

2016

Electronics Manufacturing in Tijuana and Mexico

*Advantages of Nearshoring in Mexico,
Key Highlights and 2016 Industry Overview*

WHITE PAPER



Co-Production International, Inc.
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Electronics Manufacturing in Tijuana & Mexico:

Advantages of Nearshoring in Mexico, Key Highlights and 2016 Industry Overview

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WHY ARE ELECTRONICS MANUFACTURERS EXPANDING TO MEXICO?

Mexico has rapidly become a top global destination for electronics manufacturing. With Tijuana being crowned the world capital for television manufacturing in the 1980s, Mexico has continued to take a global leadership role in various sectors of the electronics manufacturing industry.

Executives and trade organizations cite major cost savings and ease of doing business benefits in Mexico, including:

- **Low-Cost, Highly-Skilled Workforce**
- **Proximity to Major Markets (US, Canada)**
- **NAFTA, Free Trade Zone**
- **Maquila Duty-Free Temporary Imports**
- **Strong Intellectual Property (IP) Protections**
- **Established Infrastructure**

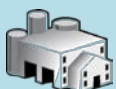
This white paper will assist executives in understanding the benefits of [manufacturing in Mexico](#) by analyzing Mexico as a potential site electronics activities. Important factors such as proximity to major markets, infrastructure, labor cost and supply, transportation and ease of doing business, will be covered. Additionally, this paper will also focus on the established electronics industry of both Mexico and Tijuana, Baja California.

Various sectors of Mexico's electronics industry are highlighted, including household appliances, televisions, semiconductors, cell phones, computers, audio/video equipment, and lighting products.

MEXICO'S ELECTRONICS INDUSTRY



458,653 workforce



2,300+ electronics manufacturing facilities

SECTION 1

Mexico: Global Leader in Electronics Manufacturing

Mexico grew from third in 2012 and is now ranked first for lowest business costs according to the annual KPMG Competitive Alternatives: Guide to International Business Location Costs 2016.¹ In 2012, Mexico's electronics industry accounted for 27% of the nation's total manufacturing output with exports valued \$80 billion.²¹

EXPORTS SPOTLIGHT

\$80 billion

Mexico's Electronics Exports in 2014²¹

Over 2,300 electronics manufacturers operate in Mexico, with 8 out of 10 of the world's largest electronics manufacturers currently operate in the country.³

Mexico's national manufacturing capabilities, long history in support of electronics manufacturing operations, and ease of doing business, are what have attracted executives to the nearshore region for decades. Additionally, the northern border cities of [Tijuana](#), [Mexicali](#) and [Tecate](#) located just minutes south of San Diego, California, have long been Mexico's regional mainstays for various electronics manufacturing sectors.

EXPORTS SPOTLIGHT

94%

Of electronics components for TV production in Mexico are imported¹¹

Nearshore Mexico Ranked Globally in Electronics Manufacturing

Executives cite Mexico's lower cost production and manufacturing capabilities versus those in the US, along with the reduced logistics expense and shorter supply chain due to Mexico's next-door proximity to major North American markets.

Mexico is the 1st largest exporter of electronics in Latin America and 5th largest worldwide.¹¹ Tijuana has one of the largest concentrations of electronics manufacturers in North America.

Mexico's Regional Electronics Industry Hubs

Baja California:

National and Global Electronics Hub

Mexico's western state of Baja California is located just south of California and is a national hub for electronics manufacturing. Over 200 companies comprise Baja California's electronics sector which employs more than 92,000 people.⁵

Most manufacturing operations are concentrated in the northern border cities of Tijuana, Mexicali and Tecate, which all boast high-growth industry clusters for electronics, medical device, aerospace and defense manufacturing.

The manufacturing industry as a whole accounts for 51% of the formal employment in Tijuana, showcasing the city's strength and capabilities to US and international firms exploring expansion in Mexico. "Tijuana is just one specific example that is replicated across the country, thanks to a nexus of brain power at relatively affordable prices," Cervera of Credit Suisse said in their report.⁷

Major Companies in Baja California

Conesys <i>Tecate</i>	Electrical Connectors for Aerospace and Defense manufacturing
FOXCONN <i>Tijuana</i>	Televisions, Car Stereos, Modular Sound Systems
Panasonic <i>Tijuana</i>	Televisions, Telephones, and Telecommunications Accessories,
Gulfstream/ GeneralDynamics <i>Mexicali</i>	Wiring Harnesses, Sheet Metal Components, Sub-Assemblies
Plantronics <i>Tijuana</i>	Communications Headsets
Samsung <i>Tijuana</i>	Televisions
SMK <i>Tijuana</i>	Electronics, Remote Controls

TIJUANA:

Global Television Capital

Tijuana has over 120 electronics companies and a 60,000 person-strong direct industry workforce. Tijuana gained its reputation as the global capital for television manufacturing in the 1980s and continues to hold this title to this day. Every year more than 19 million televisions (LCD, DPL, and Plasma) are produced in the region.

Tijuana continues to expand its capabilities in the electronics industry. The Tijuana Economic Development Council (Tijuana EDC), a non-profit collaboration between government and private industry, announced their new "Tijuana Contract Manufacturing" program in September 2014. The "CM" platform aims to connect product developers with the competitive manufacturing capabilities of the region by facilitating access to over 100 fully automated assembly lines in the city that are capable of over 500 million placements a month.

PRODUCTION SPOTLIGHT

19 million a year

Televisions Manufactured in Tijuana

City of the Future: Cleantech Industry

Beyond television manufacturing, Tijuana has also been a top destination for clean and renewable energy product manufacturers. Almost ten years ago, **Kyocera Solar, Inc.** opened its photovoltaic module manufacturing operations in Tijuana, Baja California, utilizing facilities operated by its sister company, Kyocera Mexicana, S.A. de CV. Prior to manufacturing solar products, Kyocera Mexicana had been producing high-tech components for the semiconductor and microelectronics industries since 1987.¹²

In 2009 Kyocera Solar opened a two-story production complex in Tijuana, adjacent to its original plant. With this second plant, Kyocera has enough production capacity in Tijuana alone to produce enough megawatts (MW) to equip the equivalent of about 60,000 homes every year with solar power generation systems of up to 3.5 kilowatts (KW) each.¹² The company's facility in Baja California has produced more than two million solar panels to-date.

MEXICALI:

Capital of Baja California

Mexicali is the capital of Baja California and is located just east of the Tijuana/San Ysidro and Otay Mesa border crossings. A rapidly growing city both in population and industry, Mexicali is home to over 130 industrial firms, including the major aerospace giants of **Honeywell**, **Gulfstream** and **UTC Aerospace Systems**.

The city's main activities of manufacturing, trade, services and construction, receive highly-trained and highly-skilled personnel into the workforce from the 12 universities ranking amongst the best in the nation. Mexicali offers an established and experienced infrastructure for international trade and business and is becoming an increasingly popular destination for foreign companies.

MADE IN MEXICO vs. MADE IN CHINA⁶

Products Made in Mexico
Contain 4 Times as Many
U.S.-Made Parts

TECATE:

Eastern Baja's Hidden Jewel

Also located just east of Tijuana, Tecate's manufacturing industry is strong with 119 manufacturing facilities responsible for employing over 10,000 people. Tecate is known for its electronics, medical device, ceramic and plastics manufacturing industries.

Executives choose this smaller western city for the quiet atmosphere, proximity to the Otay Mesa commercial border crossing and easy business travel from the Tijuana International Airport just 30 miles west. Tecate is the proud home of manufacturing giants **Rockwell Automation** and **Schlage Lock (Ingersoll Rand)**. **Conesys**, the aerospace and defense specialty electronics connector company opened their 50,000 square foot Tecate facility in 2011. Employing 138 employees, Conesys supports Baja's booming Aerospace industry.

The first solar photovoltaic power plant in Baja California broke ground in eastern Tecate in early 2012, with a planned total capacity of 450 megawatts. The installation, financing and planning was supported by a binational group of private companies and efforts from the government in Mexico. The new solar power plant is shows Mexico's commitment to infrastructure improvements such as low-cost utilities.

[Electronics Manufacturing in Mexico](#)

Courtesy of CPI International, Inc. | May 2016

Querétaro:

Mainland Mexico's Electronics Cluster

Known as "El Bajío", the state of Querétaro is located just two hours from Mexico City and is a strong hub for electronics manufacturing on Mexico's mainland. Located at the southern hub on North America's NAFTA corridors Querétaro has direct access to US Interstate Highways I-10 and I-25.

Major Companies in Querétaro

Conesys	Electrical Connectors for Aerospace and Defense manufacturing
Bombardier	Fuselages, Electrical Systems, Wing Production
Hitachi	Telecom. Systems, Electrical Systems, Electronic Devices, Automotive Systems
General Electric	Airplane Turbines, Power Systems
Mabe (for GE)	Household Appliances
Samsung Electronics	Refrigerators, Washing Machines
Siemens	High Voltage Systems

Samsung, which manufactures close to 1,500 refrigerators and 800,000 washing machines every year in Querétaro, has been one of the state's mainstays for over a decade. Since their arrival in 2002, Samsung has invested over \$180 million in their Querétaro operations with facilities now over 60,000 square meters in four buildings. Samsung's Querétaro facilities have also been responsible for over 3,000 jobs.

In 2012, **Harman** opened a premium car audio equipment manufacturing plant with a \$75-million-dollar investment in Querétaro. After starting with 325 employees, the plant has now grown to nearly 1,800 and supplies 16 major brands including Audi, GM and BMW.¹⁴

The Danish-based industrial sweeper, vacuum cleaner and high-pressure washing machine manufacturer, **Nilfisk Advance de Mexico**, opened a 10,000 square meter facility in Querétaro in 2009 which generated a little over 180 direct jobs. Since then, Nilfisk has recorded growth of up to 30% for the Mexican and Latin American markets.²

SECTION 3

Electronics Manufacturing Sectors & Electronics Supply

In 2012, the electronic industry in Mexico accounted for 27% of manufacturing output and 24% of non-oil exports. The most staggering statistic is that that 9 of the top 10 electronic manufacturing service (EMS) companies are located in the country.

Manufacturers are placing the supply chain at the center of their efforts to achieve their strategic priorities. Global manufacturers' ability to optimize performance and cost in their entire supply chain will be key to helping them become more competitive and resilient.⁹ Looking to nearshore production is one way manufacturers have been able to achieve cost reductions and efficiency in their supply chain.

SUPPLY SPOTLIGHT

\$11 Billion

Tijuana's Annual Industrial Supply Demand²

According to the KMPG report, "Global Manufacturing Outlook 2016," fifty-six percent of respondents say they will enter new geographic markets in the next 12-24 months. Additionally, forty-three percent of respondents said their primary driver for international investments is to obtain lower manufacturing costs.²⁴

Recent Investments in Mexico

Among the companies that recently announced investments in Mexico operations were:

Skyworks – \$184 million dollars to expand its facilities in Baja California that manufacturer smart phone chips and with an estimated generation of 700 jobs (2012).¹⁴

Cal-Comp Electronics – Opening its first plant in Mexico investing approximately \$50 million and 1,000 new jobs to manufacturer electronic components and boards (2012).¹⁴

Ericsson – Invested \$13 million dollars to expand its Global Services Center in Querétaro.²

LG Electronics – Announced it would inject \$60 million to build a third industrial warehouse.²

ELECTRONICS SUPPLY:

Mexico's Electronic Parts and Components Supply Industry

The country's electronics supply sector provides circuit boards, audio/video components, microchips, semiconductors, marine radar, amongst thousands of other electronic parts and components. Almost just as large as OEM manufacturing, the electronics supply sector supports assembly and manufacturing operations for the aerospace, electronics, defense, medical device, automotive, and cleantech industries.

In 2012, the electrical industry total production reached \$28.843 billion dollars, of which 54.2% was concentrated in the wiring, cabling and battery segment; 26.8% in electricity distribution and control equipment; and 19.0% in production of electric motors and generators.¹⁴

DEMAND SPOTLIGHT

\$44.4 Billion

Electronic component demand in Mexico in 2013¹¹

Many electronics components and parts suppliers choose to go where their customers are going; including those that expand operations to nearshore Mexico. For example, **Manufacturing Resource Group (MRG)**, opened facilities in Tecate, Baja California. MRG manufactures custom cable assemblies, wire harness assemblies, battery pack assemblies, custom medical cables assemblies and box builds for medical, industrial, solar, telecommunications, lighting and automotive OEMs.

SMK Electronics, established operations Tijuana and is a leading manufacturer of remote controls, touch panels and connectors. SMK produces approximately 20 million remote controls a year at their Tijuana facility.

SPOTLIGHT:

Household Appliance Parts Suppliers

Through a study, Pro-México found that close to 63% of the supply for refrigerator manufacturing in Mexico is imported. The household appliances industry requires the supply of parts and metal and plastic components, as well as electric and electronic assemblies, Imports to the sector reached \$2.06 billion in 2012 alone.²

HOUSEHOLD APPLIANCES

SECTOR PRODUCTS: Refrigerators, Freezers, Washing Machines, Air Conditioning Units, Vacuum Cleaners

TOTAL FDI: \$1.84 Billion (between 2002 and 2012)²

MAJOR MAINSTAYS: Whirlpool, GE, Electrolux, Black & Decker, Daewoo, Mabe, Embraco, LG, Samsung



Mexico is the top exporter of household appliances in Latin America and the 6th largest in the world.

In 2012 alone, its sales abroad reached a value of \$6.69 billion dollars – more than double that recorded in 2006. Between 2002 and 2012, accumulated FDI in this sector reached \$1.84 billion most of which came from the United States (\$1.52 billion).



- 1st** Refrigerators With Freezers (w/ Separate Doors)
- 2nd** Air Conditioning Equipment and Electric Water Heaters
- 3rd** Washing Machines (10 Kg Capacity Or Less)

The industry's production has expanded steadily, reaching a value of approximately \$6.69 billion dollars in 2012. According to projections by ProMéxico, it will record an average annual growth rate of 8.7%, reaching \$13.02 billion dollars by 2020.

Companies to Watch

Whirlpool, who has been operating in Mexico since 1987, now exports 80% of its production in Mexico to the United States and Canada.² Between 2002 and 2012 Whirlpool doubled its manufacturing business with various plants located throughout Mexico manufacturing refrigerators, washing machines, compact refrigerators and stoves.

In 2013, **Embraco**, the Brazilian manufacturer of hermetic compressors for refrigeration, announced it would invest \$90 million in a new plant in Nuevo León. Embraco began operations in Mexico in 2011 with approximately 500 employees and production capacity for 2.2 million compressors per year. The company has so far invested \$50 million in its 64,000 square-meter Monterrey plant and increased its workforce to nearly 750 people.²

Mabe is the third largest supplier of household appliances in Latin America. It designs, produces and distributes its products under the **GE, Easy, IEM** and **Mabe** brands. Of its 15 production plants around the world, 8 are located in Mexico, as well as a technology center in Querétaro.²

FLAT PANEL TELEVISIONS

SECTOR PRODUCTS: LED, LCD, Plasma, DPL

MAJOR MAINSTAYS: Sony, Samsung, Sharp, Sanyo, LG Electronics, Panasonic



Mexico is the world's top producer of flat screen televisions, exporting \$15.03 billion a year.

A study by ProMéxico showed that close to 94% of the components required to manufacture televisions in Mexico are imported.¹⁴ Electronic parts and components suppliers see Mexico, and especially Tijuana, as lucrative ground for expansion and access to OEMs. Tijuana produces more than 19 million televisions annually, which represents millions of dollars in demand for electronic components and parts.

Companies to Watch

In May 2011, **Samsung** announced an expansion of its plant in Tijuana with an investment of \$70 million dollars and an estimated generation of 1,000 jobs. The new facility focuses on flat screen televisions and smart TVs.¹⁰

SEMICONDUCTORS

SECTOR PRODUCTS: Semiconductors

TOTAL FDI: \$144 million (between 2002 and 2012)²

MAJOR MAINSTAYS: International Rectifiers, Jabil

Companies to Watch

In February 2011, **Jabil** opened its third plant in Jalisco dedicated to manufacture circuit components. The new facility investment expected was \$10 million dollars and generated 600 new jobs.

MEXICO EXPORT SPOTLIGHT

84.6%

Electronics Exports to the US⁸

COMPUTERS, AUDIO, AND VIDEO

SECTOR Computers, Microphones, Earphones,
PRODUCTS: Speakers

TOTAL FDI: \$3.11 billion – Computers and Office²
\$2.08 billion – Audio and Video²

MAJOR Bosch, Avnet, IBM, Hewlett-Packard (HP),
MAINSTAYS: Kyocera Mexicana



Mexico is ranked 4th in the world for its microphone, earphone and speaker exports; and is 4th in the world for computer exports.²²

The International Information Technology Agreement ITA Plus entered into force in 2004, completely eliminating tariffs on imports of computer, telecom and other electronic goods, in addition to raw materials for manufacturers²

Companies to Watch

Based in Phoenix, Arizona, **Avnet** is one of the largest distributors of electronic components, computer products and embedded technology, serving customers in more than 80 countries worldwide with reported FY 2013 revenue of \$25.5 billion. Avnet established a facility in Nogales, Sonora five years ago due to the proximity to the US market, its highly-skilled Mexican workforce amongst other factors and currently employs almost 300 people.²

JOHN CHAMBERS, President of Cisco Systems²

“The location of the country in the hemisphere is very strategic. It’s a solid market, but perhaps what we loved the most was the consistent commitment of the government to facilitate business.”

Bosch, the manufacturer of automotive systems and components, will invest \$460 million in Mexico to expand some production lines at their plants in Toluca, State of Mexico and they will soon announce more investments in Ciudad Juarez. "Early this year, the company announced investments for US\$150 million in Mexico; however, the decision has been made to increase the amount and more investment is coming", Marco Antonio Quero, Communications Director for Bosch Mexico, informed.¹⁰

US based electronics manufacturer **Plantronics** announced in 2013 that it will invest \$30 million to expand operating capacity at its production site in Tijuana, Baja California. The company produces communications headsets at its five operating units in the city,²

LIGHTING PARTS & COMPONENTS

SECTOR Lamps, Ballasts, Transformers
PRODUCTS:

MAJOR Hubbell Lighting, Cooper Lighting, Philips
MAINSTAYS: Lighting (PLE)



Mexico is the 2nd largest supplier of lighting accessories to the United States.²

Mexico exported approximately \$837 million in lamps and lighting electric devices in 2012. With the increasing demand for energy efficient products, lamps; ballasts and electronic products are taking center stage while much of the world begins to retrofit and recommission for energy savings.

Companies to Watch

Hubbell Lighting, who reported sales of \$2.4 billion in the first nine months of 2013, operates a facility in Mexico City..

Cooper Industries, who was acquired in 2012 by **Eaton Corporation** for \$13 billion, produces lighting accessories and components out of facilities in Querétaro, and Mexico City.

Philips Lighting manufactures electronics components for lighting equipment in Baja California, as well as in mainland Mexico.

Philips Lighting manufactures electronics components for lighting equipment in Baja California, as well as in mainland Mexico.

MANUFACTURER HIGHLIGHT

5 million

JAE Harnesses produced every month in Tijuana

AUTOMOTIVE PARTS

SECTOR Electrical systems, electrical components
PRODUCTS:

MAJOR Toyota, Nissan, Ford
MAINSTAYS:



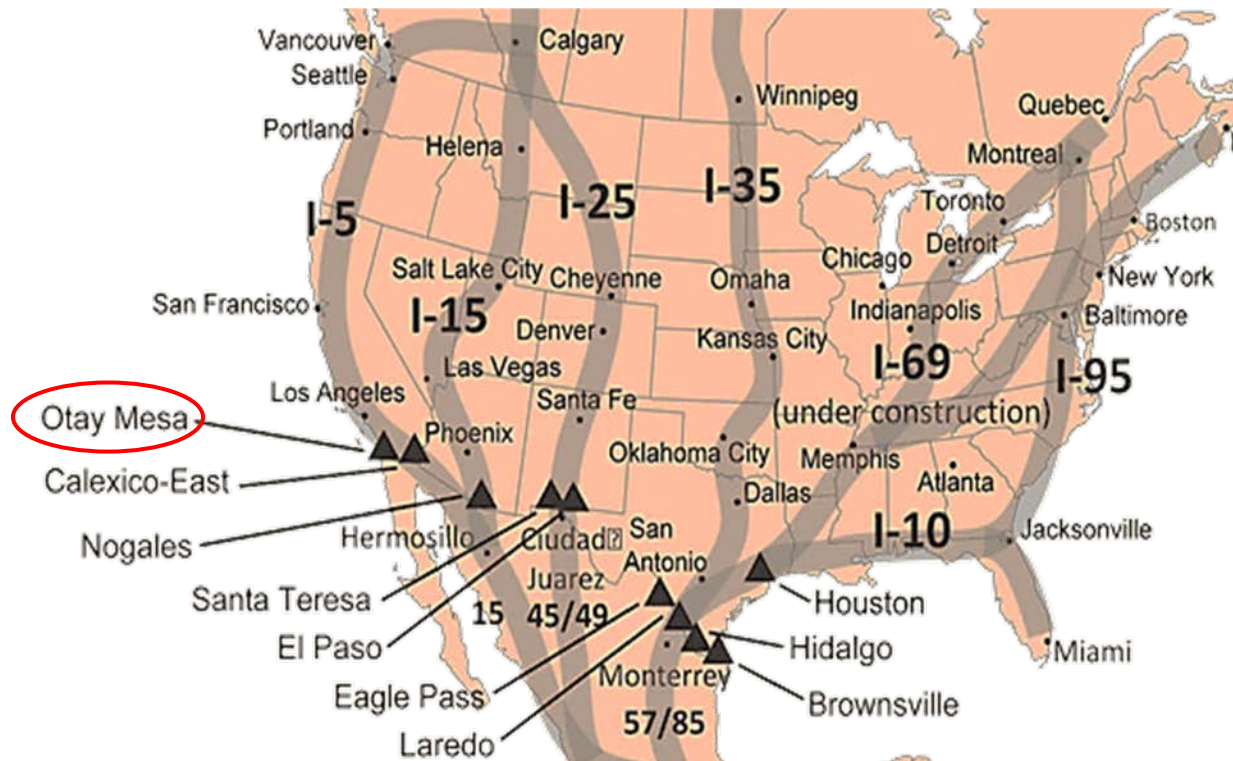
Mexico is the 1st largest supplier of auto parts to the United States.²³

Automotive parts, including electronics and electrical components make up 9% of the electronics

manufacturing industry in Mexico. Mexico is also the 6th largest auto parts exporter in the world.²³

NAFTA Free Trade Zone

NAFTA Corridor & Major Commercial Routes



SECTION 4

NAFTA for the Electronics Manufacturing Industry

Welcome to an Effortless, Free Trade Zone

During the last 15 years, Mexico's foreign trade policy has focused on establishing strong commercial trade partnerships with other countries. Mexico has entered into 12 major free trade agreements giving preferential treatment to 49 markets on three continents.

Despite multiple strong agreements with the European Union and Latin America, it's the North American Free Trade Agreement (NAFTA) that remains the most attractive to North American companies selecting Mexico for their next facility. Signed by the United States, Canada and Mexico in 1994, NAFTA created one of the largest trade zones in the world with more than 160 million consumers within its borders.¹⁵

"Mexico has a free market economy in the trillion-dollar class," according to a KPMG report, with trade to the US and Canada nearly tripling since its signing in 1994.¹⁵ NAFTA has proven to be a successful 20-year global case study on how lucrative trade agreements can be, especially between neighboring countries.

NAFTA's main purpose is to gradually reduce or eliminate trade barriers between its three member nations, with 99% of imports currently duty-free in Mexico, and the remaining 1% benefiting from preferential duty. In very few cases where NAFTA does not apply, the Mexican government established programs such as IMMEX and PROSEC to fill these gaps.

IMMEX Program for Temporary Import

This program is ideal for electronics manufacturers who are looking for low cost manufacturing and assembly solutions that also shorten the supply chain to major markets.

Under the Manufacturing, Maquiladora and Export Service Decree, the IMMEX Program allows for goods, raw materials and components to be imported into Mexico on a temporary basis, duty-free and VAT-free, as long as they are returned abroad within the established timeframes (most are 18mos).¹⁵

From Buy American to "Buy NAFTA"

The United States government's Buy American Act includes acquisitions by the U.S. Department of Defense and restricts purchases from suppliers whose products do not contain a minimum of 50% national produced content. As this directly conflicts with NAFTA provisions banning protectionist legislation such as the Buy American Act, Mexico and the United States intend on signing a Memorandum of Understanding (MoU) that will exempt Mexico from this Act.

An Infrastructure of Support Services

After nearly 20 years since the signing of NAFTA, Mexico has fostered a pro-business environment ideal for manufacturing activities. From industry support service companies such as legal consulting firms and administrative services outsourcing to call centers, and trade & logistics specialists, a long-established network of support services available for electronics manufacturers.

For businesses looking to establish operations in Mexico, [Co-Production International \(CPI\)](#) is one of these whose purpose is to take on the logistical and legal tasks of establishing your new operations, managing day to day administrative activities, along with trade and logistics support.

Using the shelter model for legal and corporate establishment, services firms such as CPI are a large part of the support services infrastructure for the electronics industries in Mexico. A large portion of the foreign electronics manufacturers in Mexico work with these firms to operate under a “shelter” company, minimizing their liability and dramatically reducing costs while maximizing the cost-savings for their nearshore operations.

TPP: Benefits for Manufacturers in Mexico

The establishment of a free trade zone for 12 countries under the Trans Pacific Partnership in 2016 will open up NAFTA-style preferential tariffs or liberalization of tariffs. The member states include the USA, Canada, Mexico, Peru, Chile, Australia, New Zealand, Japan, Malaysia, Singapore, Vietnam and Brunei. Ratification is expected by 2018 and is expected to boost exports in strategic sectors such as vehicles & auto-parts, aerospace, medical devices, electric equipment, cosmetics, tequila, mescal, beer, avocado, beef, pork and orange juice.¹⁵

IP Protections

Mexico is regarded as having strong IP protections and enforcement. Two main Mexican laws govern intellectual property. The Industrial Property Law, enforced by the Mexican Trademark Office (IMPI), and is mainly for inventions, trademarks, industrial designs, and appellations of origin. The second is the Copyright Law enforced by the Mexican Copyright Office (INDAUTOR), and is primarily for literary, musical, artistic, photographic and audiovisual works.

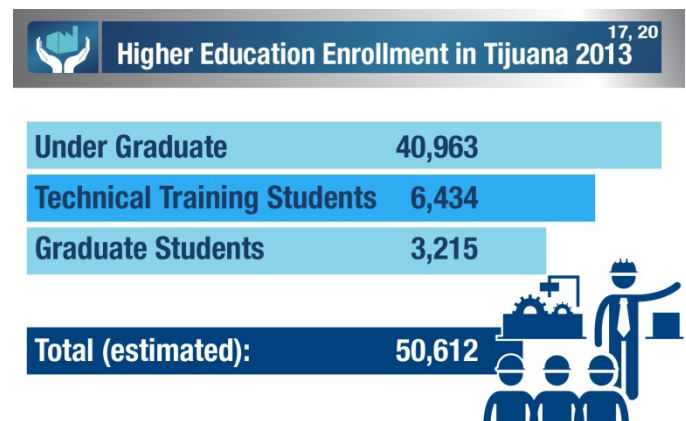
Both of these laws were modeled after international standards set by the World Intellectual Property Organization (WIPO) and carry similar legal provisions for IP protection and enforcement as seen in the United States. The Mexican Patent and Trademark Office will cooperate with its counterparts in other countries to reduce the local examination process for patents that have already been registered in other countries.

SECTION 5

Mexico's Low Cost, Highly Skilled Workforce

Expect Employees to be University Educated and Technically Trained

Mexico and Baja California's workforce is well-educated, plentiful and reliable. Graduating around 115,000 engineering and technical students nationally per year, Mexico produces roughly three times more graduates in the field than the United States.¹⁶



The Baja California's state university (UABC) is located in most major urban centers of the state and offers Bachelor of Science degrees in Aerospace, Electronics, Electrical, Mechanical, and Industrial engineering fields. Graduates transition directly into the workforce, of which the manufacturing sector being the largest employer in the state.

Tijuana's workforce is extremely reliable with a low average turnover rate of 2.6% reported in 2011.¹⁵ additionally; executives cite benefits of the closer cultural ties with the mostly bilingual workforce versus difficulties observed in offshore locations like those in the Asia-Pacific. The manufacturing industry in Tijuana represents 47% of the permanent private jobs in the city.

Highly Skilled & Highly Trained

Baja California is home to 35 universities and 14 technical schools offering over one hundred professional degrees including Biotechnology, Physics, Oceanography, Digital Geothermal Technology, Astronomy, Aerospace, Electrical Engineering, and Sustainable Energy.¹⁷ Most universities and technical schools are located in major urban centers such as Tijuana (35) and Ensenada (12) and many participate in direct

education exchange programs with the leading universities in Southern California and San Diego.¹⁷



Globally Competitive Labor Rates

In the high growth markets, total labor costs account for approximately 30 percent of total location-sensitive costs in manufacturing and approximately 65 percent of total location-sensitive costs in service operations. Labor costs are lowest in India, China, and Mexico.¹

In the last 10 years Mexico has significantly closed the gap in labor costs compared to its offshore competitor, China. Labor cost in Mexico went from being 200% more expensive than China, to an impressive 19.6% difference today. Adding in transportation and logistics time and cost, companies are finding nearshore operations in Mexico dramatically less expensive, even with the growing gap in labor costs.

Close Cultural Ties to the United States

Strong cultural, economic and familial ties have existed between Tijuana and San Diego for decades, some would say as long back as when California was still a part of Mexico. With over 59 million northbound crossings from Tijuana to San Diego a year, executives find that the region is not only largely bilingual, but also engrained with many American customs. Additionally, the US Dollar is a widely accepted and used form of currency, especially along Northern border regions and in city metropolises. The US dollar is also the main currency for most commercial trade.

SECTION 6

Mexico's Commercial Trade & Logistics Infrastructure

Rapid Ground & Air Transportation to Major North American Markets

Baja California is Mexico's most western state located just south of California. The Tijuana/San Diego border region is one of the largest in the world for both tourism and commercial trade. With the enactment of NAFTA, Mexico has invested significantly in infrastructure improvements to maintain existing, as well as attract new commercial trade to the region.

Between 2013 and 2018, the Mexican federal government will invest 100 billion dollars as outlined in the Transport and Communications Infrastructure Investment Program 2013-2018. The investment will be focus on improvements and investments, 45% will be used to modernize and upgrade transport infrastructure and 55% will be used for telecommunications.¹⁴

Highways & Transportation

Tijuana and the Otay Mesa Commercial border crossings are located just minutes south of San Diego, California, giving commercial transportation access to all major North American trade corridors and highways. (Also see map on page 9.) Baja California has a strong network of well-maintained highways with Highway 1 as the major artery connecting the entire state to the US via San Diego. Running east from Tijuana, Highway 2 provides direct connection to eastern commercial land ports of entry like those in Nogales and El Paso.

In addition to several thousand miles of highways and railways used to move raw materials and finished products throughout the region and to major North American markets, Baja California also has one deep water port located in Ensenada. A mere 63 miles south of Tijuana/San Diego, Ensenada's deep water port is directly linked to over 60 major international commercial ports, including the global hubs of Los Angeles, Long Beach and Hong Kong.

NEW, FASTER PROCESSING:

Otay Mesa Commercial Crossing

Otay Mesa is located just 15 minutes east of Tijuana and 20 minutes south of San Diego, California. Designated as the only commercial crossing in all of Southern California, Otay Mesa sees more than 1.4 million commercial trucks crossings into the United States a year.

A new facility located at the Otay Mesa port of entry was recently completed in 2013 by the Mexican government and has customs officers from both the U.S. and Mexico. From laboratory rooms and cold storage, to state of the art inspection equipment, the purpose of joint operation is to speed processing of produce coming into the US. It's these types of investments in infrastructure and import/export process improvement by the Mexican government that continue to prove the country's dedication to increasing efficiency in trade and commerce for its region.

In the summer of 2013, US Customs and Border Protection began two new pilot programs at the Otay Mesa commercial crossing for empty trucks heading both north and southbound. These pilot programs are meant to help ease traffic and wait times. Now, the northbound import facility will open at 5am (instead of 6am) and the southbound export facility will open at 7am (instead of 8am). Investments by the US in these types of pilot programs also show the importance of the commercial trade relationship with Mexico.

Facilities & Real Estate

The Tijuana industrial real estate market offers more than 57.3 million square feet of pre-owned and new buildings throughout the city. From Class A to Class C facilities, companies will find shell, semi-finished and built-to-suit options, as well as inexpensive land for new facility construction. Tijuana has over 60 industrial parks making it one of the top four industrial markets in Mexico.

	'14 Q1	'15 Q1	'16 Q1	Trend
Total Available Industrial Space (Million SF)	4.97	4.48	2.89	↓
Vacancy Rate %	8.06%	7.00%	4.40%	↓
Asking Lease Rates Class A, \$/SF/month	\$0.45	\$0.45	\$0.46	↑
Under Construction (SF)	497,327	800,556	833,242	↑

Utilities Infrastructure

Utility costs include electricity and natural gas costs and represent up to 8 percent of total location-sensitive costs. Mexico has very low utility costs when compared to other major growth markets.¹ For example, the capital of Baja California, Mexicali, lies just east of Tijuana, supplies most of its inhabitant's electricity from hydroelectric power provided by the Colorado River.

Currently, utility costs are 4% less than in China. Within the last 2 years Mexico also made the electrical infrastructure for new facility sites easier to obtain by streamlining procedures, offering training opportunities to private contractors, using a geographic information system (GIS) to map the electricity distribution network and increasing the stock of materials.⁹

A majority of the water supply for Tijuana is obtained from the Colorado River. The Baja Californian State Water Commission (CESPT) opened two new water treatment plants in Tijuana in 2010 for recycled water meant specifically for industrial use.¹⁰ These two new facilities were certified by the North American Bank.

SPOTLIGHT ON MEDICAL DEVICES

DJO Global in Tijuana

Mexico's medical device industry is the main supplier of medical devices to the United States with exports valued at \$8.5 billion dollars in 2015. Tijuana is home to over 44 medical device manufacturers and a 41,000 person-strong workforce.

DJO Global has been operating in the region for decades and has drawn some of its major suppliers to the region to support their manufacturing activities, including RAM Technologies just this year.

SECTION 7

Nearshore vs. Offshore

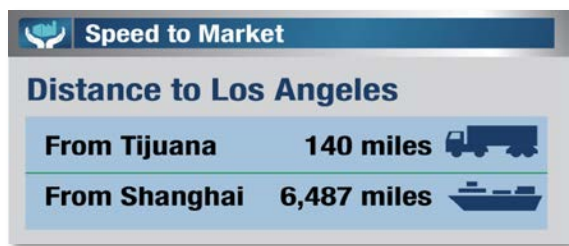
World Bank: Mexico Top-Ranked Global Destination for Doing Business

Mexico is ranked 38 under the "ease of doing business" category, surpassing all the BRIC countries including Costa Rica (58), China (84), Brazil (116), and India (130), according to the World Bank's annual report "Doing Business 2016," which compares business regulations for domestic firms in 185 countries.¹⁹ This represents a marked improvement of Mexico's rank of 48 in 2012.

Mexico's pro-business government made notable improvements including eliminating minimum capital requirements for LLCs, and reducing the number of times a company pays taxes from 27 to 6 times a year.

Nearshore Operations Savings

A study by KPMG shows that Mexico has the lowest operation costs in equipment and component manufacturing in the Americas, with 14.6% savings in the cost of electronics assembly, compared to the US.² Within five years, higher manufacturing exports due to a widening cost advantage over China and other major economies could add \$20 billion to \$60 billion in output to Mexico's economy annually.⁶



Nearshore Logistics Savings

The cost to transport materials and products represents anywhere from 30–40% of your total logistics costs. Contributing directly to your bottom line and the product's final cost, logic dictates having your manufacturing activities as close to your market as possible. Tijuana is only 140 miles from Los Angeles making it 46 times closer to North American markets than the global commercial logistics hub in Shanghai.

SECTION 8

Getting Started in Mexico

It Doesn't Get Any Easier!

Starting or expanding your business in any foreign country can be a daunting decision process for any sized business. Fortunately, it couldn't be any easier than it is in Mexico. In addition to the long history of social and cultural ties between the Mexico and the United States, the two countries have also mastered a mutually beneficial and supportive environment for trade and commerce.

An Industry at Your Service

Considering close geographic proximity, over 20 years of NAFTA, and an established network of industry support services, executives exploring Mexico for their next facility can rely on services organizations whose sole purpose is to facilitate or handle it all for you.

Not only are there many companies such as [Co-Production International](#), to facilitate your operations in Mexico, but also government organizations waiting to get you through the legal steps so you can get up and running as soon as possible.

Security & Safety in Mexico

One last consideration by executives is the safety and security of the country they are considering to do business in. Much of the news reports of unrest in Mexico, especially along the US/Mexico border, have been shown to be exaggerated.

Co-Production International has an expanded paper for executives interested in learning more about issues of security and safety in Mexico. For your free copy of *Security First in Tijuana, Mexico*, visit CPI's [website](#) or contact CPI at (877) 230-7989.

Mexico: A New State of Manufacturing

Executives and companies consider a handful of factors when exploring new facilities for electronics manufacturing activities. Most frequently considered are the cost-effectiveness of production (labor & materials), the proximity to major markets, trade and commerce infrastructure, and ease of doing business.

Years ago businesses wouldn't hesitate to cite offshore countries such as China as the hands-down lowest cost option for manufacturing. After examining various factors crucial to a low cost, efficient and lean manufacturing supply chain, Mexico has emerged as a global leader for the electronics manufacturing industries.

2016 EVENT HIGHLIGHTS

Upcoming Regional Electronics Events

CPI Baja Manufacturing Tours

Tijuana, Baja California

Want to see it first hand?

Get a chance to see manufacturing in Mexico up close! Tour includes visits to manufacturing OEMs, industrial park and sites, and meetings with government officials specializing in setting up operations in Mexico.

Contact us today to set up a tour date that works for you!

Denisse Martinez

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www.co-production.net

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References and sources provided for further information. This is not a legal document. Co-Production International, Inc. does not guarantee claims made by sources used in this paper. Every effort to be accurate has been made at the time of publication. Corrections to data or errors should be sent to CPI.

FURTHER READING

CPI invites you to read more about manufacturing in Mexico with its series of White Papers on the following industries. Requests to: Denisse Martinez, Marketing Director, Email: denissem@co-production.net Phone: (619) 429 4344 Ext. 231

NEW!

Industry Fact Sheets

2016

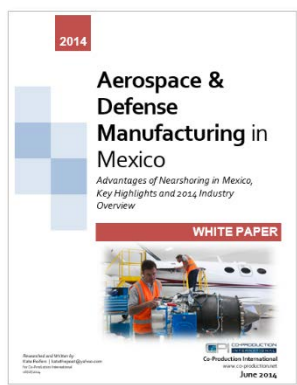
- Medical Device
- Aerospace & Defense
- Electronics
- Automotive & Auto Parts



Manufacturing in Mexico

2016

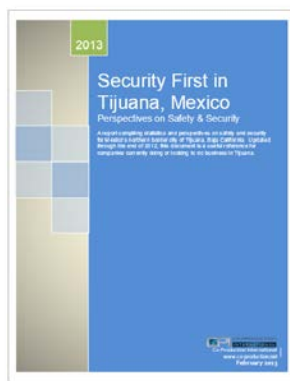
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Aerospace & Defense Manufacturing in Mexico

2016

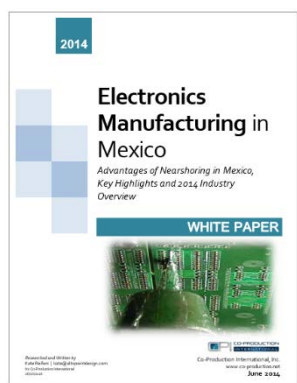
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Security First in Tijuana, Mexico

2013

[LINK TO DOWNLOAD](#)



Electronics Manufacturing in Mexico

2016

[LINK TO DOWNLOAD](#)



Medical Device Manufacturing in Mexico

2016

[LINK TO DOWNLOAD](#)