



# Greater Phoenix Climate Tech Ecosystem

JUNE 2023

# Innovating the Future in Greater Phoenix

## Pioneering Climate Technology Advancements

Climate technology is revolutionizing industries and reshaping our world, and Greater Phoenix is at the forefront of fostering the development and implementation of sustainable solutions. With its commitment to enabling programs and forward-thinking policies, Arizona has become a leading destination for climate technology research, development and testing.

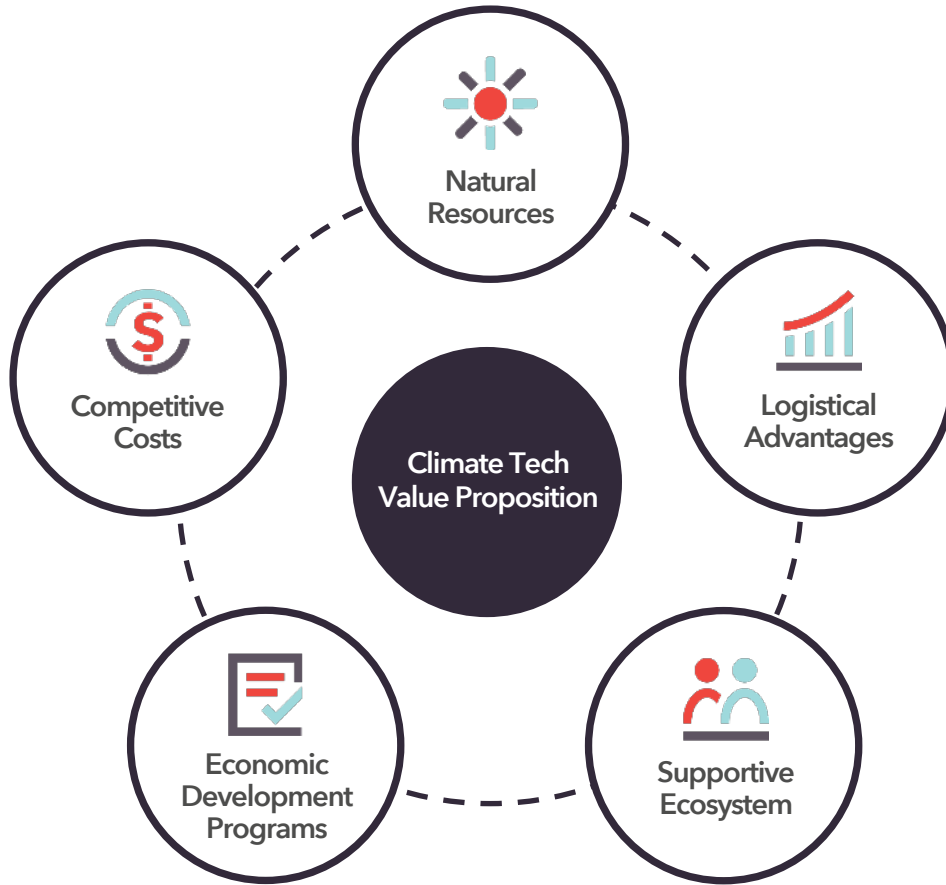
Though it is a relatively young region, Greater Phoenix has a rich history of technological innovation and research, attracting major players in various industries for decades. Thanks to substantial population and market growth, investment in infrastructure and a strong culture of high-tech innovation, Greater Phoenix has positioned itself as a thriving hub for the next-generation development of climate technologies. This is why industry leaders such as Footprint, OnePointOne, First Solar and SOURCE Water have found success in the region.

### Here are just a few reasons why climate technology companies choose Greater Phoenix:

- Supportive state and local policies that facilitate clean technology research and development
- A well-established ecosystem for technological research and development, attracting some of the industry's most prominent industry players
- A large and continuously growing workforce, providing a competitive advantage for hiring talent compared to peer markets
- A strong education pipeline fostering the development of skilled workers with expertise in climate technologies
- A highly competitive operating cost and tax environment, complemented by several incentives available to clean technology companies

Greater Phoenix's commitment to climate technology innovation and its thriving ecosystem make it a prime destination for companies at the forefront of sustainable solutions. With an unwavering dedication to shaping a cleaner and greener future, the region continues to attract and support the pioneers of the clean technology industry.

# Value Proposition



Natural Resources	Logistical Advantages	Supportive Ecosystem	Economic Development Programs	Competitive Costs
<ul style="list-style-type: none"> <li>• Low risk of natural disasters leading to fewer days with significant weather interruptions</li> <li>• More than 300 days of sunshine annually</li> <li>• Second-best nationally for solar energy potential</li> <li>• Pioneer in water innovation through strategic investments in diverse water supplies and advanced groundwater management</li> </ul>	<ul style="list-style-type: none"> <li>• Second-most reliable grid in the nation</li> <li>• Well-planned highways provide easy access to all major regional submarkets</li> <li>• 35 million consumers across seven states can be reached within a one-day truck haul</li> <li>• Seamless access to both California and Texas markets due to Interstates 8 and 40</li> </ul>	<ul style="list-style-type: none"> <li>• Specialized programs at universities and institutional alignment produce strong talent and cutting-edge R&amp;D</li> <li>• Major employers have ESG goals that support climate tech advancement</li> <li>• Greater Phoenix communities are developing aggressive environmental goals</li> <li>• Utility providers are entering into large-scale clean energy PPAs to achieve their sustainability goals</li> </ul>	<ul style="list-style-type: none"> <li>• Up to \$20,000/job in refundable tax credit</li> <li>• \$9,000/job in corporate income tax credits</li> <li>• Reduced property tax through favorable depreciation schedules</li> <li>• Sales tax abatement on electricity and natural gas</li> <li>• Sale tax exemptions for manufacturing machinery and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Operating costs up to 28% lower than competing markets</li> <li>• Cheaper real estate and benefit costs compared to peer markets</li> <li>• Substantially lower corporate income tax rate compared to common climate tech markets such as California and Massachusetts</li> <li>• One of the lowest individual income tax rates in the U.S. at a 2.5% flat rate</li> </ul>

# Local Innovation

## Climate Tech in Greater Phoenix

Greater Phoenix is home to many companies on climate tech and renewable energy.

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Intelligent cooling

### Air<sub>2</sub>O (Scottsdale)

- Air<sub>2</sub>O is world leader and pioneer in advanced evaporative cooling and Hybrid Air Conditioning Technologies particularly suited to cooling large-scale facilities including data centers and agriculture facilities.
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### Arevon (Scottsdale)

- Arevon is a renewable energy company providing commercial, financial, performance asset management and construction services to nearly 10 GWac of utility-scale wind, solar and energy storage assets delivering clean energy to utilities and corporations.
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### Array Technologies (Chandler)

- Array Technologies delivers renewable energy solutions for customers seeking clean energy adoption around the globe. It provides utility-scale solar tracker technology and software to maximize energy production, accelerating the adoption of cost-effective and sustainable energy.
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### AuraSource, Inc. (Chandler)

- AuraSource is a technology-driven company focused on developing and implementing clean energy and mineral processing technologies, specifically on hydrocarbon clean fuel and mineral processing technologies.
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### Diamond Age (Phoenix)

- Diamond Age develops next-generation robotics for 3D home construction to improve efficiency and cost in home building, while reducing manual labor requirements.
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### Exro Technologies (Mesa)

- Exro's new-generation power electronics optimizes energy use by increasing the capabilities of electric motors and batteries.

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### First Solar (Tempe)

- First Solar's worldwide HQ is in Tempe, where it produces solar panels near ASU campus. Its advanced thin film photovoltaic (PV) modules represent the next generation of solar technologies, providing a competitive, high-performance, lower-carbon alternative to conventional crystalline silicon (c-Si) PV panels.
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### Footprint (Gilbert)

- Footprint designs, develops and manufactures plant-based fiber solutions with the goal of eliminating single-use plastics that harm consumers and the planet. It employs more than 100 people in Arizona and 2,000 people worldwide.
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### Gemtek Products (Phoenix)

- Gemtek Products provides high-performance cleaners, solvents, lubricants and specialty chemicals derived from renewable plant-based resources for a broad range of industrial applications such as food process, national defense and transportation.
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### JA Solar (Phoenix)

- JA Solar's first U.S. manufacturing location in Phoenix will produce high-efficiency PV modules for commercial and residential rooftop applications and create more than 600 new jobs in the region.
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### KORE Power (Buckeye)

- KORE Power is a U.S.-based battery cell technology developer and integrated solution manufacturer for the energy storage and e-mobility sectors. The 1.33 million square-foot KOREPlex will employ 1,250 people to support the manufacturing of lithium-ion battery cells.

# Local Innovation

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### LG Energy Solution (Queen Creek)

- LG Energy Solution is a major player in the global battery industry, supplying batteries for electric vehicles, energy storage systems, and other electronics. Its massive \$5.5 billion expansion into Queen Creek will be a catalyst for the region's clean energy ecosystem.
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### Li-Cycle (Gilbert)

- Li-Cycle's third North America lithium-ion battery processing/recycling center, the Arizona Spoke (also known as Commercial Spoke 3), was opened in May 2022. The \$10-million facility has the capability of processing up to 10,000 metric tons of spent batteries and battery manufacturing scrap annually.
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### Lucid Motors (Casa Grande)

- Silicon Valley-based Lucid Motors' manufacturing plant in Casa Grande assembles models including the Lucid Air sedan, named the 2023 World Luxury Car of the Year, and is ramping up to the luxury SUV Gravity in 2024.
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### Meyer Burger (Goodyear)

- Meyer Burger chose Goodyear as its first U.S. location to produce high-performance, sustainably manufactured solar modules. It has been a pioneer in the development and industrialization of innovative technologies that make photovoltaics more cost-effective and efficient.
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### Nikola Motors (Coolidge)

- Nikola, which designs and manufactures battery-electric vehicles and hydrogen fuel cell electric vehicles, is headquartered in Phoenix and has a manufacturing facility in Coolidge. Here, it has begun production and delivery of its first battery-powered, zero-emissions, shorter-range (330 miles per charge) version of the electric semitruck called TRE BEV.

# Local Innovation

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### OnePointOne (Avondale)

- OnePointOne integrates artificial intelligence, automation and plant science to leverage vertical farming technology in growing food, developing medicines, and researching genetics. Its technology enables more plants per acre with less water and energy consumption, less labor and no pesticide or herbicide use.
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### Persefoni (Tempe)

- Persefoni offers a climate management platform that provides tools to measure, track and reduce carbon emissions. The company's software helps users meet regulatory climate disclosure requirements and requests.
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### SOURCE Water (Scottsdale)

- SOURCE Water develops the world's first renewable drinking water system with its Hydropanel. The sustainable water technology uses solar power to extract clean, pollutant-free, reliable drinking water from the air. SOURCE has served residential, commercial, industrial and other clients in more than 50 countries.
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### United Cities (Scottsdale)

- United Cities aims to build sustainable cities and communities. The company uses its Scottsdale-based North American headquarters to create an environment where innovators and investors can collaborate to advance and address sustainability topics and goals.
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### XNRGY (Mesa)

- XNRGY provides cutting-edge sustainable solutions in air treatment systems. It engineers and manufactures HVAC systems focused on low sound and vibration levels, data center efficiency, and power usage effectiveness while supporting LEED certification in a wide range of applications.

# Water Innovation

While the state has maintained a well-managed water supply over the last century, Arizona continues to aggressively invest in its multi-faceted portfolio of water supplies and advanced programs for managing groundwater.

## \$4B

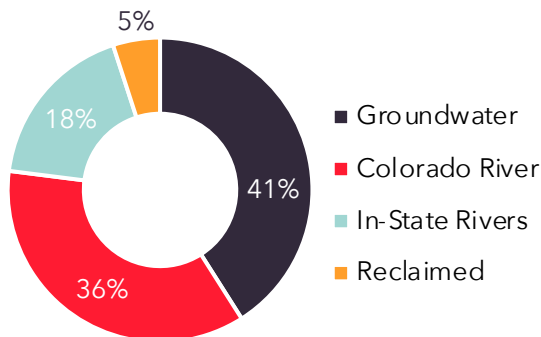
Approved through the Inflation Reduction Bill to compensate farmers who voluntarily reduce their water deliveries under short-term or multi-year agreements.

## \$1.2B

Approved by the legislature as part of former Ariz. Gov. Doug Ducey's water package to boost long-term water supply and conservation efforts.

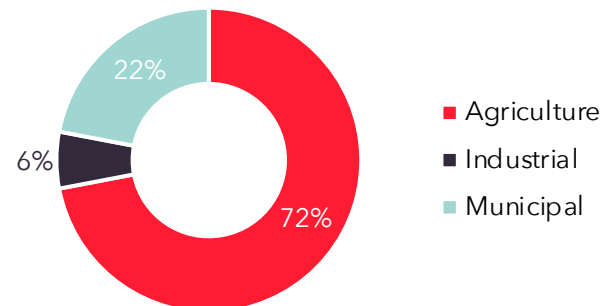
### Water Sources:

Arizona has four primary water sources and relies less on the Colorado River than neighboring states.



### Water Consumption:

Only 6% of water goes to industrial and manufacturing ecosystems.



### Notable Investment:

The Arizona Water Innovation Initiative \$40 million grant supports the development of immediate, actionable and evidence-based solutions to secure the state's future water supply.

Areas of research and development include:

- Coastal water desalination
- Water-efficient agricultural operations
- Water treatment and reuse technology that supports energy production and microchip manufacturing
- New designs for urban water conservation



# Research & Development

Major universities in Greater Phoenix have participated in developing climate, renewable and vertical farming technologies and addressing various challenges.

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## Arizona State University (ASU)

ASU, ranked No. 1 in sustainability in North America and No. 2 in the world, provides research and a skilled workforce toward clean and renewable energy through a variety of innovative lab spaces and learning centers. Highly regarded spaces include the Advanced Technology Innovation Center (ATIC), the Global Institute of Sustainability and Innovation, and the Walton Center for Planetary Health, which is home to programs including the Global Futures Laboratory, College of Global Futures, and the School of Sustainability.

## ASU's Clean Energy Efforts

### Carbon Collect's Mechanical Tree

The first commercial-scale Mechanical Tree removes CO<sub>2</sub> from the atmosphere without the use of blowers or fans.

### Red Rock Solar Project

ASU produces about 53 MW of solar and solar thermal energy with the help of its collaborative project with Arizona Public Service (APS).

### Swette Center for Environmental Biotechnology

The biotech center works with Mesa's wastewater plant to find more effective ways to feed carbon dioxide to microalgae.

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## Science and Technology Centers

With the support of funding from the state of Arizona, ASU has created five Science and Technology Centers (STCs) that provide the expertise, facilities and infrastructure to collaborate with industry and develop future-focused technologies and science-based solutions.

Focuses of the STCs include materials and devices for broad electrification, robotics, automation, cyber and AI product development, human performance technologies, environmental impact reduction, and innovative communications and sensing technologies.

# Research & Development

Major universities in Greater Phoenix have participated in developing climate, renewable and vertical farming technologies and addressing various challenges.

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## Grand Canyon University (GCU)

GCU's Environmental Sustainability Research Group works to solve some of the world's most important problems through interdisciplinary research in environmental monitoring, remediation, sensor development and modeling. The group conducts research on electrochemical detection of environmental contaminants, phytoremediation, airborne volatile organic compound sensing, environmental monitoring in outdoor recreation areas and environmental modeling.

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## Northern Arizona University (NAU)

NAU participates in a wide range of research encompassing the major renewable energy technologies and issues, including wind, solar, synthetic fuels, and other energy frontiers. NAU's Sustainable Energy Laboratory, also known as the "Solar Shack," is an instructional and research facility for the development of sustainable energy technologies like hydrogen, solar and wind.

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## University of Arizona (UA)

UA's Institute for Energy Solutions (IES) provides a platform for cross-college energy science, policy, and technology research and development. IES allows energy experts, industry, NGOs, government and communities to address emerging energy challenges and opportunities. UA also operates the Controlled Environment Agriculture Center (UA-CEAC), which works with technology/industry collaborators to launch a new multi-tier vertical farm (VF) based research, education and outreach facility (UAgFarm).

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# Accelerators & Incubators

Greater Phoenix has a strong support network for climate technology companies. Listed below are some of the region's accelerators and incubators specifically related to clean tech and renewable energy. Many of these spaces offer additional services to help connect, integrate and build new companies in the ecosystem.



## Center for Entrepreneurial Innovation (CEI)

Launched in partnership between GateWay Community College and the Maricopa County Community College District, CEI's incubation program supports the growth of innovators and businesses in areas like climate tech.



## LaunchPoint Technology Accelerator

LaunchPoint, the Mesa Technology Accelerator, is a place for biotech and green energy entrepreneurs and small companies that provides flexible space, business development assistance, and networking and training opportunities.



## LightWorks® Innovation Accelerator

The LightWorks® Innovation Accelerator at Arizona State University helps companies to leverage ASU's research strengths in climate tech and renewables such as recycling CO2 into sustainable fuels and products.



## Resource Innovation and Solutions Network (RISN) Incubator

From Arizona State University and the City of Phoenix, the RISN Incubator is a niche business accelerator for entrepreneurs in the early stages of waste-to-product innovation with the goal of moving a Circular Economy in the Phoenix area forward further and faster.

# Local Initiatives

Local utility companies are shifting their energy generation to clean, renewable sources.

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## Arizona Public Service (APS)

APS, one of the two largest energy providers, plans to end all coal-fired generation by 2031 and has set a bold goal to provide 100% clean, carbon-free electricity using sources like solar and wind to customers by 2050. As of 2022, APS has 1,925 MW of solar, wind, geothermal, biomass and biogas energy in purchased power contracts, which is almost half of its renewable energy portfolio.

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## Salt River Project (SRP)

SRP, one of the two largest energy providers, is expanding its mix of clean, renewable energy sources including biomass, geothermal, solar and wind. It aims to reduce the amount of CO<sub>2</sub> emitted by 65% by 2023 and 90% by 2050. In 2022, SRP prioritized additional renewable resources by finalizing 961 MW of carbon-free power purchase agreements, extending existing battery storage agreements, and initiating the procurement process for 277 MW of new solar.

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## Central Arizona Project (CAP)

Through an extensive channel of canals throughout Arizona, the CAP delivers the state's single largest renewable water supply and serves more than 80% of the state's population, including irrigated farmland.

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# Major Companies Committed to ESG Goals

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## Boeing

- 55% absolute reduction in Scope 1 and 2 GHG by 2030
- Maintain net-zero emissions for Scope 1 and 2



## Intel

- Carbon-neutral computing by 2030
  - Net-zero GHG by 2040
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## Bristol Myers Squibb

- Aligned with UN Sustainable Development Goals
- Net neutrality in Scope 1 and 2 GHG emissions by 2040



## Northrop Grumman

- Net-zero GHG emissions in operations by 2035
  - Investing in low and zero carbon energy solutions
- 



## General Dynamics

- 40% reduction in GHG emissions by 2034



## Medtronic

- Net-zero GHG emissions in Scope 1, 2, and 3 by 2045
  - 50% reductions in emissions intensity by 2025
- 



## Honeywell

- Carbon neutrality by 2035
- Earmark \$50M/year for projects with greatest impact on GHG footprint



## TSMC

- Net-zero emissions by 2050
  - Workshops for GHG inventory with suppliers
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# Local Initiatives

There are a variety of local initiatives operating around the region that address clean technology development, sustainability and water consumption.

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## Arizona Sustainability Alliance

- Arizona Sustainability Alliance promotes sustainable energy through community projects and education. They provide help to Arizona cities by cleaning parks, planting trees, refreshing and repairing existing community garden beds, and more.
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## Arizona Water Innovation Initiative

- This initiative is a collaboration of partners from the federal and local governments, industry, and academia to ensure Arizona can secure its future water supply. Areas of research and development include coastal water desalination, water-efficient agricultural operations, water treatment and reuse technology that supports energy production and microchip manufacturing, and new designs for urban water conservation.
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## Solar Zone at UA Tech Park

- The University of Arizona partnered with Tucson Electric Power (TEP) to establish the Solar Zone at UA Tech Park. This park allows ten companies and organizations to test and demonstrate a variety of solar technologies and systems.
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## Southwest Clean Hydrogen Innovation Network (SHINe)

- SHINe is a regional hydrogen hub focused on production, storage, delivery systems and infrastructure. The partnership consists of more than 40 organizations including clean energy companies, gas producers, nonprofits, and universities in the energy sector in Arizona, the Navajo Nation, and Nevada have teamed up to launch the Southwest Clean Hydrogen Innovation Network.
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# Community Initiatives

## Regional Dedication

Cities in the region have committed to sustainability goals related to carbon-neutral city operations, renewable energy, and an increase in electric vehicle charging stations. The City of Phoenix Climate Action Plan detailed below has a goal of carbon neutrality and zero waste by 2050.

## 2012-18 City of Phoenix Overview



Population



Economy



GHG emissions

- \$30 million in LED Streetlight project replacing 100,000 streetlights
- \$16.9 million in a state-of-the-art compost facility
- \$25 million in a biogas facility
- \$30 million in retrofits underway to reduce energy use in city buildings
- \$530 million in transit since 2016 under the Phoenix Transportation Plan
- 45 miles of cool pavement installed – the most of any city in the world

## Phoenix's 2050 Climate Plan



Transition city operations electrical use to carbon neutral by 2030



Reduce community carbon emissions from buildings, transportation, and waste



Support increased energy efficiency, renewable energy and new electric vehicle charging requirements in building codes



Attract businesses that turn waste into resources



Create a thriving Resource Innovation Campus by 2030



Support and prepare for 280,000 electric vehicles in the city by 2030

# Talent Pipeline

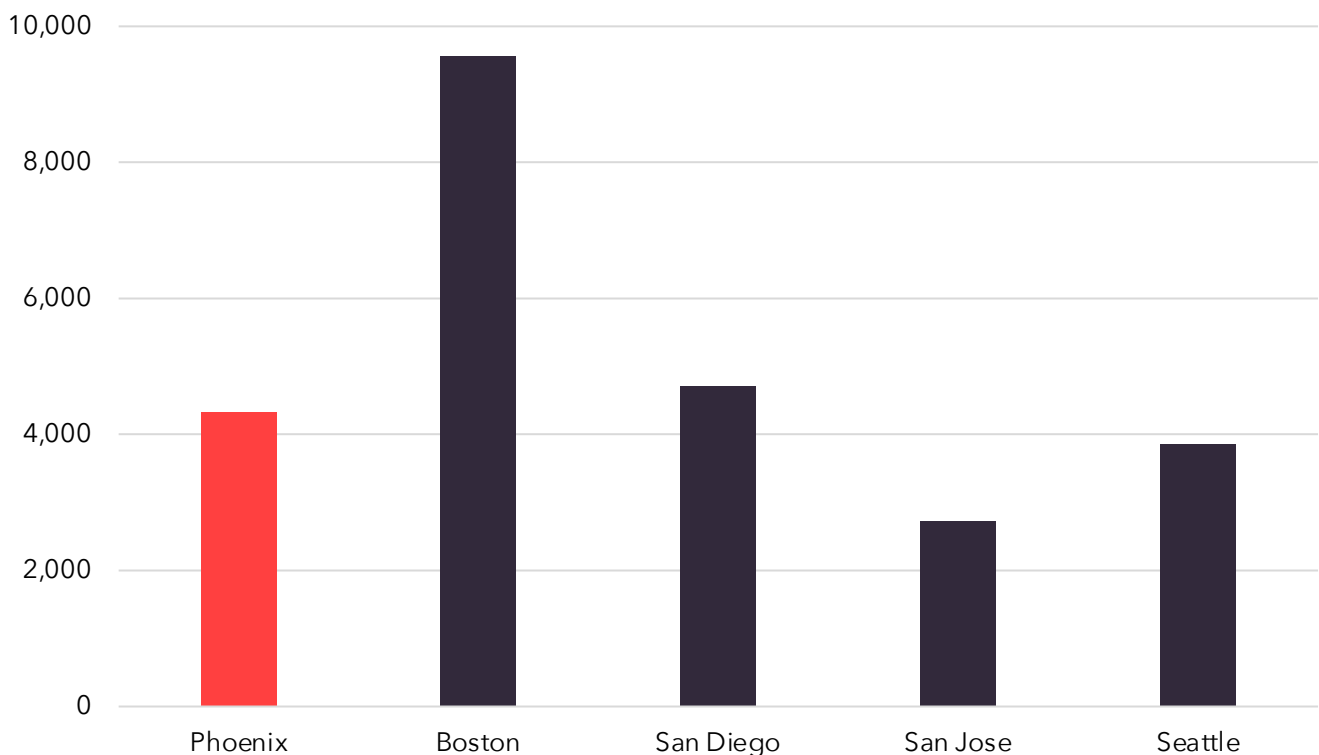
## Greater Phoenix Talent Pipeline

Below are total numbers of non-distance program completions at colleges and universities in Greater Phoenix with degree programs relevant to the climate tech industry. The region produced over 4,300 graduates in these fields during the 2020-21 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.

Certificates	Associate	Bachelor	Master	Doctor
627	148	2,626	766	166

## Competitor Markets' Talent Pipeline

### Total Completions Awarded by Metro





# Talent Pipeline

## Notable Programs in Climate Tech & Renewable Energy-Related Fields

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### Arizona State University



Arizona State University (ASU) has several schools including the School for Engineering of Matter, Transport and Energy and the School of Sustainability that cultivate talent in the fields of climate tech and renewable energy.

- Sustainable Energy (Ph.D.)
  - Modern Energy Production and Sustainable Use (M.S.)
  - Energy and Sustainability (Certificate)
- 

### Northern Arizona University



The Northern Arizona University (NAU) has several programs that educate a workforce in climate tech and renewable energy fields.

- Earth Sciences & Environmental Sustainability (Ph.D.)
  - Environmental Engineering (M.S.)
  - Environmental Sciences & Policy (M.S.)
  - Climate Science and Solutions (Professional master)
- 

### University of Arizona



The University of Arizona (UA) offers a wealth of opportunities in energy-related education.

- Environmental & Energy Economics (Ph.D.)
  - Engineering with an emphasis in Innovation, Sustainability, & Entrepreneurship (M.S.)
  - Sustainable Built Environments (B.S.)
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# Labor Analysis

## Labor Pool

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

Occupation	Phoenix	Boston	San Diego	San Jose	Seattle
General and Operations Managers	58,782	88,486	28,962	22,100	33,873
Software Developers	29,256	54,020	17,569	69,292	81,271
Miscellaneous Assemblers and Fabricators	15,849	16,106	10,491	8,375	11,079
Computer Systems Analysts	9,741	12,312	5,756	9,559	13,273
Inspectors, Testers, Sorters, Samplers, and Weighers	7,739	8,653	5,788	5,962	8,285
Industrial Engineers	5,075	10,067	2,842	3,940	6,052
Machinists	4,524	5,428	2,979	3,018	4,504
Electrical, Electronic, and Electromechanical Assemblers	4,321	8,362	6,016	13,421	5,800
Mechanical Engineers	3,600	6,625	3,789	4,698	5,539
Electrical Engineers	3,122	6,000	3,280	5,021	6,012
Electronics Engineers, Except Computer	2,915	1,707	3,270	5,531	2,271
Software Quality Assurance Analysts and Testers	2,363	4,217	3,275	9,752	9,891
Industrial Production Managers	2,296	4,474	2,596	2,549	2,630
Electrical and Electronic Engineering Technologists and Technicians	1,703	2,521	3,056	4,069	1,621
Computer Programmers	1,636	4,820	4,147	3,918	3,902
Computer Numerically Controlled Tool Operators	1,423	2,450	1,426	1,471	1,145
Helpers--Production Workers	1,239	1,710	2,013	894	1,328
Computer Hardware Engineers	364	2,469	3,944	7,731	1,903
Materials Engineers	243	374	246	576	777
<b>Total</b>	<b>156,189</b>	<b>240,800</b>	<b>111,444</b>	<b>181,875</b>	<b>201,155</b>

# 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 climate tech occupations.

Occupation	Phoenix	Boston	San Diego	San Jose	Seattle
General and Operations Managers	\$80,963	\$126,815	\$101,878	\$153,693	\$127,856
Software Developers	\$103,117	\$132,366	\$130,832	\$165,089	\$152,511
Miscellaneous Assemblers and Fabricators	\$34,978	\$37,743	\$36,192	\$43,240	\$39,185
Computer Systems Analysts	\$99,598	\$104,308	\$101,171	\$131,156	\$110,340
Inspectors, Testers, Sorters, Samplers, and Weighers	\$46,636	\$49,697	\$46,966	\$48,030	\$61,450
Industrial Engineers	\$99,330	\$102,695	\$99,653	\$121,900	\$104,276
Machinists	\$48,829	\$58,845	\$48,173	\$57,742	\$60,402
Electrical, Electronic, and Electromechanical Assemblers	\$38,117	\$48,065	\$37,461	\$45,779	\$46,346
Mechanical Engineers	\$98,850	\$103,544	\$101,670	\$128,789	\$100,098
Electrical Engineers	\$97,028	\$120,079	\$108,909	\$155,562	\$126,476
Electronics Engineers, Except Computer	\$128,712	\$131,393	\$128,336	\$156,037	\$127,931
Software Quality Assurance Analysts and Testers	\$79,981	\$105,621	\$99,507	\$131,892	\$102,666
Industrial Production Managers	\$119,497	\$132,583	\$126,381	\$143,113	\$124,719
Electrical and Electronic Engineering Technologists and Technicians	\$66,233	\$63,776	\$66,498	\$74,924	\$74,378
Computer Programmers	\$78,824	\$104,447	\$124,779	\$154,782	\$114,311
Computer Numerically Controlled Tool Operators	\$46,918	\$49,691	\$47,944	\$54,719	\$63,461
Helpers--Production Workers	\$29,774	\$36,371	\$36,712	\$37,558	\$39,285
Computer Hardware Engineers	\$127,559	\$131,479	\$164,986	\$179,246	\$169,721
Materials Engineers	\$101,873	\$105,433	\$98,218	\$128,864	\$116,813

# Operating Cost Analysis

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

## Assumptions

- \$15,000,000 personal property investment
- 50,000 square-foot Industrial Manufacturing, Leased
- Utilities (per month):
  - Electricity: 75KW, 30,000KWh
  - Water/Wastewater: 3,000cf, 5/8 meter
- 100 jobs (Bureau of Labor Statistics equivalent occupations)

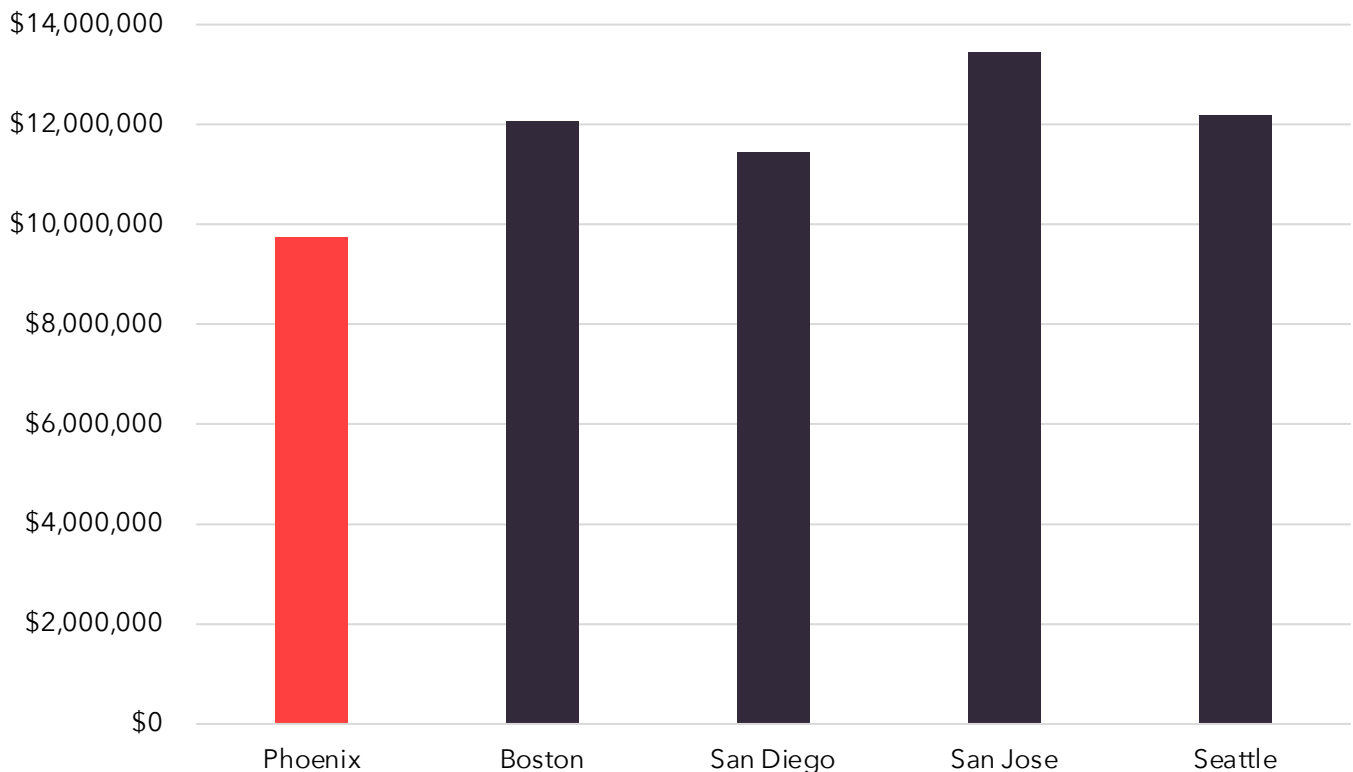
Occupations	Employment
Helpers–Production Workers	15
Team Assemblers	15
Software Developers	12
Inspectors, Testers, Samplers, and Weighers	10
Electronics Engineers, Except Computer	10
Electrical Engineers	10
Mechanical Engineer	10
Electrical and Electronics Engineering Technicians	6
Machinists	5
Computer-Controlled Machine Operators	5
Industrial Production Managers	1
General and Operations Managers	1
<b>Total</b>	<b>100</b>

# Operating Cost Analysis

## Annual Operating Cost

Metro	Payroll	Benefits	Utilities	Real Estate	Property Tax	Total Operating Cost	Index
Phoenix	\$7,567,887	\$1,732,393	\$41,022	\$386,000	\$7,395	\$9,734,697	100.0%
Boston	\$8,885,569	\$2,075,045	\$80,496	\$638,500	\$374,700	\$12,054,310	123.8%
San Diego	\$8,420,883	\$2,030,494	\$86,926	\$726,000	\$175,650	\$11,439,953	117.5%
San Jose	\$9,927,617	\$2,383,084	\$79,730	\$870,000	\$181,500	\$13,441,931	138.1%
Seattle	\$9,108,752	\$2,361,875	\$33,482	\$532,000	\$142,430	\$12,178,539	125.1%

### Total Operating Cost by Metro



# Operating Cost Analysis

## Arizona Tax Environment vs. Competitor Markets

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

Metro	Sales Tax Rate	Corporate Income		Inventory Tax	Unemployment Insurance			Workers comp. (Rate per \$100 payroll)	Property Tax Rate
		Tax Rate	Basis		Rate (As % of payroll)	Wage Base	Max. Weekly Benefit		
Phoenix	8.60%	4.90%	Net income	No	2.00%	\$8,000	\$320	\$0.87	1.97%
Boston	6.25%	8.00%	Net income	Yes	1.45%	\$15,000	\$1,522	\$1.05	2.50%
San Diego	7.75%	8.84%	Net income	No	3.40%	\$7,000	\$450	\$2.26	1.17%
San Jose	9.38%	8.84%	Net income	No	3.40%	\$7,000	\$450	\$2.26	1.21%
Seattle	10.25%	0.48%	Gross receipts	No	1.00%	\$67,600	\$999	\$1.31	0.87%

Source: Applied Economics Metrocomp Tool; Tax Foundation, 2023; Various state revenue departments, 2023; Oregon Dept. of Consumer and Business Services, "Workers' Comp. Premium Rate Ranking", 2022; U.S. DOL, "Significant Provisions of State Unemployment Insurance Laws", Jan. 2023.



# Statutory Incentives

## Statutory Incentives

Even with the highly competitive tax environment in Greater Phoenix and Arizona, there are several tax incentives that can be utilized to mitigate operating costs. Please note that this is not a comprehensive list of all incentives available in the state of Arizona. Additionally, it should be noted that this is only a guide for potential incentives. Actual incentives will depend on project parameters and varying program qualifications and requirements as determined by the Arizona Commerce Authority.

## Quality Jobs Tax Credit

The Quality Jobs Tax Credit program awards \$9,000 of tax credits over three years for qualifying companies. The chart below highlights minimum qualifying capital expenditure and wage rate in an urban area, while the texts describe additional program parameters.

# \$9K

\$9,000 corporate income tax credits per job (\$3,000/employee/year)

# 10K

Capped at 10,000 jobs per year

# 65%

Employer must offer to pay at least 65% of employee health insurance premium

### Urban

Min. New Jobs	County Median Wage	Maricopa	Min. Capex
25	100%	\$45,927	\$5,000,000
25	125%	\$57,409	\$2,500,000
25	150%	\$68,891	\$1,000,000
25	200%	\$91,854	\$500,000

### Rural

Min. New Jobs	County Median Wage	Pinal	Min. Capex
5	100%	\$38,712	\$1,000,000
5	125%	\$48,390	\$500,000
5	150%	\$58,068	\$100,000

# Statutory Incentives

## Qualified Facilities Refundable Tax Credit

- Targets manufacturing facilities, including those focusing on research and development or headquarters locations
- Offers refundable income tax credit equal to the lesser of:
  - 10% of the qualifying capital investment, or
  - \$20,000 per net new full-time employment position at the facility, or
  - \$30,000,000 per taxpayer
- Requires annual wages of greater than 125% of the state median wage for production occupations in urban areas (\$49,274); 100% in rural areas (\$39,419)
- At least 65% of benefits package covered by employer
- Minimum investment of \$250,000

## Foreign Trade Zones (FTZ)

- Designated areas where imports can be stored without full customs formalities
- In Arizona, property is reclassified from Class 1 to Class 6, lowering assessment ratio from 17% to 5%
- Property tax savings of up to 72.9%

## Personal Property Depreciation (HB2822)

This legislation sets the full cash value of business and agricultural personal property initially classified during or after Tax Year 2022 to 2.5% of the property's acquisition cost. Properties that can benefit from the new legislation include shopping centers, golf courses, manufacturers, and other personal property devoted to commercial or industrial use that is not classified elsewhere, agricultural property, and personal property in a FTZ or MRZ.

## R&D Tax Credit

A nonrefundable tax credit equal to 24% of the first \$2.5M in qualifying expenses and 15% above that amount for years 2011-2030. After that the credit is equal to 20% of the first \$2.5M and 11% above that.

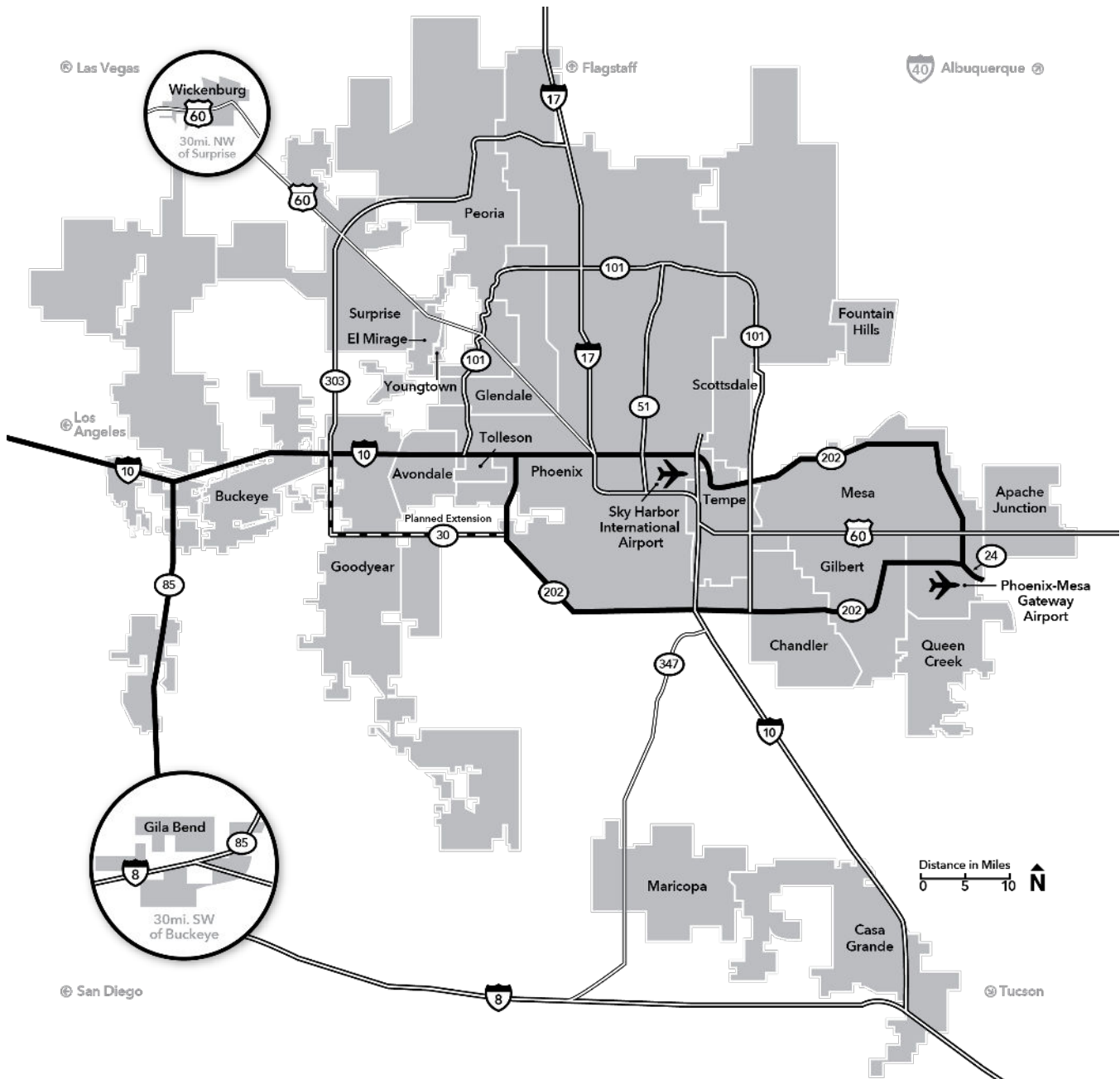
- Qualifying small companies (fewer than 150 employees) can apply to make their credit refundable (75% of nonrefundable value, up to \$100,000 per year)
- An additional credit of 10% of the amount of basic research payments paid to one or more state universities for the non-refundable program



# Key Infrastructure

## Greater Phoenix Regional Highway Map

The map below displays existing and planned highway infrastructure in Greater Phoenix. The region's highways are well-planned and provide easy access to all the major submarkets in the region. In addition, proximity to Interstates 8 and 40 mean that access to California markets is seamless.



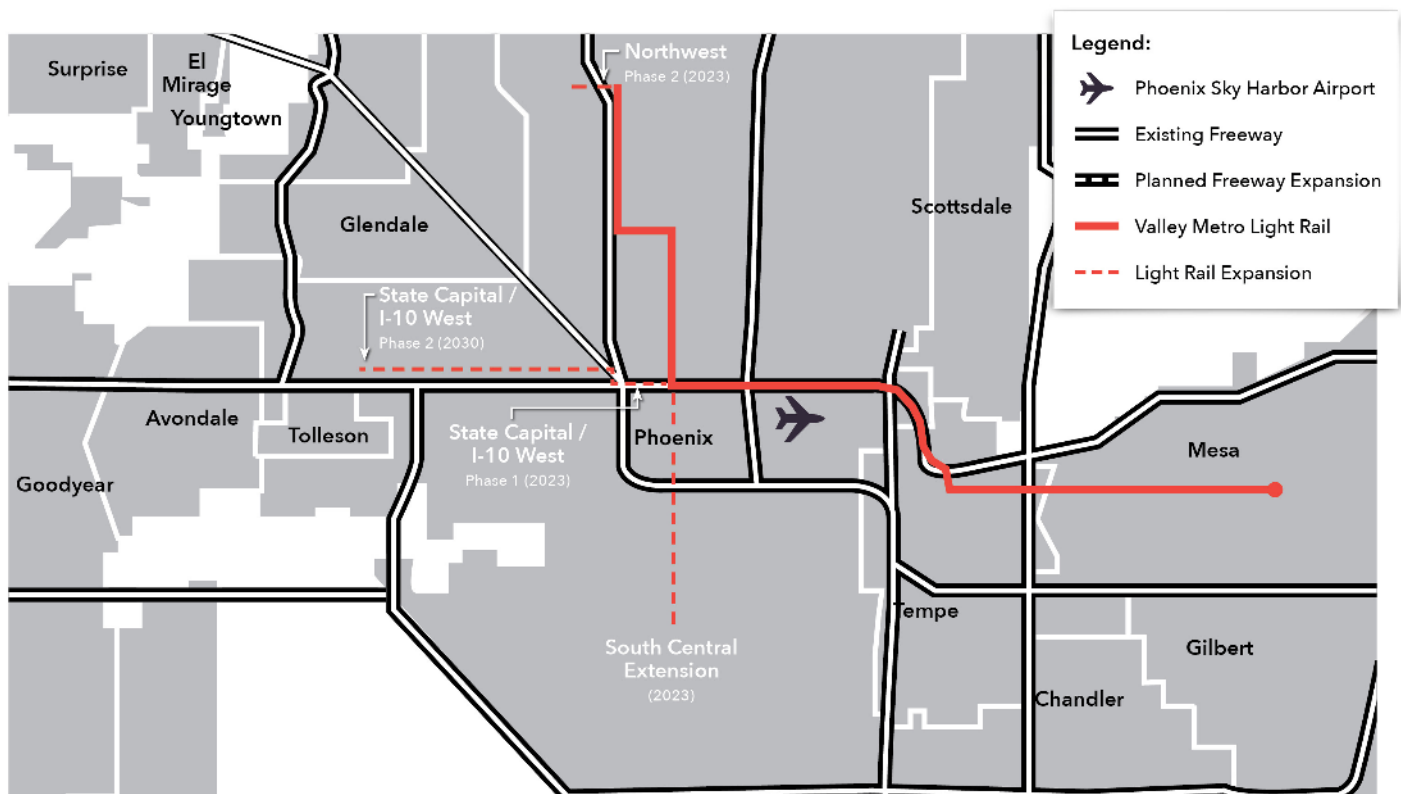
# Key Infrastructure

## Commute Times & Light Rail

Companies that move to the region comment on the access to workforce and the proximity to customers. An important aspect of this is the region's commute times, which are shorter than competitor markets including Boston and Seattle, that enable employees to spend more time enjoying their lifestyle and less time in traffic. The region has a modern freeway system and an expanding light rail that ensures a robust talent supply no matter where a business is located.

Metro	Average Commute Times	Yearly Commute	Index
Phoenix	25.6 minutes	9.2 days	<b>100.0%</b>
Boston	28.4 minutes	10.3 days	<b>110.9%</b>
San Diego	24.5 minutes	8.8 days	<b>95.7%</b>
San Jose	24.3 minutes	8.8 days	<b>94.9%</b>
Seattle	28.5 minutes	10.3 days	<b>111.3%</b>

Source: ACS 2021 1-Year Estimates



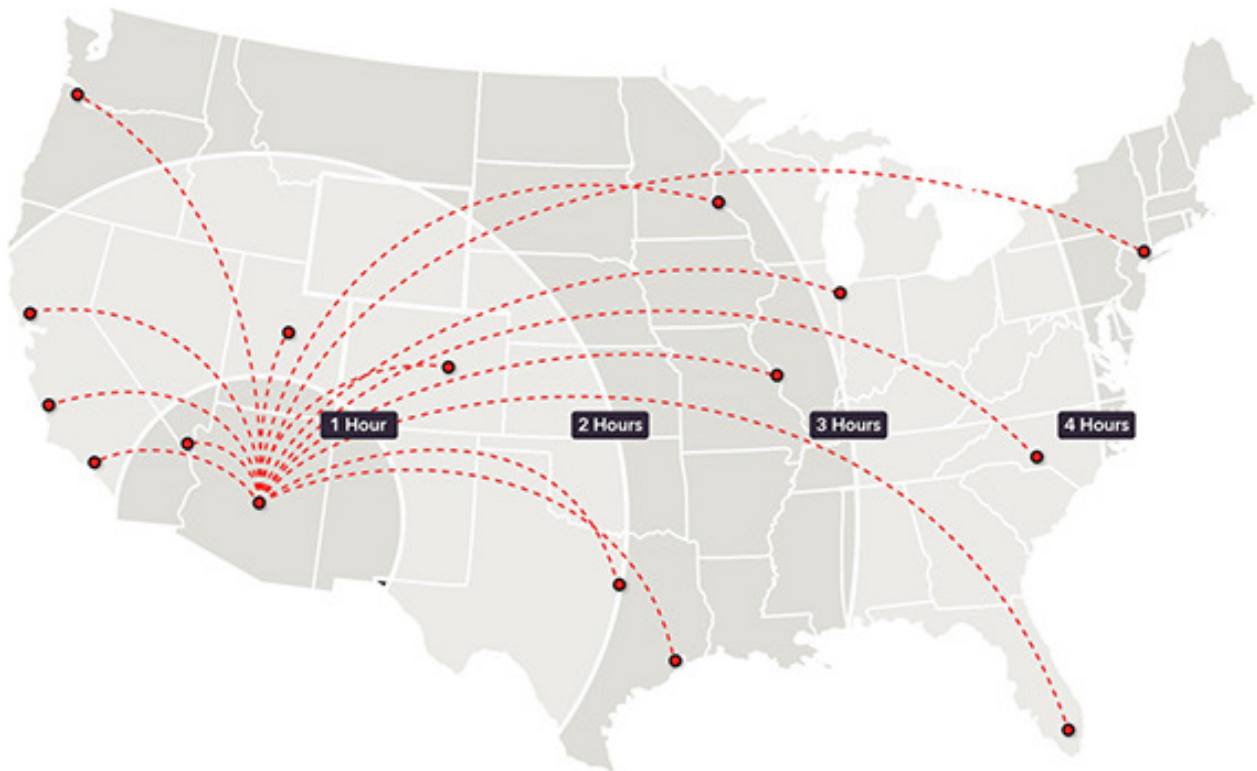
# Key Infrastructure

## Greater Phoenix Airport Connectivity

Greater Phoenix is home to two commercial airports: Sky Harbor International Airport and Phoenix-Mesa Gateway International Airport. Sky Harbor, the larger of the two, is consistently rated among the best international airports in the United States.

### Major carriers from Sky Harbor include:

- Air Canada
- Alaska Airlines
- American Airlines
- Boutique Air
- British Airways
- Condor Airlines
- Delta Airlines
- DHL (Freight)
- FedEx (Freight)
- Frontier Airlines
- Hawaiian Airlines
- JetBlue
- Southwest Airlines
- Spirit Airlines
- Sun Country Airlines
- United Airlines
- UPS (Freight)
- Volaris
- WestJet



### Phoenix Sky Harbor International Airport:

- 44 million passengers in 2022
- 418,856 landings and takeoffs in 2021
- Over 1,000 tons of cargo handled daily

### Sky Harbor offers nonstop flights to 24 international locations, including:

- Frankfurt
- London
- Mexico City
- Montreal
- Toronto
- Vancouver

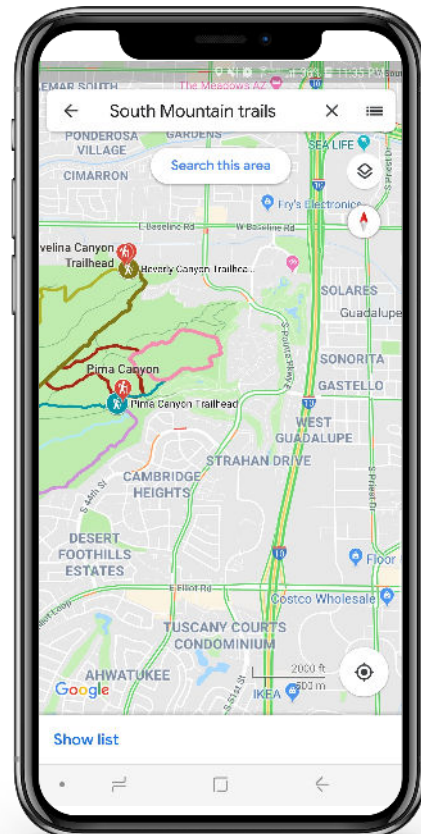


CLIMATE TECH

# Quality of Life

## Parks & Recreation

Greater Phoenix is home to hundreds of parks and hundreds of miles of hiking, biking and walking trails. Greater Phoenix has 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.



# Quality of Life

## Cost of Living

Although the cost of living in Greater Phoenix has increased in recent years, it is much less expensive than Massachusetts and California where major climate tech developers are located.

Metro	Groceries	Housing	Utilities	Transportation	Health Care	Index	Local Index
Phoenix	103.1	122.7	98.8	102.8	92.2	103.8	100.0%
Boston	105.0	219.5	126.1	127.5	112.6	148.4	143.0%
San Diego	115.0	215.6	105.4	130.0	105.9	142.5	137.3%
San Jose*	127.8	286.6	132.3	131.5	123.5	169.9	163.7%
Seattle	117.0	210.1	102.0	125.6	134.5	144.5	139.2%

\*San Francisco cost of living data was used for San Jose.

Source: C2ER 2023 Q1 Cost of Living Index

## Housing

Compared to other major markets, Greater Phoenix housing remains affordable. The median home value in the region is less expensive than most competing markets.

Metro	Median Home Value	Index	Median Rent	Index
Phoenix	\$435,984	100.0%	\$1,918	100.0%
Boston	\$630,100	144.5%	\$2,978	155.3%
San Diego	\$850,397	195.1%	\$3,040	158.5%
San Jose	\$1,438,238	329.9%	\$3,289	171.5%
Seattle	\$691,948	158.7%	\$2,223	115.9%

Source: Zillow Home Value Index April 2023; Zillow Observed Rent Index April 2023

## Personal Income Tax

Greater Phoenix has the lowest personal income tax of those states that have a personal income tax across all income levels.

State	\$50,000	\$150,000	\$270,000	\$500,000	\$1 Million or More
Arizona	2.5%				
California	8.00%	9.30%	9.30%	11.30%	13.30%
Massachusetts	5.00%				9.00%
Washington	N/A				

Source: Tax Foundation 2023. Tax rates are for single filers.

# Rankings & Recognition

## #1

Phoenix was ranked #1 by population growth from 2010 to 2020 among all US cities

## #1

Arizona State University named America's Most Innovative Schools eight years in a row by U.S. News & World Report

## #2

Arizona is ranked #2 by U.S. News and World Report in power grid reliability

## #3

Sky Harbor International Airport ranked 3<sup>rd</sup> in the Wall Street Journal's "The Best of the Biggest Airports"

## #4

Arizona was ranked the No. 4 place to do business in 2022 by *Chief Executive*

## #7

In 2023, Arizona was ranked as the seventh-best state to start a business by WalletHub

## Top 20

In 2022, Scottsdale was listed in the top 20 happiest cities in the nation

## Top Tier

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

# Greater Phoenix Greater Together