

MAPPING SAN DIEGO'S DEFENSE ECOSYSTEM



FULL REPORT
RELEASED FEBRUARY 2018



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EXECUTIVE SUMMARY | 01

For more than a century, San Diego's defense cluster has been at the heart of the regional economy. The breadth and depth of defense activity stretches far beyond military bases and naval ships; from telecomm to robotics, aerospace to cybersecurity, San Diego's defense cluster is the driving force behind the region's innovation economy. In absence of the defense cluster, it is doubtful San Diego would be the global innovation hub it is today.

In 2017, defense-related spending contributed \$25.2 billion to the regional economy. More than \$9 billion came from defense contracts procured by private firms, making San Diego the second largest recipient of defense procurement dollars nationwide. Today, there are more than 5,600 defense contractors connected to the region's defense cluster. The overwhelming majority are small businesses in the manufacturing and professional, scientific, and technical service sectors which, together, account for 81 percent of all defense-specific contractor employment.

As a region heavily reliant upon defense spending, uncertainty surrounding the federal defense budget poses a potential threat to the region's essential network of defense contractors and, more broadly, the regional economy. In order to better understand and support the local defense cluster, a survey of defense contractors in the region was conducted to gauge perceptions of the business climate, with the ultimate goal of informing the development of specific programs designed to enhance the resiliency of local companies.

KEY TAKEAWAYS

- » San Diego is the second largest recipient of defense procurement dollars, contracting more than 5,600 firms and 62,000 employees.
- » A strong network of suppliers and access to customers are key reasons that 71% of firms have a favorable view of San Diego as a place to do business.
- » Defense contractor jobs have grown 6.3% over the last three years, and are expected to grow another 9.3% over the next year.
- » Skilled workers are in high demand but a majority of employers have difficulty finding qualified applicants.
- » Most defense contractors already focus on their non-defense business, and 83% are interested in growing their commercial portfolio.

For an interactive tool that displays defense contracts within the region,

VISIT » SanDiego.DODspend.com



INTRODUCTION | 02

Since 1846, San Diego has remained a vital national defense asset for the U.S. Navy, providing strategic access to the Pacific. Home to the largest concentration of military assets in the world, San Diego's regional economy is heavily dependent on defense spending. According to the San Diego Military Advisory Council's 2017 Military Economic Impact Study, direct, regional defense spending on facilities, payroll, benefits, acquisitions, procurement contracts, and related expenses amounted to \$25.2 billion for the fiscal year 2017. When accounting for multiplier effects, it is estimated that one out of every five jobs in the region is tied to defense spending.

From unmanned aerial vehicles and cybersecurity, to shipbuilding and satellites, San Diego's defense industrial base comprises companies large and small that continue to deliver capabilities necessary to our armed services, in an increasingly challenging federal budget environment.

Understanding the types of companies that make up San Diego's defense supply chain, and their specific needs, is critical for a region that has and will remain closely connected to the military. This report is part of a region-wide effort, known as Propel San Diego, to develop a more comprehensive understanding of the region's defense industry in order to develop specific programs designed to enhance the resiliency of local defense contractors.

» GRANT BACKGROUND

In July 2016, the City of San Diego was awarded a \$1.7 million grant from Office of Economic Adjustment (OEA) through their Defense Industry Adjustment (DIA) program.

Propel San Diego – the regional initiative born out of the OEA grant awarded to the City - is a multiphase effort undertaken by a regional collaborative of six key partner organizations with the goal of increasing the strength and resilience of regional defense firms.

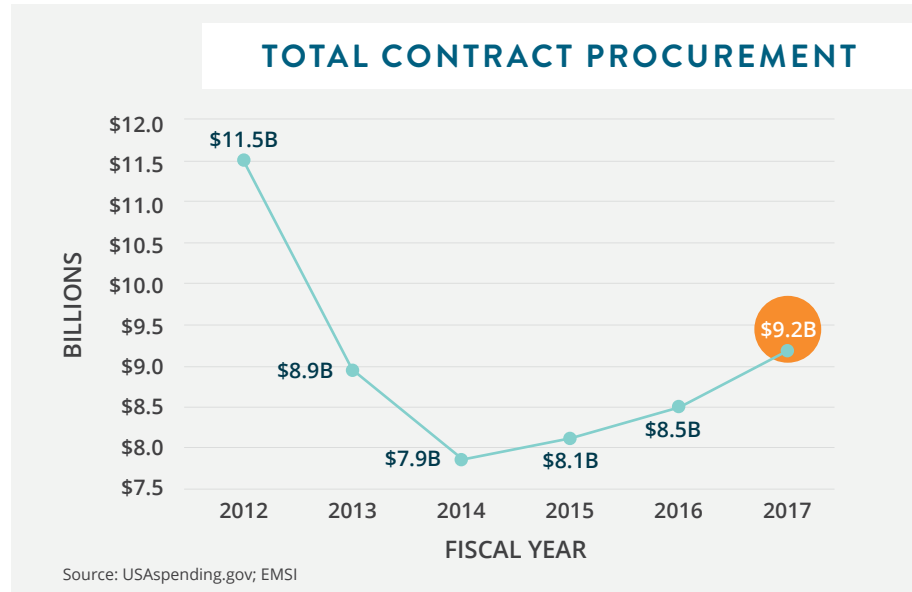
To date, a variety of programs have been initiated or fully executed through members of the regional collaborative, which include: the City of San Diego, San Diego Regional Economic Development Corporation, San Diego East County Economic Development Council, South County Economic Development Council, San Diego Military Advisory Council, and San Diego Workforce Partnership.

Phase one of the OEA grant has been focused on researching the local defense cluster and developing programs to address competitiveness barriers for defense contractors who have been or could be adversely impacted by changes in federal defense spending. The resulting research has helped Propel San Diego better understand potential challenges and the needs of small and medium-size defense contractors.

PROCUREMENT TRENDS | 03

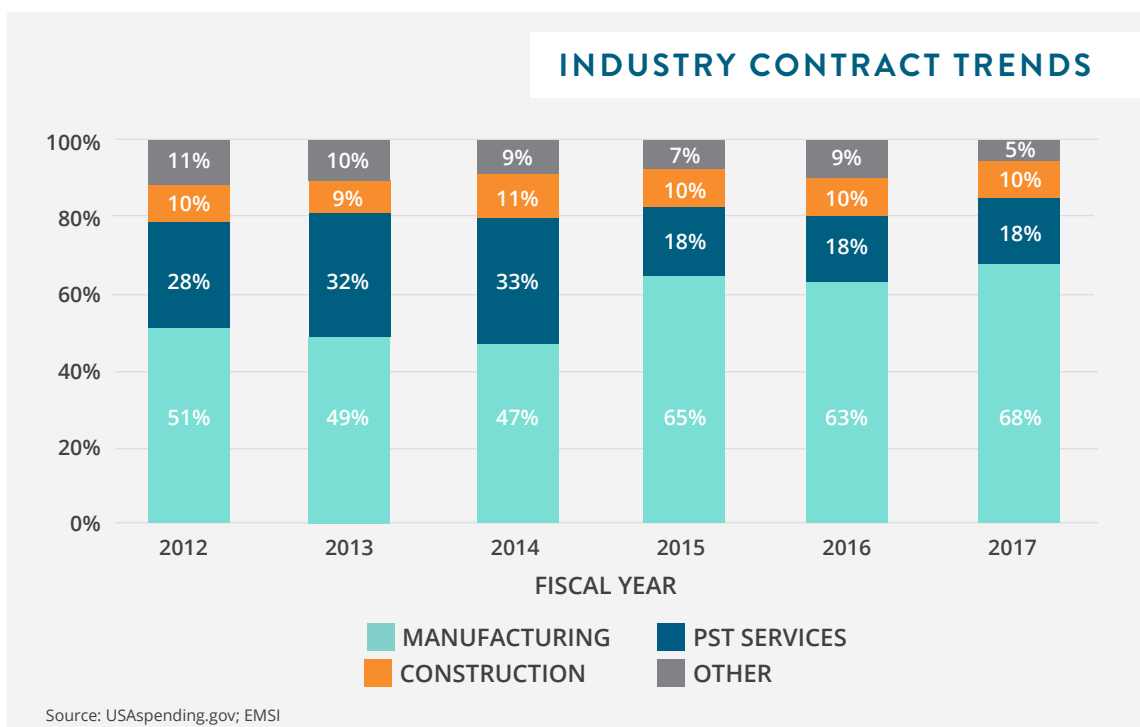
CONTRACT PROCUREMENT TRENDS

Defense spending can vary drastically year-to-year due to changes in national priorities, major program acquisitions, or uncertain federal budgets. Fluctuations in defense spending directly impact local defense contractors, creating potential vulnerabilities for the regional economy.



CONTRACTS BY INDUSTRY

The overwhelming majority of contract dollars awarded to San Diego went to manufacturing (mfg), professional, scientific, and technical (PST) services, and construction companies. In 2017, these three industries received more than 95 percent of total awards. Manufacturing consistently leads, receiving between 47 and 68 percent of total contract dollars since 2012.

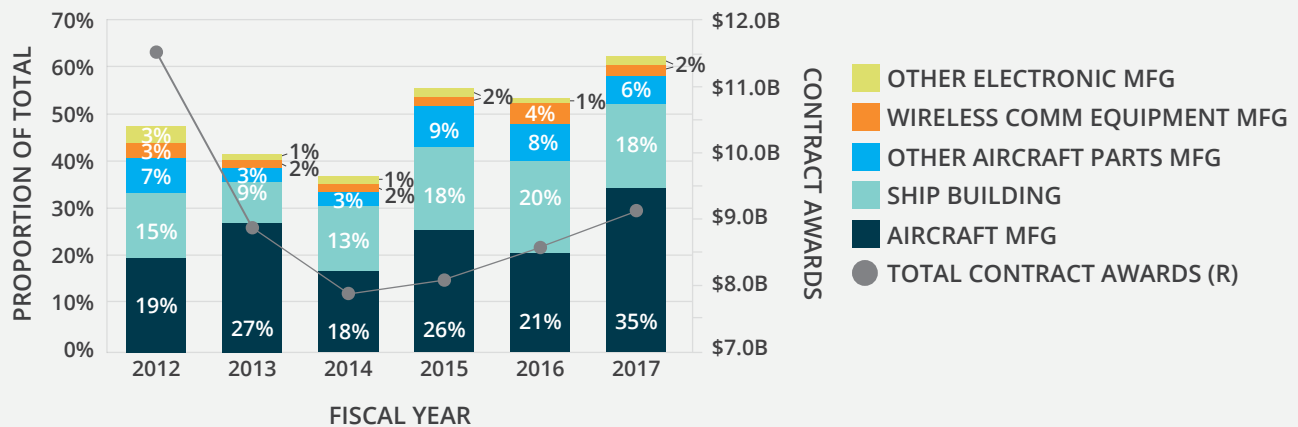


KEY INDUSTRY BREAKDOWN | 03

A CLOSER LOOK

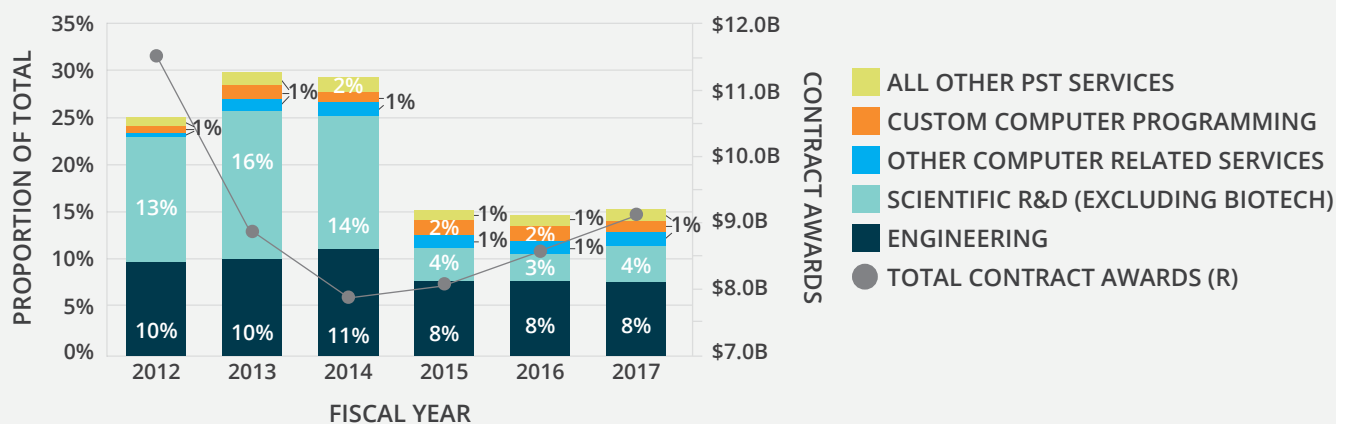
More than two-thirds of defense contracts awarded to the region in 2017 went to manufacturers. This is consistent with the two prior years, when total annual contract awards to San Diego rebounded after two years of sharp declines. Aircraft manufacturers and ship builders consistently win the bulk of all defense contract dollars - totaling nearly 53 percent of all contract awards in 2017. Between 2012 and 2014, scientific research and development (R&D) firms received an average of 14.3 percent of all contract dollars. However, since total awards began rising again in 2015, the industry has seen an average share of only 3.4 percent.

CONTRACT TRENDS: TOP FIVE MANUFACTURING INDUSTRIES



Source: USAspending.gov; EMSI

CONTRACT TRENDS: TOP FIVE PST SERVICES



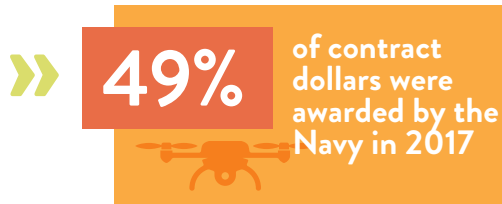
Source: USAspending.gov; EMSI



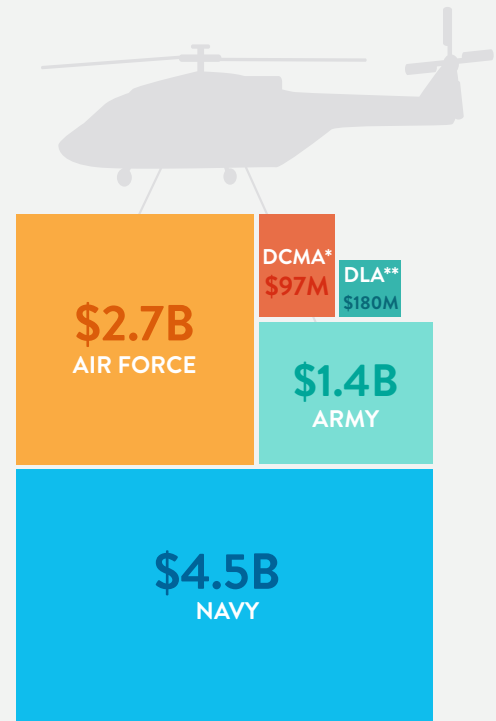
CONTRACT FUNDING | 03

FUNDING AGENCIES

The breakdown between funding agencies has remained relatively stable over time. In fact, the same three agencies have continuously funded more than 93 percent of total contract awards in San Diego. The Department of the Navy has awarded between 44 and 55 percent of total awards since 2012. While it is no surprise that the Navy is the largest source of contracts in San Diego, defense companies in the region also receive significant funding from the Air Force and Army.



TOP FIVE FUNDING AGENCIES

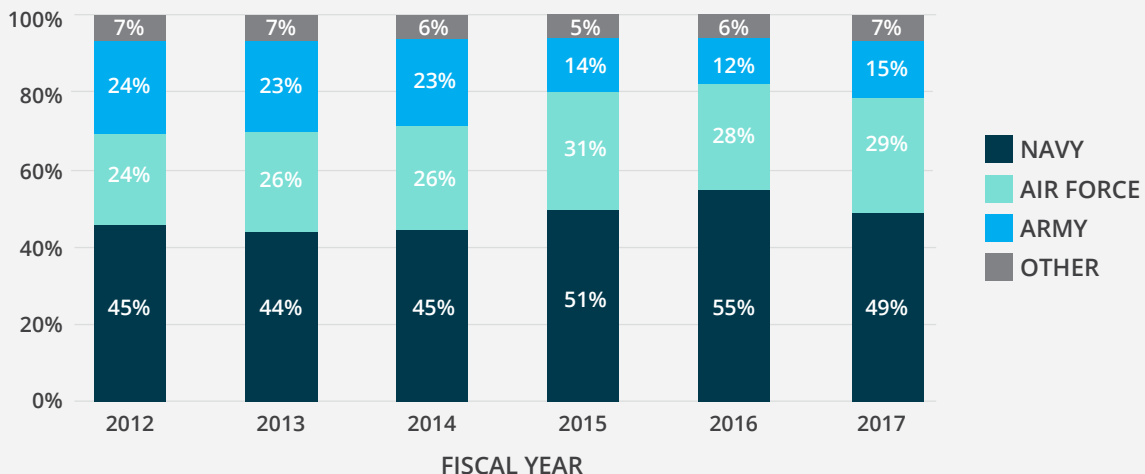


*DCMA - Defense Contract Management Agency

**DLA - Defense Logistics Agency

Source: USAspending.gov; EMSI

FUNDING AGENCY TRENDS

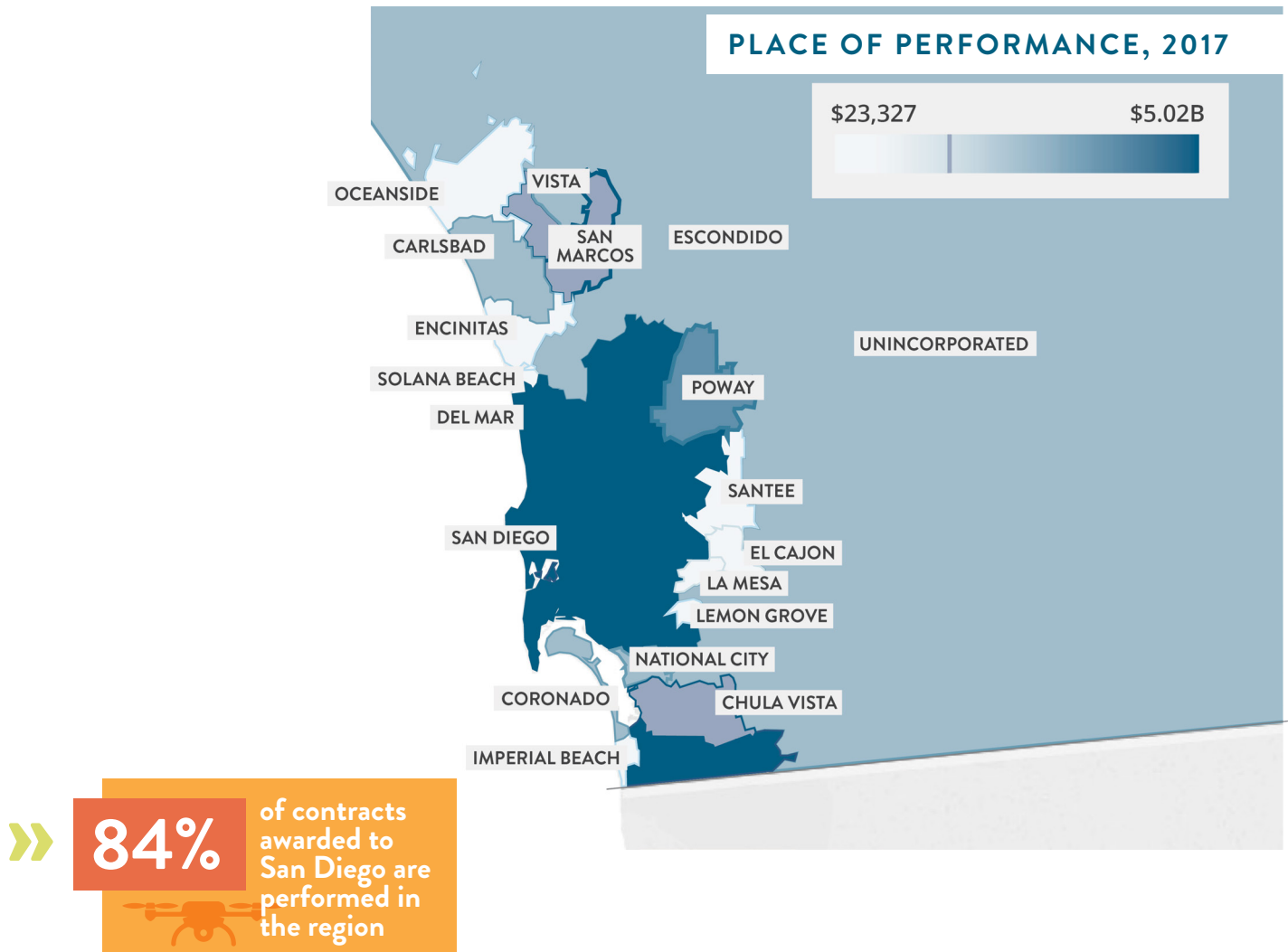


Source: USAspending.gov; EMSI



REGIONAL FLOWS | 03

While contracts may be awarded to a business in one locality, the work may be performed elsewhere. In 2017, contracts awarded outside but performed in the region totaled \$2.1 billion, whereas contracts to San Diego firms performing work outside the region totaled \$1.5 billion - making San Diego a net beneficiary of inter-regional contract spending flows.



For an interactive tool that displays defense contracts within the region,

VISIT  SanDiego.DODspend.com

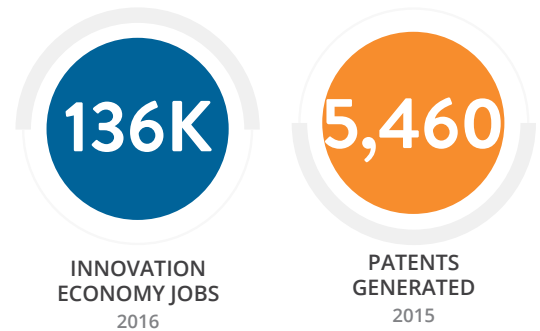


DIVERSE ECONOMY | 04

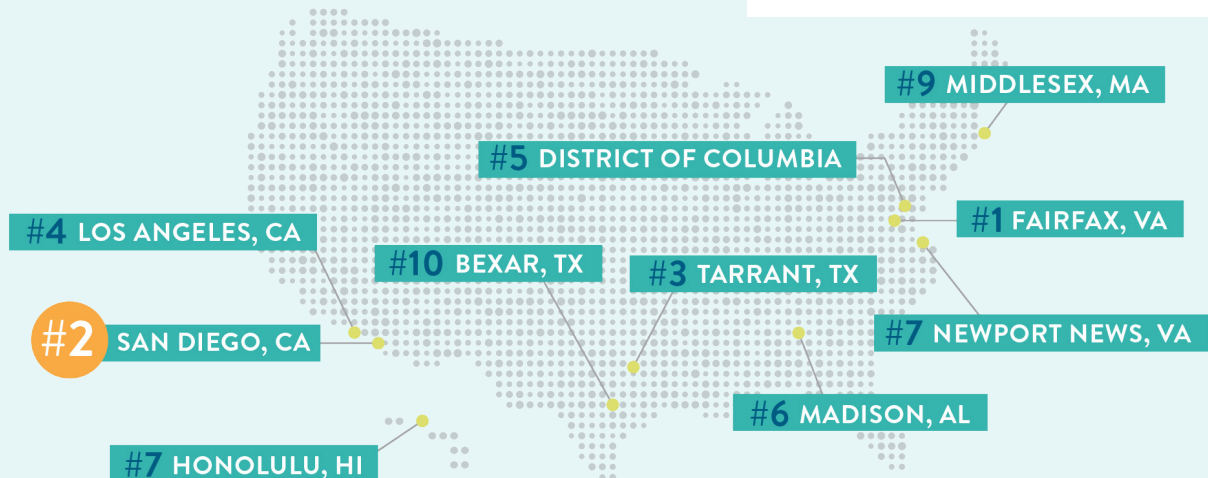
NAVY TOWN AND INNOVATION HUB

The top 10 counties, in terms of defense procurement dollars received, account for almost 23 percent - or \$93.3 billion - of total U.S. Department of Defense contract and payroll procurement. Six of the top 10 counties are in Virginia, Texas, or California - San Diego ranks second among the top 10.

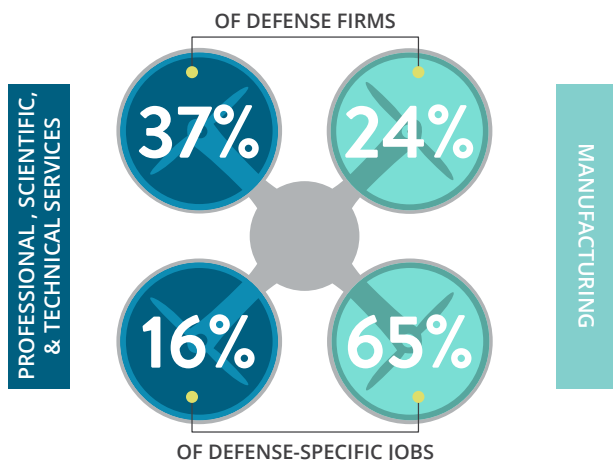
In San Diego, defense is also a driver of innovation. It is the birthplace of corporate giants like Viasat, Qualcomm, and Cubic. It is a driver of advancements in the telecomm, robotics, and cybersecurity industries. All of these investments have helped transform San Diego into the innovation hub it is today.



HOW SAN DIEGO STACKS UP



Source: U.S. DoD Office of Economic Adjustment



Source: BW Research, 2017

DEFENSE ECOSYSTEM

The majority of the defense contractors are concentrated in either the professional, scientific, and technical services or manufacturing industries. These two industries represent 61 percent of defense contractor firms and 81 percent of all defense-specific contractor employment. While far fewer in number, manufacturing firms employ more than four times as many workers than professional, scientific, and technical service firms.

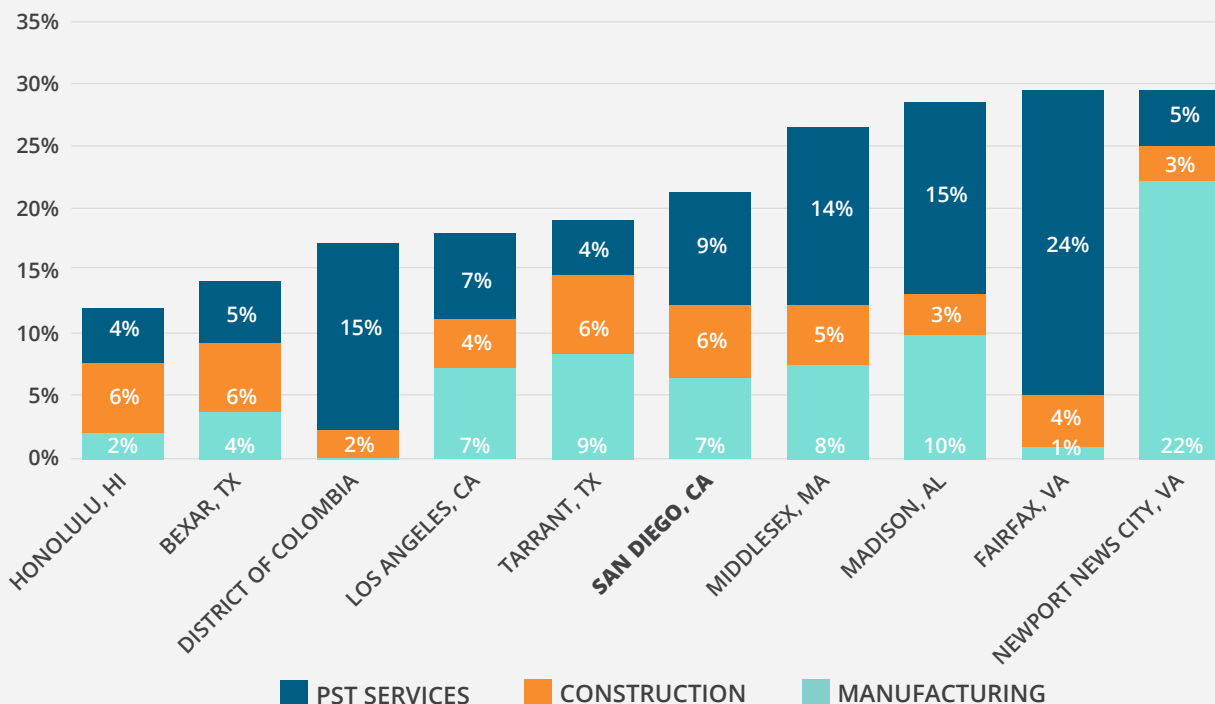


KEY INDUSTRIES | 04

At its core, the defense ecosystem heavily depends on and supports the manufacturing, professional, scientific, and technical services, and construction industries. Advancements in defense technology, security, and infrastructure have been made possible through the success and innovation seen across these industries.

Together, these three industries support more than 21 percent - or 358,000 jobs - of total employment in San Diego. Among the top 10 defense-procuring counties, these industries account for between 12 percent and 30 percent of a county's total employment. The 10 counties combine to represent 7.5 percent - or 2.3 million jobs - of total U.S. employment within these key industries, further illustrating their importance to national defense.

PROPORTION OF TOTAL EMPLOYMENT



Source: EMSI, 2016

Industrial strengths vary from county to county. San Diego's share of employment across the three industries is fairly evenly distributed. The bulk of employment falls within the professional, scientific, and technical services industry, but manufacturing and construction are not far behind. On the other hand, places such as District of Columbia, Fairfax, and Newport News City have the overwhelming majority of employment concentrated within one particular industry.



ADVANCED MANUFACTURING | 04

» SPOTLIGHT: ADVANCED MANUFACTURING

Even though San Diego has a smaller concentration of manufacturing employment than the national average, the region is home to more than 108,000 manufacturing jobs across more than 300 distinct industries. These include hundreds of unique occupations, with an average annual salary exceeding \$79,000 in 2016.

Since 2007, when the Great Recession began, manufacturing employment declined 8.9 percent nationwide. During that same time, manufacturing in San Diego grew 4.2 percent, adding more than 4,400 jobs. In that regard, the focus on advanced manufacturing has enabled San Diego to weather the recession better than most. This is because manufacturing in San Diego is driven by the innovation economy that makes aircrafts, medical equipment, and semiconductors. The top eight manufacturing industries, which account for more than 56 percent of all manufacturing jobs, are in advanced industries.

Compared to the other top 10 defense-procuring counties, San Diego has the second most advanced manufacturing jobs and the fastest growth rate since 2011 - 15.3 percent. In fact, six of the 10 counties have experienced employment declines during the same timeframe.

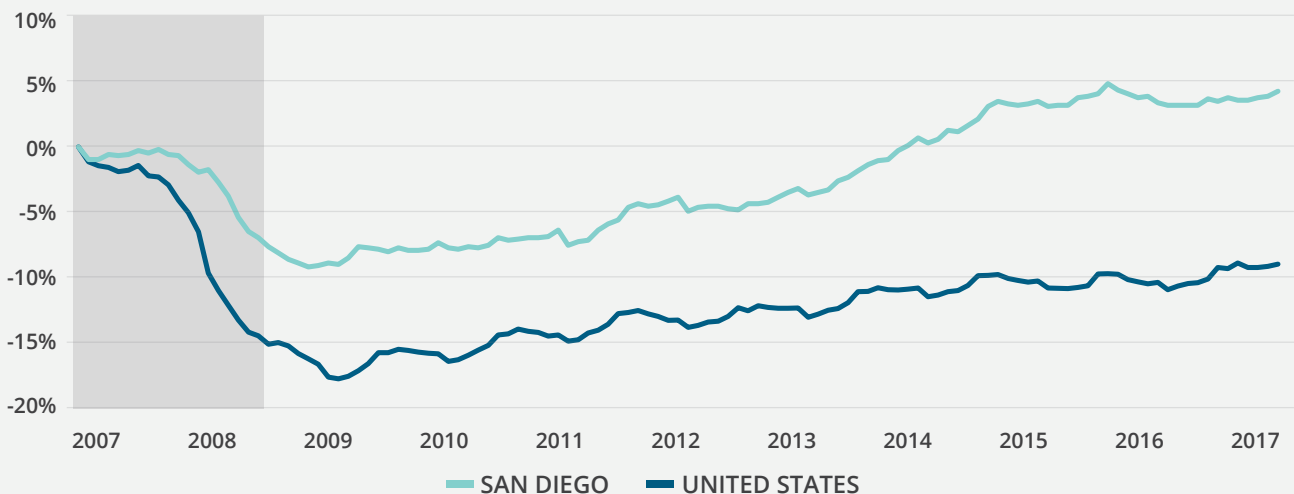


15.3%



advanced
manufacturing
job growth from
2011 to 2016

MANUFACTURING EMPLOYMENT GROWTH



Note: Shaded area represents recession. Growth rates indexed to December 2007.
Source: Bureau of Labor Statistics

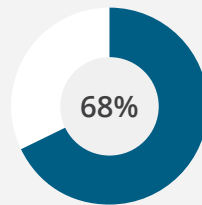


REGIONAL ASSETS | 05

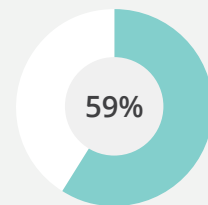
A MODEL BUSINESS ENVIRONMENT

An extensive survey of defense contractors was conducted to better understand what makes the region uniquely positioned to foster growth and what, if any, needs remain unmet. More than 5,000 firms were contacted, and upwards of 1,500 firms participated in the survey. Additionally, in-depth interviews were conducted with 30 firms to learn more about their challenges to doing business and their interest in assistance programs.

ACCESS AS A REGIONAL STRENGTH



CLIENTS
& CUSTOMERS



VENDORS
& SUPPLIERS

Source: BW Research, 2017

Defense contractors cited proximity to customers and access to vendors and suppliers as the top advantages to being located in San Diego. More than two-thirds of firms said access to new commercial technologies is important, and half of those said it is extremely important.



71%



of defense contractors view San Diego as a good or excellent place to do business

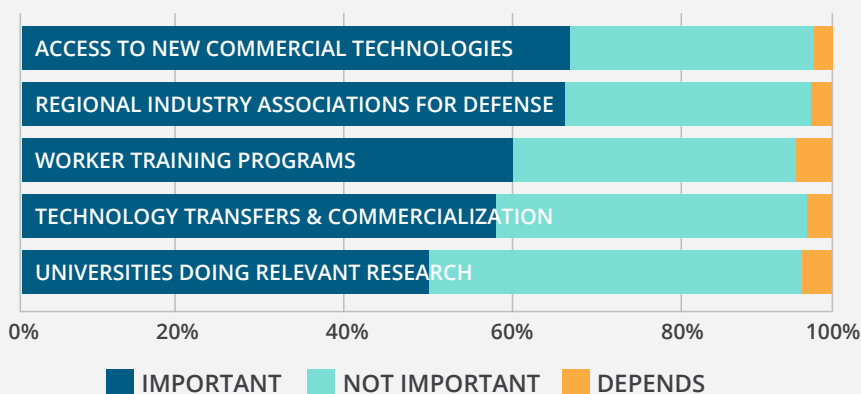


35%



of defense contractors view access to new commercial technologies as extremely important

CRITICAL ASSETS



Source: BW Research, 2017

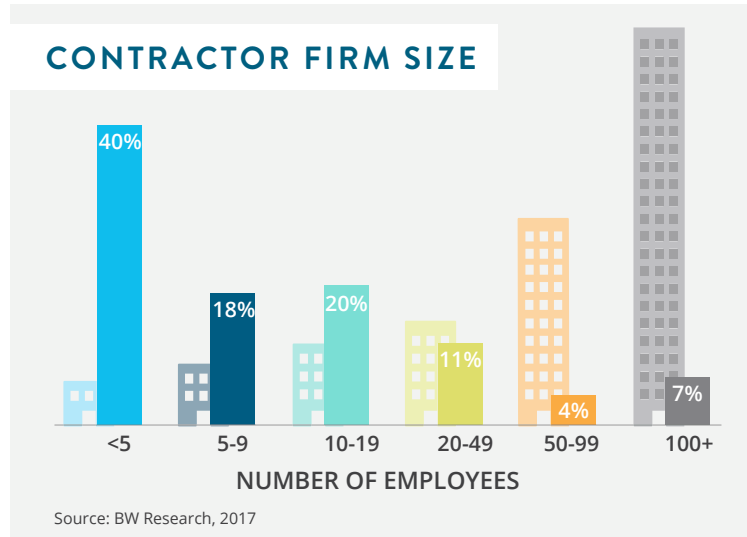


EMPLOYMENT TRENDS | 05

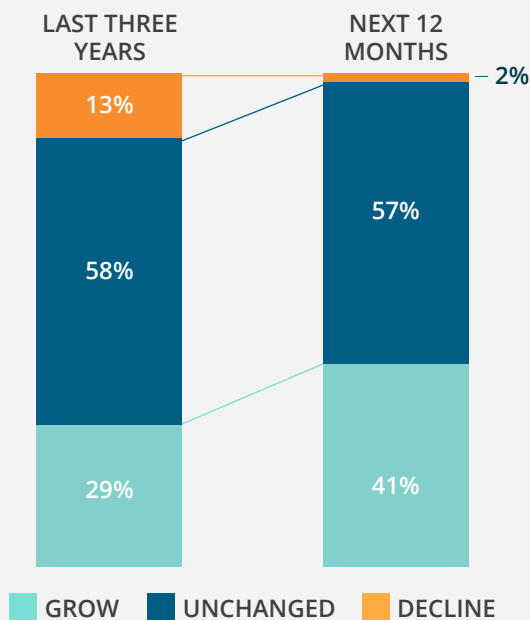
FIRM COMPOSITION

Approximately 90 percent of defense contractors are small businesses employing less than 50 people and a full three-quarters employ fewer than 20. At the other end of the spectrum, roughly seven percent of defense contractors employ more than 100 workers - four times greater than the regional economy as a whole.

CONTRACTOR FIRM SIZE



PROPORTION OF FIRMS REPORTING EMPLOYMENT CHANGES



PAST & FUTURE CHANGES

Over the last three years, more than a quarter of defense contractors grew their workforce, adding more than 2,100 workers - an annual average of 2.1 percent growth. Even more firms expect to hire in the year ahead, accelerating the pace of growth to 9.3 percent.



9.3%



employer-projected job growth over the next year



SKILLED TALENT IS IN SHORT SUPPLY

Technical training and industry experience top the list of desired qualifications by employers, more so than prior military experience and security clearances. However, skilled talent is hard to find. More than half of employers express difficulty in finding qualified entry to mid-level applicants. Additionally, 61 percent report having difficulty finding qualified experienced industry professionals.



91%

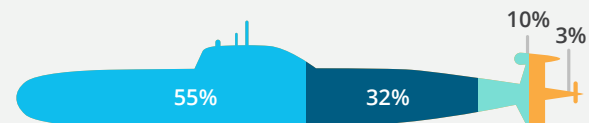


of employers say it is important for applicants to have technical training

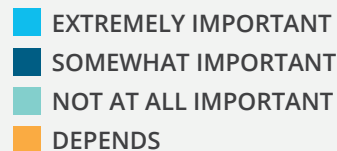
EMPLOYERS WANT SKILLED TALENT



TECHNICAL TRAINING



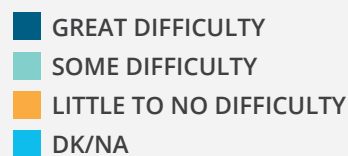
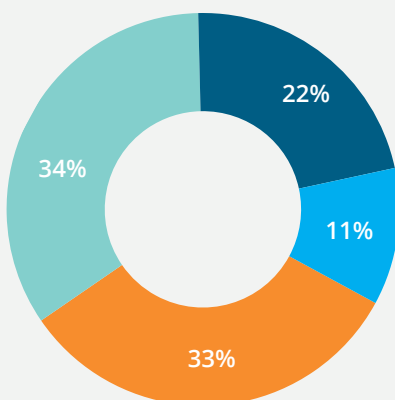
1+ YEAR OF INDUSTRY EXPERIENCE



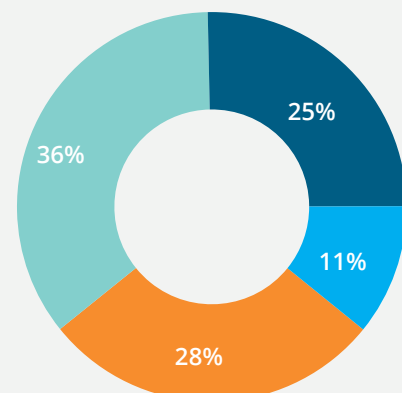
Source: BW Research, 2017

HIRING DIFFICULTIES

ENTRY TO MID-LEVEL



EXPERIENCED



Source: BW Research, 2017



NEW MARKET OPPORTUNITIES | 05

CUSTOMERS NEAR & FAR

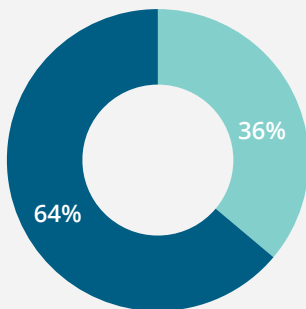
Defense contract firms have customers that span the globe. Nearly 40 percent of firms sell to customers within San Diego, 41 percent sell across the nation, and 23 percent export abroad. Further promoting and supporting out-of-region sales will allow defense contractor firms to diversify beyond the local defense economy.


23%

of defense contract firms export abroad



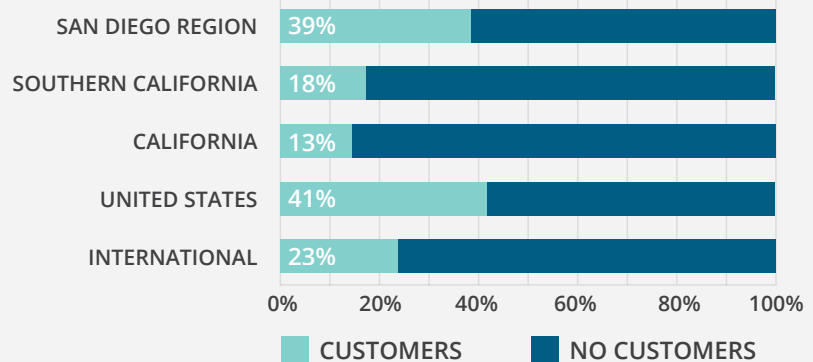
CUSTOMER FOCUS



■ DEFENSE ■ NON-DEFENSE

Source: BW Research, 2017

CUSTOMER BASE



Source: BW Research, 2017


83%

of defense contractors interviewed say it would be ideal to have at least half of their revenue coming from commercial business



SPOTLIGHT: METROCONNECT

MetroConnect is an export assistance program that equips San Diego's small businesses with a suite of financial and programmatic resources to increase international sales. In 2018, World Trade Center San Diego will execute an eight-month long, defense-specific MetroConnect. Programming will specifically address the needs of local defense companies looking to export. This includes curriculum and consulting to address regulatory and technical hurdles for international defense business, including International Traffic in Arms Regulations (ITAR) compliance. Additionally, the program will seek to identify companies who are interested in non-defense related applications for their products abroad.

To learn more, contact World Trade Center at [wtcsd@sandiegobusiness.org](mailto:wtcSD@sandiegobusiness.org)



CONCLUSION | 06

San Diego's defense cluster plays an essential role in the regional economy. With the largest concentration of military assets in the world, San Diego's robust defense ecosystem has grown to include more than 5,600 contractors collectively employing 62,000 people and spanning nearly every major industry. Accordingly, a significant portion of the regional economy is directly linked to defense, with nearly one in five jobs tied in some way to the military and approximately \$25.2 billion in GDP added in 2017. Totalling \$9 billion in 2017, defense contracts awarded locally increase economic activity and remain a vital source of business opportunities for local firms.

While fluctuations in defense spending can be reasonably expected from one year to the next, any significant reductions in the federal defense budget could potentially pose a serious threat to local contractors. Because of this, it is imperative to the health and vitality of the regional economy to not only understand the needs and challenges encountered by local firms, but to also provide opportunities for commercialization and expansion into other, non-defense related markets.

In the immediate term, local defense contractors, primarily small businesses, expect to add 54 percent more jobs in the next year than the past three years combined. This optimistic outlook can be attributed, in part, to the favorable business climate in the San Diego region. More than 71 percent of firms polled indicated the region is an exceptional place to do business and cite proximity to customers and access to vendors and suppliers as key advantages. Yet, most defense contractors indicated difficulty finding qualified applicants for both entry and mid-level positions. Furthermore, contractors are increasingly focused on gaining commercial clients, citing the defense contract procurement process as their biggest challenge to doing business.

Moving forward, providing ongoing assistance and programming tailored to the needs of the region's defense contractors will help ensure San Diego's defense ecosystem remains vibrant and resilient for many years to come.

» OEA PHASE TWO

Following the successful execution of Propel San Diego's phase one, the City of San Diego has been awarded a phase two grant for an additional \$1.7 million. Phase two programs seek to increase the resiliency of the local defense supply chain with new services; assisting these companies to diversify and find new commercial markets beyond defense may help to future-proof them in the event of decreased federal defense spending.

Support programs and mechanisms in phase two include: funding and marketing support services, International Traffic in Arms Regulations (ITAR) compliance, export assistance, lean supply chain, and business development support, as well as assistance programs to identify opportunities in the commercial market. With the majority of defense firms in San Diego County employing fewer than 50 employees, these programs are designed to ease the burden and reduce costs associated with exploring strategies and processes that could enhance resilience. Ultimately, phase two projects will provide practical consulting to local defense contractors who are interested in pursuing new avenues for commercialization through free or heavily discounted services.

For more information about specific phase two projects, please visit: sdmac.org/propel.

METHODOLOGY | 07

Contractor database development, business survey, and extrapolation research of the region's defense contractors were conducted in partnership with BW Research. In-depth interviews of 30 firms were conducted by Propel San Diego partner organizations.

DATABASE DEVELOPMENT

BW Research and San Diego Regional EDC developed a database of potential defense contractors in San Diego County. Potential firms were collected from the Connectory database provided by the San Diego East County EDC, internal San Diego Regional EDC databases, the USA Spending database, and the Government Contracts Won database.

DATABASE DE-DUPLICATION

The database of potential defense contractors was de-duplicated based on phone number (if available), email (if available), company address, and company name. Priority was afforded to records with complete (or more complete) contact fields within the database. For example, if two records existed for the same company with the same address, the record with the least amount of information (email, phone, NAICS, etc.) was removed.

DATABASE INDUSTRY CONCENTRATION

To inform the unknown universe sampling plan, the finalized potential defense contractor database records were appended with North American Industry Classification System (NAICS) codes using the InfoUSA platform. The following table displays the industry concentration (for firms with appended NAICS data) of defense contractors in the San Diego region:

Industry	Concentration
Agriculture (NAICS 11)	0.1%
Mining & Extraction (NAICS 21)	0.2%
Utilities (NAICS 22)	0.4%
Construction (NAICS 23)	9.8%
Manufacturing (NAICS 31-33)	35.1%
Wholesale Trade (NAICS 42)	6.4%
Retail Trade (NAICS 44-45)	2.3%
Transportation & Warehousing (NAICS 48-49)	3.1%
Information (NAICS 51)	3.0%
Finance & Insurance (NAICS 52)	0.0%
Real Estate & Rental & Leasing (NAICS 53)	1.4%
Professional, Scientific, & Technical Services (NAICS 54)	20.1%
Administrative & Support & Waste Management & Remediation Services (NAICS 56)	4.3%
Educational Services (NAICS 61)	2.3%
Healthcare and Social Assistance (NAICS 62)	1.8%
Arts, Entertainment, & Recreation (NAICS 71)	0.7%
Accommodation and Food Services (NAICS 72)	2.9%
Other Services (NAICS 81)	6.1%



METHODOLOGY | 07

QUANTITATIVE SURVEY

Through an iterative process, BW Research developed and administered a web and telephone survey. In developing the survey instrument, BW Research utilized techniques to overcome known biases in survey research and minimize potential sources of measurement error within the survey.

Prior to beginning data collection, BW Research conducted interviewer training and pre-tested the survey instrument to ensure that all words and questions were easily understood by respondents. BW Research sent out approximately 1,000 letters inviting San Diego County firms to participate in the survey process. The overall data collection period went from February 21, 2017 through May 10, 2017. The final survey averaged eight minutes in length (phone and web) and was taken by 1,521 firms in San Diego County. Of these, 591 firms indicated that they are either prime- or sub-contractors for defense-related work for the Federal government, including the Department of Defense. The table below provides an overview of the survey methodology utilized for the project.

Method	Telephone and web survey of potential defense contractors in San Diego County.
Number of Survey Participants	591 firms that were identified as defense prime- or sub-contractors from 1,521 that completed the survey. Of these, 547 defense-related firms completed the full survey.
Survey Field Dates	February 21 – May 10, 2017.
Survey Universe	5,659 extrapolated defense contractors in San Diego County.

DATABASE SURVEY

A census of potential defense contractors from the finalized database was conducted between February 21, 2017 and May 10, 2017. Each firm was solicited up to six times via phone or up to eight times via email. This effort was supplemented by email outreach by San Diego Regional EDC and its partners. More than 330 firms responded to the survey online, with 223 qualifying as defense contractors. Surveys over the phone generated 424 total responses, with 229 qualifying as defense contractors.

UNKNOWN UNIVERSE SURVEY

A database of unknown firms was developed to further understand the penetration of defense contractors in the San Diego regional economy. To maximize completes, the three largest industries from the database concentration analysis were targeted; construction, manufacturing, and professional, scientific, and technical services, representing nearly two-thirds of known contractors combined. The database was provided through the InfoUSA platform, and after duplicating against the defense contractor database, the unknown database included 11,715 establishment records. The unknown database was called through approximately three times, yielding 766 completed surveys, with 139 qualifying as defense contractors.

CONTRACT DATABASE

Contract data was sourced from USAspending.gov by EMSI with consultation from the Fermanian Business & Economic Institute at Point Loma Nazarene University.



ACKNOWLEDGMENTS | 07

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Propel San Diego is a Department of Defense (DoD) funded grant initiative led by the City of San Diego, South County Economic Development Council, San Diego Regional Economic Development Corporation, East County Economic Development Council, and the San Diego Military Advisory Council. The goal of this effort is to better understand the needs and opportunities for regional businesses that conduct defense-related work. Additionally, Propel San Diego aims to develop a resilient defense supply chain in the San Diego region that remains stable despite changing budget priorities, and addresses both regional economic and DoD readiness priorities.

This project is funded with Community Economic Adjustment Assistance for Reductions in Defense Industry Employment funds provided by the U.S. Department of Defense Office of Economic Adjustment to the City of San Diego.

For more information, please contact EDC's research team:

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