



## Project Profile: New Jersey MarketShift

### Impact Statement

New Jersey MarketShift increased local awareness of New Jersey's defense sector, introduced new innovations, tools and approaches to local firms, engaged with more than 1,820 NJ aerospace and defense organizations, including 633 A&D companies, and developed and shared over 1,000 company profiles using the MarketShift Intelligence Platform. Additionally, the NJII team led numerous training programs and workshops focused on product innovation and new market development. These training programs generated economic development, enabling communities within the state to refine and improve their industry cluster support programs, improving the resiliency and readiness of the defense industrial base.

### Key Project Takeaways

In late 2014, the Office of Economic Adjustment provided the New Jersey Institute of Technology (NJIT) and its partners with a grant to support the New Jersey Market Shift project (NJMS). NJIT tasked the New Jersey Innovation Institute (NJII), an NJIT research institute, with implementing the initial grant and any subsequent follow-on investments.

The New Jersey MarketShift activities led by NJII increased local awareness of New Jersey's defense sector and introduced new innovations, tools and approaches to local firms. Through NJ MarketShift, NJII engaged with more than 1820 NJ aerospace and defense organizations, including 633 A&D companies. More than 1,000 company profiles are resident on the MarketShift Intelligence Platform.

In addition to the platform, the NJII team led numerous training programs and workshops focused on product innovation and new market development. Market growth tools have been used by 305 people, and innovation training has been provided to 354 people. In addition to bringing new concepts to participants, these training programs are also generating economic development impacts as several communities—Cape May County, Morris County, Atlantic County, Bergen County, Monmouth County, and the city of Trenton--have used these techniques to refine and improve their industry cluster support programs.

### Project Description

#### Rationale

Defense activities are highly concentrated in New Jersey. The military is the second largest employer in the state and its primary economic driver, employing roughly 71,000 residents across seven major military bases including Joint Base McGuire-Dix-Lakehurst (JBMDL). JBMDL services all five branches of the military and spans 20 miles, 8 municipalities, and 2 counties. The base has 80 mission partners, in excess of \$9 billion in physical infrastructure, and employs roughly 44,000 military personnel living and working in and around the base.

At the core of New Jersey's aerospace and defense industry are weapons, guidance systems and components manufacturing. Recently, the New Jersey aerospace and defense industry faced the threat



of shifting defense procurement and base closures. The BRAC closure of Fort Monmouth in 2011 led to 70 percent of the installation's personnel and tens of millions in economic activity relocating out of the state.

The state's manufacturing base is predominately composed of tier 2 and 3 suppliers whose components service not only the defense industrial base but are also used in high-tech sectors such as medical devices, pharmaceuticals, and biotechnology. New Jersey has only one tier 1 defense supplier: Lockheed Martin, which employs 4,000 people at its Naval Electronics and Surveillance/Surface Systems facility in Moorestown. Facing the threat of continued base closure and shifts in defense expenditures, New Jersey's defense industrial base requires support to increase their ability to manufacture goods that meet the needs of the defense and commercial sectors.

### Program Activities

Combining both NJII's Innovation Labs' (iLabs) – industry-led forums emphasizing co-created solutions to company challenges – access to business executives and NJIT's influence and resources, NJII launched NJ MarketShift to focus support for New Jersey aerospace and defense industries. Similar initiatives are in place for health care, fintech, pharmaceuticals, and other sectors with a strong presence in the state.

The New Jersey Market Shift program supported defense suppliers in the following ways:

- New Jersey MarketShift Intelligence (NJMS-I): a web platform and supply chain mapping tool designed to better understand challenges faced by defense manufacturers.
- Consulting and technical assistance support for companies, primarily provided by the New Jersey Manufacturing Extension Partnership (NJMEP) through the Market Shift Destination Innovation program.
- Community planning and support for local areas affected by changes in DoD expenditures through workshops, Innovation Academy meetings, and other services.
- Specialized company and industry services using the Technology Radar and Market Explorer, tools created by the German Fraunhofer Institutes to identify new and potential industry technologies and consumer markets for product development.
- Employment of Strategic Doing™ protocol, originally developed by researchers at Purdue University, to address and reassess obstacles to industry growth and develop approaches to managing risk in bringing products to market.

These OEA-backed programs align with NJII's work with local industries to develop industry-specific strategies and common metrics for measuring industry innovation. This work has ensured a better footing for New Jersey's defense industrial base, bolstering DoD's mission.

### Resiliency Impacts

#### Increasing Awareness of the Defense Industrial Base

NJII programs increased visibility of New Jersey's defense manufacturing base, especially the lower tier suppliers who are critical and underappreciated parts of the state's industrial base. One of the significant developments in increasing the visibility of NJ's defense manufacturing base is the creation of



the Aerospace and Defense Consortium, facilitated and convened by NJII. This consortium has knitted together representatives from business, government, military, higher education to discuss, prioritize and advocate for defense interests across the state.

In addition, the NJII team has been able to refine and improve its market intelligence and other capacities thanks to partnerships developed under these grants. These learnings are now being applied to further bolster the A&D sector and to support other clusters as well.

The surveys and analyses conducted by NJII helped policy makers and elected officials understand the scale and scope of New Jersey's defense sector. Tools such as NJ MarketShift, a directory of defense suppliers and their capabilities, helped defense suppliers realize commercial and defense opportunities and understand the broader market of defense companies. Increased understanding of New Jersey's defense market allowed NJII to help companies better serve defense and commercial markets.

#### [Enhancing Force Multipliers to Support the Defense Industrial Base](#)

Prior to the IR grant, no state economic development organization had received funding from OEA. NJIT's status as the first entity to do so provided New Jersey the capacity to address Defense supply chain issues. This led to support for large OEMs such as Lockheed Martin in addition to Tier 2 and 3 suppliers.

MarketShift's activities provided regional organizations insights regarding the needs of the defense industrial base in New Jersey. A significant finding from MarketShift is that New Jersey is ready to focus on innovation clusters in sectors including Aerospace and Defense. MarketShift leaders were invited to the FAA William J. Hughes Technical Center in Atlantic County to provide leadership in the development of an aerospace and defense solution center to advance the sector in the region with a focus on full regional support, including leveraging relationships from MarketShift to facilitate collaboration between the FAA, NAVAIR, McGuire Air Force Base, and other military operations. MarketShift leaders also received permission to work directly with the Air Force directly to set up an innovation facility at the joint base, which is the only tri-service joint base in the world.

New Jersey Innovation Institute, in collaboration with the New Jersey Economic Development Authority, New Jersey Business & Industry Association, Choose New Jersey, and the New Jersey Manufacturing Extension Program, formed the New Jersey Aerospace & Defense Coalition (NJADC). After the conclusion of the grant, the NJADC continues to organize cross-company collaborations to compete DoD contracts to benefit the New Jersey supply chain. Companies continue to be active and take leadership roles at the NJADC, which is now housed at NJII. Companies such as Lockheed Martin, in addition to other industry associations, serve in senior leadership capacity with the Coalition, which holds a role as a convener of companies seeking to collaborate on defense work.

Platforms to facilitate collaboration between small defense suppliers support the defense industry supply chain, and therefore DoD, by providing a method for organizations to share and leverage each other's capacities.



## Commercial Diversification of Defense Companies to Sustain the Industrial Base

NJMS found early success in connecting candidate companies with new growth markets. General A&E (GA&E) manufactures rugged enclosures and chassis used to house mission critical electronic components for military vehicles – primarily in aerospace. Defense contracts comprise more than half of GA&E’s total revenue. In 2018, the NJMarketShift team partnered with GA&E to employ the Fraunhofer IAO MarketExplorer™ process to identify growth market opportunities appropriate for GA&E – based on current assets, capabilities, and constraints – and develop a low-risk market entry strategy that respects their current customer base. The MarketExplorer found that GA&E’s target market is Internet of Things (IoT) nodes and gateways. The market entry strategy was coupled with a roadmap to move up-market by adding additional value-added production steps to their current capability set.

Additional examples include working with a software company, PRICE Systems, that developed parametric cost estimating tools for the defense industry. These tools were found to have applications in “smart” city cost estimating. A precision metal stamping company, Brewster Washers, used MarketExplorer services to enter the exploding sensor market; and a stainless-steel manufacturer, Alloy Stainless Products, found new opportunities in wind energy, cryogenics, and sensors. Companies able to address the needs of both commercial and defense sectors can remain resilient through out any fluctuations in defense spending, remaining available to support the needs of the DoD as they evolve.

Over 55 companies underwent market assessments from NJMS, five of which received defense diversification plans. An additional 23 companies received export assistance through NJMEP workshops, helping them identify and move into international markets. Helping companies diversify in this way increased the overall strength of the state’s economy bolstering the talent pool and resources DoD can call on in its mission.

## Readiness Impacts

### Training and People Support

The NJIT team engaged in aggressive outreach to defense-dependent communities across the state. The team sponsored local “design forums” (often using tools from Strategic Doing) to address key challenges facing the region’s businesses and guide participants to create solutions as local experts. A recent forum in Cape May helped local economic development leaders create a strategy to support UAV research and testing in the area. Other regional workshops were held in Toms River, Trenton, and Morris County.

Other successes in connecting NJMS services with small and medium businesses include:

- Conducting six regional “design forums” at sites throughout the state, attracting 108 participants.
- Cohosting an event with the National Contract Manufacturing Association’s Picatinny Chapter which attracted 150 participants.
- Cohosting an event at Imperial Manufacturing which drew 74 attendees.



To grow the NJMS network, the project team made direct appeals to manufacturers and key decision-makers in businesses through phone calls, emails, and in-person conversations. As of April 2015, the NJMS team had made 172 contacts, registering 85 people for design forums.

The design forums focused around support of New Jersey's A&D cluster to diversify into commercial markets, foster production innovation, and strengthen the capacity of companies in supply chains integral to both the DoD and New Jersey's economy. Outcomes from a stronger NJ A&D supply chain include increased corporate revenue, a more highly skilled and competitive workforce, and a set of increased contracting capabilities to service the DoD. NJMS has also begun to leverage its growing defense supplier network. Activities supported by the grant include:

- Engaging with more than 90 small and medium A&D enterprises (SMEs)
- Providing concierge services to 13 SMEs
- Delivering 18 Strategic Doing workshops, serving more than 230 people
- Providing 4 adjacent market identification consultations
- Offering NJMEP services to 24 businesses
- Completing 15 market research analyses provided by BCC Research
- Completing 15 MarketShift intelligence supplier analyses
- Completing 20 NJMEP SME Quickview surveys
- Completing 5 innovation network map analyses

#### Improved Capabilities and/or Production Adjustments

In addition to core training and business consulting services, the NJMS team introduced an innovative approach to engage larger prime contractors: the business challenge. Using this approach, larger firms identify a pressing business challenge and work with potential suppliers and partners (via a structured process) to identify potential solutions. Two major business challenge efforts were supported by the grant. NJII used its NJMS Intelligence Platform to help assist and publicize Stanley Black and Decker's efforts to relocate its RFID antenna production facilities to the US. While the project located in New England rather than New Jersey, NJII helped re-shore production capabilities previously based overseas.

The second business challenge effort worked with Lockheed Martin to focus on the thorny technical issue of condition-based maintenance for the AEGIS Combat System (ACS). This call for subcontractors attracted 90 New Jersey-based suppliers. A small group of these firms now collaborate with Lockheed Martin to provide technical solutions. This project attracted other large NJ employers interested in condition-based maintenance, including Arconic and RWJBarnabus, permitting the further leveraging of concepts developed by the network of NJ companies associated with the Lockheed project. This business challenge in particular holds significance for DoD, providing the Navy an upkeep plan for aging but valuable weapon systems.

#### Lessons Learned



### Greatest Challenge

Contracting framework in federal government made the development of the intelligence platform more difficult. MarketShift still has valuable tools in development that need more funding to get off the ground. The platform is functional, but the program team had to make choices based on deadlines that were more contract driven than project driven. With this knowledge, they could have done a better job managing the platform's development.

### Most Important Lessons Learned

Take risks to support your region. OEA supported NJIT's supply chain analysis work, including the intelligence platform, techniques, and tools to work in supply chains. At the outset, there seems to be a mass of uncoordinated economic activity, and mapping the supply chain was a risk for OEA where program leaders recognized the value proposition.

Providing a stable and trusted platform will encourage use and collaboration. The supply chain mapping effort uncovered a denser-than-expected defense industrial base in New Jersey that was initially wary of the platform. Due to the reputation of MarketShift, participants trusted the platform, which made it more attractive to new entrants.

Leverage MEP partnerships strategically. Two tools that were the most efficient for MarketShift were the Fraunhofer tool that helps companies diversify by gaining a better understanding of their strengths, and the Strategic Doing tool, which helped to get people engaged in moving agendas forward.

The economy around New York City is very supply chain oriented, and the Department of Defense needs to be engaged. OEMs such as those in the aerospace and defense and automotive industries are dispersed across country, but innovation is concentrated in New York City Region. The Department of Defense needs to be present in the area to benefit from those innovations, and it will take these innovative strategies to do so.

### Sustainability

Through the partnerships developed through the Industry Resilience program, NJIT is acquiring new grants from local bases in addition to contracts from state and local governments. NJIT is also seeking additional baseline funding from the State of New Jersey to support their business support services.