2025

CBRE


# Semiconductor Growth

## Reshaping Metro Phoenix

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# Why the World's Biggest Chipmakers Are Betting on Arizona

Arizona boasts a rich history in the semiconductor industry, dating back over seven decades. Beginning with Motorola's early contributions in the 1940s, the state's position as a vital center for chip design, fabrication, and testing has been solidified over time. This evolution includes Intel's arrival in 1979 and Taiwan Semiconductor Manufacturing Company's (TSMC) ongoing investments in its 1,100-acre manufacturing campus.

Since 2020, the State of Arizona has won more than 60 semiconductor expansions, amounting to over 16,000 jobs and $205 billion in capital investment—the most of any state in the country. The state's lack of natural and weather related disasters, deep and fast-growing skilled labor pool, operational affordability and collaboration between local governments, universities, economic development agencies and employers continue to position Arizona at the forefront of America's semiconductor resurgence.

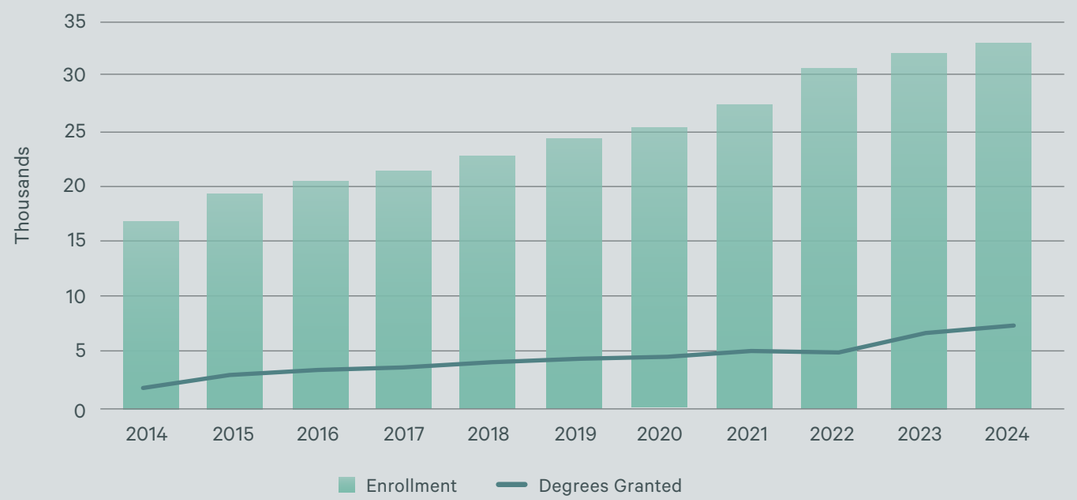
*Source: Arizona Commerce Authority.*

# A National Leader in Workforce Development

Arizona is leading the charge to address the U.S. semiconductor workforce challenges. The state is home to 6.4% of the nation's semiconductor workforce, despite comprising of just 2.2% of the U.S. population. With nearly 50,000 students currently enrolled in engineering programs across Arizona State University, Northern Arizona University and the University of Arizona, these three institutions are helping meet Arizona's high-tech workforce needs. In fact, Arizona State University's Ira A. Fulton Schools of Engineering is the largest and most comprehensive engineering school in the U.S., with more than 32,700 students enrolled as of Fall 2024 and over 7,400 students graduated during the 2023-2024 academic year. These institutions, alongside Grand Canyon University and Maricopa Community Colleges provide a robust talent pipeline that will fuel the semiconductor workforce of the future.

**ASU is providing the Valley with talent to grow the semiconductor workforce.**

**ASU'S IRA A. FULTON SCHOOLS OF ENGINEERING ENROLLMENT AND DEGREES GRANTED**




*Source: Arizona State University.*

# A Thriving Ecosystem of Collaborative Innovation

Arizona has seen a surge in investments to advance research and workforce development across the state. Some of these initiatives include:

### THE MATERIALS TO FAB CENTER AT ARIZONA STATE UNIVERSITY

This collaboration between Arizona State University and Applied Materials, with financial aid from the Arizona Commerce Authority will provide students and faculty with opportunities for hands-on learning and research on the same 300mm equipment used in leading-edge production fabs.

### MICRO/NANO FABRICATION CENTER EXPANSION AT THE UNIVERSITY OF ARIZONA

The Arizona Commerce Authority invested $35.5 million towards the expansion of the University of Arizona's Micro/Nano Fabrication Center. The center is a cleanroom facility that supports manufacturing and research efforts involving semiconductors, computer chips, optical devices, and quantum computing systems. The funding will also support the expansion of training and educational modules.

### MICROELECTRONICS METROLOGY CERTIFICATE PROGRAM, TRAINING CENTER AND RESEARCH LABORATORY AT NORTHERN ARIZONA UNIVERSITY

The Arizona Commerce Authority invested $13 million in Northern Arizona University to expand training programs and research related to metrology. NAU will leverage the investment to establish a Microelectronics Metrology Certificate Program producing students with knowledge and skills in measurement and quality assurance. A semiconductor Training Center at the university's North Valley Campus in Phoenix serving the microelectronic and semiconductor industries with a skilled workforce and a campus-wide Metrology Research and Teaching Laboratory bringing subject matter expertise from multiple disciplines.

### FUTURE 48 WORKFORCE ACCELERATORS

A collaboration between Governor Katie Hobbs, the ACA, Gateway Community College and industry participants such as Intel, TSMC and NXP partners to offer advanced training facilities, including a full-size mock clean room, to prepare students for high-demand jobs in semiconductor processing and maintenance.

### MARICOPA COMMUNITY COLLEGES QUICK START PROGRAM

A 10-day accelerated training program for Semiconductor Technician roles, giving a broad overview of industry processes and skills.



### SCAN THE SEMI CAREER AND APPRENTICESHIP NETWORK

The SEMI Career and Apprenticeship Network (SCAN) is customized training programs created for the microelectronics industry that teach the foundational and specialized skills needed for workers to succeed in well-paid, high-demand jobs in microelectronics.

### INTEL APPRENTICESHIP PROGRAM

Intel is piloting its first U.S. apprenticeship program for manufacturing faculty technicians in Arizona in collaboration with the Arizona Commerce Authority, the Phoenix Business and Workforce Development Board, The SEMI Foundation, Maricopa Community Colleges District and Fresh Start Women's Foundation. Participants will be hired as Intel employees as they learn the core competencies needed for faculty technician roles, including hand-tool basics with mechanical, pneumatic, hydraulic and vacuum systems; electrical basics and electronics; handling of chemicals and gases; and communication skills, problem solving and critical thinking.

### TSMC APPRENTICESHIP PROGRAM

In Collaboration with the City of Phoenix and Maricopa Community Colleges, the Registered Technician Apprenticeship for Facilities Technicians combines supervision, structure, on-the-job training, related technical instruction, and personal and professional development and training. Apprentices work full-time under an expert in the field for anywhere from one to six years, which prepares them for a long career.

# Semiconductor Success Drives Job Growth in Phoenix

Nicknamed the Silicon Desert, the Phoenix MSA has the highest density of manufacturing employment in the State of Arizona. Local manufacturing accounts for 148,380 jobs, comprising just over 6% of jobs in the Phoenix metro area. Of all manufacturing employment, 21% or 30,900 jobs are in computer and electronic product manufacturing jobs. Computer and electronic manufacturing employment in the Phoenix MSA has increased by nearly 10% since 2017, while local semiconductor and other electronic component manufacturing employment has grown by 22.3% during this span.

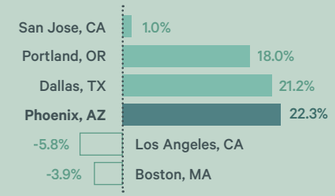
Phoenix's semiconductor value chain has accumulated the most investment of any U.S. metro since 2020. With recent investments from companies in the semiconductor ecosystem and other advanced manufacturing firms, it is expected that semiconductor and advanced manufacturing job growth will continue in the years to come. Additionally, the Greater Phoenix Economic Council estimates that for every job created in the semiconductor industry, it will also create five new jobs in other industries that support this new workforce, such as construction, retail and child care.

### SEMICONDUCTOR AND OTHER ELECTRONIC COMPONENT MANUFACTURING JOBS (THOUSANDS) BY MSA

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|
| **San Jose-Sunnyvale-Santa Clara, CA** | 39.8 | 39.8 | 38.5 | 37.0 | 36.6 | 38.2 | 39.4 | 40.2 |
| **Portland-Vancouver-Hillsboro, OR-WA** | 28.8 | 30.0 | 30.7 | 30.8 | 31.2 | 34.5 | 34.5 | 34.0 |
| **Dallas-Fort Worth-Arlington, TX** | 20.9 | 21.4 | 22.0 | 22.3 | 22.0 | 23.3 | 24.6 | 25.3 |
| **Phoenix-Mesa-Scottsdale, AZ** | 19.7 | 20.4 | 21.2 | 22.5 | 22.5 | 23.6 | 24.3 | 24.1 |
| **Los Angeles-Long Beach-Anaheim, CA** | 23.6 | 23.3 | 22.5 | 21.6 | 21.5 | 22.1 | 22.3 | 22.2 |
| **Boston-Cambridge-Newton, MA-NH** | 10.7 | 11.3 | 11.3 | 10.9 | 10.9 | 11.1 | 11.0 | 10.3 |

**The Phoenix metro boasts the 4th largest semiconductor workforce in the nation.**

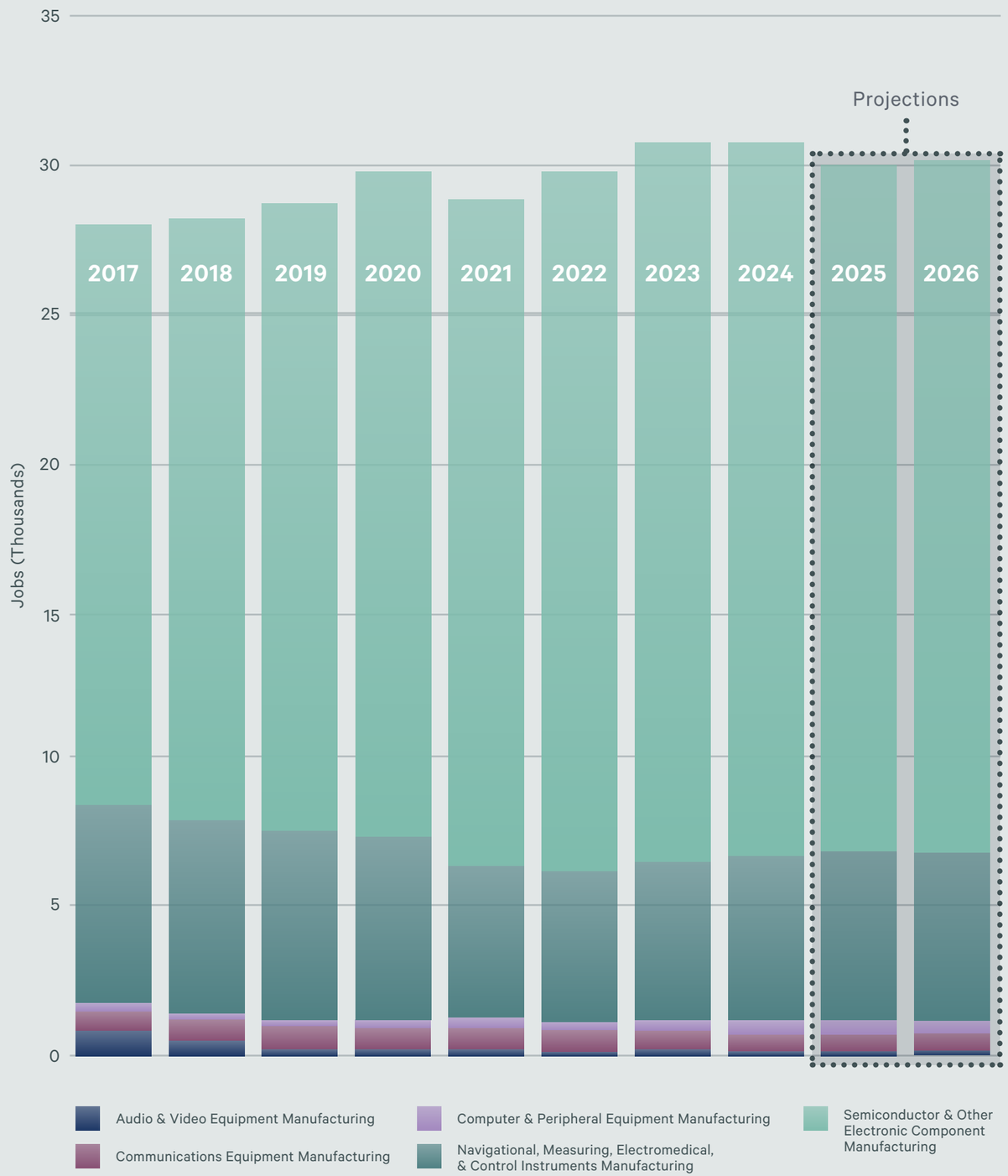
**% GROWTH (2017–2024)**




*Source: Oxford Economics, Bureau of Labor Statistics. This applies to all graphs and charts in this section.*



### PHOENIX MSA COMPUTER AND ELECTRONIC MANUFACTURING EMPLOYMENT BY INDUSTRY



# Economic Incentives

Qualified Facility Arizona aims to promote the expansion of its headquarters facilities or manufacturing facilities, including manufacturing-related research and development, through the Qualified Facility tax credit. Arizona employers may be eligible for up to $30 million in refundable income tax credits each year if they meet the minimum capital investment and job creation requirements.

### QUALITY JOBS

The primary goal of the Quality Jobs tax credit is to encourage business investment and the creation of high-quality employment opportunities in the state. The Quality Jobs tax credit offers up to $9,000 of Arizona income or premium tax credits spread over three years for each net new qualifying job ($3,000 per year).

### TPT EXEMPTION

Semiconductor Exemption from sales tax on clean room construction and installation for primary semiconductor manufacturers.

### TPT EXEMPTION FOR MANUFACTURERS

Exemption from sales tax on utilities, manufacturing equipment, materials, and chemicals purchases.

### FOREIGN TRADE ZONE

Businesses located in a zone or sub-zone are eligible for up to a 71% reduction in state real and personal property taxes.

### ARIZONA ADDITIONAL DEPRECIATION PROGRAM

Arizona's Additional Depreciation encourages new capital investment in Arizona by reducing the taxable value of most business personal property, resulting in substantially lower personal property tax liabilities for businesses. Arizona's Additional Depreciation values all qualifying business personal property classified in or after 2022 at 2.5% immediately and indefinitely, regardless of equipment type or use, creating low, uniform, and consistent taxable values.

### RESEARCH AND DEVELOPMENT

Arizona firms engaged in research and development (R&D) may be eligible for a refundable tax credits worth up to 24% of the first $2.5 million in qualifying expenses plus an additional 15% of qualifying expenses in excess of $2.5 million.

# CHIPS Act Funding

The CHIPS and Science Act authorized a substantial investment in the U.S. semiconductor industry, allocating $52 billion to manufacturing, R&D and sourcing initiatives. This funding aims to bolster domestic production and create a need for skilled labor. Although the continuation of support for these programs under a new administration remains undetermined, the strategic importance of semiconductors for national security is widely acknowledged.

**ARIZONA COMPANIES RECEIVING CHIPS ACT FUNDING**

tsmc

## $6.6 Billion in Funding

PHOENIX, AZ

intel

## $3.9 Billion in Funding

CHANDLER, AZ

Amkor Technology®

## $400 Million in Funding

PEORIA, AZ

As a result of CHIPS Act funding, Arizona has sparked substantial investments into the semiconductor ecosystem. The projects below span all phases of the chip supply chain between 2020-2025.

**Air Liquide**

New Facility | Materials
Project Size: $60 Million
PHOENIX, AZ

**Amkor Technology**

New Facility | Packaging
Project Size: $1.7 Billion
2,000 Total Jobs Expected
PEORIA, AZ

**ASM**

New Facility | R&D
Project Size: $324 Million
500 Total Jobs Expected
SCOTTSDALE, AZ

**ASML**

Expansion | Equipment
100 Total Jobs Expected
CHANDLER, AZ

**CCP**

New Facility | Materials
Project Size: $400 Million
209 Total Jobs Expected
CASA GRANDE, AZ

**EDWARDS**

New Facility | Equipment
200 Total Jobs Expected
CHANDLER, AZ

**EMD Electronics**

New Facility | Equipment
Project Size: $39 Million
CHANDLER, AZ

**FUJIFILM**

Expansion | Materials
Project Size: $88 Million
120 Total Jobs Expected
MESA, AZ

**intel**

New/Modernization | Semiconductors
Project Size: $32 Billion
3,000 Total Jobs Expected
CHANDLER, AZ

**JX Nippon Mining & Metals**

New Facility | Materials
100 Total Jobs Expected
MESA, AZ

**KANTO PPC**

New Facility | Materials
Project Size: $250 Million
65 Total Jobs Expected
CASA GRANDE, AZ

**KoMiCo**

New Facility | Equipment
Project Size: $50 Million
200 Total Jobs Expected
MESA, AZ

**LCY**

New Facility | Materials
Project Size: $100 Million
57 Total Jobs Expected
CASA GRANDE, AZ

**Linde**

New Facility | Materials
Project Size: $600 Million
PHOENIX, AZ

**PENTAGON TECHNOLOGIES**

New Facility | Equipment
Project Size: $50 Million
300 Total Jobs Expected
MESA, AZ

**Purewafer**

Expansion | Materials
Project Size: $30 Million
PRESCOTT, AZ

**saras MICRO DEVICES**

New Facility | Semiconductors
Project Size: $50 Million
50 Total Jobs Expected
CHANDLER, AZ

**SOLVAY**

New Facility | Materials
Project Size: $60 Million
30 Total Jobs Expected
CASA GRANDE, AZ

**SUNLIT**

New Facility | Materials
Project Size: $100 Million
PHOENIX, AZ

**tsmc**

New Facility | Semiconductors
Project Size: $165 Billion
12,000 Total Jobs Expected
PHOENIX, AZ

**YES**

New Facility | Equipment
Project Size: $25 Million
100 Total Jobs Expected
CHANDLER, AZ

*Source: Greater Phoenix Economic Council.*

# Arizona and the Greater Phoenix Metro Continue to Grow it's Semiconductor Ecosystem

The thriving semiconductor ecosystem is driving substantial investment in the metro Phoenix area. Plans are underway for the development of what some call "a city within a city" in north Phoenix, which is intentionally designed to accelerate innovation and foster critical partnerships for world-class talent and industries. This project is Halo Vista, which includes 2,300 acres surrounding the Taiwan Semiconductor Manufacturing Company's campus. It is estimated to include 30 million square feet of integrated spaces for industrial, education, retail, hospitality, office, healthcare, and residential uses. The build-out will span over 25 years and is expected to create 62,000 jobs just in the Halo Vista area.

Arizona is rapidly accelerating into a tech-driven future, poised to become a national and global powerhouse in cutting-edge fields like artificial intelligence, semiconductor production, and renewable energy. TSMC started high-volume production of 4-nanometer chips in late 2024 and its north Phoenix site is the only location in the U.S. manufacturing these advanced logic chips. By 2030, TSMC's Phoenix facilities are projected to produce 20% of the worlds leading edge logic chips. Strategic commitments to artificial intelligence (AI), semiconductor production and clean energy are forging a dynamic ecosystem, reshaping the state's economy and propelling Arizona to the forefront of global technology.

**Driven by forward-thinking public policy and educational initiatives, Arizona is poised to capitalize on the opportunities in 2025 and spearhead the nation's next wave of technological progress.**

# TSMC's Historic Investment in Arizona

## TSMC Project Timeline

### MAY 2020
TSMC first announced plans to invest $12 billion in Phoenix, Arizona for an advanced semiconductor manufacturing fab.

### DECEMBER 2020
TSMC Arizona acquires 1,129 acres of land in north Phoenix.

### APRIL 2021
Construction of TSMC Arizona's first fab begins.

### JUNE 2022
TSMC celebrated placing the last beam on the Arizona fab.

### JULY 2022
Structural construction of the first fab was completed.

### DECEMBER 2022
TSMC celebrated the arrival of its first collection of state-of-the-art semiconductor manufacturing equipment in Arizona.

TSMC announced an increased investment to $40 billion, and its commitment to a second advanced fab in Arizona.

TSMC Arizona announced it would build an Industrial Water Reclamation Plant, allowing the company to reach "Near Zero Liquid Discharge." This means TSMC Arizona will be capable of discharging nearly every drop of water back into the facility.

### AUGUST 2023
TSMC Arizona, the Arizona Division of Occupational Safety and Health (ADOSH), and Arizona Governor Katie Hobbs signed a Workplace Safety Partnership Agreement as a voluntary step to implement more safety, health, and education programs.

TSMC Arizona's safety record outperforms national averages:

- Recordable safety incident rate is nearly 80% lower.
- Lost-time incident rate is nearly 96% lower.

### DECEMBER 2023
TSMC and the Arizona Building and Construction Trades Council (AZBTC) reached an agreement on a framework for cooperation regarding the construction and tool installation at TSMC Arizona's semiconductor manufacturing facility in Phoenix. The agreement outlines priorities including site staffing, communication channels, and union workforce safety and training.

### JANUARY 2024
TSMC Arizona achieved the 'topping milestone' for its second semiconductor fabrication plant currently under construction.

### FEBRUARY 2024
TSMC Arizona now employs over 2,200 people, with ongoing hiring of engineers, technicians, and business professionals. More than 12,000 union and non-union construction trade workers report to the project site daily. For the first fab, thousands of pieces of advanced semiconductor manufacturing equipment are being installed in preparation for production start in 2025.

### APRIL 2024
TSMC announces plans to build a third fab in Phoenix, bringing the total investment to more than $65 billion. This new fab will operate 2nm or more advanced process technology and be operational by the end of the decade. Its second fab will incorporate 3nm and 2nm technology, and start production in 2028.

### NOVEMBER 2024
- The US Department of Commerce awarded TSMC Arizona up to $6.6 billion in direct funding under the CHIPS Act.
- TSMC Arizona expanded its Registered Semiconductor Technician Apprenticeship program during National Apprenticeship Week alongside Arizona Governor Katie Hobbs and Phoenix Mayor Kate Gallego. TSMC Arizona is investing more than $5 million representing on-the-job training hours and education tuition support for nearly 130 new apprentice employees.

### JANUARY 2025
During its quarterly earnings update, the company announces that in the final quarter of 2024, TSMC Arizona started high-volume semiconductor production on its N4 process technology with a yield rate comparable to its advanced fabs in Taiwan.

### MARCH 2025
TSMC announces an investment of an additional $100 billion in the United States and the state of Arizona. This investment will support the development of three additional advanced fabs, two advanced packaging facilities, and a new R&D team center. With this announcement, TSMC's total investment in the U.S. reaches $165 billion.

### APRIL 2025
TSMC Arizona breaks ground on its third advanced fab, which is slated to produce 2nm and even more advanced technology.

TSMC Arizona welcomes its first class of Equipment and Process Technician Apprentices, as well as its second class of Facilities Technician Apprentices.

*Source: https://www.tsmc.com.*

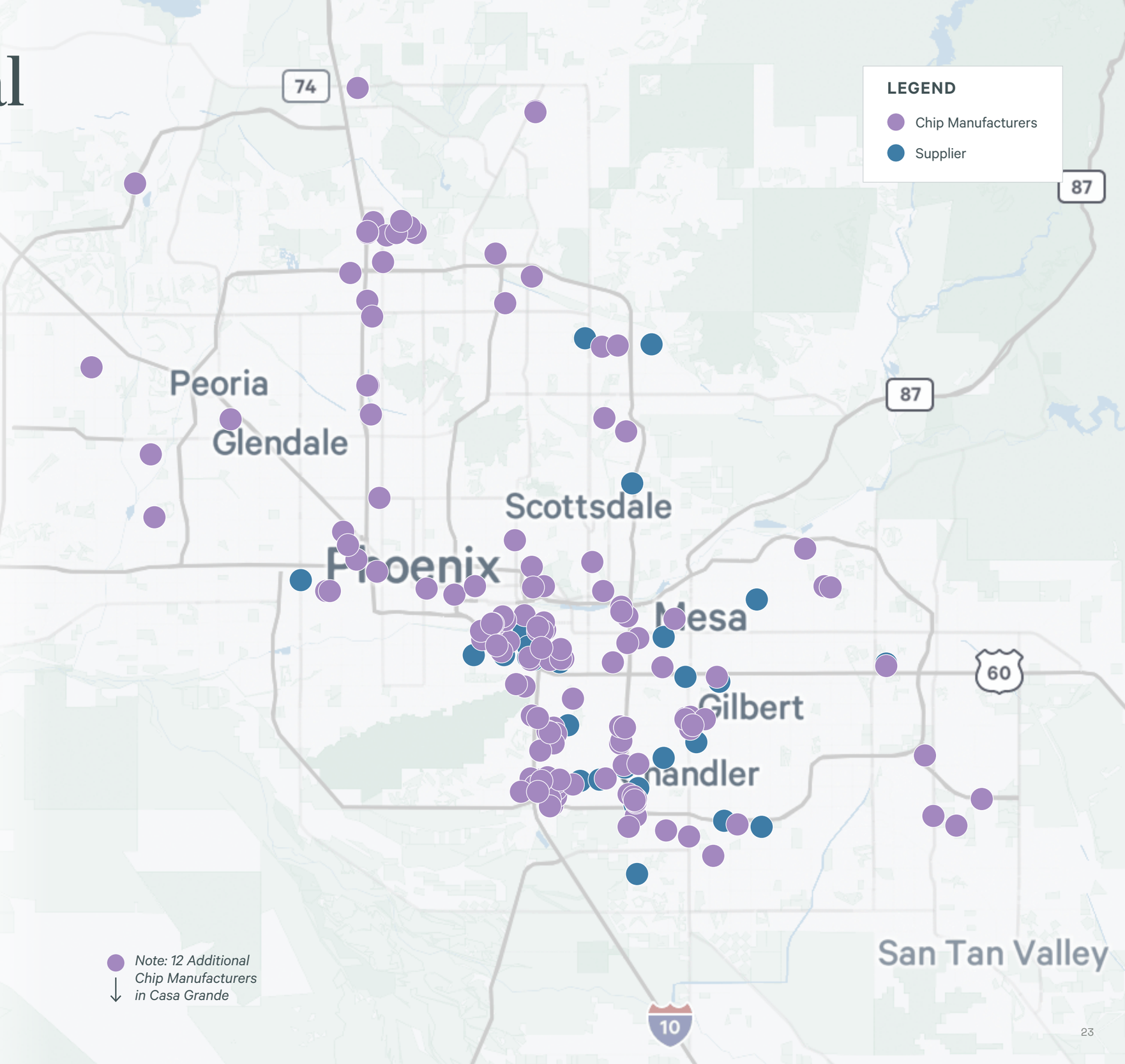
# Attracting Global Players Across Metro Phoenix

**35**
CHIP MANUFACTURERS

**181**
SUPPLIERS

## Top 10 Chip Manufacturers and Suppliers:*

Amkor Technology
ASM
FUJIFILM
intel
LCY
MICROCHIP
NXP
onsemi
SUMCO
tsmc




*By employee count.

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