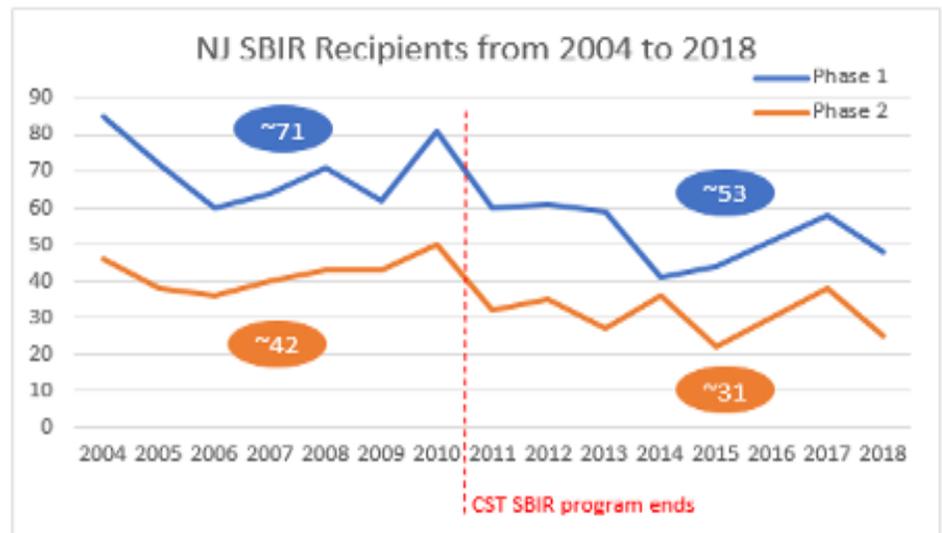


CSIT FEDERAL SBIR/STTR MATCHING FUNDING PROGRAM

With a limited budget of \$1 million covering both administrative and programmatic expenses, the Commission's Program Committee decided to focus initially on SBIR/STTR matching grant support. (See Appendix for details on the Federal SBIR/STTR programs). This program was selected because it addresses challenges faced by New Jersey innovation-based entrepreneurs, would be easy to stand up, builds on the Commission's mandate of creating a vibrant innovation economy by supporting high potential innovation-based entrepreneurs, and is similar to the former Commission's support programs. Benchmarking from other states that have implemented similar SBIR matching grant and technical assistance programs demonstrates that companies that receive support have increased success rates and are more likely to maximize their ability to move from Phase I to Phase II awards.

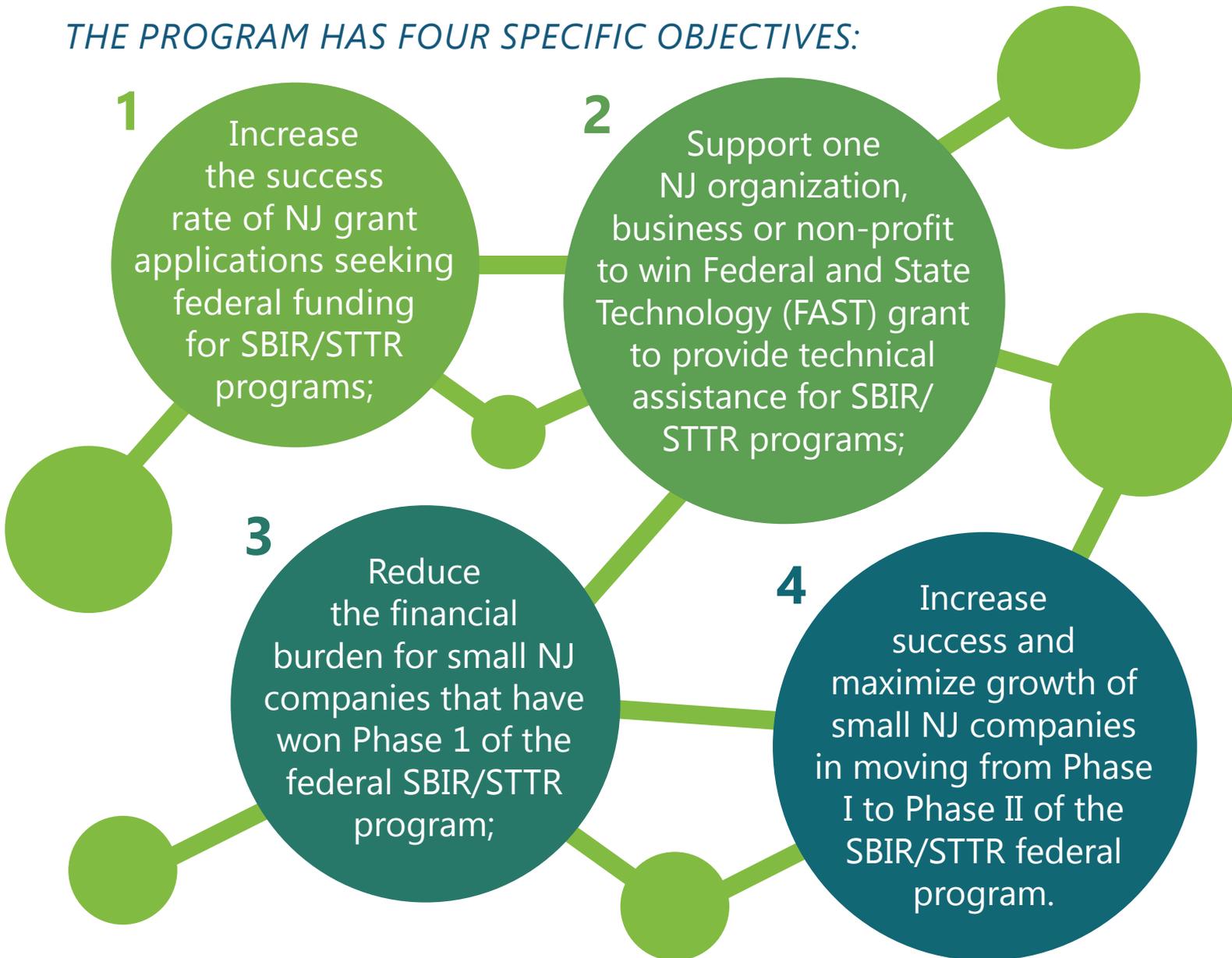
The former Commission provided coaching and gap funding to New Jersey SBIR applicants, until 2010. According to www.sbir.gov, from 2004 to 2010, New Jersey averaged 71 Phase I recipients and 42 Phase II recipients per year.

From 2011 to 2018, when the former Commission no longer provided resources, NJ averages decreased to 53 Phase I recipients and 31 Phase II recipients per year. This represents a 25 percent decrease in Phase I recipients and 28 percent decrease in Phase II recipients.



The CSIT SBIR / STTR Support Program, including technical assistance (FAST) and direct company support in terms of matching grants, was launched in December 2019 to address the above decline, maximize opportunities, improve competitiveness of applicants, and increase the number of applications and awardees.

THE PROGRAM HAS FOUR SPECIFIC OBJECTIVES:



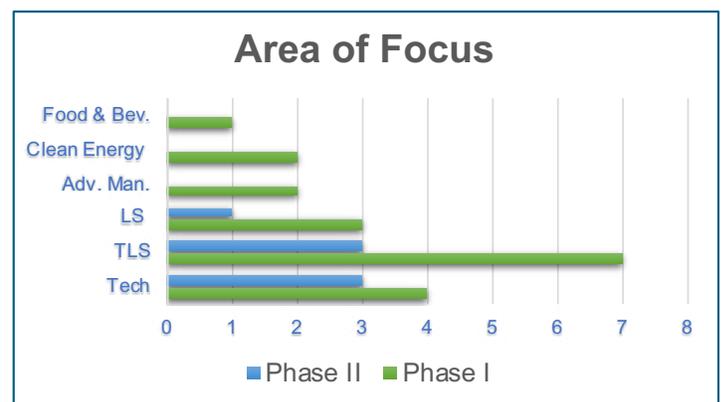
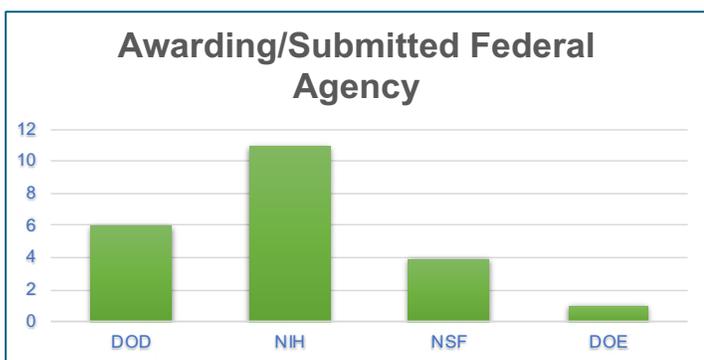
The CSIT SBIR/STTR Support Program is complementary to other programs, including the New Jersey Small Business Development Centers (NJSBDC) technology commercialization support. It also strengthens the current technical assistance initiatives by providing additional funding for both technical assistance and direct company support, increasing the potential award benefits to applicant companies.

CSIT SBIR/STTR - IMPLEMENTATION OUTCOMES

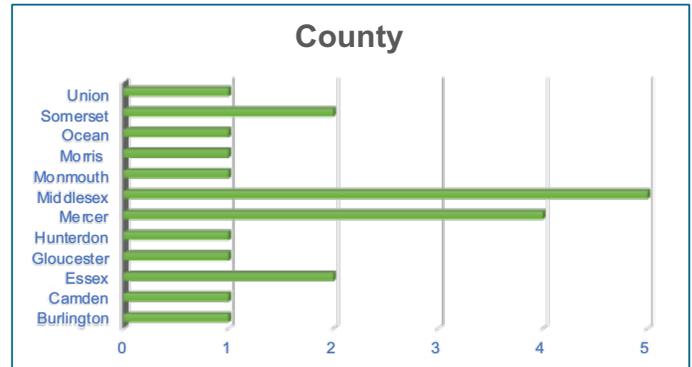
The CSIT SBIR/STTR program opened in late December 2019 with a five-week open application period.

The Direct Financial Assistance component aimed to provide Phase I grants of \$25,000 to NJ small businesses that had received a federal Phase I SBIR/STTR award and Phase II grants of \$50,000 to New Jersey small businesses that have successfully completed Phase I and have applied for Phase II of the Federal SBIR/STTR program. The program was targeted to provide seven Phase I grants (\$175,000) and four Phase II grants (\$200,000).

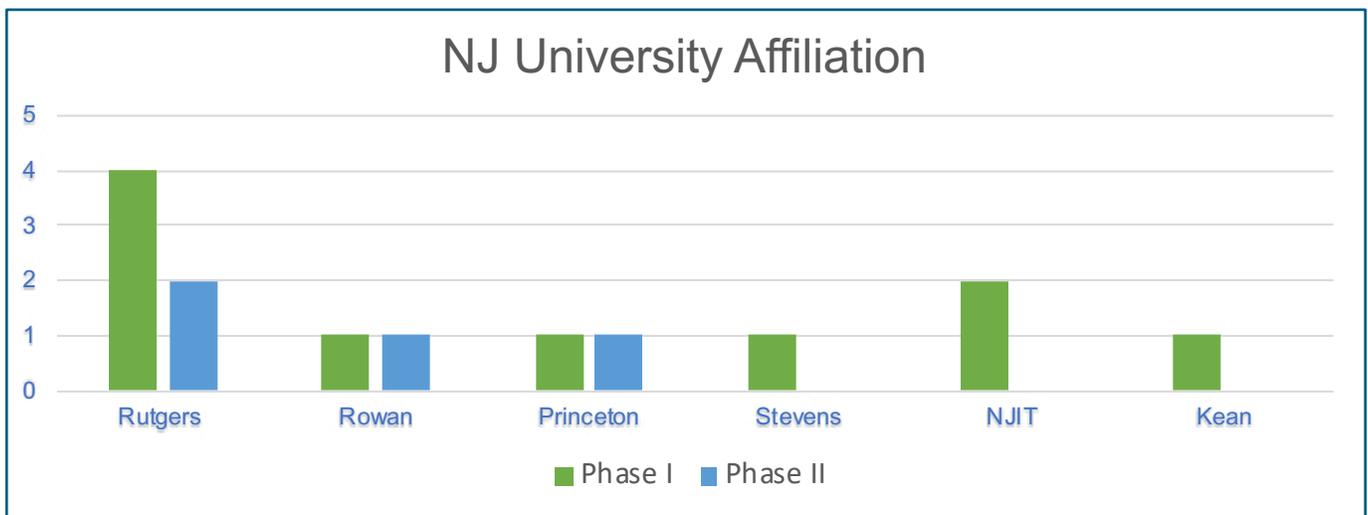
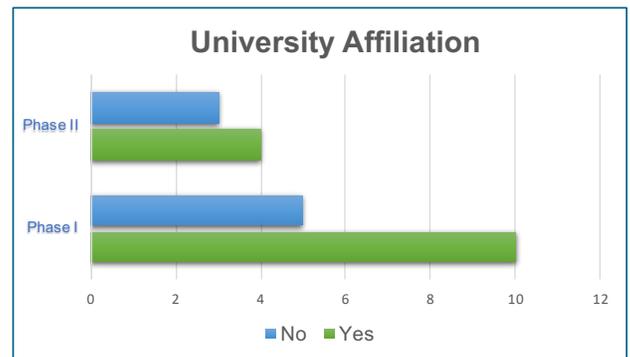
A total of 22 applications were received - 15 Phase I applications and seven Phase II applications. The companies had projects across a range of areas with technology and life sciences combined the highest followed by technology, life sciences, advanced manufacturing, clean energy and food/beverage. The supporting federal agencies were National Institutes of Health (NIH), Department of Defense (DoD), National Science Foundation (NSF) and Department of Energy. This is consistent with overall federal funding where approximately 75 percent of the SBIR/STTR awards are given out by DoD and NIH.



The CSIT program had many first-time SBIR/STTR applicants (60 percent Phase I and 28 percent Phase II), which is in line with CSIT’s objectives of increasing the number of successful applicants in the program. Additionally, the applications came from companies located throughout New Jersey, indicating that there is a base for innovation economic development in every region of the state. However, only 18 percent of applicants are currently located in Opportunity Zones.



A majority of the applicants have an affiliation with a New Jersey university – licensed technology, located in a university incubator space, collaborating with university faculty or utilizing university lab / testing facilities. This is supportive of the CSIT strategy of stimulating and promoting strong industrial – academic collaboration.



CSIT SBIR/STTR - IMPLEMENTATION OUTCOMES *CONT.*

For the technical assistance (FAST) component, two applications were received from organizations that have experience working with early stage innovation-based companies. The applications are under review. The winner of the technical assistance component will also be able to apply as the New Jersey state-supported applicant to the Federal SBIR FAST program. The Federal and State Technology (FAST) Partnership Program provides one year of funding to organizations to execute state/regional programs that increase the number of SBIR/STTR proposals, leading to an increase in the number of SBIR/STTR awards. Federal funding for FAST currently provides up to \$125,000 per applicant for outreach, financial support, and technical assistance to next generation research and development (R&D) focused small businesses. The program places emphasis on helping women, socially/economically disadvantaged individuals, and applicants from underrepresented or rural areas compete in the SBIR and STTR programs. Only one application is allowed per state. It was anticipated that the NJ FAST awardee would use the CSIT funds as part of the required match for the Federal submission. ¹

¹ This component of the SBIR/STTR support program may be canceled as a result of the budget freeze put into place on March 27, 2020 resulting from the current global COVID-19 pandemic. CSIT has alternative means of ensuring SBIR/STTR applicants receive coaching and mentoring support.



CSIT SBIR/STTR - PRELIMINARY TAKEAWAYS

CSIT launched the SBIR/STTR program in late December 2019 with a short application window. Even with this limited timeframe to conduct outreach over the end of year holiday and shut down period, the program was oversubscribed and NJEDA received inquiries from companies that did not apply. This indicates that SBIR/STTR companies in NJ that are building high-potential, innovation-based businesses are looking for additional support.

To enhance the application process, a webinar will be held for future program rounds, to address questions and provide guidance in the application process. The open-application period will be extended and companies that are missing documents will be given a cure period to submit all the required materials.

In terms of outreach, there will be more marketing / communication to underrepresented groups and females. In this pilot round, 82 percent of the applications came from males. It is expected that the NJ FAST Technical Assistance awardee will focus efforts in reaching these populations and providing 1:1 support and guidance for submitting applications for both the CSIT grants and federal solicitations.

CSIT SBIR/STTR - STATUS

The Direct Financial Assistance applications are currently under review and undergoing CSIT's internal appeals process.

The Technical Assistance component is under review.

LOOKING AHEAD

In January 2020, CSIT submitted a budget request for approximately \$4 million for FY21. This was to support the development and implementation of a variety of programs including additional SBIR/STTR direct company support, an early stage seed grant program, a technology commercialization matching fund for university spin outs, and innovation ecosystem events.

In light of the fiscal uncertainty due to the COVID 19 health emergency, the New Jersey Office of Management and Budget has placed certain funding into spending freeze reserve to preserve sufficient cash and budget authority to meet emergency and statutory obligations. It is therefore unclear what level of funding will be appropriated for CSIT in the FY21 budget. The close of the FY20 budget has been extended for three months to September 30, 2020.

The CSIT Executive Director and Board are evaluating alternatives to address the fiscal uncertainty including a potential elimination of the technical assistance (FAST) SBIR/STTR technical assistance component which would enable CSIT to provide much needed direct company support matching grants and continue administrative functions.



FY2019-FY2020

APPROPRIATIONS

AMOUNT NOTES

FY2019 appropriation	\$1,000,000	
FY2020 appropriation	\$0	FY20 Budget Freeze on FY20 appropriation to CSIT of \$1,000,000
TOTAL PRIOR APPROPRIATIONS	\$1,000,000	

ESTIMATED FY2019-FY2020

EXPENSES

AMOUNT NOTES

ADMINISTRATIVE

Executive Director salary	\$127,500	6 months of fully-loaded salary
NJEDA program support charge-back	\$75,000	Estimated Chargeback through 6/30/20
Insurance, Telephone / Network	\$4,000	12 month of board insurance
<i>Sub-total administrative</i>	<i>\$206,500</i>	

PROGRAM

SBIR/STTR Technical Assistance Grant	\$125,000	1 technical assistance grant
SBIR/STTR small business grants	\$375,000	phase I and phase II direct company support
<i>Sub-total program</i>	<i>\$500,000</i>	
TOTAL ESTIMATED FY2019-FY2020 EXPENSES	\$706,500	EXPENSES THROUGH 6/30/20

*ESTIMATED ADMINISTRATIVE EXPENSES
7/20 – 9/20*

\$85,000

*ADDITIONAL FY20 EXPENSES DUE TO
EXTENSION OF FY20 DUE TO COVID 19*

ESTIMATED AVAILABLE FUNDS 10/1/20

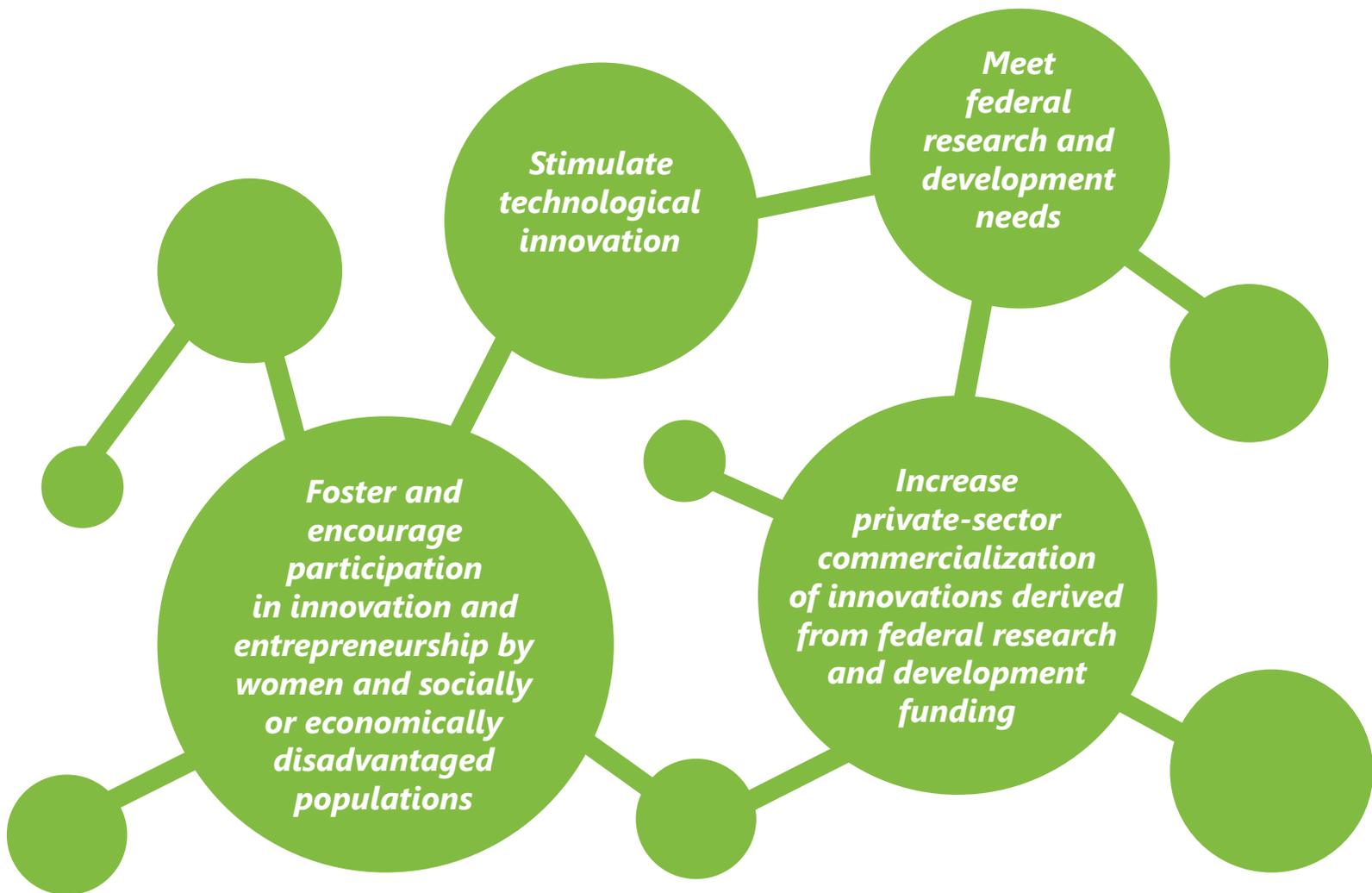
\$208,500

*ASSUMES NO MODIFICATION OF
SBIR/STTR PROGRAMS*

FEDERAL SBIR/STTR BACKGROUND

The Federal Small Business Innovation Research (SBIR) and the Small Business Technology Transfer Program (STTR) are highly-competitive, three-phase award programs, which provide qualified small businesses opportunities to propose innovative ideas that meet the specific research and development needs of the federal government. The programs were created to support scientific excellence and technological innovation through the investment of federal research funds in critical American priorities to build a strong national economy.

THE GOALS OF THE FEDERAL PROGRAMS ARE TO:





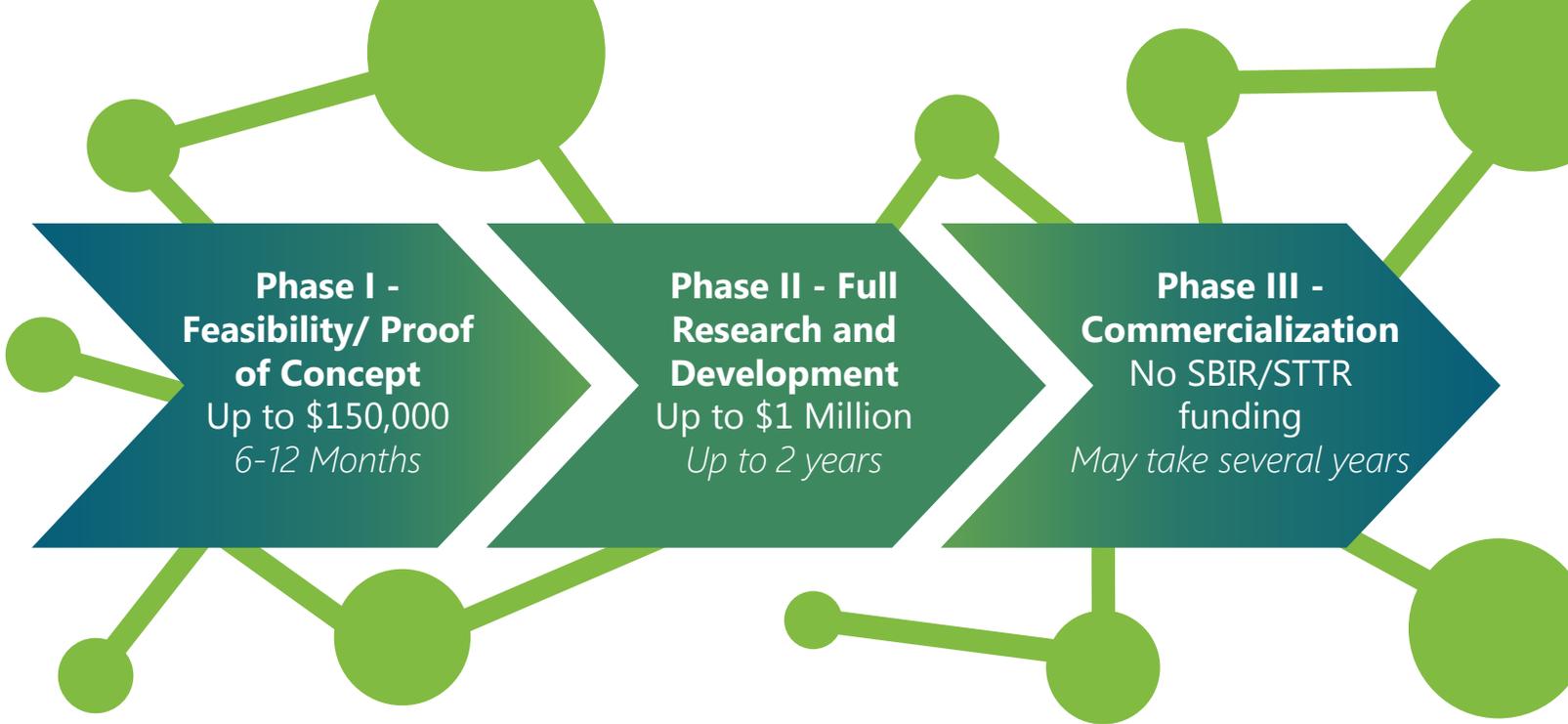
Congress established the SBIR program in 1982 and the STTR program ten years later to assist small business concerns (SBCs) in obtaining Federal research and development (R&D) funds to build a strong economy and support technological innovation.

SBIR/STTR targets the entrepreneurial sector because that is where most innovation and innovators thrive. However, the risk and expense of conducting serious R&D efforts are often beyond the means of many small businesses. By reserving a specific percentage of federal R&D funds for small businesses, SBIR protects the small business and enables it to compete on the same level as larger businesses. SBIR funds the critical startup and development stages and it encourages the commercialization of the technology, product, or service, which, in turn, stimulates the U.S. economy. Since its enactment in 1982, the SBIR program has helped thousands of small businesses to compete for federal R&D awards. Their contributions have enhanced the nation's defense, protected our environment, advanced health care, and improved our ability to manage information and manipulate data. Annually the SBIR/STTR award obligations are approximately \$3B. In FY19, 105 NJ companies received approximately \$38M in SBIR/STTR awards.

SBIR: Requires federal agencies with extramural research/research & development (R/R&D) budgets over \$100 million to set aside a percentage (3.2 percent) of their annual extramural R/R&D budget for small businesses.

STTR: Modeled after the SBIR program, STTR requires federal agencies with extramural budgets exceeding \$1 billion to set aside a percentage (0.45 percent) of their annual extramural R&D budget for small business concerns that work in cooperation with universities, federally funded research and development centers, and other non-profit scientific and educational institutions. The goal is to facilitate transfer of technology and research from these institutions to commercial use and encourage innovation.





Phase I – Feasibility/Proof of Concept: *Using a competitive process, federal agencies award up to \$150,000 to a small business to perform R/R&D for up to six to 12 months on a specific topic in order to establish its technical merit, feasibility, and commercial potential. During this phase, federal agencies assess both the performance of the small business and the potential of the technology prior to providing further federal support in Phase II.*

Phase II – Full Research and Development: *Based on the results achieved in Phase I, federal agencies will decide whether to continue R/R&D efforts into Phase II based on the scientific, technical, and commercial merit and feasibility of the idea. If the federal agency decides to continue into Phase II, they will award up to \$1 million to the small business to continue R/R&D efforts for up to 2 years.*

Phase III - Commercialization: *No specific SBIR funding is associated with Phase III, however, some agencies may include follow-on non-SBIR funded R&D or production contracts for products or services intended for use by the U.S. Government. The objective of Phase III is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities.*



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