



AUTONOMOUS VEHICLES ECOSYSTEM

2 N. CENTRAL AVE. SUITE 2500 PHOENIX, AZ 85004 TEL. 602.256.7700 GPEC.ORG



Greater Phoenix
ECONOMIC COUNCIL



DRIVERLESS
VEHICLES

ARABLES

INDUSTRIES
& OPERATIONS

ING

CS

AEROSPACE
& DEFENSE

SOFTWARE

GR



VIRTUAL



TABLE OF CONTENTS

OVERVIEW

WHY GREATER PHOENIX

LOCAL INNOVATION

INDUSTRY ECOSYSTEM

AUTOMOTIVE INNOVATION

REGULATORY ENVIRONMENT

KEY INFRASTRUCTURE

TALENT PIPELINE

UNIVERSITY ALIGNMENT

LIVABILITY

RESEARCH & DEVELOPMENT

OPERATING COST ANALYSIS

LABOR ANALYSIS

RANKING & RECOGNITION

INDUSTRY 4.0

THE CONNECTED PLACE

HEALTHCARE
& BIOMEDICAL



BLOCKCHAIN

WHERE BUSINESS COMES
TOGETHER TO CHANGE
THE WAY WE LIVE

CYBERSECURITY

DRIVING THE FUTURE IN GREATER PHOENIX

THE CUTTING EDGE OF AUTONOMOUS VEHICLE RESEARCH AND DEVELOPMENT

Autonomous vehicles are changing the world we live in, and Greater Phoenix is leading the way in supporting the development and testing of this transformative technology. Enabling programs and policy has made Arizona a top destination for autonomous vehicle testing, and a robust supply chain and electronics cluster make it ideal for component development.

Though it is a relatively young region, Greater Phoenix has a long history of automotive research and development, as major automakers have located proving ground facilities in the state for decades. In addition to the longstanding automotive ecosystem, high-tech manufacturers like Intel have also long had a presence in Greater Phoenix. The region came of age in the era of the automobile, meaning that it has new, high-quality infrastructure, a gridded street system, wide roads and lower levels of traffic. Compared to aging regions like Pittsburgh and Detroit, Greater Phoenix has infrastructure that is difficult to match. And unlike those two legacy metros, Greater Phoenix has seen tremendous growth.

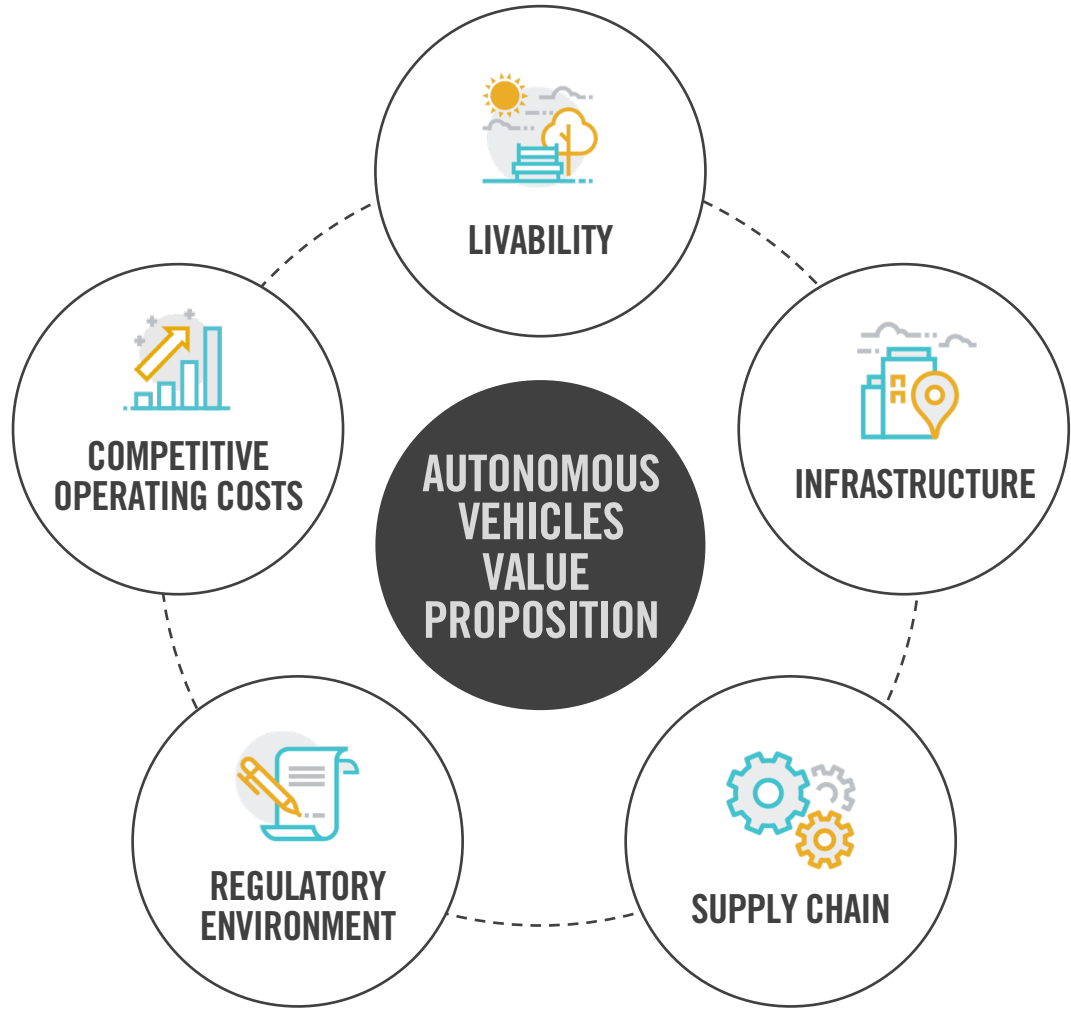
Thanks to its growth, infrastructure and history of high-tech innovation, Greater Phoenix has established itself as a hub for the development of the next generation of vehicles. That's why innovators like Nikola Motors, Waymo, Nuro and many others are thriving in Greater Phoenix.

Here are just a few more reasons why so many top companies choose Greater Phoenix:

- Supporting state and local policy for autonomous vehicle testing
- Longstanding automotive R&D ecosystem which includes many of the world's leading automakers
- Robust existing supply chain
- A large & growing workforce with easier hiring than peer markets
- A strong education pipeline developing workers with vital skills
- Competitive operating cost and tax environment with a number of available incentives



VALUE PROPOSITION



LIVABILITY	INFRASTRUCTURE	SUPPLY CHAIN	REGULATORY ENVIRONMENT	COMPETITIVE OPERATING COSTS
<ul style="list-style-type: none"> • Shorter commute times than peer markets • Fewer days with significant weather interruptions • More than 300 days of sunshine annually 	<ul style="list-style-type: none"> • Gridded road system allows for a more forgiving test environment • Continued investment in street infrastructure • Warm temperatures eliminate freeze and thaw potholes 	<ul style="list-style-type: none"> • Robust ecosystem with significant presence from advanced technology companies • Longstanding automotive R&D infrastructure with many major automakers 	<ul style="list-style-type: none"> • Pro-business regulatory environment encourages autonomous vehicle development • Limited reporting and permitting means more time testing on the roads 	<ul style="list-style-type: none"> • Lower annual operating costs than Detroit & San Jose • Cheaper real estate and benefit costs compared to peer markets • A number of quality incentives to further decrease operating costs

WHY GREATER PHOENIX

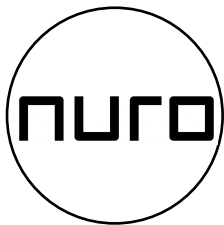
WHAT INDUSTRY LEADERS ARE SAYING ABOUT TESTING IN GREATER PHOENIX

There are good reasons why industry leaders are conducting critical research and development in Greater Phoenix. Below are just a few examples.



"We began testing our self-driving technology in the Phoenix metro area, because the driving environment offered valuable insight early on that was utilized in our other markets. By comparison, Phoenix's traffic and road conditions are more forgiving than our other locations, which gave us more latitude when testing new features and hardware."

-Cruise Automation on testing in Greater Phoenix



"Scottsdale stood out as a perfect community for our pilot. Mayor Lane and the city of Scottsdale have welcomed our vision for transforming local commerce. The weather and topography of the area are favorable for testing."

-Nuro on launching in Scottsdale



"The Phoenix area specifically also has relatively low winds and a temperature range that is conducive to completing regulatory tests almost every day of the year. Arizona also allows the testing of vehicles in extreme high temperatures," which makes worst-case scenario testing possible.

-Richard Woodroffe, Toyota Arizona Proving Ground Manager



"We want to learn how sensors react to the dust in the air, and other area quirks—unique vegetation and golf-cart crossings, for example. There's a lot of enthusiasm for tech in Chandler and residents are supportive of self-driving cars being on the road."

-Google Spokesperson on why Waymo (formerly Google) chose Chandler



LOCAL INNOVATION

AUTONOMOUS R&D IN GREATER PHOENIX

Arizona is a leading state for cutting-edge research and development of autonomous vehicles. Listed below are the firms developing autonomous technologies in Greater Phoenix.

Waymo



- Chandler, Tempe, Mesa, & Gilbert, Arizona
- Launching autonomous ridesharing service in 2018.
- Waymo, formerly Google's self-driving car project, is testing its technologies in Greater Phoenix. Waymo is in the public trial phase, utilizing volunteer participants to rely on Waymo as their primary method of transportation. Waymo has amassed more than eight million total test miles to date.

Local Motors (Olli)



- Tempe & Chandler, Arizona
- Local Motors is an open-source, creative, collaborative, low-volume automaker, headquartered in Tempe, Arizona. Local Motors is currently focusing on Olli, an electric autonomous microbus, which features IBM's Watson technology. Olli is currently in development and being tested at locations around the world.

Cruise Automation (General Motors)



- Phoenix, Scottsdale & Tempe, Arizona
- Cruise Automation, recently acquired by General Motors, is an autonomous vehicle technology company currently testing vehicles. The startup plans to rapidly expand as a result of being acquired by GM. The company uses Chevrolet's small electric car, the Bolt, to test.

Intel



- Chandler, Arizona
- Intel's Chandler Advanced Vehicles Lab, located at the Intel Chandler Campus, is developing systems and technologies that are used for autonomous driving.

Nuro



- Scottsdale, Arizona
- Nuro launched a driverless delivery service in Scottsdale in August 2018. The company has partnered with Kroger to make deliveries using self-driving cars in its first stage, with its R1 driverless delivery vehicles arriving in the fall of 2018.



LOCAL INNOVATION

PROVING GROUNDS

Arizona is a leading state for cutting-edge research and development in the automotive industry. The list below highlights automotive proving grounds throughout the Greater Phoenix Area.



Toyota Arizona Proving Ground

- Wittman, Arizona
- This is a 12,000-acre facility that contains a 10-mile high speed oval track along with several other test tracks. This facility is used to test vehicles in a North American environment, including performance and reliability testing in hot weather climates. The facility employs more than 50 people with its total investment being more than \$108 million.



Ford Arizona Proving Grounds

- Wittman, Arizona
- Ford is testing autonomous vehicle technology at this facility.
- Testing at this facility includes vehicle performance testing, vehicle dynamics and handling, noise vibration and harshness, and hot-weather testing.



Nissan North America Arizona Testing Center

- Stanfield, Arizona
- This facility is used to test the comfort, ride and handling events that are important to the North American Region. Other functions of the site are hot and cold weather simulation, high altitudes testing, high speed, crash, powertrain and durability. This facility includes replicas of some of North America's worst roads.



Volkswagen Arizona Proving Grounds

- Maricopa, Arizona
- This facility is used primarily for hot-weather testing. Pre-production vehicles are tested for durability and weather-readiness. In addition, electric vehicles are tested there.



LOCAL INNOVATION

PROVING GROUNDS, Cont.

Arizona is a leading state for cutting-edge research and development in the automotive industry. The list below highlights automotive proving grounds in areas other than Greater Phoenix.



General Motors Desert Proving Grounds

- Yuma, Arizona
- This facility employs 75 engineers, technicians and support staff. The property is 2,400 acres that contains 40 miles of road and 24 acres of buildings. Testing at this location includes hot weather testing, off-road testing, powertrain, ride and handling, and other vehicle development activity.



Chrysler Arizona Proving Grounds

- Yucca, Arizona
- This is a 3,840-acre site with 50 miles of test roads and 109,000 square feet of building space. Testing here includes hot-weather testing and rigorous testing on roads that simulate extremely harsh driving conditions. The facility employs more than 75 people.



LOCAL INNOVATION

MANUFACTURERS AND OTHER AUTOMOTIVE INNOVATION

Automotive innovation doesn't just take place on the streets or at the proving grounds in Greater Phoenix. It also comes from manufacturers, IT innovation and third-party labs.

Lucid Motors



- Casa Grande, Arizona
- Lucid Motors is an electric car maker which will be building a \$700 million factory in Casa Grande, Arizona. An upstart automaker, Lucid is a competitor to Tesla, and has released designs and working concepts for their first product, the Lucid Air. Lucid vehicles will also come equipped with autonomous technology.

Nikola Motors



- Phoenix, Arizona
- Nikola Motors is a leader in innovative electric long-haul trucks. Using hydrogen-electric technology, Nikola is currently conducting R&D in Phoenix. In addition, the company already has 8,000 reservations for its trucks.

General Motors AZ IT Innovation Center



- Chandler, Arizona
- This facility is developing the next generation of advanced IT solutions for General Motors' products. Projects underway at the Innovation Center include ride sharing, vehicle-to-vehicle communication and IT security. The facility hires large numbers of Arizona State University graduates.



Intertek Phoenix Automotive Lab

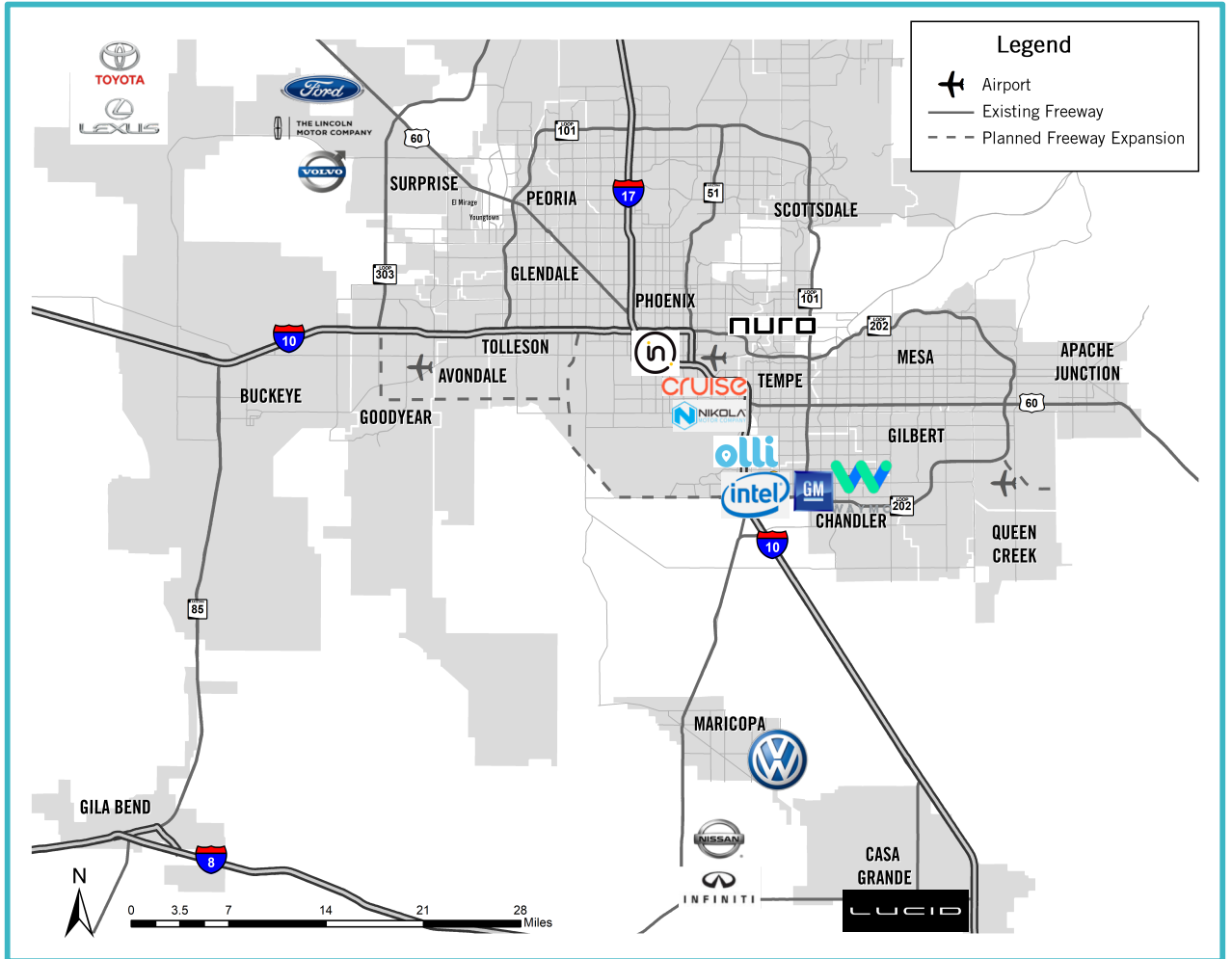
- Phoenix, Arizona
- This lab is a piece of Intertek's Center for the Evaluation of Clean Energy Technology (CECET), whose mission is to test and evaluate automotive technologies that contribute to the reduction of the consumption of petroleum. The facility tests both in-lab and on a track for quality assurance for both passenger and heavy-duty vehicles.



LOCAL INNOVATION

PROVING GROUNDS & INNOVATION MAP

The map below highlights where automakers and innovators are located within Greater Phoenix.



2 N. CENTRAL AVE. | SUITE 2500 | PHOENIX, AZ 85004 | TEL. 602.256.7700 | GPEC.ORG



INDUSTRY ECOSYSTEM

AUTONOMOUS VEHICLES SUPPLY CHAIN

Greater Phoenix is home to every piece of the autonomous vehicle supply chain. The companies below represent a sample of the firms currently operating in the region.



AUTOMOTIVE INNOVATION

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION CONNECTED VEHICLES PROGRAM.

MCDOT SMARTDrive PROGRAM

Arizona's Connected Vehicle Program was initiated in 2007 by MCDOT, the Arizona Department of Transportation (ADOT) and the University of Arizona (U of A). It began as a research project to identify how new technology applications could enhance traffic signal operations, incident management and traveler information. During this time, MCDOT developed the concept of vehicle prioritization and used this concept to develop applications to improve safety for emergency responders. This concept, now known as the MCDOT SMARTDrive ProgramSM, prevents emergency vehicles from colliding with one another at signalized intersections while responding to emergencies. The MCDOT SMARTDrive ProgramSM simultaneously communicates with multiple emergency vehicles arriving at the same intersection at the same time and relates back which vehicle has the right-of-way.



ANTHEM TEST BED

MCDOT constructed a test bed in Anthem, Arizona to test the MCDOT SMARTDrive ProgramSM's vehicle prioritization technology in 2011. It was one of the first seven test beds in the country.

The Arizona Connected Vehicle program has now expanded its testing to include new applications such as a pedestrian traffic signal crosswalk application, transit priority application and a trucking priority application. In the future, the AZ Connected Vehicle Consortium hopes to expand its program even further by testing these applications in "real world" scenarios where residents and businesses in Maricopa County can participate.

NATIONAL LEADERSHIP

The technology developed by Arizona's Connected Vehicle Program contributed to the development of the U.S. Department of Transportation's Multi-Modal Intelligent Traffic Signal System (MMITSS). MMITSS is now available to other Departments of Transportation across the country to help them build and establish their own connected vehicle programs. MCDOT's Anthem Connected Vehicle Test Bed was officially recognized as a Nationally Affiliated Test Bed in 2012.

Source: Maricopa County Department of Transportation, Image: Anthem News



REGULATORY ENVIRONMENT

AUTONOMOUS VEHICLES POLICY AND PROGRAMS

ADVANCING AUTONOMOUS VEHICLE TESTING AND OPERATING; PRIORITIZING PUBLIC SAFETY

In March 2018, Governor Doug Ducey signed Executive Order 2018-04: “Advancing Autonomous Vehicle Testing and Operating; Prioritizing Public Safety.” This executive order is an update on Governor Ducey’s 2015 executive order enabling autonomous vehicle testing in Arizona. The 2018 order allows for autonomous vehicles to be tested in Arizona without a driver behind the wheel. No permitting or reporting is required in Arizona.

- Allowed for driverless testing of autonomous vehicles in Arizona and described safety standards that companies must meet in order to test driverless vehicles in the state
- Instructed the Arizona Department of Public Safety to issue a law enforcement interaction guide in conjunction with companies testing autonomous vehicles
- Creates a protocol under which autonomous vehicle operators must notify the state of the commencement of their driverless testing activities
- Instructed the Arizona Departments of Transportation and Public Safety to review existing regulations and submit a report determining which are no longer necessary

SELF-DRIVING VEHICLE TESTING AND PILOTING EXECUTIVE ORDER

In September 2015, Governor Doug Ducey signed an executive order aimed at reducing barriers for companies trying to test autonomous vehicles in Arizona. The executive order contained the following components:

- Instructed the Department of Transportation, Department of Public Safety and other agencies to support the testing of self-driving vehicles in Arizona
- Authorized pilot programs at selected universities through which licensed drivers can operate vehicles remotely while on campus
- Established a Self-Driving Vehicle Oversight Committee to advise the Department of Administration, the Department of Public Safety, selected universities and other agencies on how to advance the testing and operation of self-driving vehicles

THE ARIZONA CONNECTED VEHICLES PROGRAM

The Arizona Connected Vehicles Program was initiated in 2007 as a partnership between the Arizona Department of Transportation (ADOT), Maricopa County Department of Transportation (MCDOT) and the University of Arizona to research technologies that would allow autonomous vehicles to communicate with each other and the transportation system.

The MCDOT SMARTDriveSM Program is an intelligence system that prioritizes emergency vehicles at signalized intersections. This technology is currently being tested in Anthem, Arizona, where eleven intersections contain this technology.

Additional technology applications are also being tested, including pedestrian crosswalks and transit and trucking priorities.

ARIZONA 5G WIRELESS COMMUNICATION POLICY

In March 2017, Arizona passed legislation creating a statewide policy for the implementation of 5G technology. HB 2365, which was signed by Governor Ducey in April, limits regulations on the collocation of small wireless facilities used to improve the existing 4G LTE network and create the infrastructure needed to buildout 5G technology.

Source: Office of Arizona Gov. Doug Ducey. “Executive Order Number 2015-09: Self-Driving Vehicle Testing and Piloting in the State of Arizona; Self-Driving Vehicle Oversight Committee.” August 25, 2015. Accessed from: <http://www.azgovernor.gov/governor/executive-orders>; Maricopa County, “Connected Vehicles Program.” <https://www.maricopa.gov/640/Connected-Vehicles-Program>. Accessed 8/18/2017; Arizona Legislature Passes Bill Making Arizona Pioneer for 5G Technology Deployment. Press Release March 31, 2017, <http://www.azleg.gov/press/house/53LEG/1R/170331WENINGERSMALLCELLTOWERS.pdf>. Accessed 9/1/2017.



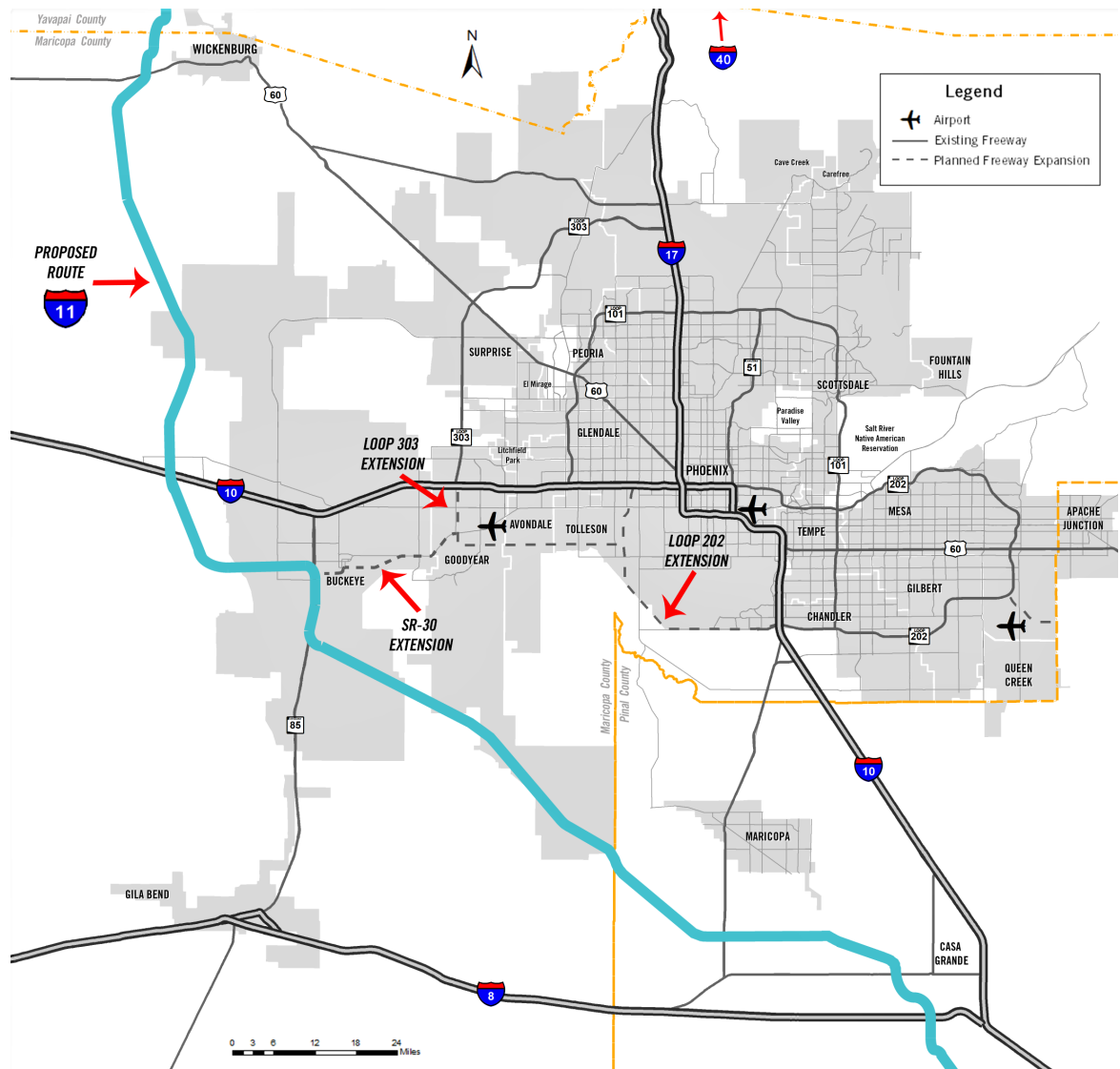
KEY INFRASTRUCTURE

COMMUTE TIMES & FORGIVING STREETS

Commute times in Greater Phoenix are significantly shorter than competitor markets, enabling your workforce to spend more time enjoying their lifestyle and less time in traffic. The region has a modern freeway system ensuring that there is a robust supply of talent no matter where a business is located. In addition, the region has a grid street system with wide, forgiving roads, meaning that early stage R&D is easier in Greater Phoenix than in legacy markets.

Metro	Average Commute Times	Yearly Commute	Index
Phoenix	26.0 minutes	9.4 days	100.0%
Detroit	26.7 minutes	9.6 days	102.7%
Pittsburgh	26.5 minutes	9.6 days	101.9%
San Jose	27.3 minutes	9.9 days	105.0%

Source: 2012-2016 American Community Survey 5-year estimates



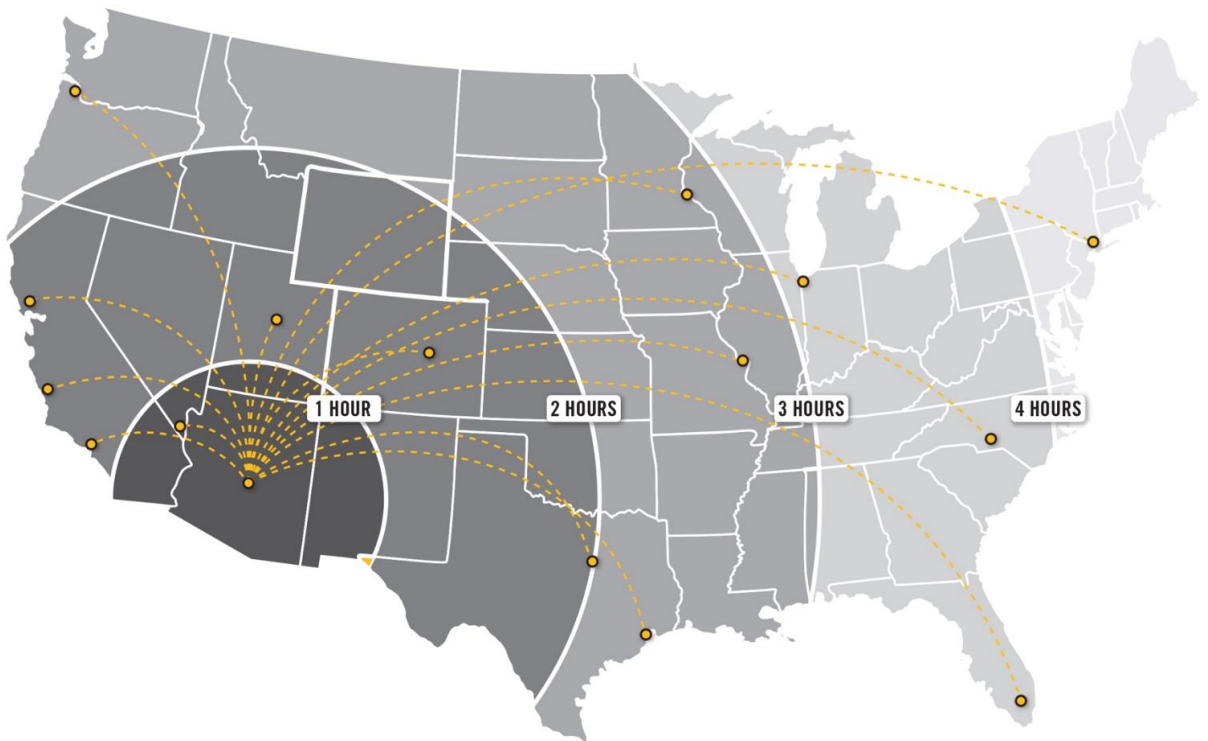
KEY INFRASTRUCTURE

GREATER PHOENIX AIR CONNECTIVITY

Greater Phoenix has regular and consistent access to top autonomous vehicle hubs. With an average of 58 flights per week to these markets, Greater Phoenix is well connected. The table below shows weekly direct flights to leading Autonomous Vehicles hubs for August 2018.

Destination	Total Direct Flights Per Week From Phoenix
Detroit	40
Pittsburgh	22
San Jose	112

Source: Phoenix Sky Harbor Flight Schedule August 2018



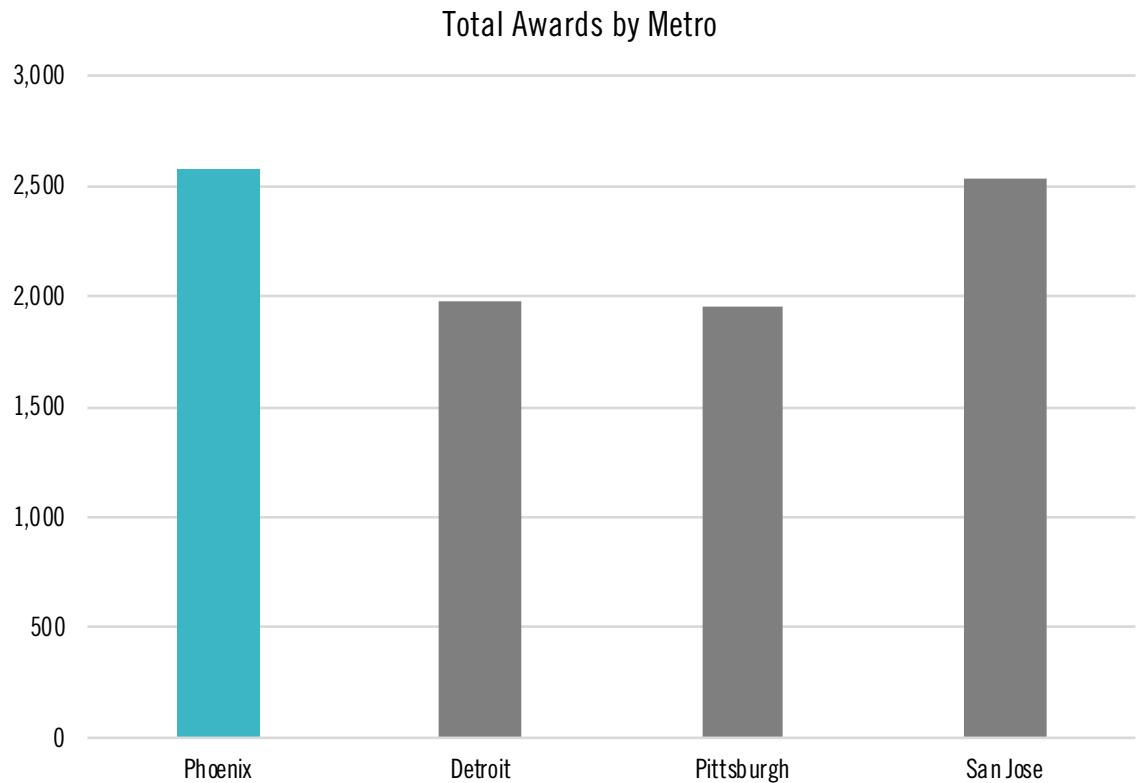
TALENT PIPELINE

GREATER PHOENIX TALENT PIPELINE

Below are the total number of non-distance program completions at colleges and universities in Greater Phoenix with degree programs relevant to the development of autonomous vehicles. The region produced over 2,500 graduates in these fields during the 2015 to 2016 school year. The region's universities are committed to supplying the workforce needed to enable companies to scale in the region. Comparison data for peer markets has been provided below.

Non-degree Certificates	Associate	Bachelor	Master	Doctor
405	232	1,195	641	100

COMPETITOR MARKETS' TALENT PIPELINE



Source: EMSI 2015-2016 Non-Distance Offered Degree Programs, 2018.2 Dataset



TALENT PIPELINE

NOTABLE PROGRAMS IN AUTONOMOUS VEHICLE-RELATED FIELDS



ARIZONA STATE UNIVERSITY

Arizona State University (ASU) is committed to partnering with corporate, education, and government organizations to produce a skilled software & IT workforce. ASU has the largest engineering school in the nation, with over 20,000 students enrolled.

- Computer Systems Engineering
- Computer Science
- Autonomous Vehicle Systems
- ASU Polytechnic Campus: Engineering with focus on automotive, electrical systems, mechanical engineering systems, or robotics



UNIVERSITY OF ARIZONA

The University of Arizona is committed to partnering with government and corporations to train job-ready students.

- Computer Science
- Management Information Systems with Emphasis in Information Assurance
- Cyber Operations
- Artificial Intelligence Laboratory



GRAND CANYON UNIVERSITY

Grand Canyon University is a private Christian university committed to training the next generation of working professionals.

- Computer Programming
- Computer Science with an Emphasis in Big Data Analytics
- Information Technology Degree
- Arizona Cyber Warfare Range facility



TALENT PIPELINE

NOTABLE PROGRAMS IN AUTONOMOUS VEHICLE-RELATED FIELDS



UNIVERSITY OF ADVANCING TECHNOLOGY

The University of Advancing Technology was the first computer university in the United States and continues to be a nationally-recognized leader in advanced technology education.

- Advancing Computer Science
 - Enterprise Software Development
 - Network Engineering
 - Web Design
-



MARICOPA COMMUNITY COLLEGES

The largest community college district in the United States, the Maricopa Community College District includes 10 colleges throughout Greater Phoenix.

- Computer Applications Technology
 - Computer Programming
 - IT: Computer Applications Specialist
 - Computer Information Systems
-



EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

Embry-Riddle is an aeronautical university that offers programs software and computer engineering. Located in Prescott, Arizona, Embry-Riddle is a short drive from Greater Phoenix.

- Software Engineering
 - Computer Engineering
-



UNIVERSITY ALIGNMENT

NOTABLE UNIVERSITY RANKINGS



ARIZONA STATE UNIVERSITY

- #1 Most innovative school (2016, 2017, 2018, 2019), U.S. News & World Report
 - #3 Online graduate business programs, U.S. News & World Report
 - #4 Online Bachelor's Degree programs, U.S. News & World Report
 - #5 Online MBA program, U.S. News & World Report
 - #5 Best-qualified graduates, The Wall Street Journal
 - #24 Global Universities, Economics/Business, U.S. News & World Report
-



UNIVERSITY OF ARIZONA

- #3 Undergraduate Management Information System program, U.S. News & World Report
 - #5 Graduate Information Systems program, U.S. News & World Report
 - #8 Online Graduate Computer Information Technology Program, U.S. News & World Report
 - #10 Entrepreneurship program, U.S. News & World Report
-





LIVABILITY

PARKS & RECREATION

Greater Phoenix is home to hundreds of parks and hundreds of miles of hiking, biking and walking trails. The Greater Phoenix region is home to the largest municipal park in the United States, South Mountain Park. South Mountain Park covers more than 16,000 acres. Other large parks in the region include the White Tank Mountain Regional Park, Camelback Mountain, Piestewa Peak and the Superstition Mountains. Notable walking trails in the region include the canal system, Tempe Town Lake, the Greenbelt and Papago Park.



LIVABILITY

COST OF LIVING

Greater Phoenix provides the right combination of affordability, size and scalability. Compared to California metros, Greater Phoenix is less expensive across all major expenses.

Metro	Cost of Living Index	Index
Phoenix	106.7	100.0%
Detroit	96.0	90.0%
Pittsburgh	102.6	96.2%
San Jose	143.6	134.6%

Source: EMSI 2018.2 Dataset

HOUSING

Greater Phoenix has an affordable housing market. It is significantly less expensive to own or rent in the Greater Phoenix area than in California markets.

Metro	Median Home Value	Index	Median Rent	Index
Phoenix	\$256,000	100.0%	\$1,362	100.0%
Detroit	\$156,100	61.0%	\$1,194	87.7%
Pittsburgh	\$141,600	55.3%	\$1,083	79.5%
San Jose	\$1,292,600	504.9%	\$3,499	256.9%

Source: July 2018 Zillow Home Value Index (ZHVI), July 2018 Zillow Rental Index (ZRI)

PERSONAL INCOME TAX

Greater Phoenix has the lowest personal income tax of those states that have a personal income tax across all income levels. With its affordable cost of living and low taxes rates, income goes further in Greater Phoenix.

State	\$50,000	\$150,000	\$270,000	\$500,000	\$1 Million Or More
Arizona	3.36%	4.24%	4.54%	4.54%	4.54%
California	8.00%	9.30%	9.30%	11.30%	13.30%
Michigan	4.25% of Federal Adjusted Gross Income with Modification				
Pennsylvania	3.07%				

Source: Tax Foundation 2018 Facts & Figures tables. Tax rates are for single filers.



OPERATING COST ANALYSIS

The Annual Business Operating Cost Analysis has been prepared using the following parameters as an estimate for autonomous vehicle research & development operations in competitor markets. Component and custom analyses to match your company's operations can be provided upon request.

ASSUMPTIONS

- \$5,000,000 personal property investment
- 50,000 square foot warehouse, Lease
- Utilities (per month): Included in Lease
- 35 jobs (Bureau of Labor Statistics equivalent occupations)

Occupations	Employment
Software Developers, Applications	10
Mechanical Engineer	5
Computer Hardware Engineers	5
Software Developers, Systems Software	5
Electrical and Electronics Engineering Tech	3
Electrical Engineers	2
Computer Programmers	2
Network and Computer Systems Administrators	1
Computer and Information Systems Managers	1
General and Operations Managers	1
Total Work Force:	35

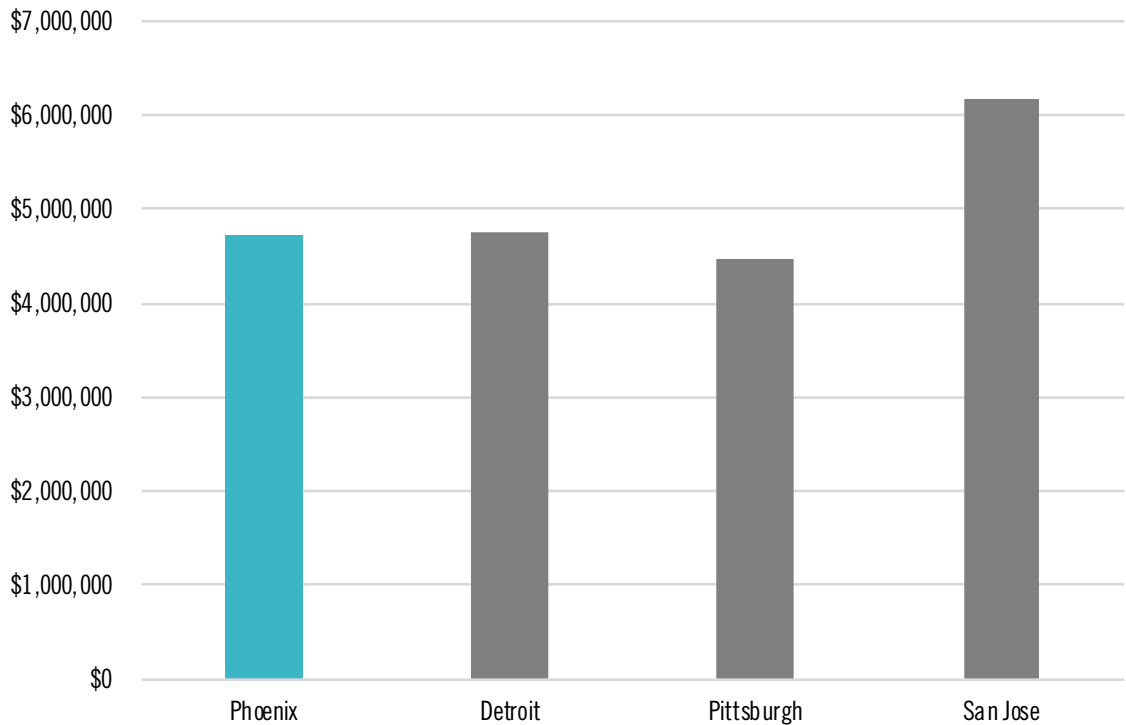


OPERATING COST ANALYSIS

ANNUAL OPERATING COST

Metro	Employee Payroll	Fringe and Mandated Benefits	Real Estate Payments	Property Tax	Total Operating Cost	Index
Phoenix	\$3,451,319	\$840,980	\$318,000	\$114,660	\$4,724,959	100.0%
Detroit	\$3,617,691	\$885,350	\$251,500	\$0	\$4,754,541	100.6%
Pittsburgh	\$3,372,075	\$830,505	\$265,500	\$0	\$4,468,080	94.6%
San Jose	\$4,486,519	\$1,124,264	\$493,000	\$60,150	\$6,163,933	130.5%

TOTAL OPERATING COST BY METRO



Source: Applied Economics Metrocomp Tool, May 2018



OPERATING COST ANALYSIS

ARIZONA TAX ENVIRONMENT VS. COMPETITOR MARKETS

Arizona has a very competitive tax and fringe/mandated benefits environment compared to other major autonomous vehicles markets.

Metropolitan Area	Sales Tax Rate	Corporate Income		Inventory Tax	Unemployment Insurance			Workers Comp. (Rate Per \$100 Payroll)
		Tax Rate	Basis		Rate (As % Of Payroll)	Wage Base	Max. Payment	
Phoenix	8.60%	4.90%	Net Income	No	2.00%	\$7,000	\$140.00	\$1.50
Detroit	6.00%	6.00%	Net Income	No	2.70%	\$9,000	\$243.00	\$1.57
Pittsburgh	7.00%	9.99%	Net Income	No	3.68%	\$9,750	\$358.80	\$1.84
San Jose	9.25%	8.84%	Net Income	No	3.40%	\$7,000	\$238.00	\$3.24

Source: Applied Economics Metrocomp Tool; Tax Foundation, 2017; Various state revenue departments, 2017; Oregon Dept. of Consumer and Business Services, "Workers' Comp. Premium Rate Ranking", 2016; U.S. DOL, "Significant Provisions of State Unemployment Insurance Laws", July 2017.



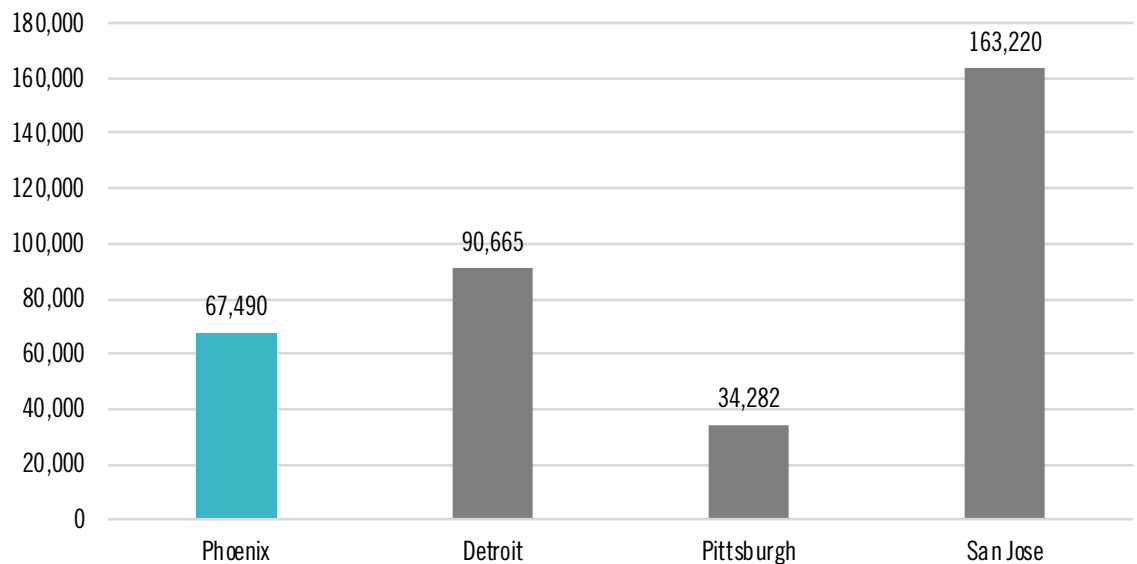
LABOR ANALYSIS

LABOR POOL

The table below shows employment for the following occupations in the selected metros.

Occupation	Phoenix	Detroit	Pittsburgh	San Jose
Computer and Information Systems Managers	5,594	4,968	2,718	14,065
Computer Systems Analysts	12,857	10,435	5,423	15,672
Computer Programmers	3,625	2,060	2,193	6,223
Software Developers, Applications	12,108	12,524	7,221	43,275
Software Developers, Systems Software	8,111	7,445	1,467	28,694
Network and Computer Systems Administrators	5,752	4,753	2,821	6,758
Computer Network Architects	2,844	1,758	1,494	4,121
Computer Hardware Engineers	570	1,004	225	11,955
Electrical Engineers	2,666	6,555	1,927	6,162
Electronics Engineers, Except Computer	4,173	1,618	888	6,113
Mechanical Engineers	2,554	29,684	3,262	3,858
Electrical and Electronics Engineering Technicians	2,119	1,664	1,467	6,777
Mechanical Engineering Technicians	482	2,817	334	609
Electrical and Electronic Equipment Assemblers	4,034	3,378	2,840	8,936
Total:	67,490	90,665	34,282	163,220

LABOR POOLS IN MAJOR AV MARKETS



Source: EMSI Q2 2018 Dataset



LABOR ANALYSIS

LABOR COSTS

Greater Phoenix has a robust supply of human capital at an affordable cost. Below is a table of median wages across peer markets for autonomous vehicles occupations.

Occupation	Phoenix	Detroit	Pittsburgh	San Jose
Computer and Information Systems Managers	\$133,301	\$127,157	\$125,324	\$182,177
Computer Systems Analysts	\$89,847	\$89,249	\$82,352	\$115,113
Computer Programmers	\$77,716	\$71,248	\$73,595	\$97,820
Software Developers, Applications	\$92,479	\$88,070	\$85,389	\$129,599
Software Developers, Systems Software	\$95,348	\$83,148	\$79,643	\$143,859
Network and Computer Systems Administrators	\$79,041	\$78,859	\$69,647	\$101,907
Computer Network Architects	\$95,201	\$108,284	\$94,586	\$136,072
Computer Hardware Engineers	\$106,487	\$78,137	\$71,383	\$143,117
Electrical Engineers	\$108,256	\$88,797	\$90,759	\$132,204
Electronics Engineers, Except Computer	\$78,860	\$84,948	\$87,927	\$126,322
Mechanical Engineers	\$87,353	\$90,503	\$82,013	\$117,596
Electrical and Electronics Engineering Technicians	\$64,091	\$56,843	\$54,358	\$63,051
Mechanical Engineering Technicians	\$50,723	\$60,282	\$56,245	\$65,883
Electrical and Electronic Equipment Assemblers	\$36,967	\$24,347	\$33,203	\$35,762

Source: EMSI Q2 2018 Dataset



RANKINGS & RECOGNITION

RECENT GREATER PHOENIX RECOGNITION

#1

- Arizona was ranked #1 most competitive state in the mountain region in the 2017 Site Selection Magazine Prosperity Cup.

TOP 20

- In 2018, two cities within the region were listed in the top 20 happiest cities in the nation by WalletHub.

#4

- Sky Harbor International Airport ranked 4th in customer satisfaction for Mega Airports by J.D. Power in 2017.

TOP 10

- In 2017, three cities within the region were listed in the top 10 best cities for jobs by WalletHub.

TOP TIER

- APS and SRP rank as top business service providers by J.D. Power and Associates for reliability.

TOP 5

- Greater Phoenix is one of the top 5 large metros with the lowest natural disaster risk, based on a report by ATTOM Data Solutions.

#1

- Arizona State University named America's Most Innovative University 4 years in a row – 2016, 2017, 2018, 2019 – by U.S. News



GREATER PHOENIX

Where business comes together to change the way we live.

ABOUT THE GREATER PHOENIX ECONOMIC COUNCIL:

The Greater Phoenix Economic Council (GPEC) is Arizona's premier, nationally-ranked economic development organization representing Maricopa County, 22 member communities and more than 160 private-sector investors.

OUR SERVICES:

- Connectivity to Key Resources
- Regional Economic Labor Market Data
- HR Employment Assistance
- Operational Cost Analysis MetroComp Analysis
- Economic Impact Analysis
- Regional Site-Selection

