INDUSTRY ATTRACTION STRATEGY AND ACTIONS

UNIVERSITY OF CALIFORNIA, RIVERSIDE

DECEMBER 2017

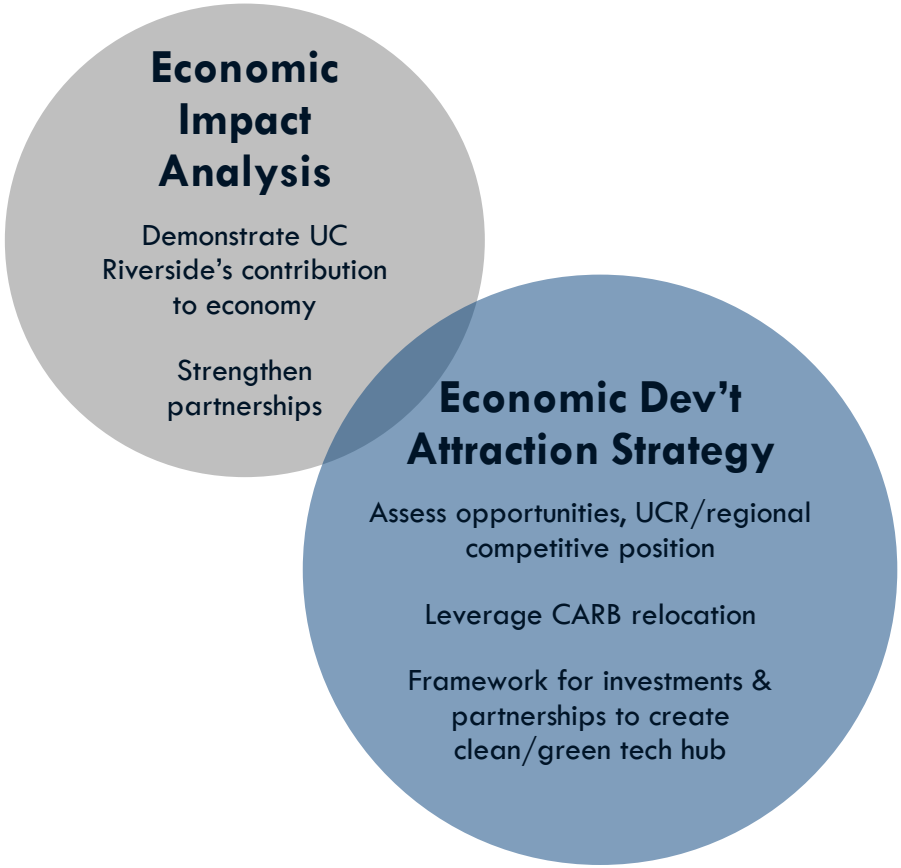
HR&A Analyze. Advise. Act.

PROJECT SCOPE | The University of California, Riverside ("UCR" or the "University") engaged HR&A to prepare an economic impact analysis and an industry attraction strategy.

As noted in the University of California, Riverside's ("UC Riverside," "UCR" or "University") Request for Proposals, the 2016 decision by the California Air Resources Board ("CARB") to relocate its Southern California headquarters to Riverside has created a unique opportunity to attract innovative industries and firms that can leverage the combined strengths of the University and CARB. The relocation of CARB to Riverside was the result of extensive collaboration between UCR and many other community partners.

HR&A's two-phase scope of work is intended to support UCR's effort to grow an innovation ecosystem that builds on the above strengths. HR&A first quantified the **economic impacts of UCR** to the region and State of California to support the communication of UCR's extensive impact; these are described separately in HR&A's October 2017 Economic Impact Report. HR&A then developed an **industry attraction strategy**, which comprises this report, delineating actions that leverage the key strengths of UCR and the region to support the objectives noted above.

HR&A's Two Phases of Work



STRATEGY REPORT OVERVIEW | This strategy builds on stakeholder interviews, case study research and a review of Riverside's socioeconomic and real estate context.

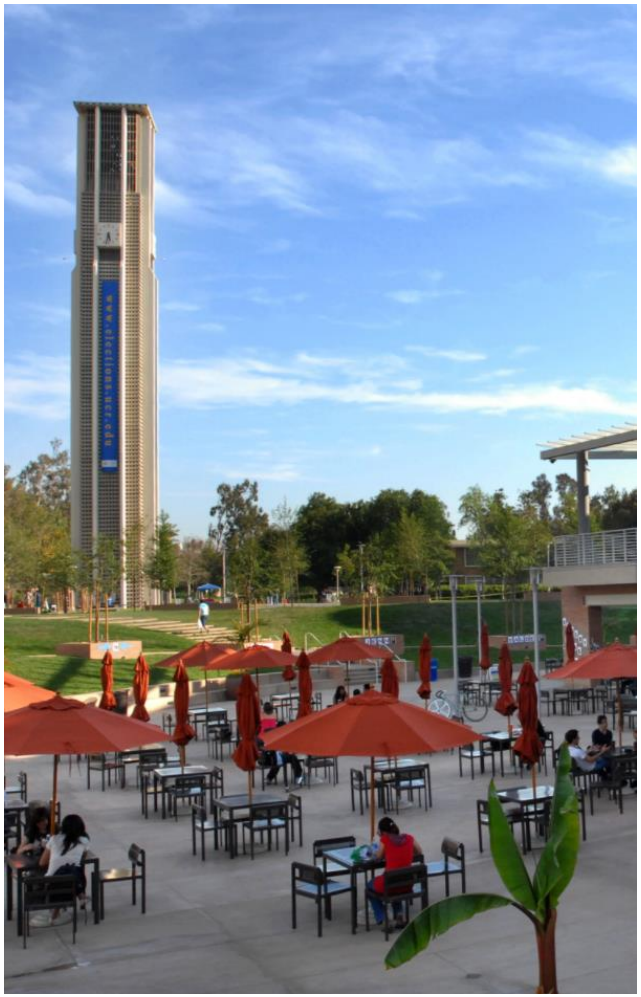
The report which follows is comprised of three initial chapters which inform a final "strategy" chapter. The first two chapters include:

- **University Strengths:** Recognizing that the University's research strengths are a key component of industry attraction, HR&A interviewed University leadership and faculty, in addition to other community leaders, to prepare a set of observed strengths as relate to "clean and green" industries. HR&A then developed a set of sample "value propositions" for relevant target industries that could build on the relocation of CARB to Riverside.

  The statements that HR&A developed should be refined and regularly updated with the latest data and trends, and value propositions should be developed for UCR's many other research strengths.

- **Riverside Strengths:** Through sociodemographic, economic and real estate market research, HR&A identified regional strengths (and weaknesses) which will be important to firms which might consider partnering with UCR or relocating to Riverside.

  UCR and its partners should be familiar with these regional strengths, communicate them to industry, and work to resolve weaknesses that are barriers to industry attraction.



STRATEGY REPORT OVERVIEW | This strategy builds on stakeholder interviews, case study research and a review of Riverside's socioeconomic and real estate context.

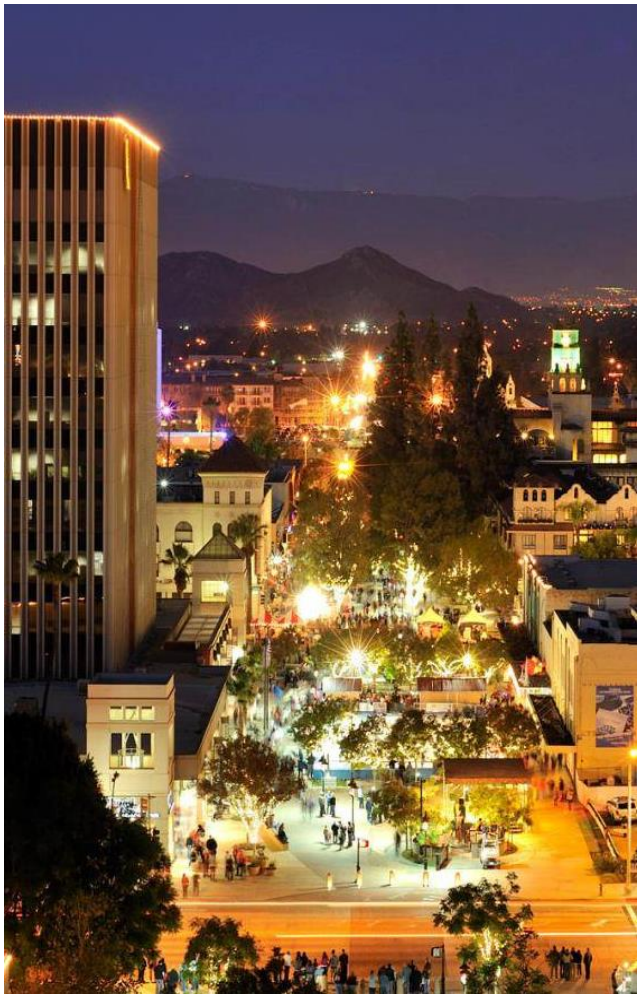
The next two chapters include:

- **Case Studies:** HR&A developed a set of case studies of University-led innovation ecosystems to identify relevant lessons and best practices for UCR.

  The lessons learned from successful University-led industry attraction efforts should be used to inform the implementation of HR&A's strategy framework. These case studies also demonstrate the ways collaboration between anchor institutions and local municipalities, for-profit and nonprofit organizations can catalyze industry attraction, innovation and economic development.

- **Strategy and Actions:** HR&A developed a strategy framework to guide UCR's industry attraction efforts, informed by our assessment of the strengths, needs and opportunities of UCR and the Riverside region.

  The University should develop consensus around recommendations and initiate efforts to drive economic development within the region, including working to attract industries that have synergies with UCR's research strengths.



KEY FINDINGS: UNIVERSITY AND RIVERSIDE STRENGTHS | Through the synergy of their strengths, the University and greater Riverside offer a compelling value proposition to "clean and green" industries.

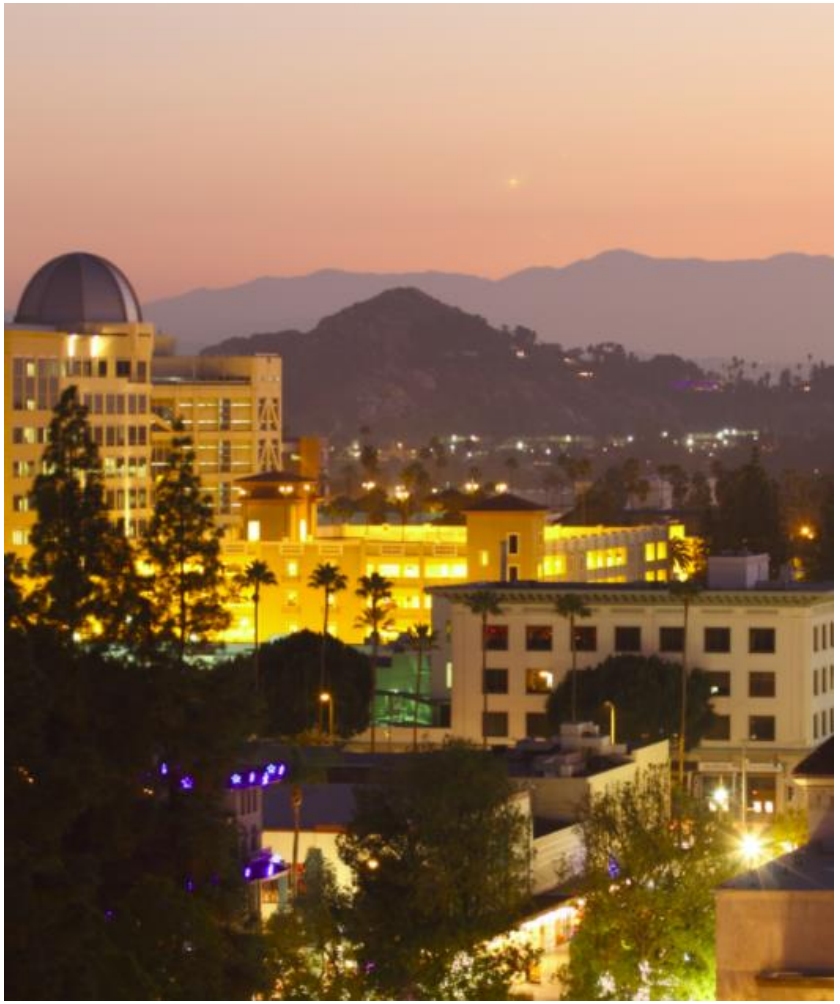
While the University and greater Riverside have many strengths, the focus of this effort is on those strengths that position UCR well to attract "clean and green" industries which have synergies with CARB. The key strengths leveraged by this strategy include:

University Strengths:

- A growing university with an increasingly active presence in the community
- A commitment to developing partnerships with industry and fostering an ecosystem for innovation
- Programmatic strengths in all aspects of "sustainability," especially at the intersection of agriculture, technology/engineering, clean air, water resources, and transportation

Riverside Strengths:

- An increasingly dynamic downtown and high quality of life
- A rapidly growing and talented population base
- Relatively affordable residential and commercial real estate

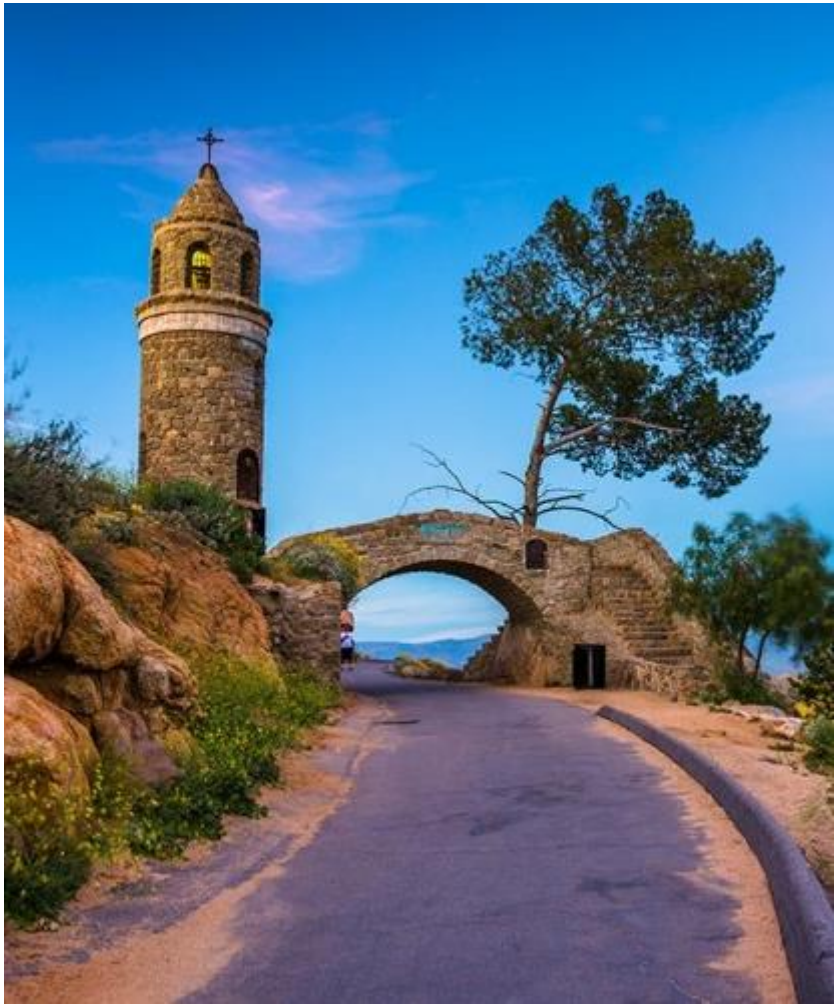


KEY FINDINGS: REGIONAL BARRIERS TO SUCCESS | The Greater Riverside area is growing rapidly due to its low cost of living and growing set of amenities, but more work needs to be done to support industry attraction.

Attracting new industries to Riverside, including fostering innovation and entrepreneurship, will require a range of initiatives to expand the region's physical infrastructure and amenities. This strategy addresses several key barriers to success.

Riverside Barriers to Success:

- Greater Riverside **lacks a range of affordable and flexible real estate options** that are important for start-ups to grow.
- Riverside has **fewer amenities,** including educational, shopping, dining options, that attract highly-skilled workers and industries, as compared to coastal counties.
- A **negative stigma** of Riverside endures outside of the Inland Empire, despite many positive changes over the past several decades.
- Riverside **lacks a cadre of business leaders in key innovation-related industries** and an ecosystem for start-ups that offers mentorship and financial resources.



STRATEGY COMPONENTS | Success for UC Riverside will require internal coordination, formalized regional collaboration, and physical infrastructure.

The strategy framework developed by HR&A includes several overarching goals and specific action items to strengthen regional partnerships and ultimately grow the scale and impact of industry partnerships. These include:

Internally **re-imagining** the University's message to industry:

- Refining strengths & value propositions
- Expanding marketing efforts
- Growing internal resources for entrepreneurship and industry attraction

Simultaneously, **re-connecting** externally to ensure that momentum is sustained and mission-aligned:

- Directly engaging with existing industry partners
- Formalizing partnerships with regional entities
- Sharing and developing compelling resources for industry attraction

Ultimately, collaborating to **re-develop** and create an "identifiable place" for innovation:

- Expanding incubation space
- Initiating efforts to develop a critical mass of innovation
- Leveraging University resources to support implementation

IDENTIFYING STRENGTHS | HR&A's understanding of UCR's unique value propositions to industry was informed by a series of stakeholder workshops.

To inform an industry attraction strategy, HR&A conducted a series of stakeholder workshops with faculty, administration and other community partners over the course of two days on June 7th and 8th, 2017, focused on "clean and green" research with relevance to CARB's pending relocation to Riverside. Through these conversations, it became clear that **UCR already offers a tangible value proposition** to "clean and green" industries. However, the conversations also identified **gaps that the University and Riverside community must address** in order to become more compelling to the types of businesses which the University and its peers would like to see located in Riverside.

The feedback provided during these conversations informed a set of matrices that identify University and community Strengths, Weaknesses, Opportunities, and Threats (**"SWOT"**), which are included in the appendix to this document. This SWOT analysis, which should be regularly updated by the University, is intended to set a baseline of existing conditions that industry attraction efforts can leverage and/or mitigate.

Stakeholder Workshop Participants	
General University	Michael Pazzani, Rebeccah Goldware, Jeff Kraus, Randall Black, Michael Allen
Entrepreneurship	Rosibel Ochoa
Information Technology	Vassilis Tsotras, Thomas Girke, Ahmed Eldawy, Karthick Ramakrishnan
Health	Michael Nduati, David Lo, Xiaoping Hu, Greer Sullivan, Juliann Allison
Transportation and Intelligent Systems	Amit Roy Chowdhury, Nicole Davis
Agriculture and Water	Kathryn Uhrich, Norm Ellstrand, Phillippe Rolshausen, Ken Gruys, Ken Baerenklau, Sharon Walker, David Jassby, Michael Anderson
Clean and Green Technologies	Marilyn Fogel, Charles Wyman, Charles Cai, Arun Raju, Matt Allen
Riverside Region and Community	Cindy Roth, Danielle Wheeler, Rafael Guzman, Sherry Shimshock, Moises Lopez, Carrie Harmon, Rob Field, Rebeccah Goldware

VALUE PROPOSITION | The University must internally assess its programmatic and other strengths to identify UCR's "value proposition" to industry, and clearly message these strengths using key metrics.

The following pages are intended to demonstrate the type of metrics that may be compelling to articulate UCR's value to industry. A set of sample value proposition statements, included herein, are based on HR&A's understanding of "clean and green" research and academic strengths as conveyed during stakeholder meetings, and require refinement. Ultimately, **statements should be developed for all departments and University focus areas,** and agreed upon by University leadership and faculty, as well as local economic development partners, all of whom should be able to communicate these statements to potential industry partners.

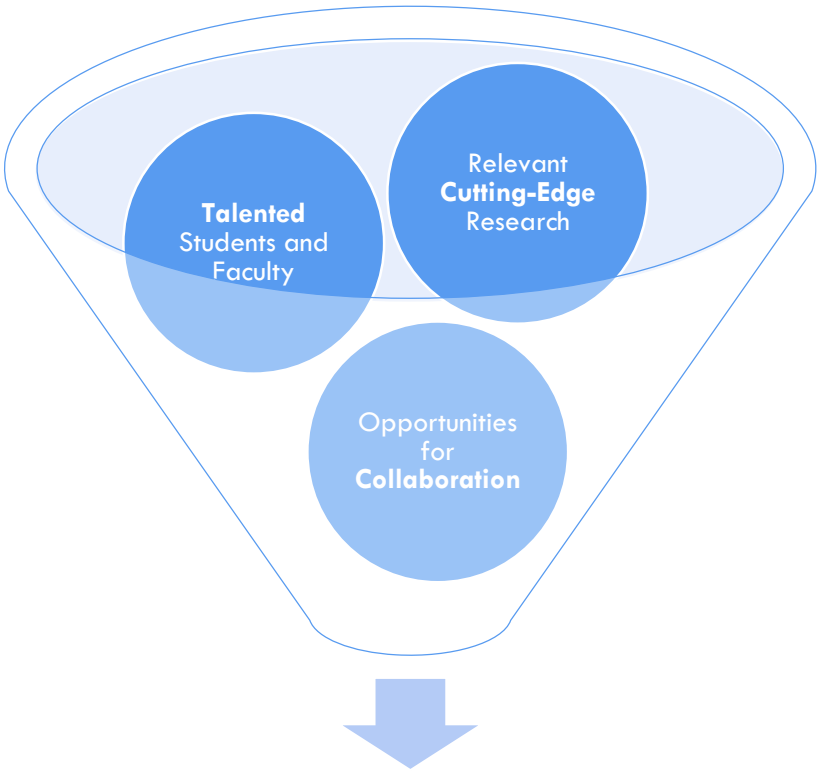
Similarly, the University should identify **key areas that need to be addressed** in order to enhance the University's attractiveness to target industry sectors. Several gaps observed by HR&A are addressed in part through the strategies and actions at the end of this document. **Conveying a compelling value proposition will be critical to engaging industry**, a process which is also described in the strategies and actions section of this document.

CLEAN AND GREEN SAMPLE VALUE PROPOSITIONS | UCR needs to clearly articulate its strengths to achieve its economic development potential, and work to minimize weaknesses.

The stakeholder interviews and SWOT analyses demonstrate that **UCR already offers a tangible value proposition** to industry in several areas of programmatic strength. For purposes of this Strategy, which seeks to capitalize on the decision of the **California Air Resources Board** to move its facility to to Riverside, HR&A developed a set of sample value propositions with UCR strengths that are relevant to attracting "clean and green" industries:

1. **"Sustainability"** broadly, especially as it pertains to:
   - **Clean Air**
   - **Green Energy**
   - **Synergies between Technology/Engineering, Agriculture and the Environment**
2. **Transportation and Intelligent Systems**
3. **Healthcare**

Sustainability clearly came through in the workshops as an overarching strength; **transportation technology** and **information technology/computer science** broadly are also notable strengths which are likely to be well-positioned when they intersect with sustainability.



University Value Proposition (Related to Target Industries)

UNIVERSITY VALUE PROPOSITION:
"Sustainability" – Clean Air

Talent: With **dozens of faculty** and **tens of millions of dollars** in active contracts related to air quality research, UCR is a leader in developing solutions for cleaner air. In addition to CE-CERT, which is a leader in emissions monitoring and emissions-reduction technologies, a new multi-disciplinary initiative is studying the impact of air quality on health.

Collaboration: These strengths have successfully attracted a **California Air Resources Board** facility to Riverside dedicated to engine emissions testing and research. The facility, with 450 staff members, will open in 2020 and provide many opportunities for collaboration. In addition to **laboratories and tools available for use by private industry,** the City of Riverside offers **affordable space** and local government willingness to facilitate R&D needs.

Enhancing the Value Proposition

- Promotion of interdisciplinary strengths around sustainability could help differentiate UCR.
- The University should strategically invest in resources that can be shared with industry, including wet lab benches and similar facilities.

CE-CERT's Mobile Emissions Laboratory is part of its cadre of top-of-the-line equipment for air quality and emissions monitoring and research.

Example Companies*	
Large, Industry-Leading Companies	AVL (*Engineering*) BASF (*Chemicals*)
Established Small- to Medium-Sized Enterprises	Cal. Analytical Instruments (*Emissions Testing Equipment*) Fuel Tech, Inc. (*Emissions Technology*)
Start-Ups	Awair/Bitfinder (*Air Quality Monitoring*) Aclima (*Environmental Sensor Networks*)

** These companies are intended to illustrate the industry sector that this value proposition could target. As described later, key attraction targets are those companies or entrepreneurs which already have a relationship with the University or its researchers.*

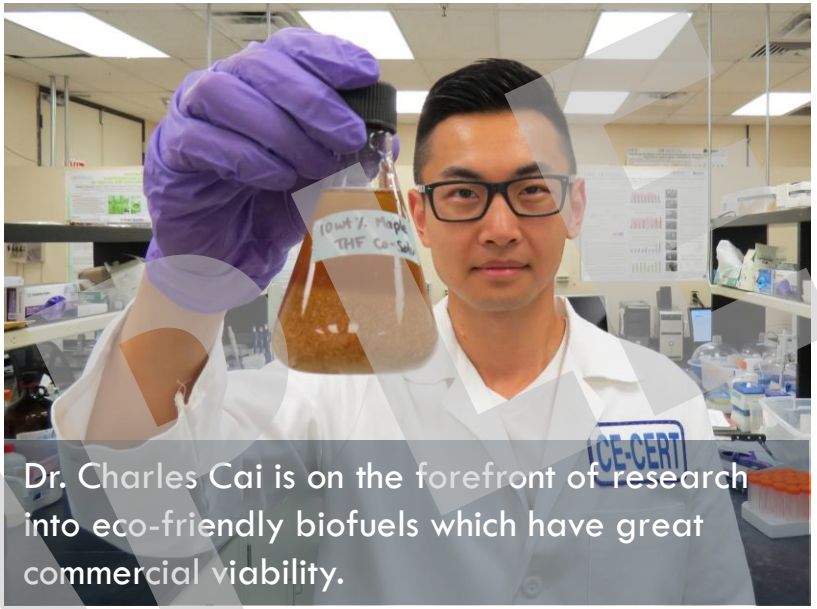
UNIVERSITY VALUE PROPOSITION:
"Sustainability" – Green Energy

Cutting-Edge: At UCR's CE-CERT, more than two dozen faculty are conducting applied research in renewable energy and fuels with high potential for **commercialization**; several are even launching start-ups and patenting/licensing their work. UCR's new interdisciplinary global energy center has the potential to capitalize on its expertise in **renewable energy solutions**.

Collaboration: CE-CERT offers a dozen state of the art **"living laboratories" for use by industry** and its **permitted facilities** are an ideal place to test technologies; the center often works as a contractor for testing technologies. UCR also has over **ten megawatts of renewable energy storage** integrated into systems across the state.

Enhancing the Value Proposition

- The University and its partners should continue their efforts to unlock access to start-up capital and networks of innovators who are experienced with the commercialization process.
- A streamlined City permitting process would support industry's ability to conduct green energy research.



Dr. Charles Cai is on the forefront of research into eco-friendly biofuels which have great commercial viability.

Example Companies	
Major Industry-Leading Companies	Siemens (*Conglomerate with major green energy division*) Tesla (*Autos and green energy storage*)
Established Small- to Medium-Sized Enterprises	All Power Labs (*Green energy supplier*) Fuel Cell Energy (*Electric services*) Achates Power (*Efficient engines*)
Start-Ups	Totem (*Energy and Smart Utilities*)

UNIVERSITY VALUE PROPOSITION:
"Sustainability" – Technology, Agriculture and the Environment

Cutting-Edge: With over **$70 million** in annual contracts and grants and the **#2 entomology department** in the world, UCR's College of Natural and Agricultural Sciences offers critical expertise to industry, especially as it relates to **growing food in a hostile and changing environment.**

Collaboration: UCR researchers are working actively with **industry and local governments** to develop solutions for pressing pest-related issues, as well as **water management** during droughts. Increasingly, UCR faculty are working together across disciplines to **leverage technology and "big data" to optimize agricultural processes** and to improve local food systems.

UCR's R'Garden is a living lab that is open to students, faculty, staff and community members to understand sustainable food systems.

Enhancing the Value Proposition

- The University should work with faculty to develop a culture of patents and commercialization that exists at other top-tier research universities.
- UCR and its partners should communicate CNAS's expertise with farmers in the Central Valley, who often look to UC Davis and not UCR.

Example Companies	
Major Industry-Leading Companies	IBM (*Precision Agriculture*) Syngenta (*Agribusiness*)
Established Small- to Medium-Sized Enterprises	Agribotix (*Drones for agriculture*) Blue River Technology (*Smart agriculture equipment*) AquaSpy (*Soil Monitoring*)
Start-Ups	AgEagle (*Drones for agriculture*)

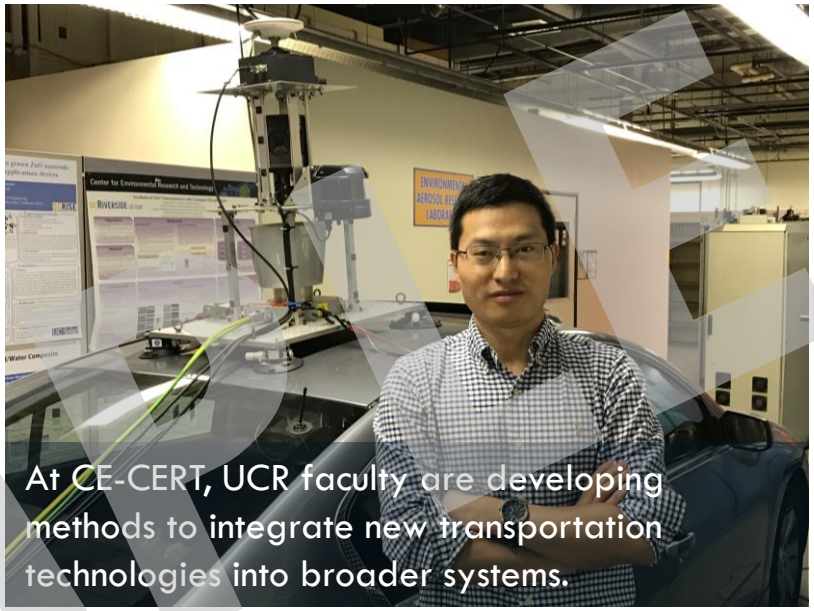
UNIVERSITY VALUE PROPOSITION:
Transportation and Intelligent Systems

Cutting-Edge: The University is a leader in the integration of transportation systems and new technologies related to **automatized navigation and environmental monitoring.** UCR's intelligent systems research is also critical to the development of **drone technology for precision agriculture** as well as for **cybersecurity.**

Collaboration: The relevance of UCR's intellectual property and research have significant commercial viability and include **autonomous vehicle technology, renewable fuels** and technology to **minimize fuel consumption and air pollution.**

Enhancing the Value Proposition

- A streamlined system for connecting industry with appropriate faculty is necessary to support collaboration.
- Most universities undertake similar intelligent systems research; UCR needs to take advantage of the intersection with its key areas of expertise, particularly around sustainability.



At CE-CERT, UCR faculty are developing methods to integrate new transportation technologies into broader systems.

Example Companies	
Major Industry-Leading Companies	ABB (*Industrial tech. and transportation*) Jacobs Engineering (*Eng. consultant*) BYD (*Green transportation technology*)
Established Small- to Medium-Sized Enterprises	EVVOS (*Sensor data acquisition*)
Start-Ups	Zoox (*Autonomous vehicles*)

UNIVERSITY VALUE PROPOSITION:
Healthcare

Cutting-Edge: UCR's School of Medicine and UCR Health have expanded rapidly over the past 5 years and are taking on critical health issues for the Inland Empire's rapidly-growing population. UCR Health is already undertaking **translational, industry-sponsored research.** This is in addition to **interdisciplinary research** across the University at the intersection of health and UCR's other strengths, including air quality and insect-related illnesses.

Collaboration: A **new electronic medical records platform** will allow the University to use big data to partner with industry to research pressing health issues.

Enhancing the Value Proposition

- The public- or private-sector development of a spectrum of medical facilities, including diagnostic testing laboratories and tertiary/quaternary care facilities, will help attract additional healthcare partners to Riverside.
- Lack of capital and an overall ecosystem means that promising start-ups must leave the region.

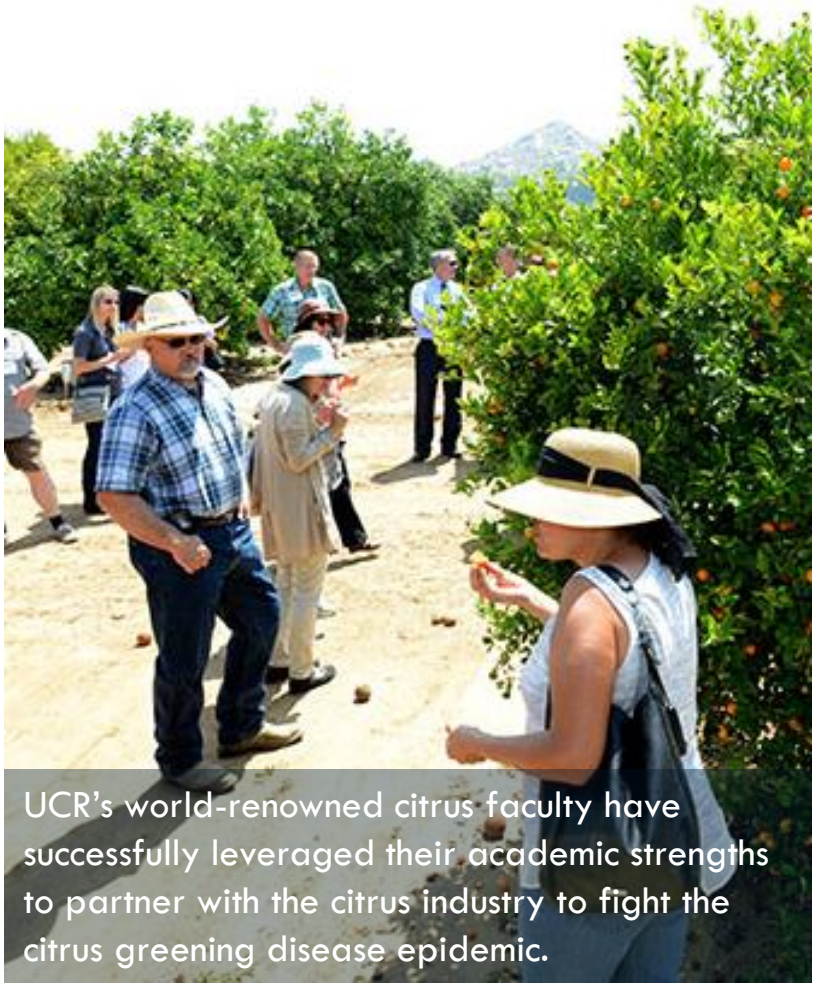
UCR Health's expansion has been matched by increasing research and clinical health opportunities.

Example Companies	
Major Industry-Leading Companies	Kaiser Permanente (*Integrated management care consortium*) Quintiles IMS (*Health information technologies*)
Established Small- to Medium-Sized Enterprises	MedeAnalytics (*Healthcare analytics*) Truven Health Analytics (*Healthcare data and analytics*)
Start-Ups	Aclima (*Air pollution sensors for health*)

ATTRACTION TARGETS | To best leverage UCR's strengths and opportunities, UCR should focus attraction efforts first on supporting its "homegrown" talent.

UCR should focus its firm attraction (and retention) efforts in the following order. Key steps for these attraction efforts are included in the strategy and actions section of this document.

1. **Retaining Homegrown Talent:** Many of UCR's talented faculty, students, and alumni have entrepreneurial ambitions and could locate in Riverside, but don't have the space, resources or mentorship to grow.
2. **Reaching out to Existing Partners:** UCR already has hundreds of license agreements and other partnerships with industry; these established relationships offer a point of entry.
3. **Engaging Firms with Research Compatibility:** Many of the firms identified in the value proposition pages have close research compatibility with UCR; firms like these may be attracted to UCR's research strengths.
4. **Others:** The University should not focus on attracting other firms outside of the first three unless they come to the University directly.

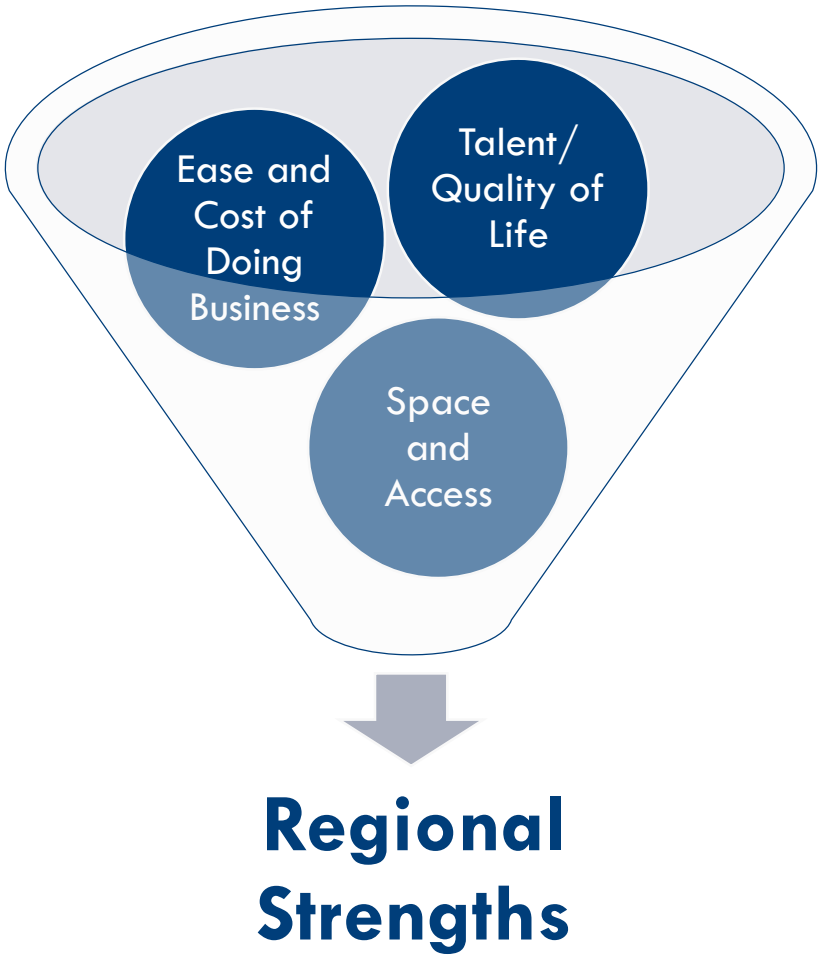


UCR's world-renowned citrus faculty have successfully leveraged their academic strengths to partner with the citrus industry to fight the citrus greening disease epidemic.

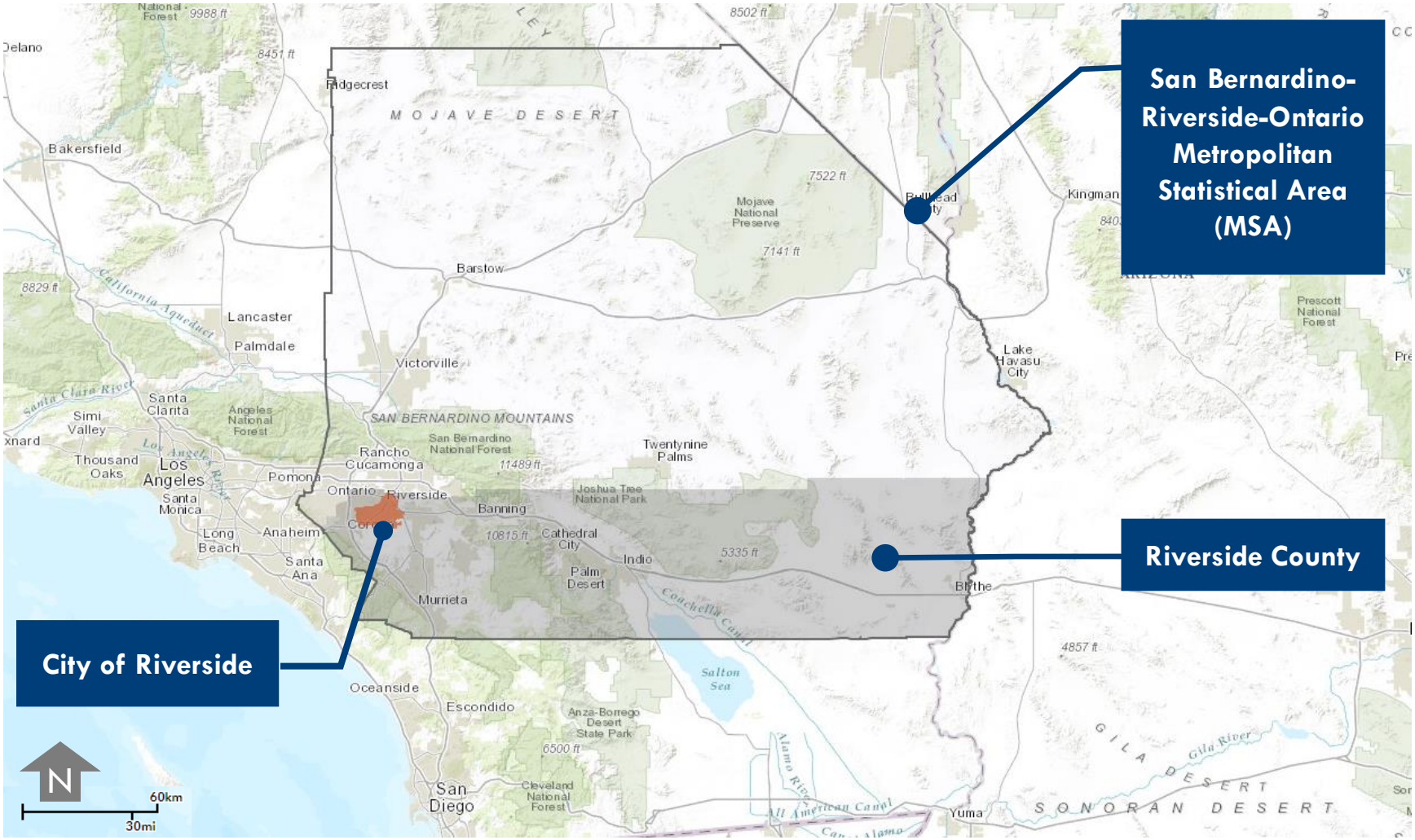
REGIONAL STRENGTHS | In addition to the University's strengths, regional strengths and weaknesses will be a key factor in attracting industries.

Potential industry partners who are drawn to Riverside because of the University's strengths are more likely to relocate to or remain in Riverside if the region is **compelling for a company.** Access to talent is the one of the most critical elements enabling firms to compete nationally and globally, followed by ease and cost of doing business.

The greater Riverside region has the potential to improve its value proposition to various industry sectors through strategic investments, improved branding and marketing, and the development various ecosystem components.

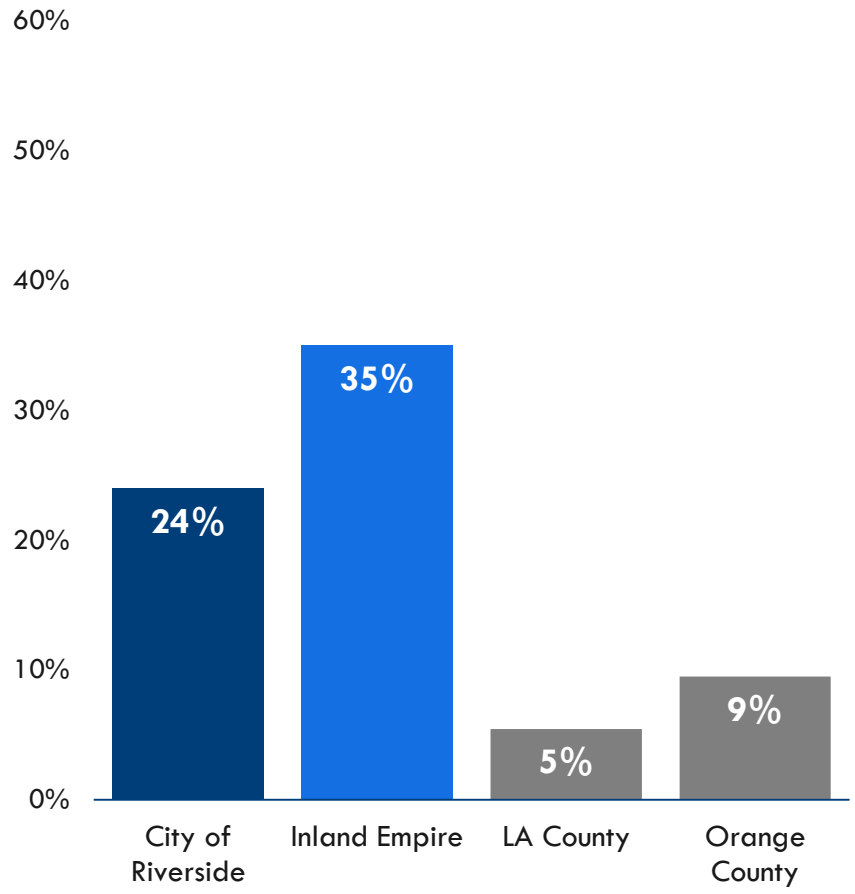


INLAND EMPIRE | Riverside sits within the Inland Empire, represented for the purposes of this analysis by the San Bernardino-Riverside-Ontario Metropolitan Area.

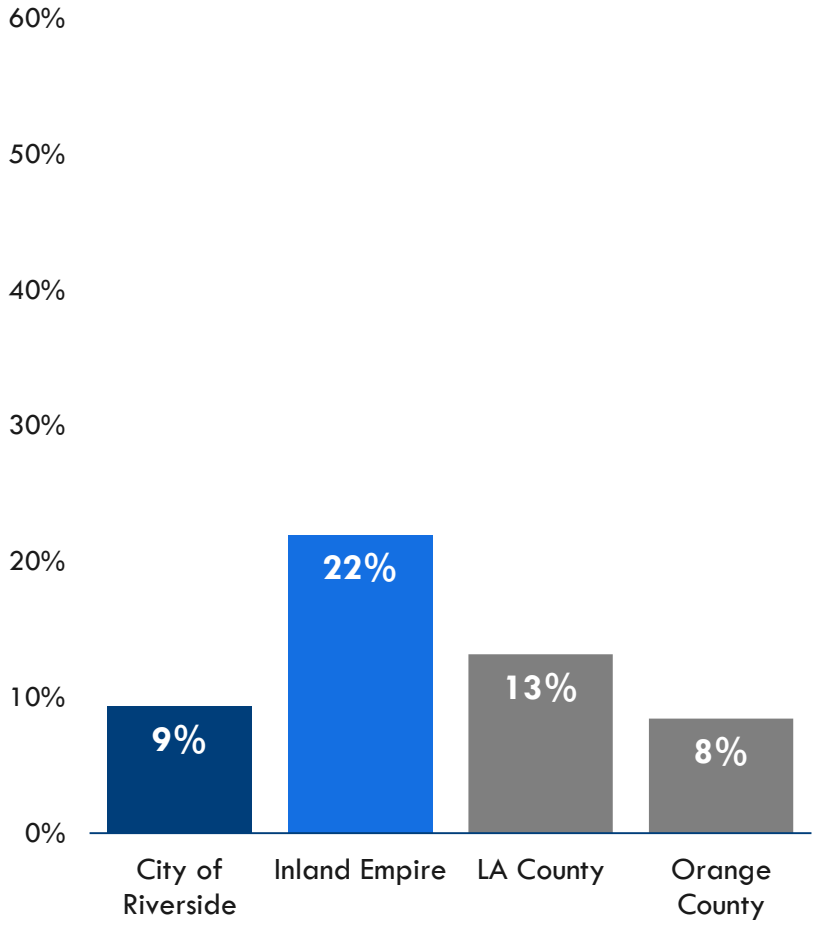


DEMOGRAPHICS | Despite population growth, employment rates have not kept up as the City attracts residents who commute to pricy, neighboring employment hubs elsewhere in the region.

Population Growth between 2000-15

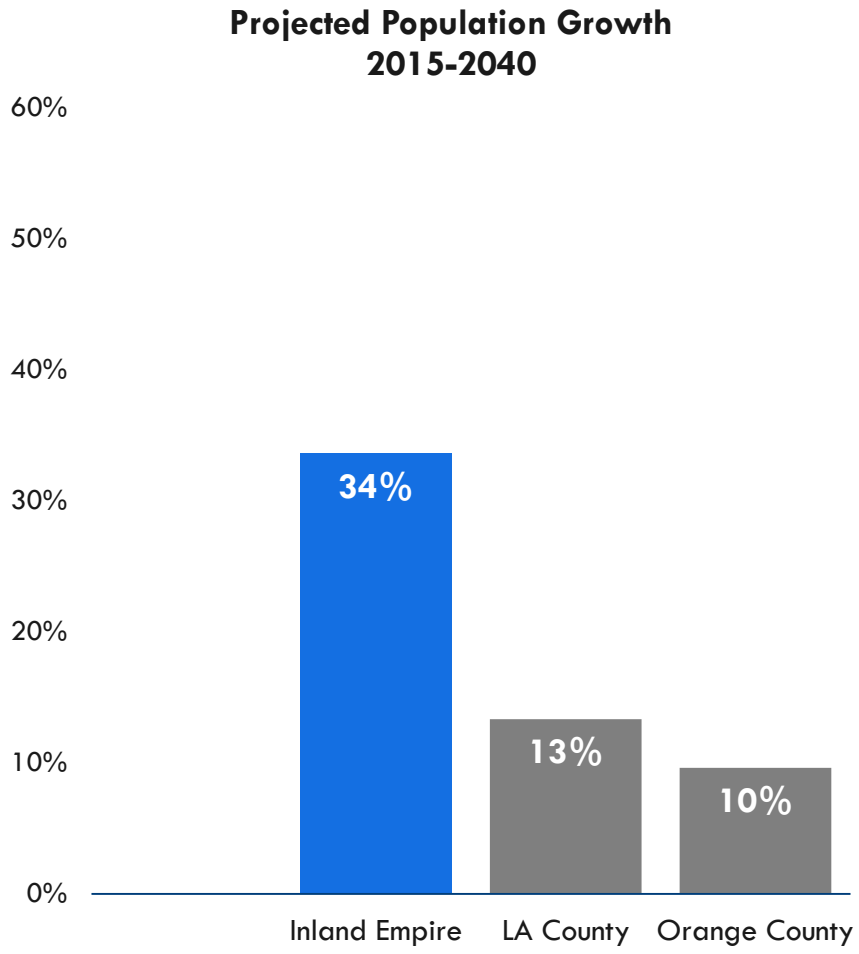


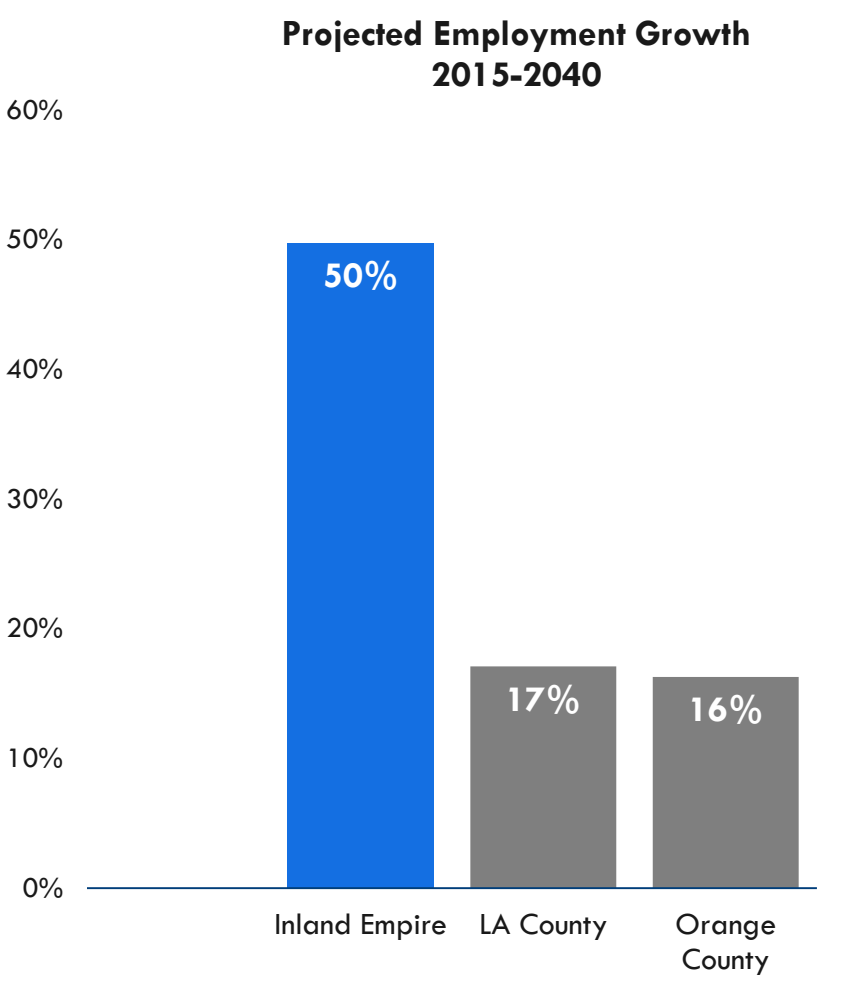
Employment Growth between 2002-14



Source: US Census, American Community Survey 2001-15, LEHD

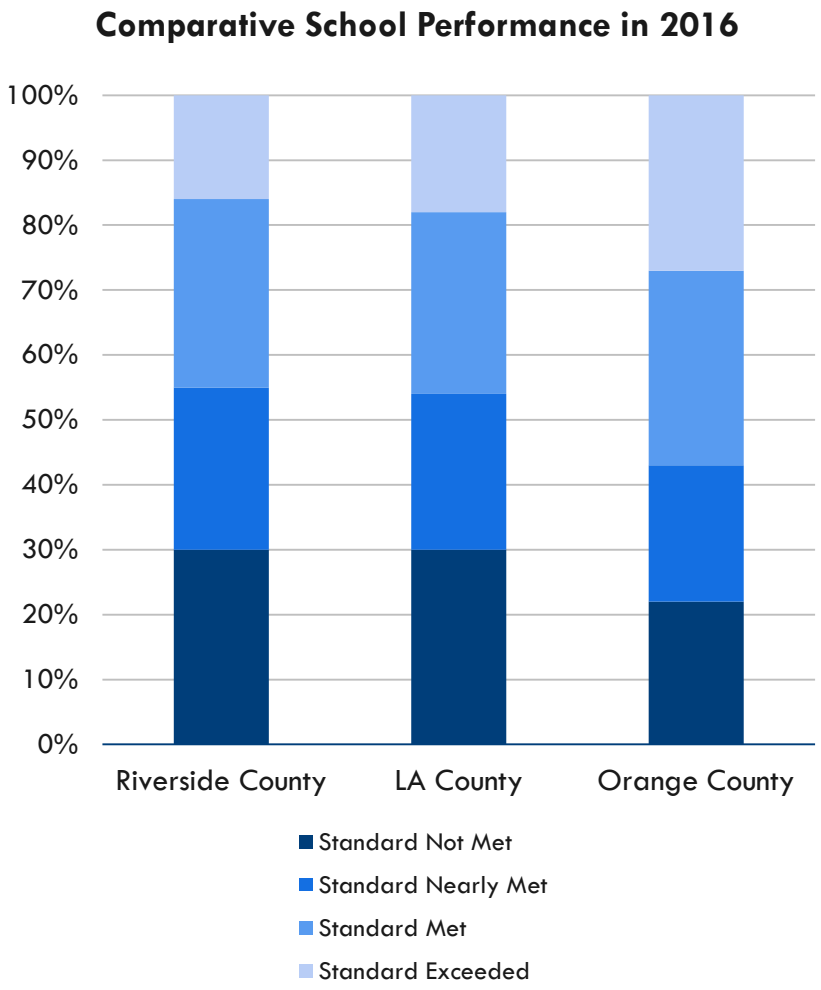
DEMOGRAPHICS | However, employment growth is expected to exceed population growth over the next two decades, and will far surpass Los Angeles and Orange counties.

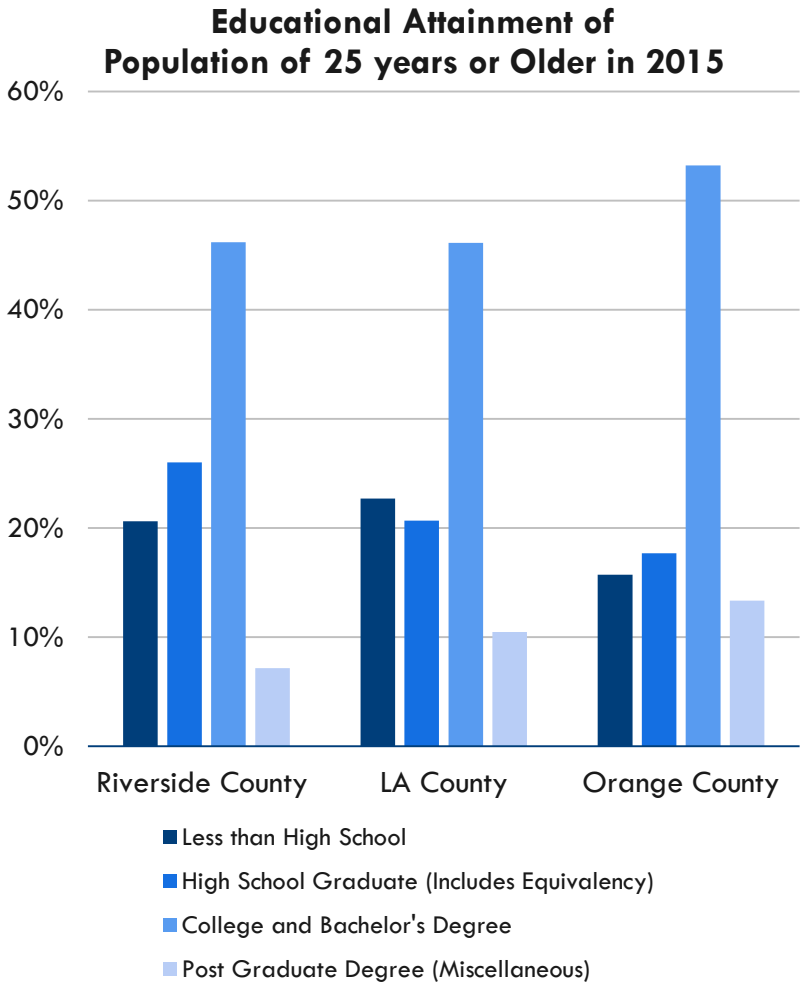




Source: Southern California Association of Governments

EDUCATION | Although overall educational performance is slightly lower than Orange and Los Angeles Counties, three Riverside schools are ranked among Newsweek's best high schools.

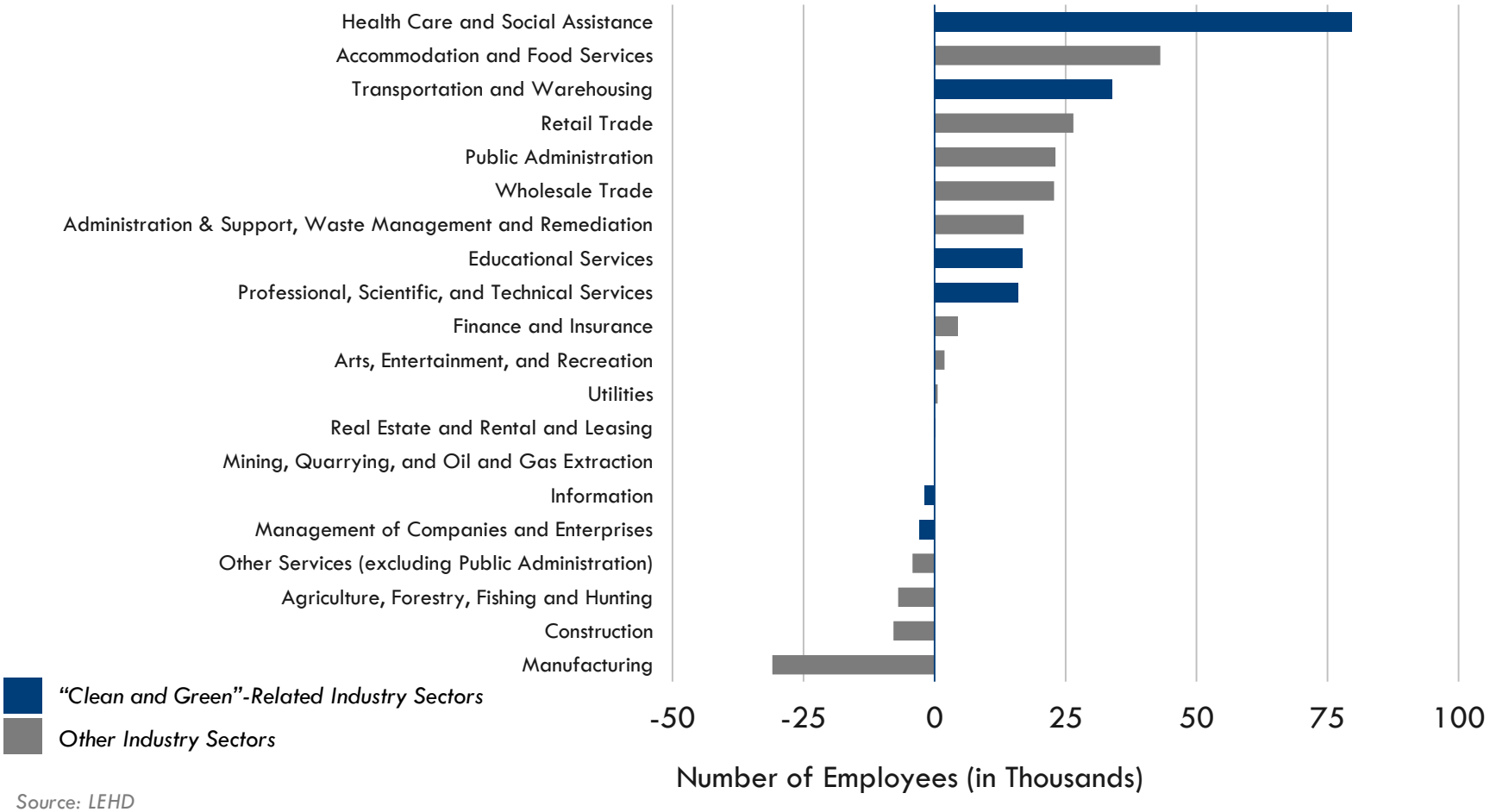




Source: California Department of Education Academic Performance Index, American Community Survey 2001-15

EMPLOYMENT GROWTH | In recent years, the Inland Empire has seen a shift from manufacturing to service industries, including health care and transportation and warehousing.

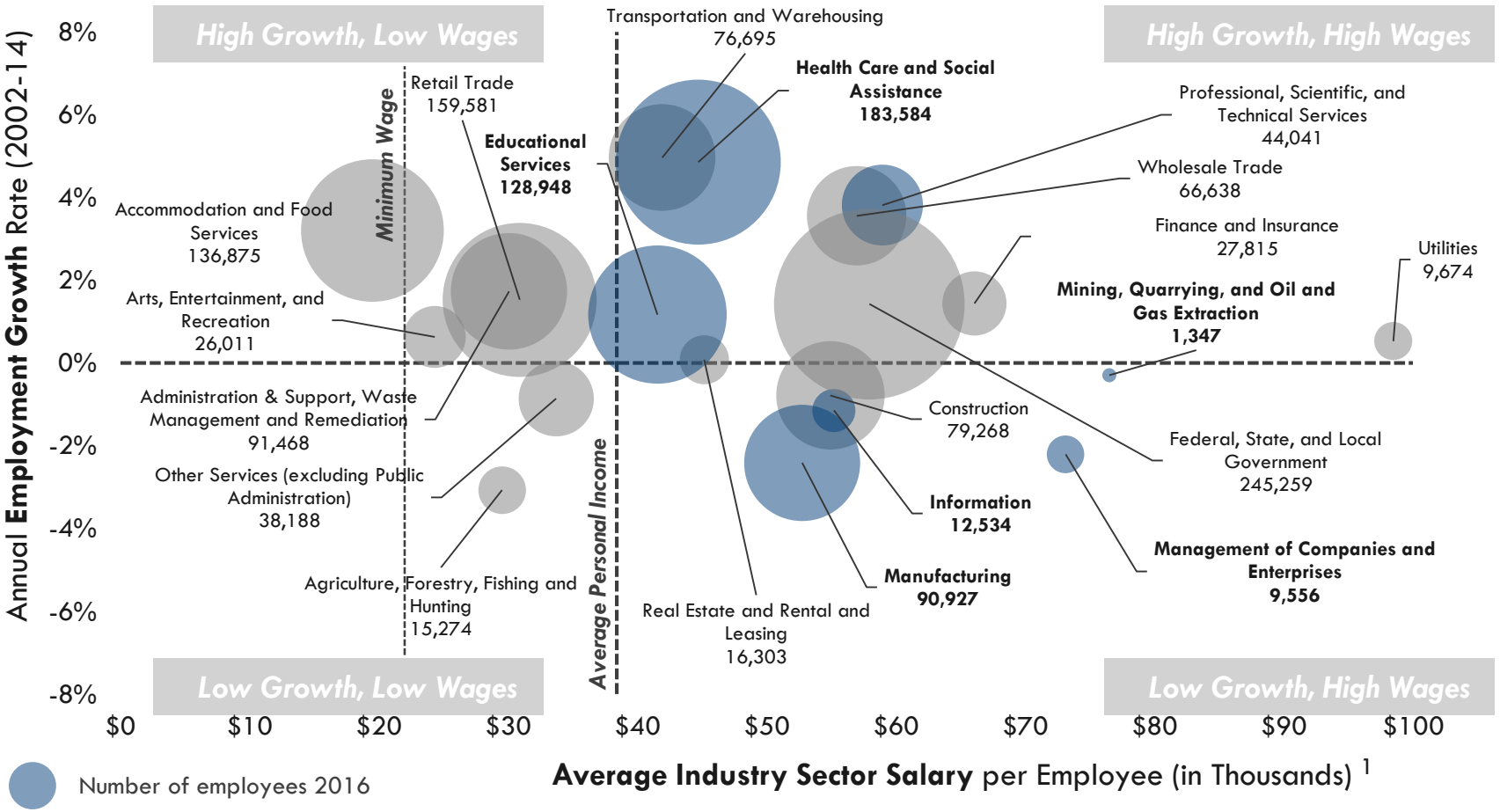
Inland Empire: Change in Employment between 2002-14



Source: LEHD

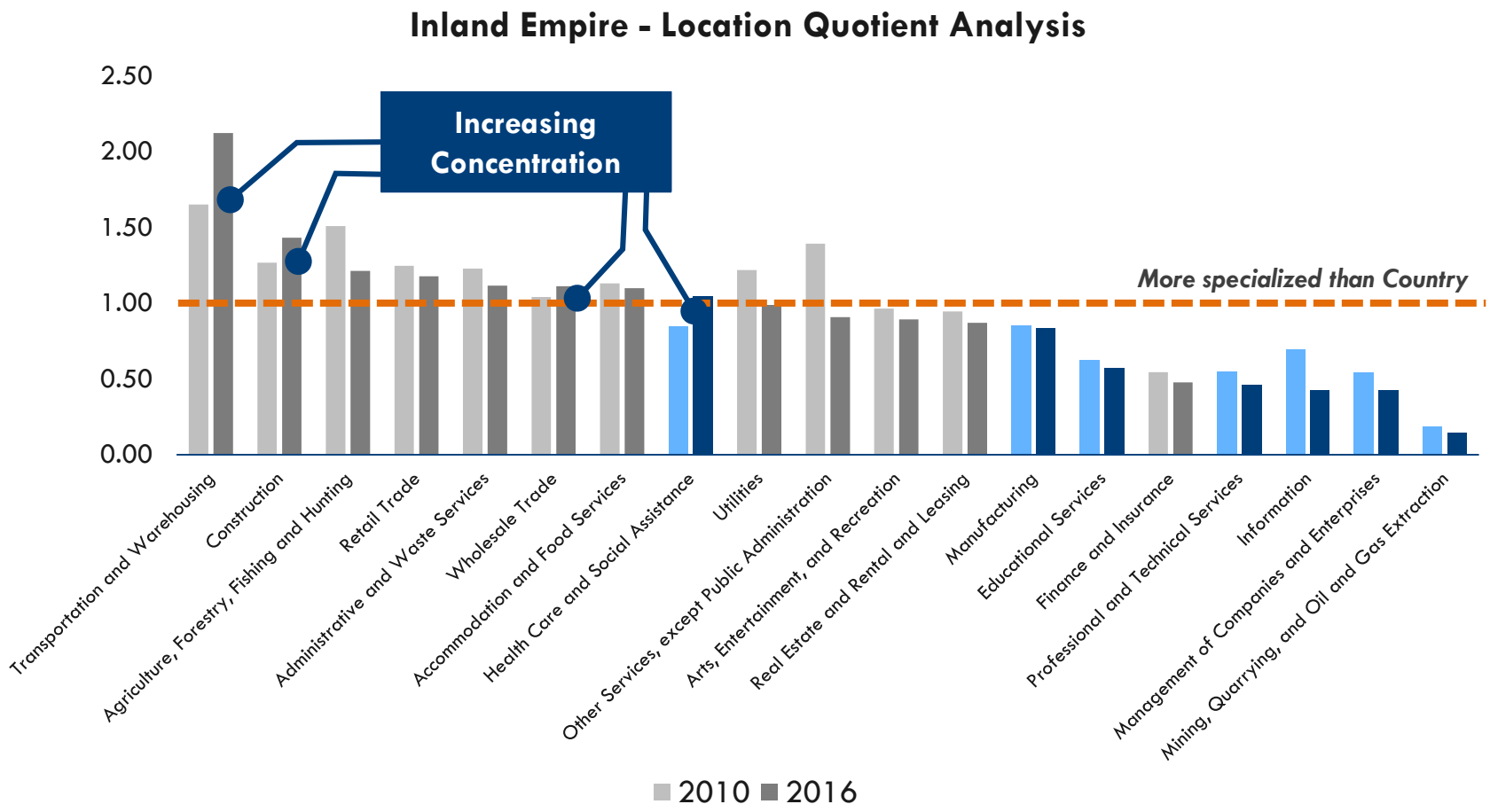
EMPLOYMENT AND WAGES | The fastest growth in the Inland Empire is in industries with salaries below or near the average Inland Empire salary.

Inland Empire Sector Analysis



[1] Average salary is from working 40 hours a week for 52 weeks a year at Riverside County's minimum wage. *Source: CA EDD, Bureau of Labor Statistics 2016*

LOCATION QUOTIENT | Generally, the Inland Empire has a smaller share of technology jobs in comparison to the rest of the country.

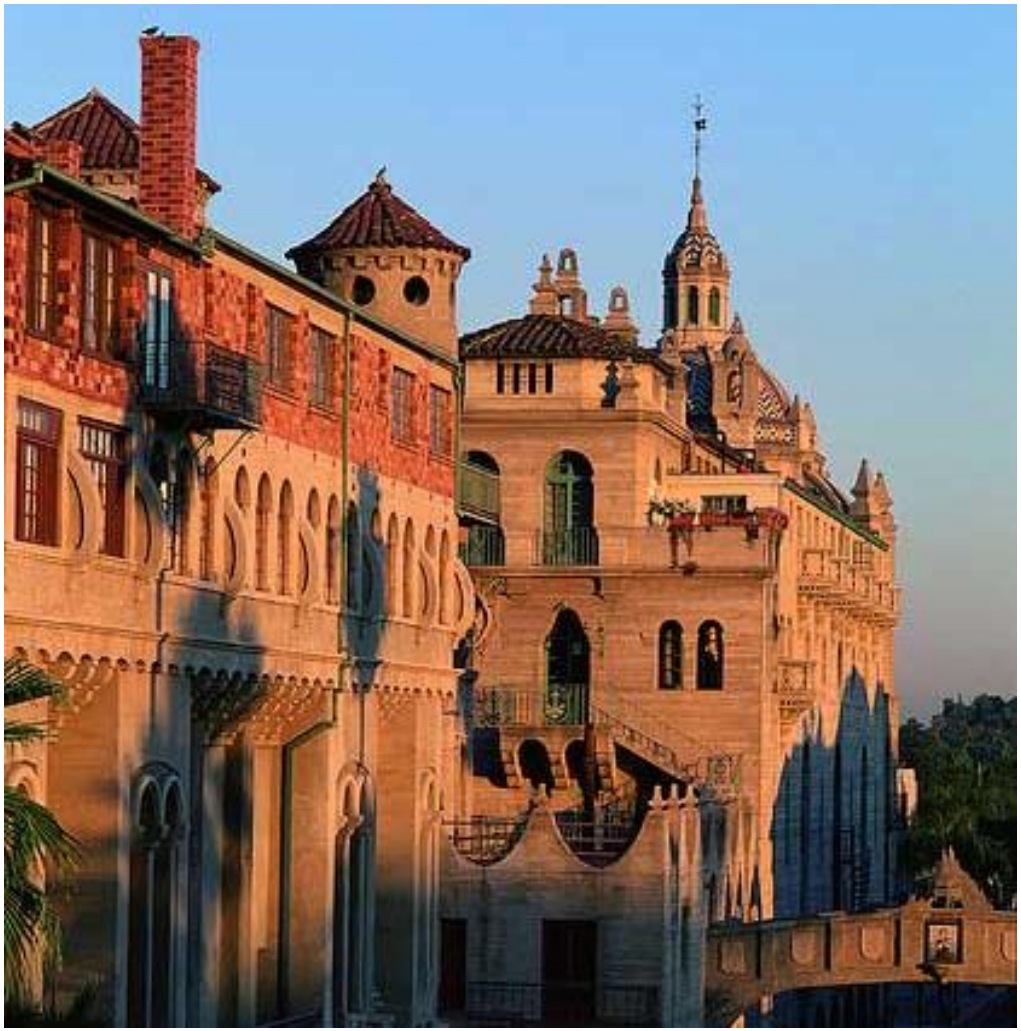


Location quotient *(LQ) determine the concentration of a particular industry in a region as compared to the nation. It can reveal what makes a particular region "unique" in comparison to the national average.*

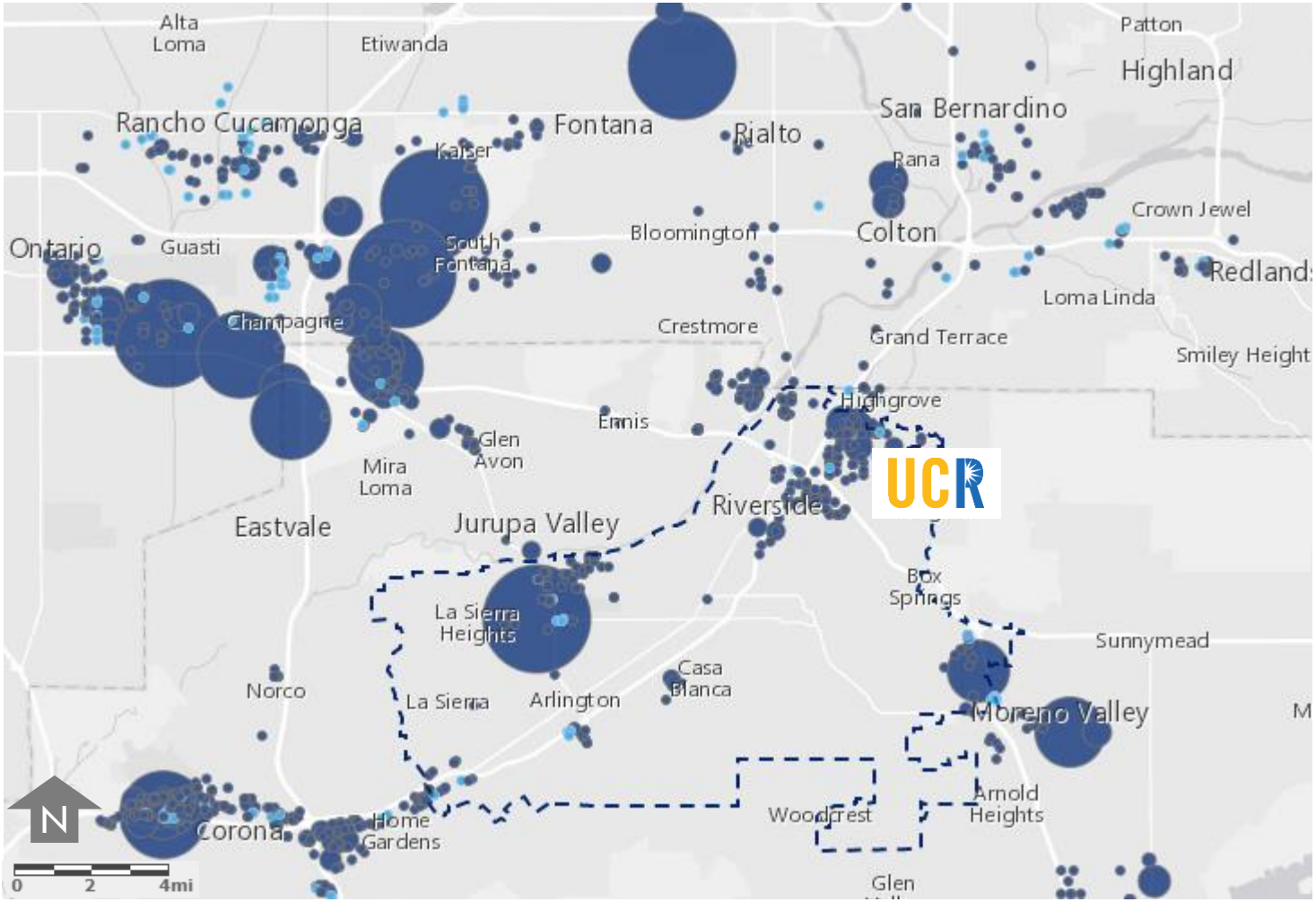
Source: CA EDD.

SOCIO-ECONOMIC SUMMARY | Riverside and the Inland Empire have seen significant growth, and are poised for further transformation with increasing market pressures and land scarcity in coastal communities.

- **Riverside is experiencing significant growth in both population and employment.** Although a shrinking manufacturing job base is being replaced by warehousing and logistics jobs, residential growth has outpaced job growth; this is expected to change over the next two decades.
- **Cost of living**, driven primarily by lower land costs, has driven significant population growth. Although school quality and lifestyle, entertainment and cultural amenities are somewhat limited, the City is taking proactive steps to stimulate investment to change this.



INDUSTRIAL REAL ESTATE | There are significant concentrations of industrial inventory within driving distance of UC Riverside and elsewhere in the Inland Empire.



Building Types*

- Industrial
- Flex R+D

Leasable Area (In Million SF)

- > 0.75
- 0.60 – 0.75
- 0.40 – 0.60
- 0.25 – 0.40
- < 0.1

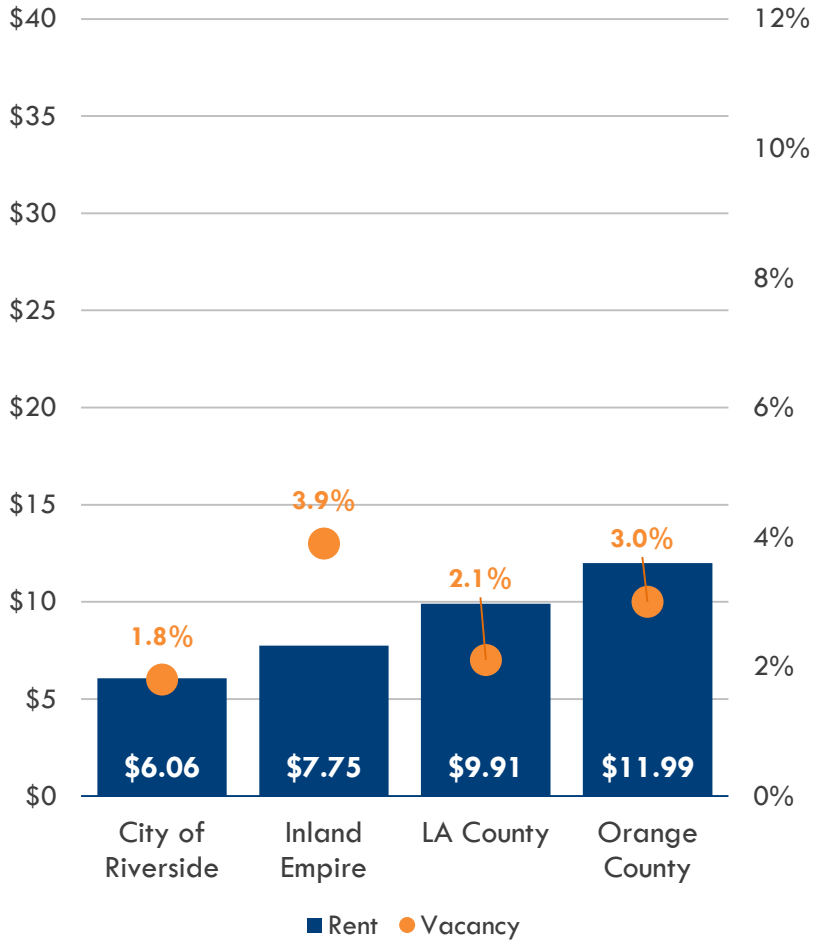
While clusters of small- to medium-sized industrial spaces exist outside of the map extent in cities like Perris and Hemet, the largest concentrations are along the I-10 and I-15 corridors shown at left.

Source: CoStar, HR&A Advisors, Inc.

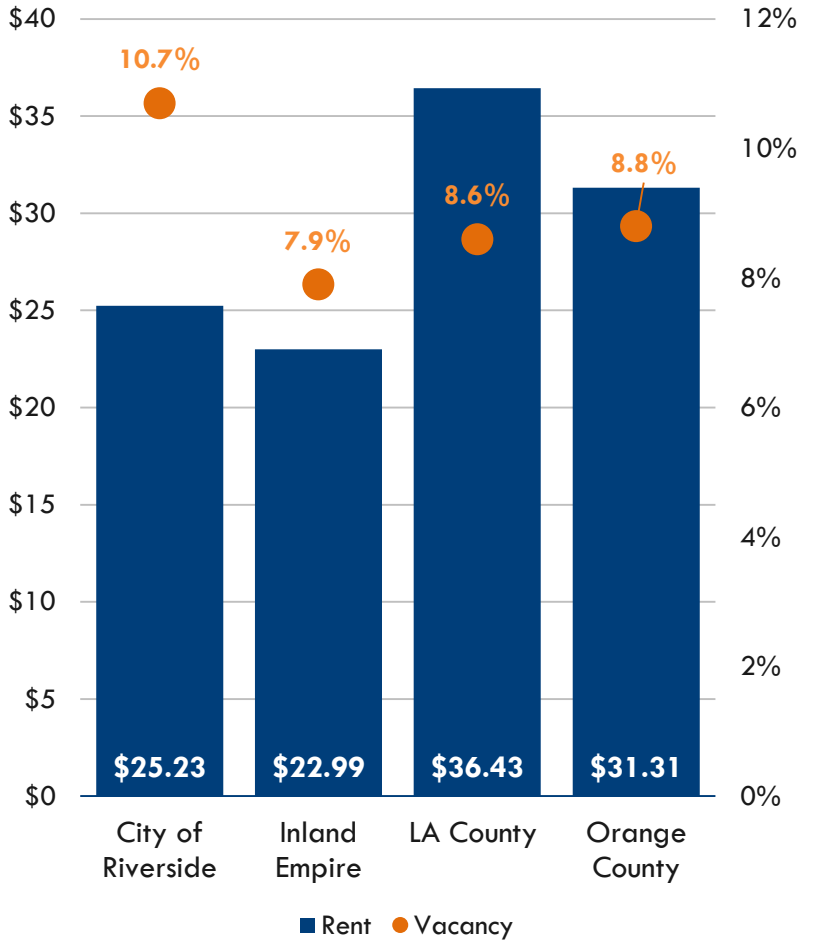
**Industrial spaces include manufacturing, light manufacturing, and R+D flex spaces, but not warehouse space.*

INDUSTRIAL REAL ESTATE | The industrial market is very tight with low vacancies, but has lower rents than LA and OC; there is significant inexpensive office space available.

Rents and Vacancies of Industrial Spaces

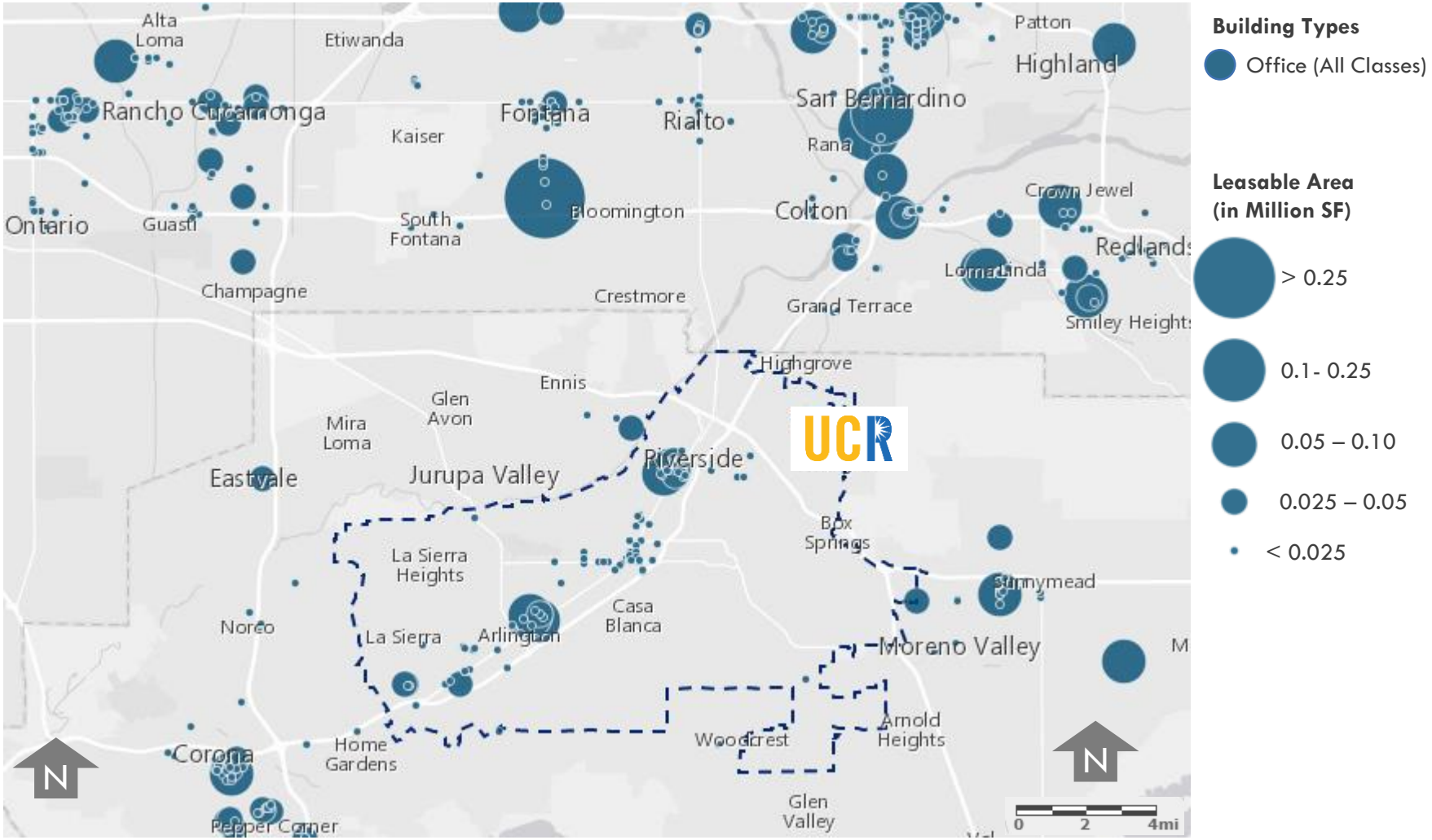


Rents and Vacancies of Office Spaces



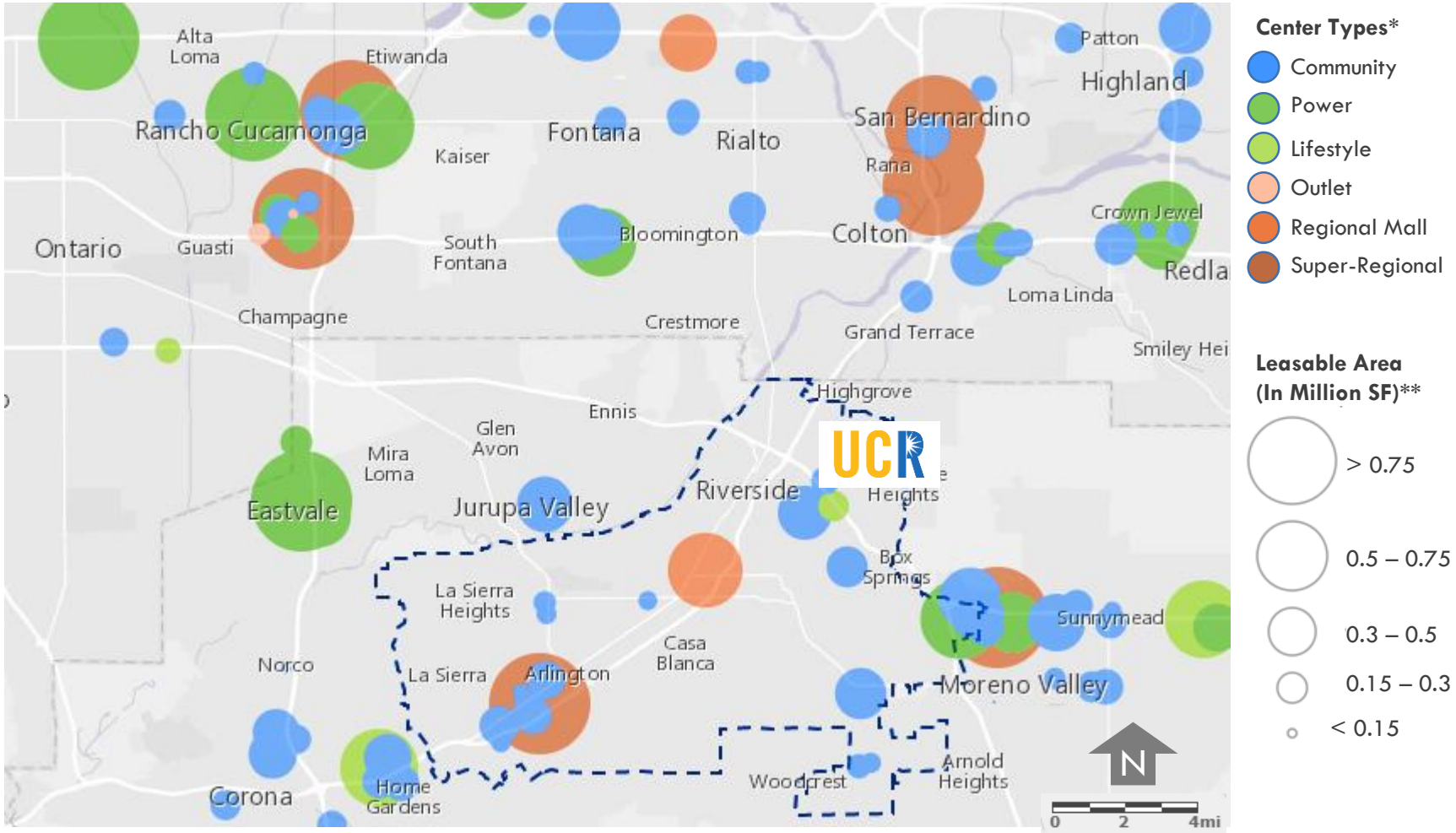
Source: CoStar

OFFICE REAL ESTATE | Although little office space exists near the University, there is a cluster of space in Downtown Riverside, and more significant concentrations elsewhere in the Inland Empire.



Source: CoStar, HR&A Advisors, Inc.

SHOPPING CENTERS | Most shopping and entertainment destinations are located elsewhere in the Inland Empire.

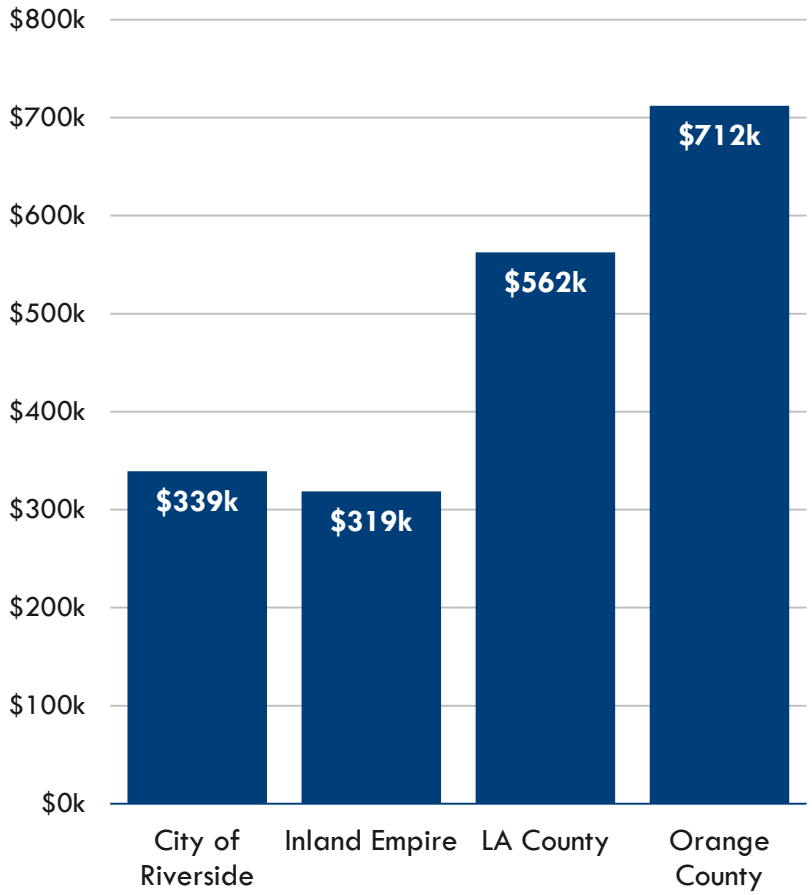


Source: CoStar, HR&A Advisors, Inc.

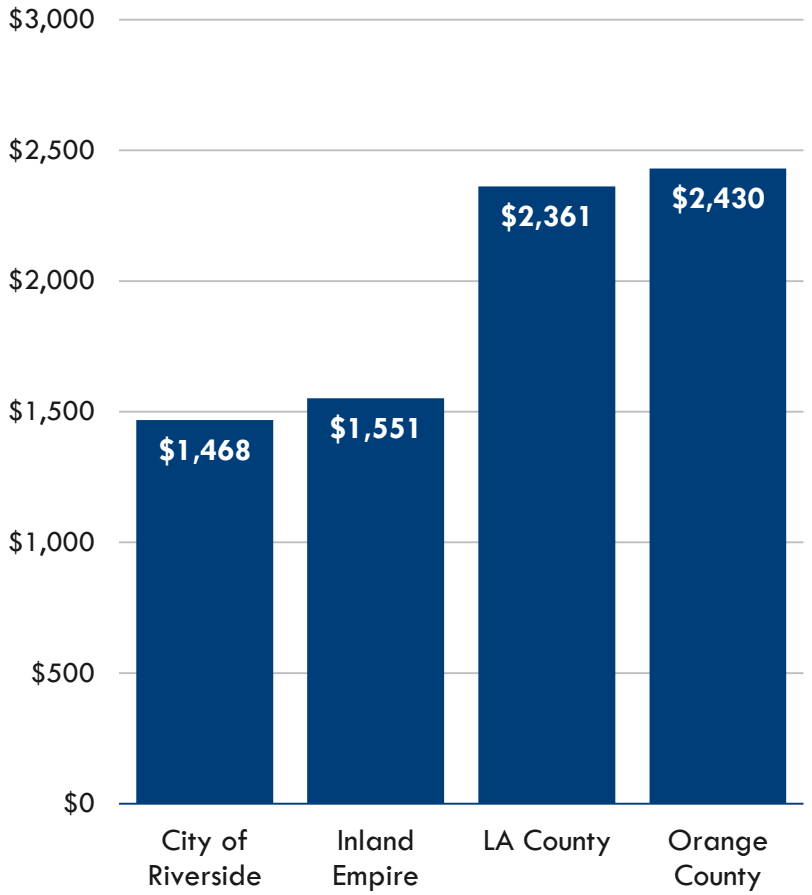
**A glossary of real estate terms has been included in the appendix.*
***Retail centers under 150,000 square feet are not included on this map.*

RESIDENTIAL REAL ESTATE | Homes and apartments are significantly less expensive in the City of Riverside and Inland Empire than in the coastal counties.

Median Price of **Single- Family Homes**

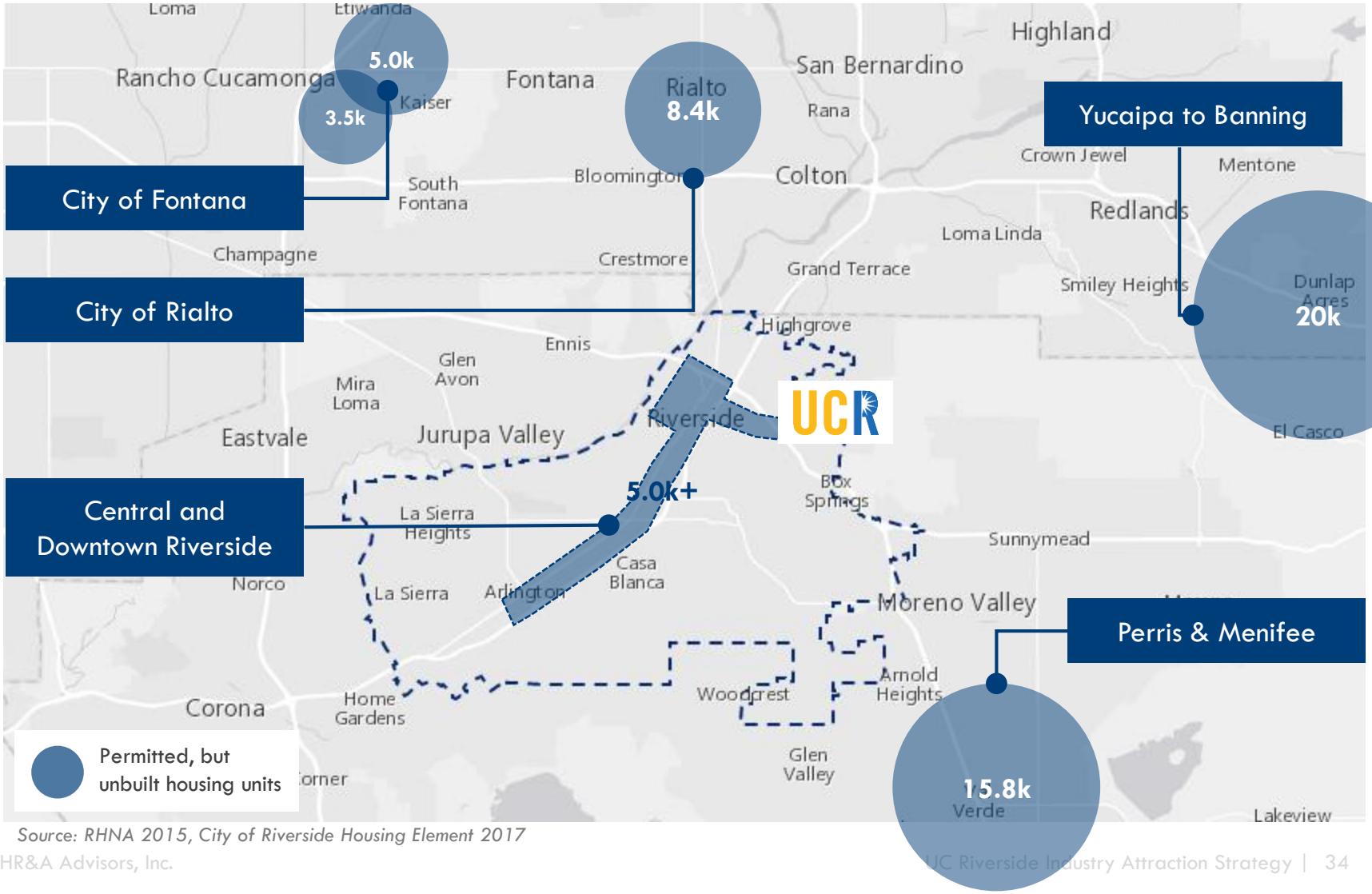


Median Monthly Rent of **Multi-Family Apartments**



Source: Zillow Market Analytics, CoStar.

RESIDENTIAL REAL ESTATE | There is significant pipeline of housing planned regionally to accommodate oncoming growth.

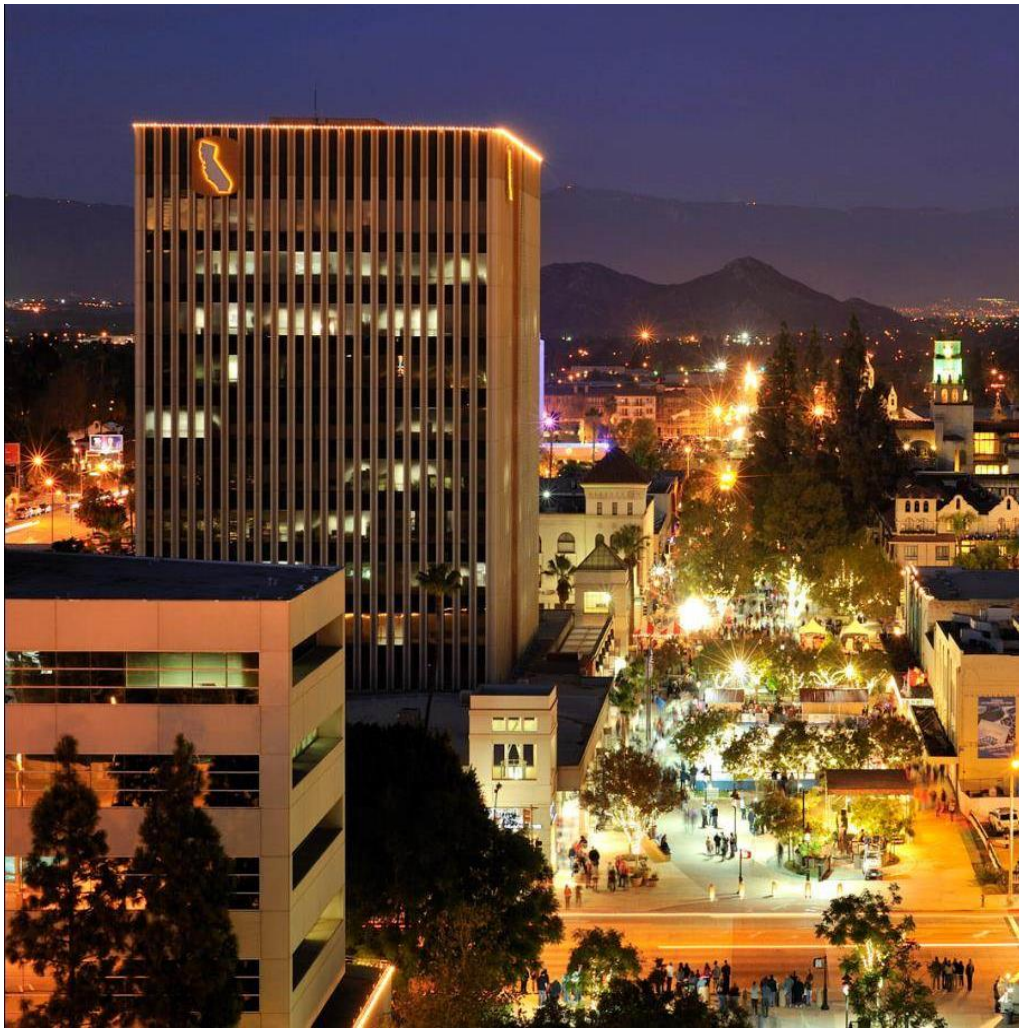


Source: RHNA 2015, City of Riverside Housing Element 2017

REAL ESTATE SUMMARY | Riverside and the Inland Empire are an affordable option for both employers and residents, in comparison to Los Angeles and Orange Counties.

Generally, Riverside and the Inland Empire have significantly lower real estate costs than coastal counties, which has helped capture growth as people and businesses are priced out of locations further west.

- Specifically, industrial and office **rents are competitive,** although there is little room for industrial or R&D companies to grow.
- **Residential costs are significantly lower** than those in the surrounding region and there is significant capacity to add housing stock. The City of Riverside is targeting Downtown for higher density "urban living."
- **Entertainment and retail options are not robust,** although there is a proactive effort by the City to increase vibrancy, and Downtown Riverside has increased these offerings.



EASE OF DOING BUSINESS | Riverside not only offers affordable real estate, but the City has taken action to facilitate business efficiency.

The City of Riverside recently revamped its development review process to encourage businesses to move to Riverside. **Streamline Riverside** is a "one stop shop" that promises reduced plan check time and an expedited development review process, leading to substantial savings for businesses. The program has received positive feedback.

Riverside also **controls its own public utility**, giving it the ability to adjust rates as a business incentive to companies. Although the cost of doing business in Riverside is less burdensome than the Cities of Los Angeles, San Bernardino and others, it is more expensive than neighboring cities like Redlands, Corona and Temecula.

The City is also in early stages of planning an **Innovation District** near UCR, which entails public realm and mobility investments, in addition to land use policy changes. An expansion of **broadband internet** offerings was recently completed across the City.

WATER | ENERGY | LIFE

CITY OF RIVERSIDE

PUBLIC UTILITIES

HR&A identified Greater Riverside's **value proposition** based on our socio-economic and real estate analysis, and conversations with regional stakeholders.

The following series of value propositions are intended to help the University and its partners begin to **articulate Riverside's value to industry.** These value propositions are based on the analysis described previously, as well as input from community stakeholders.

Riverside's key strengths, as summarized by stakeholders during interviews, include:

- **Affordability, Space and Mobility**
- **A Revitalized Downtown**
- **A Rapidly Growing Population**

Through this process, HR&A has also identified **City weaknesses** in terms of attractiveness to industry. These weaknesses are areas in which the University, City and their partners can work to create a more compelling ecosystem. Efforts by the University's public-sector partners to address these weaknesses will be a critical component of the industry attraction success.

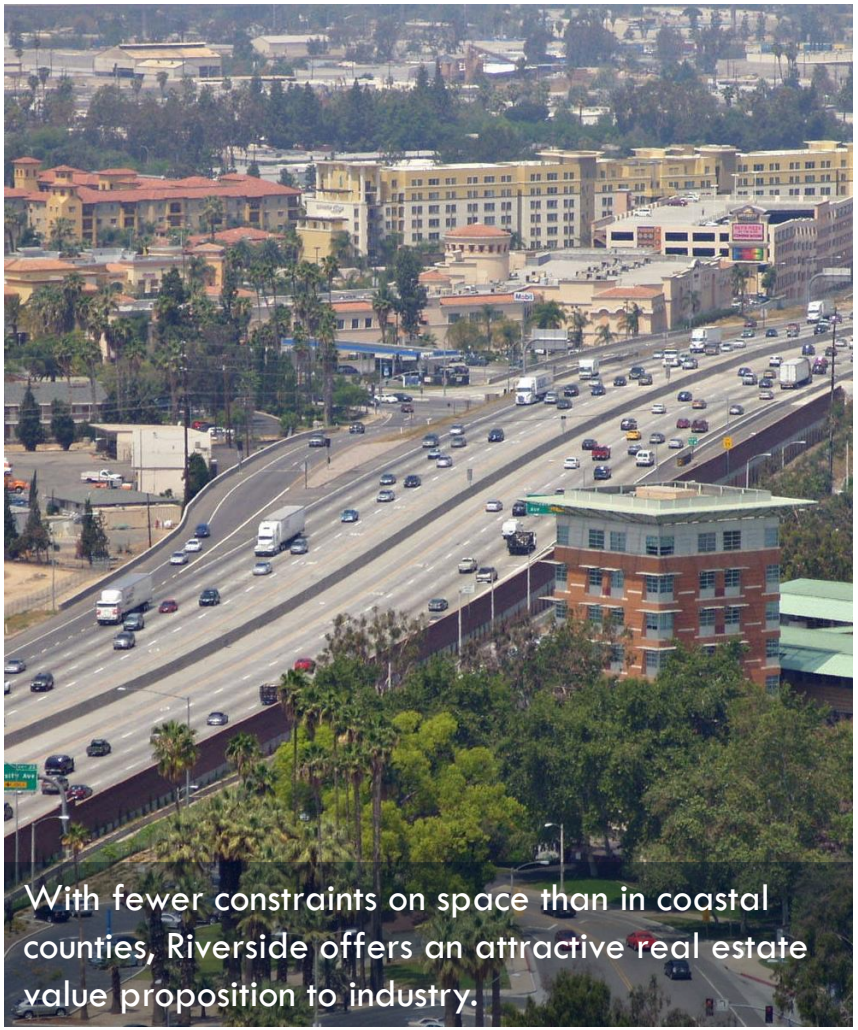
RIVERSIDE VALUE PROPOSITION
Affordability, Space and Mobility

Affordability and Space: Real estate is **significantly less expensive** than in neighboring counties, and the region's large swaths of **vacant land** are attractive to industries needing large footprints for R&D. Riverside also **owns its utility,** with the ability to offer discounted rates to new businesses.

Mobility: In addition to an extensive **freeway network**, Riverside is served by **Metrolink** rail connections and is only 15 miles to **Ontario International Airport**, which has recently added new trans-Pacific flights.

Enhancing the Value Proposition

- Riverside lacks a deep professional service infrastructure (legal, accounting, etc.) familiar with start-up enterprises that is critical to fueling an innovation ecosystem.
- There is a "missing middle" in the real estate inventory to accommodate start-ups, as well as established small- to medium-sized firms that want to scale up their operations.



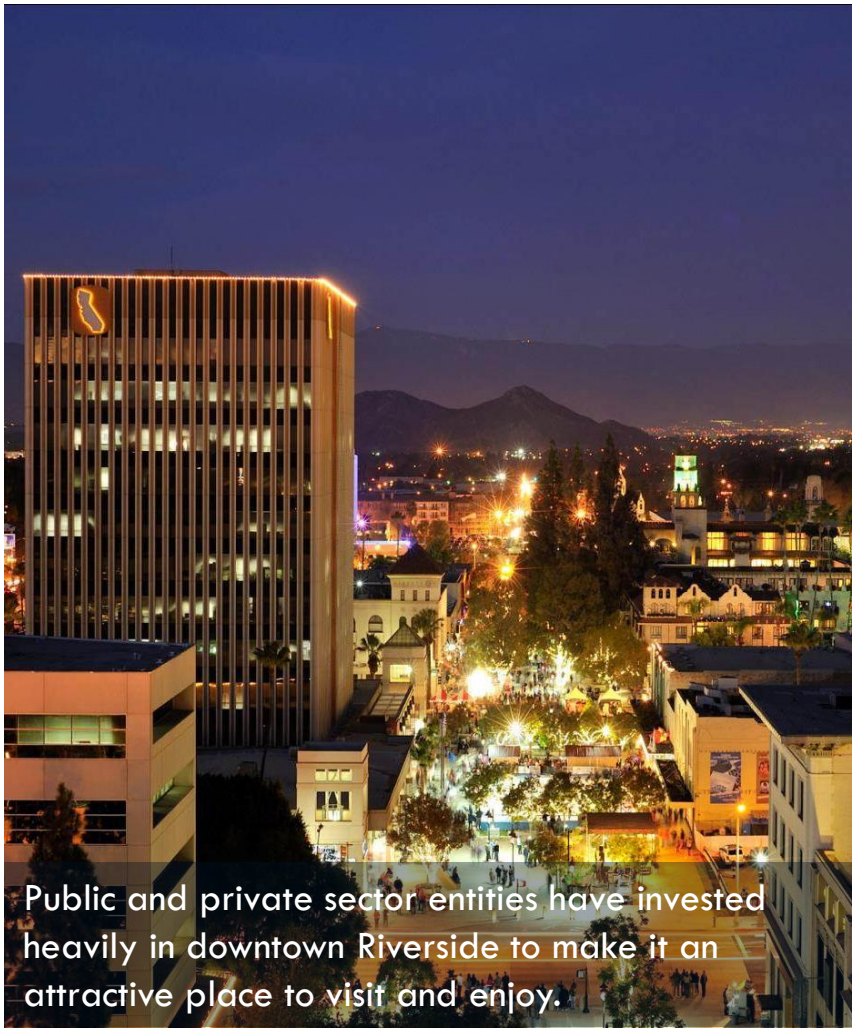
With fewer constraints on space than in coastal counties, Riverside offers an attractive real estate value proposition to industry.

RIVERSIDE VALUE PROPOSITION
A Revitalized Downtown

Quality of Life: Over the past decade, the public and private sectors have **invested substantially in downtown Riverside** to make it an attractive place to live, work and play. Renovations to the Fox Theater, Riverside Convention Center, the Mission Inn and the Main Street Mall have all catalyzed development. Over the next eight years, the City of Riverside has a goal to add **5,000 new housing units downtown,** which will serve to increase the vibrancy of the City. Currently, 900 units are already in the development pipeline.

Enhancing the Value Proposition

- Despite rapid growth and an increased interest in downtown Riverside, the City's historic core is still disconnected from UCR. Planned investments along University Avenue would help to knit together Riverside's best assets.
- Riverside still struggles with a perception issue; a strong branding and marketing campaign led by the City could help spread word about Riverside's positive upward trajectory.



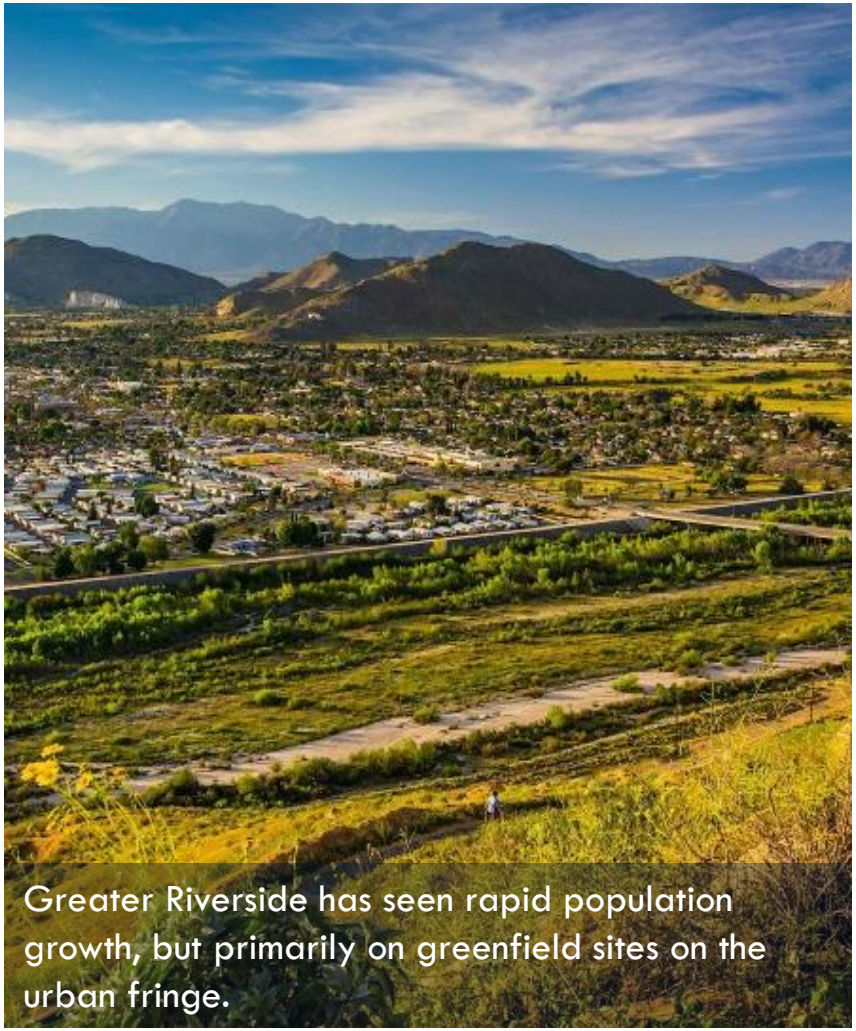
Public and private sector entities have invested heavily in downtown Riverside to make it an attractive place to visit and enjoy.

RIVERSIDE VALUE PROPOSITION
Rapidly Growing Population

Rapidly Growing Population: The Riverside metropolitan area is one of the fastest growing regions in the United States, and has seen the **fastest growth in Millennials of any region in the U.S. since 2010.** Industry can tap into a **large and increasingly educated labor pool** that has been attracted to the area by housing affordability.

Enhancing the Value Proposition

- While many new residents are moving to Riverside to access new jobs and take advantage of housing affordability, to capture growth in *high-value industries*, UCR's community stakeholder partners need to focus on measures to enhance quality of life, including schools and other amenities.



Greater Riverside has seen rapid population growth, but primarily on greenfield sites on the urban fringe.

HR&A selected five University-led economic development case studies and two additional precedents with specific industry attraction lessons for UCR.

Case studies were selected based on criteria relevant to UC Riverside's institutional and regional context.

University with Limited Land Holdings

Land Grant University

Adjacent to Major Metropolitan Area

Similar Research Strengths

University of California System

SELECTED CASE STUDIES | HR&A analyzed seven successful ecosystems that have catalyzed innovation, industry collaboration and supported economic development.

Cortex Innovation Community
St. Louis, MO

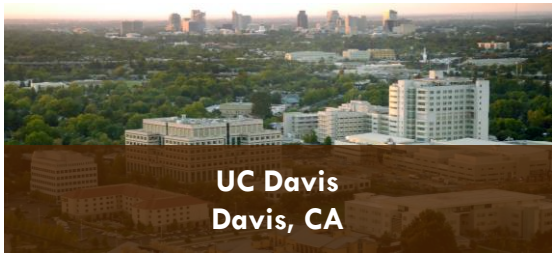
North Carolina State University Centennial Campus
Raleigh, NC

University of Illinois at Urbana-Champaign
Champaign, IL

University of Wisconsin-Madison
Madison, WI

UC Irvine
Irvine, CA

UC San Diego
San Diego, CA



UC Davis
Davis, CA

KEY LESSONS | These case studies demonstrate that successful industry attraction strategies must address several of four key areas.

Partners and Incentives	**Facilitating institutional, industry, and government collaboration.**
Ecosystem Facilitation	**Ensuring that tools, resources and physical spaces promote a culture and community of innovation.**
Branding, Marketing & Place	**Identifying and communicating academic and local strengths, and creating density and a mix of uses that attracts talent.**
University Strengths & Assets	**Facilitating industry access to unique University strengths and assets, including research spaces and tools.**

KEY LESSONS | Partnerships have been critical to the success of most innovation ecosystems, in some cases paired with innovation-related programming.

Partners and Incentives

Close collaboration between anchor universities, public entities, private companies and developers has supported the success of all technology ecosystems. Several partnerships provided **capital funding and tax incentives** to support industry attraction. In some cases, partnerships with developers have been created to **balance control** over innovation ecosystem visions with private-sector motivations.

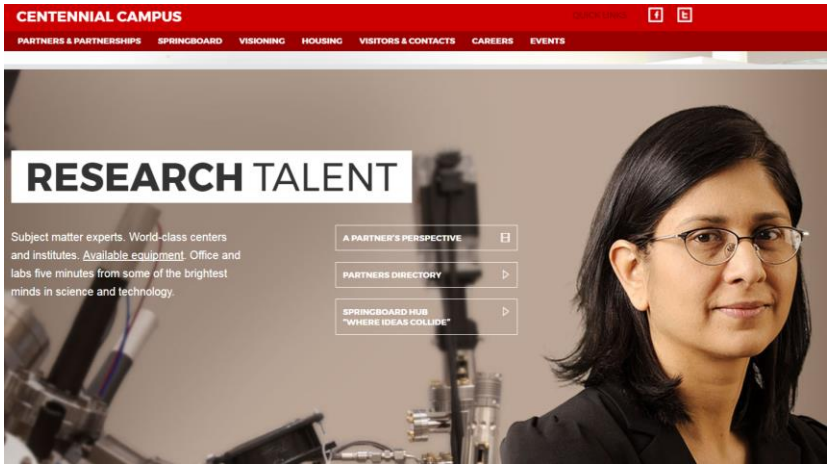
Ecosystem Facilitation

Several Universities have successfully **consolidated entrepreneurial and technology resources** to offer access to opportunities for funding, mentorship with experts in residence, incubator spaces and intellectual property. Other ecosystems have created **spaces for events to foster a community** in which entrepreneurs can organically exchange ideas and meet financial partners.

KEY LESSONS | All universities evaluated successfully market their research strengths and assets.

Branding, Marketing and Place

Most precedent universities have developed **modern and user-friendly websites** to comprehensively demonstrate the strength of their ecosystems. Many market industry partnership success, advertise the accessibility of student and faculty talent, market physical space and nearby amenities, and provide leasing resources. University have also **implemented place-making strategies** which increase connectivity and create a dense mix of uses.



University Strengths and Assets

Several universities have **leveraged their core research strengths** by developing a strong technology transfer infrastructure to streamline research commercialization. Others have worked to **attract public-private research institutes** and **develop shared facilities** that benefit industry and university research efforts.

KEY LESSONS | Each university offers a unique and compelling value proposition to potential industry partners.

St. Louis Cortex Innovation Community

A **consortium of public and institutional partners,** including three anchor universities (Washington University in St. Louis, St. Louis University, and University of Missouri-St. Louis) successfully collaborated through the creation of a 501(c)(3) organization to develop a dynamic, mixed-use community, building on a strong life science cluster. The contribution of **institutional resources, capital resources and tax incentives** catalyzed development and attracted both large companies and start-ups across a diverse set of industries.

North Carolina State University Centennial Campus

North Carolina State University ("NC State") has attracted over half a dozen **federal research institutes** related to the university's research specializations, building on **long-term industry partnerships.** These institutes and shared facilities, in addition to **easy access to talent,** have incentivized a range of companies to locate at the university's Centennial Campus.

University of Illinois at Urbana-Champaign

Fortune 500 companies have located at UIUC due in part to **regional tax incentives,** funding by the State of Illinois, and the University's partnership with a **private developer consortium.** Importantly, UIUC leveraged its **strong student talent** by creating a consolidated internship program that facilitates an inexpensive and creative workforce for companies.

KEY LESSONS | Each university offers a unique and compelling value proposition to potential industry partners.

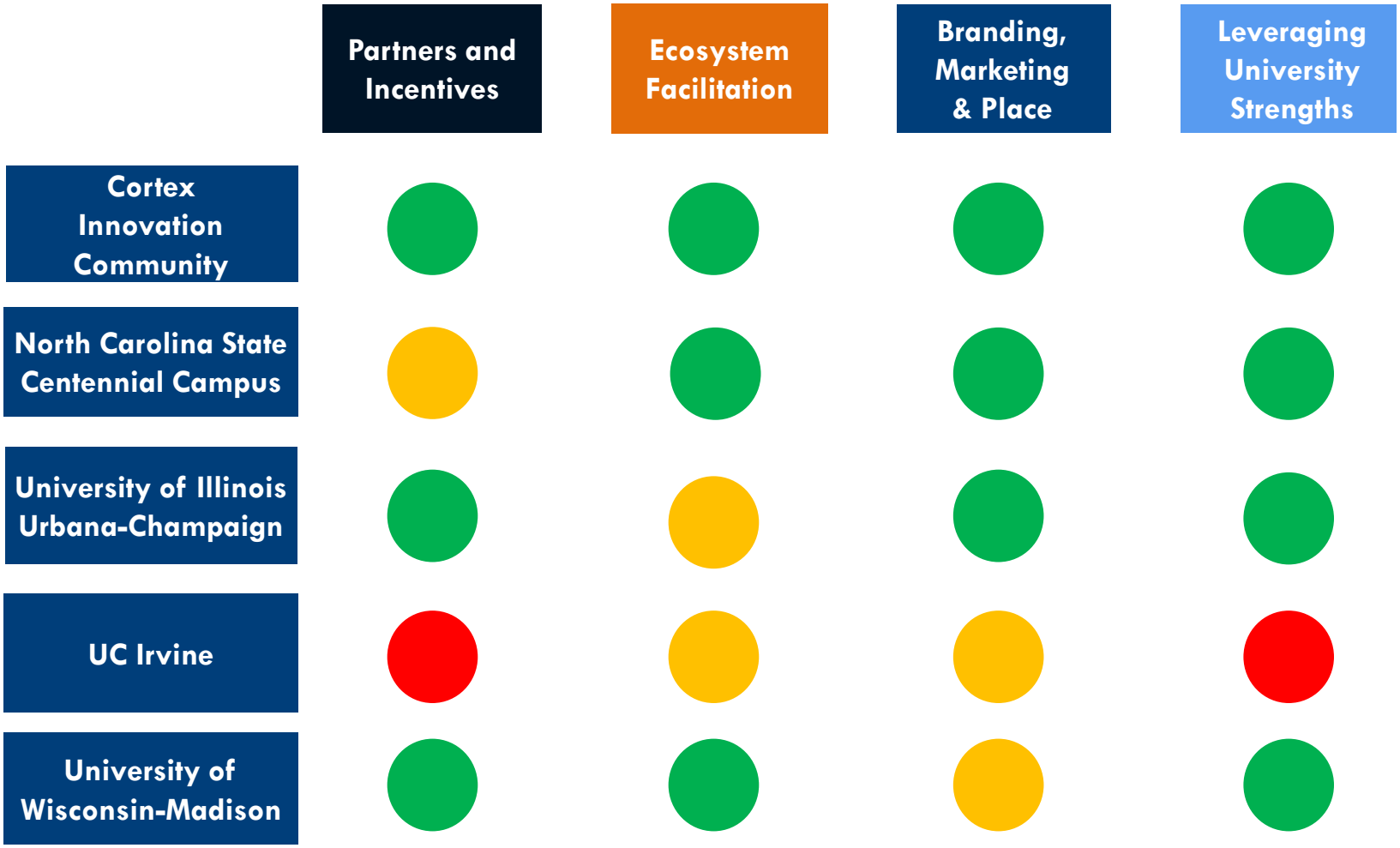
University of Wisconsin-Madison

A **strong technology commercialization ecosystem,** driven in part by the independent Wisconsin Alumni Research Foundation, has facilitated the extensive commercialization of UW-Madison faculty research. As an independent organization, the University's technology transfer mechanism is able to **take equity stakes in faculty start-ups** which, paired with the provision of flexible space at the University's research park, has supported start-ups to grow rapidly in Madison.

UC Irvine

Historically, companies have located at University Research Park ("URP" or "the Park") due **Irvine's strengths** as a highly-educated and desirable community. However, the Orange County technology community is growing and has recently been bolstered by **University-led industry acceleration programs,** which have attracted venture capital and supported entrepreneurship. Although the Park is independent from the university, UC Irvine has **developed and co-located an innovation center** at URP to connect local entrepreneurs to faculty and students.

KEY LESSONS | Each case study has leveraged strengths, or has recently initiated efforts, in each of the four key areas to drive success.

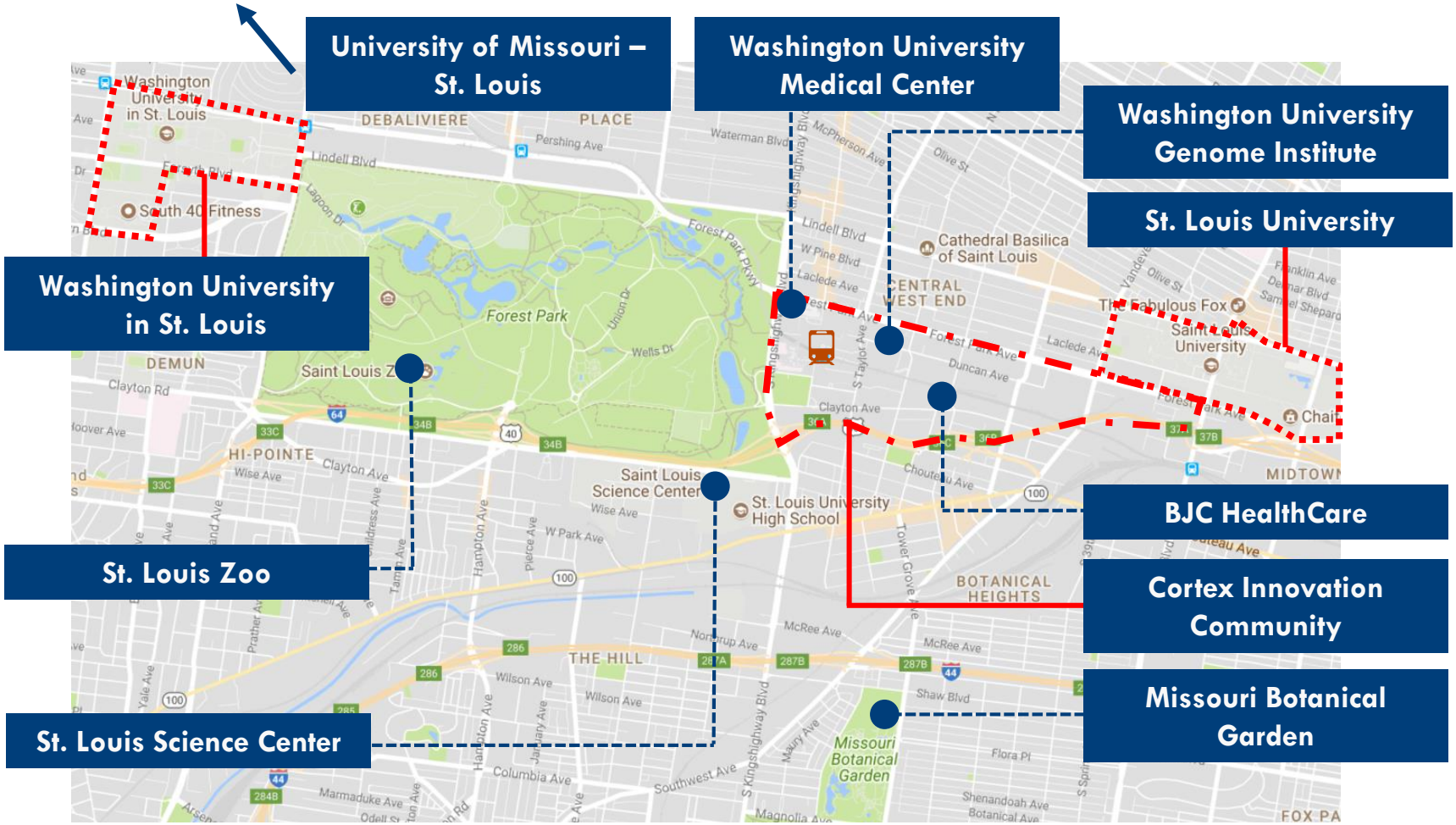


CORTEX INNOVATION COMMUNITY

St. Louis, MO

Close partnerships and major capital investments stimulated the creation of a dynamic innovation ecosystem that leverages regional and academic strengths.

CONTEXT | The Cortex Innovation Community is a roughly 200-acre neighborhood located in the Central West End neighborhood of St. Louis, Missouri.



CONTEXT | Cortex's three anchor university partners have different areas of focus, but each contribute to the region's economic strength at the intersection of agriculture, life sciences, and business.

	UC Riverside	Washington Univ. in St. Louis	Univ. of Missouri - St. Louis	St. Louis University
Total Students	22,920	14,385	16,719	13,287
Total Faculty	960 FTE	1,230 FTE	451 FTE	1,437 FTE
Metro Area Population	4.3 M	2.1 M	2.1 M	2.1 M
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	Coll. of Arts & Sciences School of Engineering & Applied Sciences Business School School of Design & Visual Arts School of Social Work & Public Health	Coll. of Arts & Sciences College of Business Administration School of Fine and Performing Arts School of Social Work	Coll. of Arts & Sciences Coll. of Philosophy and Letters College for Public Health & Social Justice College of Health Sciences School of Business College of Engineering, Aviation and Technology
Graduate Programs	42 Ph.D. programs, 52 Masters programs	50 Ph.D. programs, 19 Masters programs	14 Ph.D. programs, 20 Master's programs	100+ Master's and Ph.D. programs
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	School of Law School of Medicine	College of Education College of Nursing College of Optometry	School of Medicine School of Education School of Law School of Nursing School of Professional Studies
University Extension	UCR Extension	University College Professional & Continuing Education	None	SLU-Madrid

OVERVIEW | The buildout of 200 acres of mixed-use office, residential, hotel, and retail space has been supported by five public, private, and institutional anchors.

St. Louis Cortex Innovation Community encompasses a 200-acre mixed-use neighborhood and is a hub for **bioscience and technology research and development.**[1]

With an original sectoral focus on the bio and agri-tech industries, in recent years, the Cortex district has become a mixed-use community for start-ups and industry-funded research centers.

CURRENT COMPONENTS

- **1.7 million** SF of new and rehabilitated space
- **Over 1,000** residential units
- **200** companies & **3,600** employees in district

FOUNDING ANCHOR PARTNERS

- Washington University in St. Louis
- University of Missouri – St. Louis
- St. Louis University
- BJC Healthcare
- Missouri Botanical Garden

[1] For purposes of clarity in this report, we refer to the 501(c)3 that manages the Cortex Innovation Community as "Cortex" and the physical neighborhood as the Cortex Innovation Community or simply "the Cortex district."


West End Lofts residential development

@4240 office and lab space

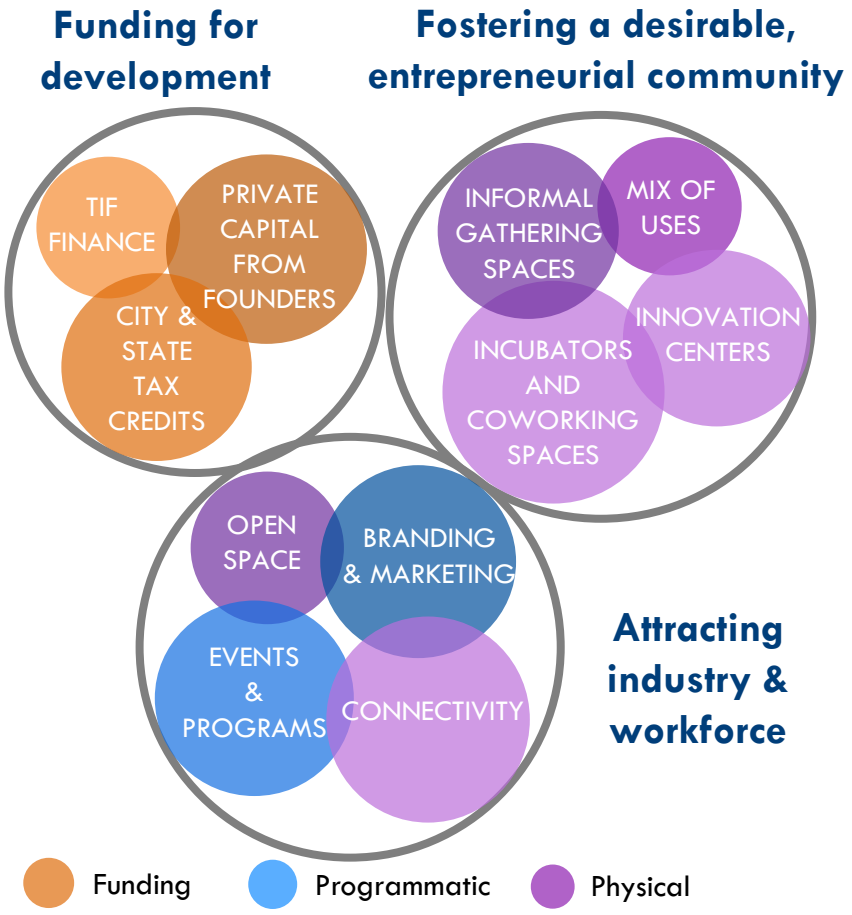
INDUSTRY ATTRACTION SUCCESS | Through a set of coordinated efforts, Cortex and its partners have attracted large biotech companies, technology corporations, and startup enterprises across a range of high-growth industries.

Efforts to develop an innovation district were galvanized by the Coalition for Plant and Life Sciences (now known as BioSTL). The Coalition's leadership brought together five anchor partners to establish the Cortex Innovation Community.[1] The five partners committed $29 million to fund Cortex's organizational capacity and investment within 200 acres in central St. Louis. To facilitate the district's growth, **the City of St. Louis designated Cortex, a 501(c)3, as the master developer** with an important suite of redevelopment powers. As such, Cortex was able to make and guide significant investment, aligning private development and investment interests with an overarching vision.

Cortex had initial success as a hub of life science companies. In 2010, Cortex's new CEO initiated a cultural shift to cultivate a diverse innovation community, adding **incubators, co-working, communal gathering spaces**, and **mixed-use urban amenities.** The private-sector has responded, and the neighborhood has seen significant investment.

[1] The five founding partners are Washington University in St. Louis, St. Louis University, the University of Missouri-St. Louis, BJC Healthcare, and Missouri Botanical Garden.

Effective Attraction Strategies



TIMELINE | Cortex's recent focus on mixed-use development has attracted new innovation centers and corporate tenants.

LEVERAGING PARTNERS' STRENGTHS | Cortex's success was predicated on regional institutional strengths and strong leadership and collaboration among anchor institutions.

RESEARCH STRENGTHS: MEDICAL AND PLANT BIOSCIENCE

- BioSTL was founded in 2001 to advance St. Louis' competitive assets in its bioscience cluster, with members including industry leaders from companies like Monsanto. The nonprofit was central in catalyzing the idea of Cortex, and has since financed several incubators.
- Washington University and St. Louis University have partnered with Cortex to offer core research facilities and equipment to scale high-growth emerging bioscience companies at incubators in Cortex.

STRONG LEADERSHIP & COORDINATION

- Founding partners financed an initial investment that kick-started Cortex, and demonstrated the commitment necessary to garner political and industry support.
- Regional partners have consistently coordinated to individually and collectively lead the implementation of specific initiatives, based on the capacity of each partner.

Monsanto: Key Agriculture Anchor


Cortex Founding Partners at MetroLink Opening

PARTNERS AND INCENTIVES | The public-sector has supported Cortex over the years through infrastructure subsidies, tax incentives, and urban realm investments.

Tax Credits (City, State)

In 2003, Missouri Development Finance Board approved $12 million in 2:1 tax credits designed to spur the construction of the Cortex district's first phase.

In 2008, City of St. Louis supported the development of Wexford's Center for Emerging Technologies with $8 million worth of historic preservation and brownfield remediation tax credits.

Tax Increment Financing District (City)

In 2012, St. Louis Tax Increment Financing Commission granted Cortex $168 million in TIF financing, of which $32 million was granted to IKEA in **2014.**

Urban Realm Improvements (City)

In 2012, the City of St. Louis contributed $15 million for new streetscapes and a linear public park in the Cortex district, known as Cortex Commons.

Transportation Commitments (Federal, State)

In 2013, the Missouri Department of Transportation contributed $16 million towards the new I-64 interchange leading into the Cortex district.

In 2014, the Federal Department of Transportation awarded St. Louis over $10 million for the construction of a new MetroLink station in the Cortex district.

ECOSYSTEM FACILITATION | Cortex has developed five key spaces that foster an entrepreneurial community that builds and attracts tech companies.

In 2010, Cortex developed a range of initiatives to expand the breadth of industries present within the campus. Informal gathering spaces, tech events, and start-up incubators have been successful both in attracting and creating companies outside the life sciences industry. Corporations like Square, Pandora, Microsoft, and Boeing have moved operations to the Cortex district because of its **energetic community, and the synergy between established companies and start-up enterprises.**

Specifically, **the Venture Café** has driven Cortex's entrepreneurial community, bringing over 500 people to **weekly events that provide a physical nexus** for innovators to develop impactful connections.

Other start-up resources include bioscience incubators with lab and office space, equipment, training, investment funding, the **Cambridge Innovation Center,** and a 24/7 prototyping studio.

The TechShop

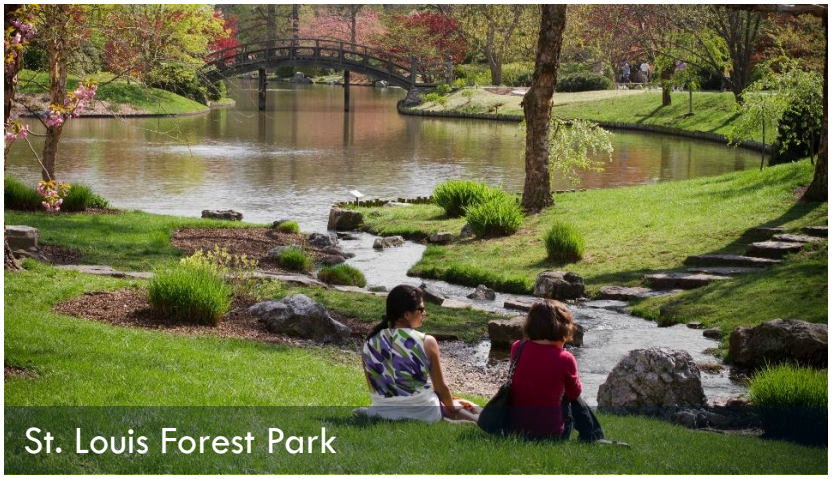
Venture Cafe

URBAN DEVELOPMENT | Cortex successfully revitalized an underinvested neighborhood through targeted investment, which has stimulated significant private interest.

Cortex has benefited from its **midtown location,** with proximity to many amenities, in addition to campuses of the founding partners. Because Cortex and its partners control relatively little of the land within its boundaries, the City of St. Louis granted the entity master developer rights, including the right to exercise eminent domain, offer tax abatements, and enter development agreements, allowing Cortex to control and stimulate development. By using these rights to shape the creation of a mixed-use environment, Cortex has become **a place for millennials to live, work and play.**

URBAN REALM AMENITIES

- Transit connectivity (new MetroLink station)
- Density and mix of uses to create a highly desirable urban environment (new retail and restaurants, including an IKEA)
- Public realm improvements such as linear parks and improved streetscapes
- Programmed spaces to foster collaboration


St. Louis Forest Park

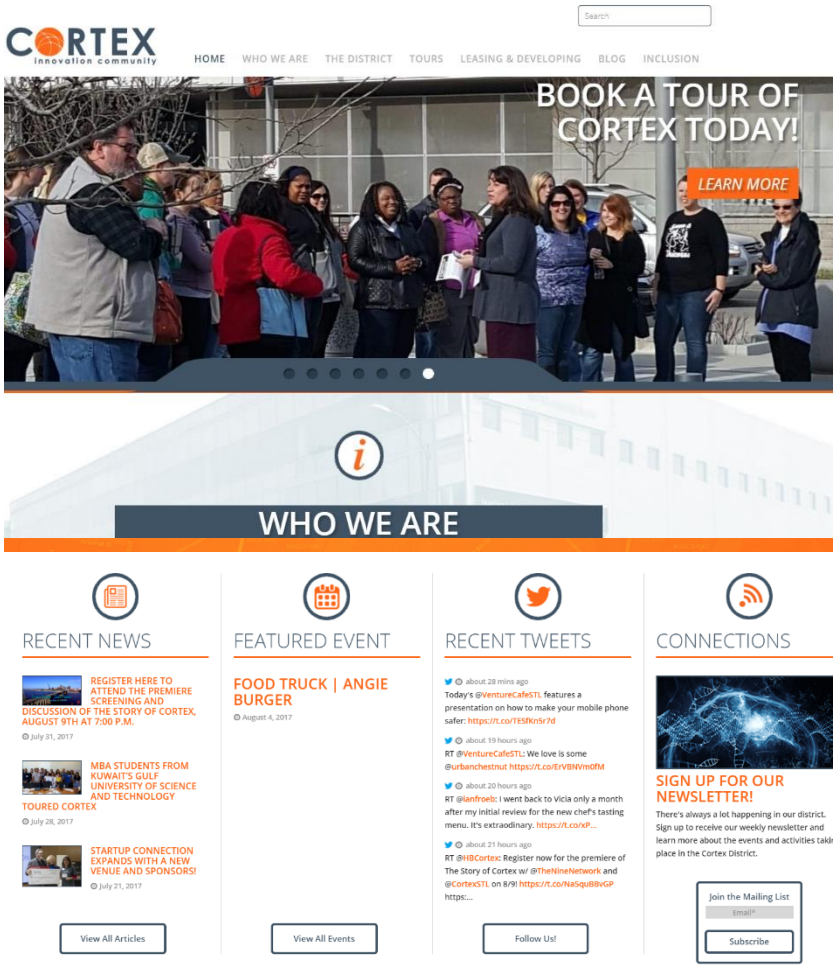

MetroLink

BRANDING & MARKETING | Cortex built a bio-agritech brand on its partners' strengths, and now markets itself as a holistic innovation community.

The initial success of Cortex as a hub of life science and biotechnology corporations was driven by branding and marketing that promoted the region's identity as a **life sciences research hub,** emphasizing St. Louis' cluster of hospitals, universities, and research centers as well as its core bio-agritech companies such as Monsanto and Solae.

After 2010, Cortex **repositioned its brand to emphasize the physical characteristics of the district** and **its community of innovators**. Cortex's website presents **leasing and development opportunities and offers tours of the district.** It also features the district's amenities and assets and markets its programming with a calendar of events and an active social media presence that emphasizes the evolving Venture Café.

Throughout all marketing materials, Cortex promotes its district as a **place to come together, share ideas in communal spaces, and work** collaboratively with companies and start-ups.



St. Louis Cortex Innovation Community | Relevant lessons and key takeaways for UC Riverside

1. Cortex required an initial investment of **$29 million from its founding anchor partners** to successfully launch and develop the first phase of the Cortex district.

2. The City of St. Louis granted Cortex the power to leverage **tax-increment financing to raise over $150 million for development.**

3. Cortex **created a community of innovators** by developing incubator spaces for start-up creation across a variety of sectors, informal gathering spaces for collaboration, accessible programming, and highly-popular weekly tech events.

4. The Cortex district grew in Phase II due to Cortex's decision to **engage development partner Wexford, which has a focus on mixed-use communities.**

5. Cortex's effective branding strategy initially leveraged St. Louis' **underlying regional bio-agritech strengths and now emphasizes access to physical space, urban amenities, and regular communal events.**

NORTH CAROLINA STATE UNIVERSITY CENTENNIAL CAMPUS

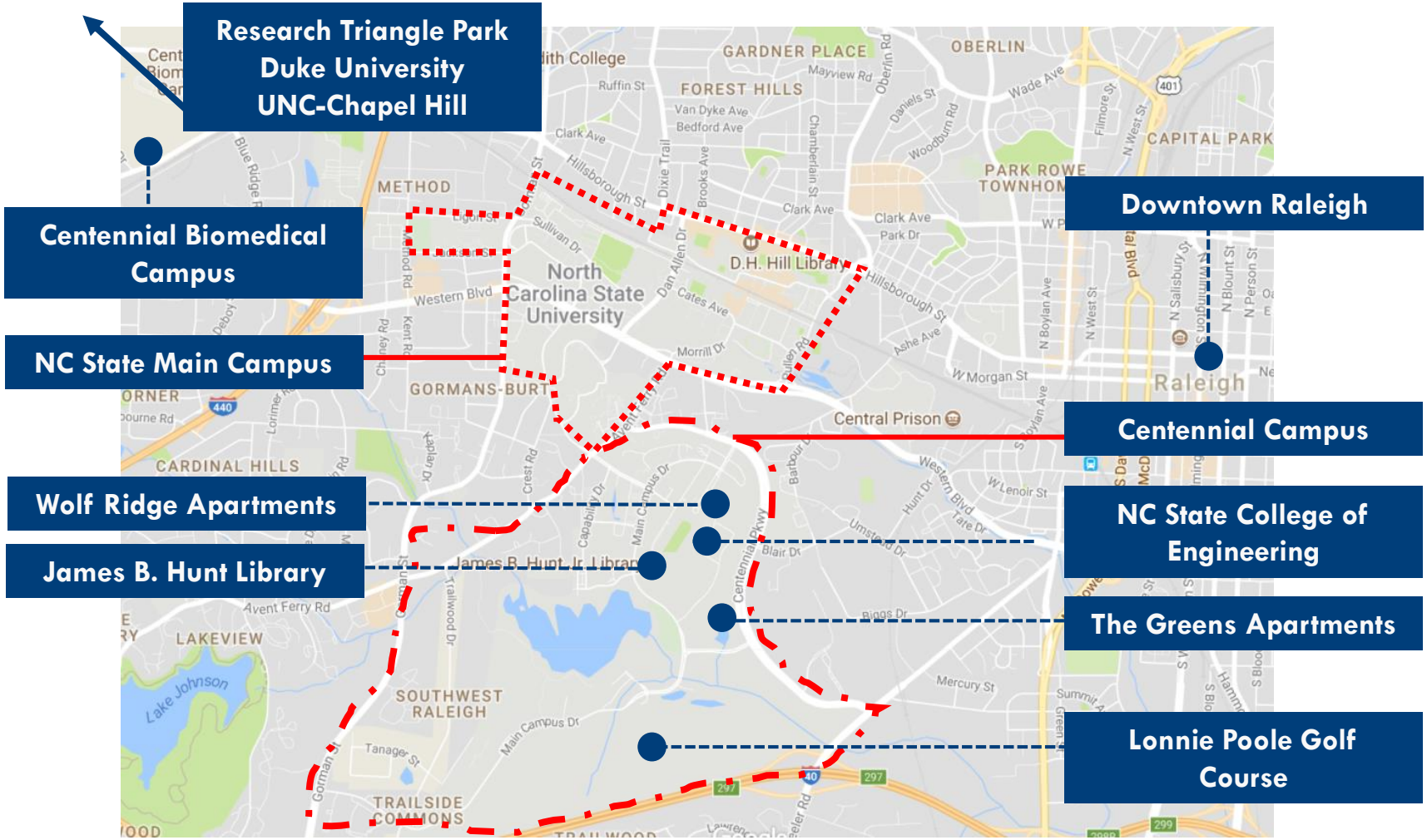
Raleigh, NC

Existing and new partnerships contribute to the success of an innovation campus, attracting government research institutes and industry anchors.

CONTEXT | North Carolina State University ("NC State") is known for its College of Engineering and its research in analytics.

Comparison Metrics	UC Riverside	NC State
Total Students	22,920	34,000
Total Faculty	960 FTE	1,050 FTE
Metropolitan Statistical Area Population	4.3 M	1.2 M
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	College of Engineering College of Textiles College of Agriculture and Life Sciences College of Sciences College of Management College of Design College of Education College of Humanities and Social Sciences College of Natural Resources
Graduate Programs	42 Ph.D. programs, 52 Masters programs	60 Ph.D. programs, 160 Masters programs
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	College of Veterinary Medicine
University Extension	UCR Extension	University Extension College

CONTEXT | NC State has focused on growing an innovation ecosystem at its Centennial Campus, located in Raleigh, N.C.



OVERVIEW | Centennial Campus has provided a home for NC State to expand its industry partnerships and grow its regional impact.

OVERVIEW

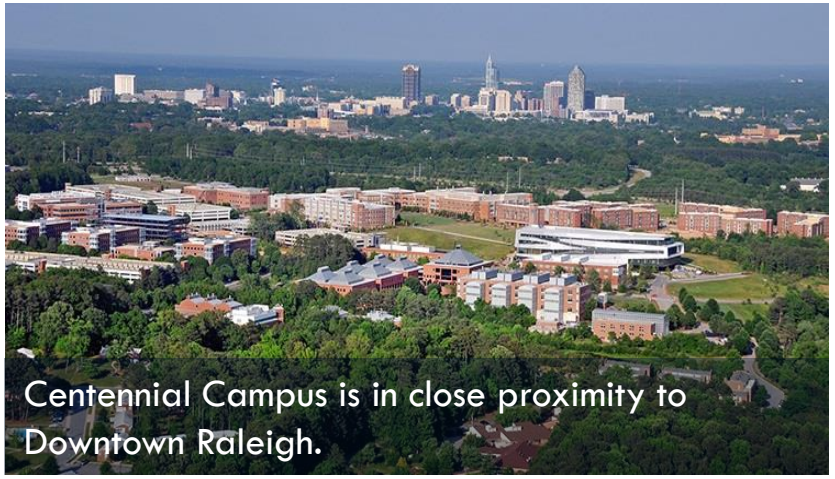
Centennial Campus is a key component of the Raleigh-Durham region's innovation economy, with a specific focus in engineering, analytics, and advanced technology. The campus, first envisioned 25 years ago, is located adjacent to Downtown Raleigh and the main NC State campus.

CURRENT COMPONENTS

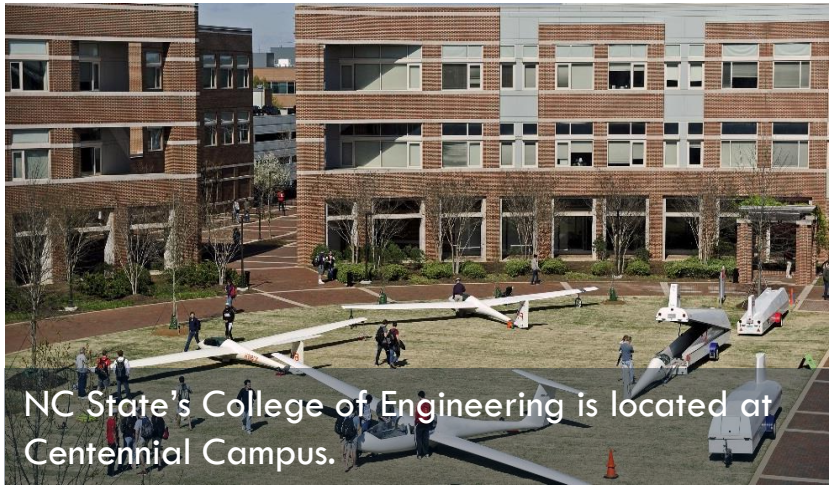
- **1.2 million SF** of office and lab space (700k SF private, 500k SF University)
- **590** residents
- **75** companies
- **4,400** employees

ANCHOR TENANTS

- NC State University
- ABB
- LexisNexis
- Bandwidth
- US Department of Agriculture
- National Weather Service



Centennial Campus is in close proximity to Downtown Raleigh.



NC State's College of Engineering is located at Centennial Campus.

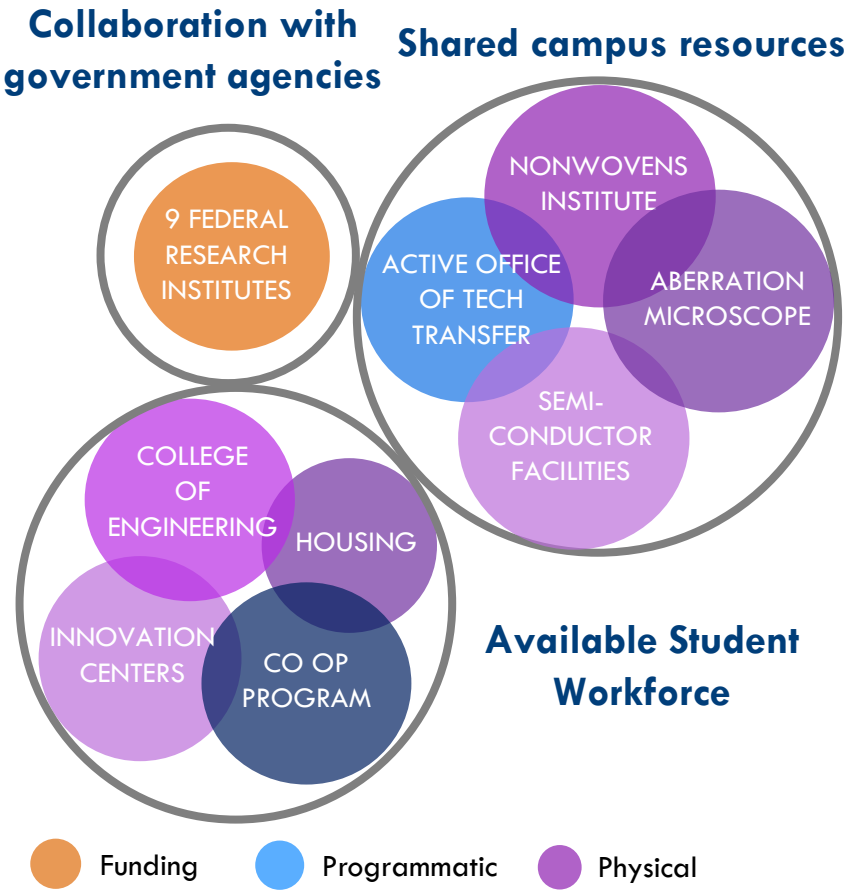
INDUSTRY ATTRACTION SUCCESS | Centennial Campus has leveraged existing partnerships with private companies to establish federal research institutes and ultimately market and build out a campus dedicated to innovation.

In the 1980s, the State of North Carolina gave NC State over 800 acres for a research park adjacent to the University's Raleigh campus.

In recent years, Centennial Campus has **led nine federally-funded, public-private efforts in applied research related to engineering and analytics.** The campus has had success in working with existing private sector partners to secure federal grants for these research institutes and has seen subsequent success in growing industry partnerships.

Shared facilities, amenities, and campus resources are well-marketed to attract companies to partner with the University and locate at the campus. Centennial Campus offers companies **easy access to NC State's student talent.** The College of Engineering and residential housing are located on the campus and the co-op internship program allows companies to hire full-time student employees. The campus will soon embark on a significant mixed-use expansion.

Effective Attraction Strategies



TIMELINE | Centennial Campus was a land grant from the State of North Carolina; careful planning has attracted corporations, government agencies and innovation centers.

1984	First 355 acres allocated to NC State from the State of North Carolina.
1985	Additional 450 acres allocated from State Farm Operations Commission.
1987	UNC Board of Governors approves Land Use Master Plan for Research I building.
2001	Biomedical campus is established; 120 acres transferred to campus.
2004	College of Engineering moves to Centennial Campus.
2007	Biomanufacturing Training and Education Center (BTEC) opens.
2012	Eastman Chemical Company opens Eastman Innovation Center (EIC).
2014	President Obama designates NC State as the leading institution of PowerAmerica, a public-private initiative, with $140M from the Department of Energy.
2015	Biomedical Partnership Center opens.
2016	IBM opens Collaborative Education Center.
Future	**StateView Hotel and Conference room; 32 acre mixed-use development**

Public-sector intervention

Private-sector action

Milestones

ECOSYSTEM FACILITATION | NC State has consolidated resources to start-ups and technology transfer in its Office of Technology Commercialization and New Ventures.

In addition to a program that requires companies to have a faculty "sponsor," who becomes companies' point of contact to the University, the Office of Technology Commercialization and New Ventures protects and promotes University intellectual property. This office and acts as a one-stop shop on campus for the acceleration of startups through:

- **THREE FUNDING SOURCES:** venture capital for all NC State-affiliated start-ups; investment for start-ups that license University research; and pre-angel investment funding for faculty researchers.
- **THREE COLLABORATIVE SPACES:** co-working space in Downtown Raleigh; on-campus incubators with wet labs; and meeting space and collaboration stations for all partners. Centennial Campus aims to increase "touchdown space" for firms with a smaller physical presence in Raleigh.
- **RESOURCES:** industry executives-in residence; 24/7 venture creation and prototyping space; and an entrepreneurship clinic with associated funding.

The Entrepreneurship Initiative

The Entrepreneurship Clinic

BRANDING & MARKETING | Centennial Campus markets itself, partnerships with government agencies, accessible talent and desirable amenities.

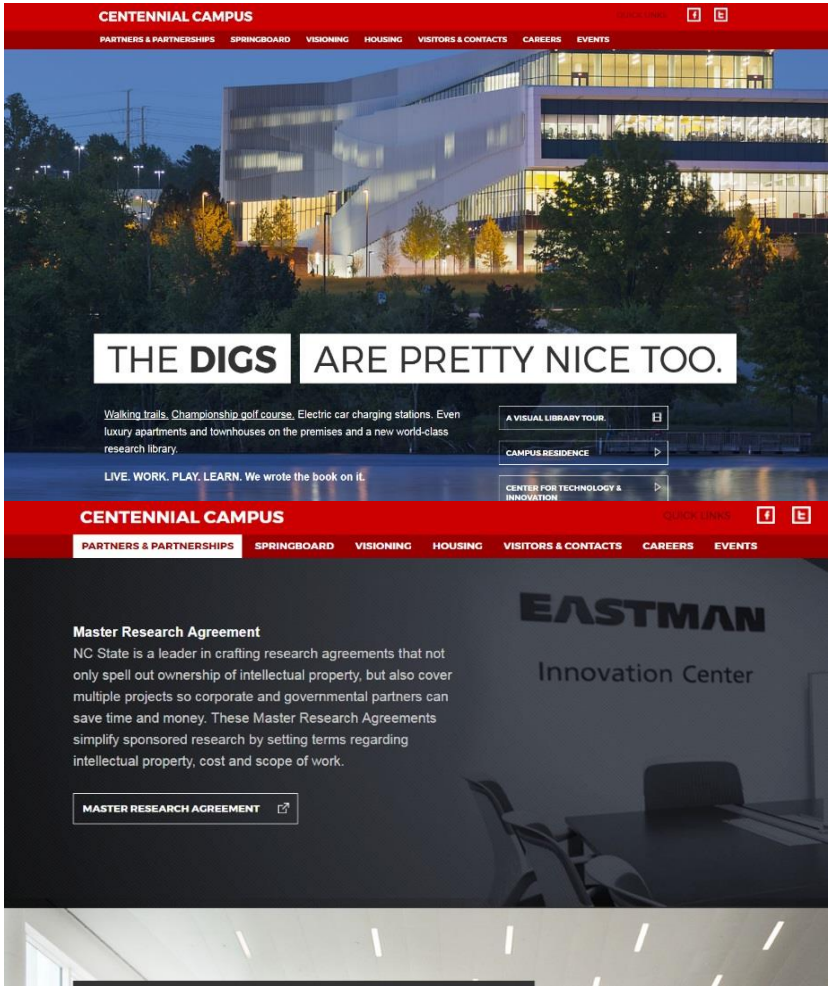
Centennial Campus's staff, NC State faculty and staff, and online materials market the campus as **a hub for ideas and thinking with robust partnerships, research and entrepreneurship resources and desirable amenities.** Rather than emphasizing physical space, the website materials market the value and **ease of forming partnerships** with NC State, providing testaments from partners' perspectives and sample master research agreements.

AMENITIES

- New and innovative James B. Hunt Library
- Hotel and conference center under development
- 18 hole golf course adjacent to campus

FACILITIES

- Testing facilities for semiconductors
- Nonwovens facility
- One of the only aberration-corrected electron scanning microscopes in North America



LEVERAGING UNIVERSITY'S STRENGTHS | NC State has leveraged its research strengths to form partnerships for which it has been recognized nationally.

RESEARCH STRENGTHS

- NC State has deepened existing partnerships with industry by collaborating to win federal funds that have enabled the establishment of nine research institutes at the Centennial Campus, several of which focus on smart grid technology and national security. These institutes have encouraged related companies to co-locate at the campus.

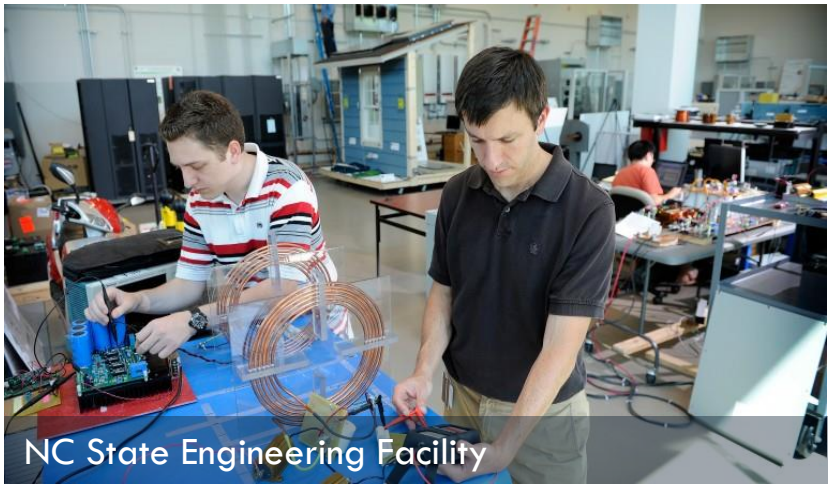
STUDENT AND WORKFORCE DEVELOPMENT

- NC State, which has one of the largest undergraduate engineering program in the US, has leveraged its student talent by creating a highly-utilized co-op program that allows students to work full-time at local companies.
- Companies, including IBM and LexusNexis, have created centers that tap into and enhance talent.

TECHNOLOGY TRANSFER INFRASTRUCTURE

- The campus recently expanded its technology transfer office to a total of 20 specialized licensing associates who intermediate between faculty and industry, which has substantially increased licensing agreements.

Nonwovens Institute


NC State Engineering Facility

NC State Centennial Campus | Relevant lessons and key takeaways for UC Riverside

1. NC State required an **initial large land donation from the State of North Carolina** in order to initiate the development of an innovation ecosystem.

2. NC State has leveraged existing **partnerships with industry to attract federal grants for specialized research institutes** at Centennial Campus.

3. NC State leverages and strengthens student talent in engineering by **providing opportunities for full-time students workers at Centennial Campus companies through its co-op program.**

4. NC State successfully increased technology transfer and commercialization by proactively deepening academic-industry relationships through **an expansion of specialized technology transfer office staff,** including the utilization of faculty "sponsors."

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

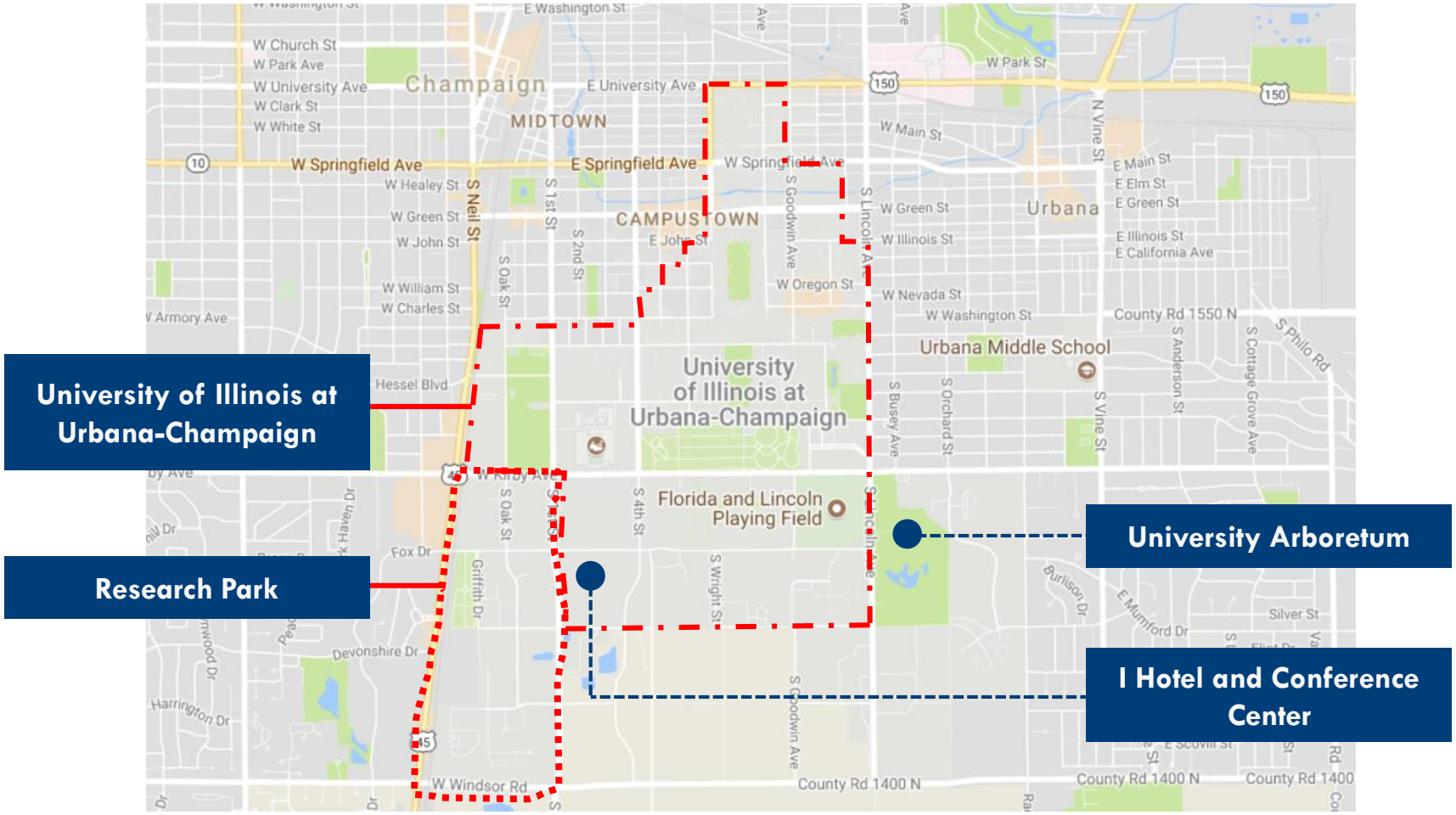
Champaign, IL

A close university-developer partnership, as well as tax incentives and public funding have created an ecosystem that leverages student talent.

CONTEXT | University of Illinois at Urbana-Champaign (UIUC) is well-known for its College of Engineering.

Comparison Metrics	UC Riverside	Univ. of Illinois at Urbana-Champaign
Total Students	22,920	45,400
Total Faculty	960 FTE	2,740 FTE
Metropolitan Statistical Area Population	4.3 M	236,000
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	College of Agricultural, Consumer & Environmental Sciences College of Applies Health Sciences College of Business College of Education College of Engineering College of Fine and Applied Arts College of Media School of Labor and Employment Relations College of Liberal Arts and Sciences School of Information Sciences
Graduate Programs	42 Ph.D. programs, 52 Masters programs	91 Ph.D programs, 156 Masters programs, 26 online graduate programs
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	Carle Illinois College of Medicine College of Veterinary Medicine College of Law
University Extension	UCR Extension	University of Illinois Extension

CONTEXT | Urbana-Champaign's 200-acre research park is located southeast of the University of Illinois campus and the cities of Champaign and Urbana.



OVERVIEW | The University of Illinois at Urbana-Champaign partnered with a developer, local and state government to establish a successful research park.

OVERVIEW

The Research Park at the University of Illinois provides a community where businesses can work with research faculty, students, and peers on collaborative research and can access UIUC services.

COMPONENTS

- **100+** companies including large companies and start ups
- **1,700+** employees in high-technology careers
- **600+** student interns
- **15** buildings, or roughly a new building every year since 2001

PARTNERS

- State of Illinois
- City of Champaign
- Fox/Atkins Development

Aerial view of the Research Park

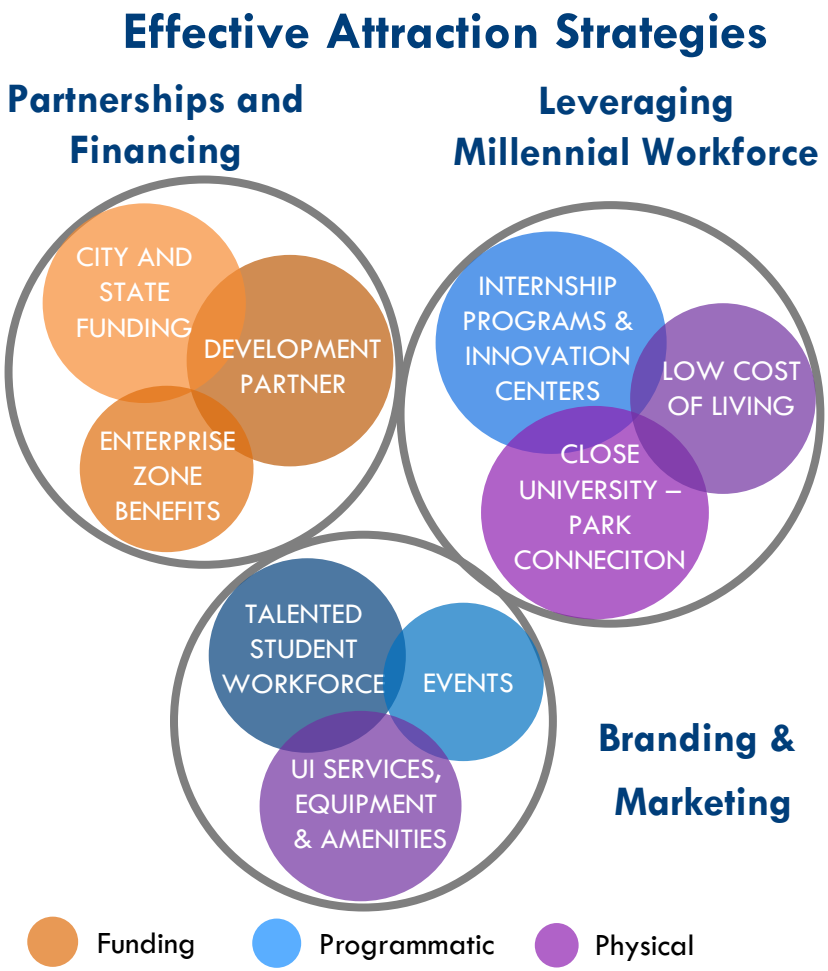
The Research Park Hotel and Conference Center

INDUSTRY ATTRACTION SUCCESS | UIUC has attracted Fortune 500 companies with accessible and diverse student talent.

In 1999, a non-profit limited liability company was established by UIUC to govern a new research park on 200 acres of University land. The LLC, named "the Research Park," selected Fox/Atkins, a private developer, to lease the land and lead construction and development.

Since then, the Research Park has **attracted large Fortune 500** firms like Yahoo, Caterpillar, State Farm, ADM, Abbott, and Deere. **Incentives offered by the City, funding by the State of Illinois, and the University's partnership** with Fox/Atkins have been central to the park's success.

A pipeline of inexpensive, diverse student talent has been a driving force of large companies to UIUC. By developing and marketing its research park internship program, and providing administrative assistance, the University has fostered mutually beneficial connections between companies and students.



TIMELINE | Public-private partnerships to develop space and launch entrepreneurial programming at the Research Park have enabled consistent growth since 1999.

PARTNERS AND INCENTIVES | The public-sector has supported industry attraction at the UI Research Park through development incentives, enterprise zone benefits, and funding.

Development Incentives (City)

- In 2000, the City of Champaign created a new high-tech incentive program which would award up to $750,000 to Fox/Atkins over 20 years. The City agreed to pay the developer $3 for every square foot of new space that is created for high-tech businesses that are not already located in the region.
- The City of Champaign also committed to rebate up to $3 million in any new hotel-motel tax for 15 years to the developer for the I Hotel project.

Enterprise Zone Benefits (City, County)

- The City of Champaign has expanded the boundaries of the enterprise zone to include the Research Park. The enterprise zone designation provides five-year property tax abatements and sales tax exemptions to eligible residential, commercial, and industrial construction.

City and State Funding (City, State)

- The Research Park receives $450,000 annually in State funding via the University.
- In 2000, then-Gov. George Ryan's VentureTECH initiative provided $8 million to build the EnterpriseWorks business incubator for UI-related startup businesses.
- The City has also provided matching funds for various park development projects.

ECOSYSTEM FACILITATION | The Research Park provides experts-in-residence, funding, and events for innovators to share ideas.

The Research Park was rapidly filled by large companies who wanted access to the University's student talent; creating start-ups was not a high priority. However, recently, the University has made efforts to facilitate start-up creation by creating "**collision spaces**" where innovators can interact, and share knowledge. **150 annual events** include weekly gatherings, women in technology discussions, CEO Roundtables as well as large summits. Key ecosystem elements include:

- **BUSINESS INCUBATOR:** offers funding, and paid experts-in-residence for big data, design, entrepreneurship and other subjects. Start-ups at the incubator have raised over **$800 million** in venture capital funding since it opened.
- **TWO KEY FUNDING SOURCES:** An early-stage technology investment firm launched by UIUC catalyzes the creation of University research-related companies; other NSF program funding is targeted to university researchers that have potential for commercialization.

11 graduates from the incubator are currently located in the Research Park.

21 innovation centers have opened at UI.

LEVERAGING UNIVERSITY'S STRENGTHS | UIUC has leveraged student talent by facilitating internship programs that have been highly attractive to industry.

AFFORDABLE & TALENTED STUDENT WORKFORCE:

- UIUC has **large computer science and engineering programs,** with over 1,500 enrolled undergraduate and graduate students.
- The University, through partnerships with industry, has developed a pipeline of talented labor for companies, and reduced administrative burden related to hiring and payroll.
- **The Research Park Internship Program allows students to easily work at companies;** recruitment assistance programs and University personnel, job boards, and well-attended career fairs all streamline this process.
- Companies, including State Farm which pioneered the internship program, have **innovation and development centers where students can work all year long** as opposed to a traditional, summer-only internships.
- Student interns and student employees make up approximately a third of the day-to-day workforce at the Research Park.


Annual UIUC Career Fair


Dow Innovation Center Student Interns

BRANDING & MARKETING | UIUC has successfully marketed the easy accessibility of cheap and strong student talent to companies.

On its user-friendly and comprehensive website, the University markets **its cheap, accessible and diversely talented student workforce** and its on-campus University amenities and events.

SUCCESS OF COMPANIES

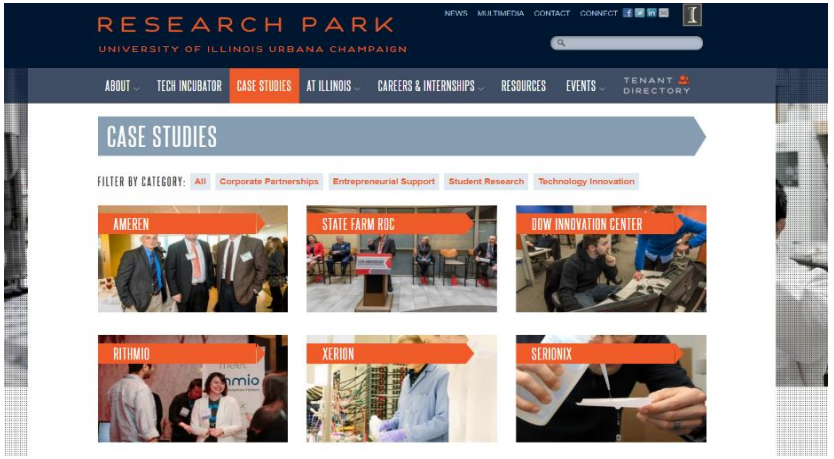
- The University markets the success of companies with "Case Studies" that feature various companies, demonstrating how and why they came to the University, with pictures and videos.

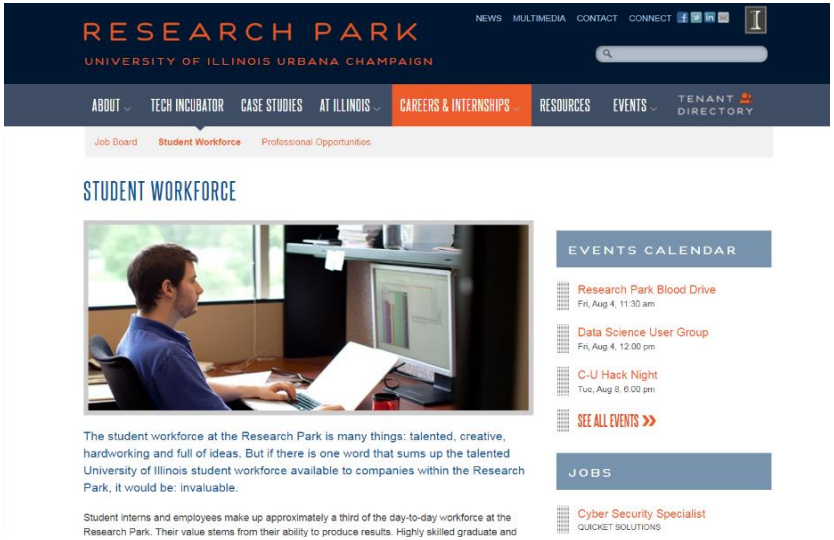
TALENTED & AFFORDABLE STUDENT WORKFORCE

- UIUC describes how to hire students through the Internship program; provides online recruitment resources; and advertises affordable wages.
- UIUC updates its online job board for students and has an active online calendar of events.

ON-CAMPUS AMENITIES

- The website features amenities like its 3D printer and BlueWaters SuperComputer.
- The website provides easy links to Urbana-Champaign's regional marketing website.





University of Illinois at Urbana-Champaign | Relevant lessons and key takeaways for UC Riverside

1. UIUC formed a **close partnership with a dedicated, local development consortium** to lead and finance construction, while retaining significant control.

2. The University has collaborated with companies to ensure a steady pipeline of workers and employees by creating internship programs, **facilitating recruitment support** and **company specific innovation and development centers.**

3. The City of Champaign and State of Illinois have provided **funding and incentives,** including both direct cash incentives and tax incentives, to support the development of buildings and attraction companies.

4. The University has begun to develop a community of entrepreneurs through regular events and gathering spaces. Its **resident experts**, and **technology transfer infrastructure and funding** have produced successful start-ups that stay at the Research Park.

UNIVERSITY OF WISCONSIN - MADISON

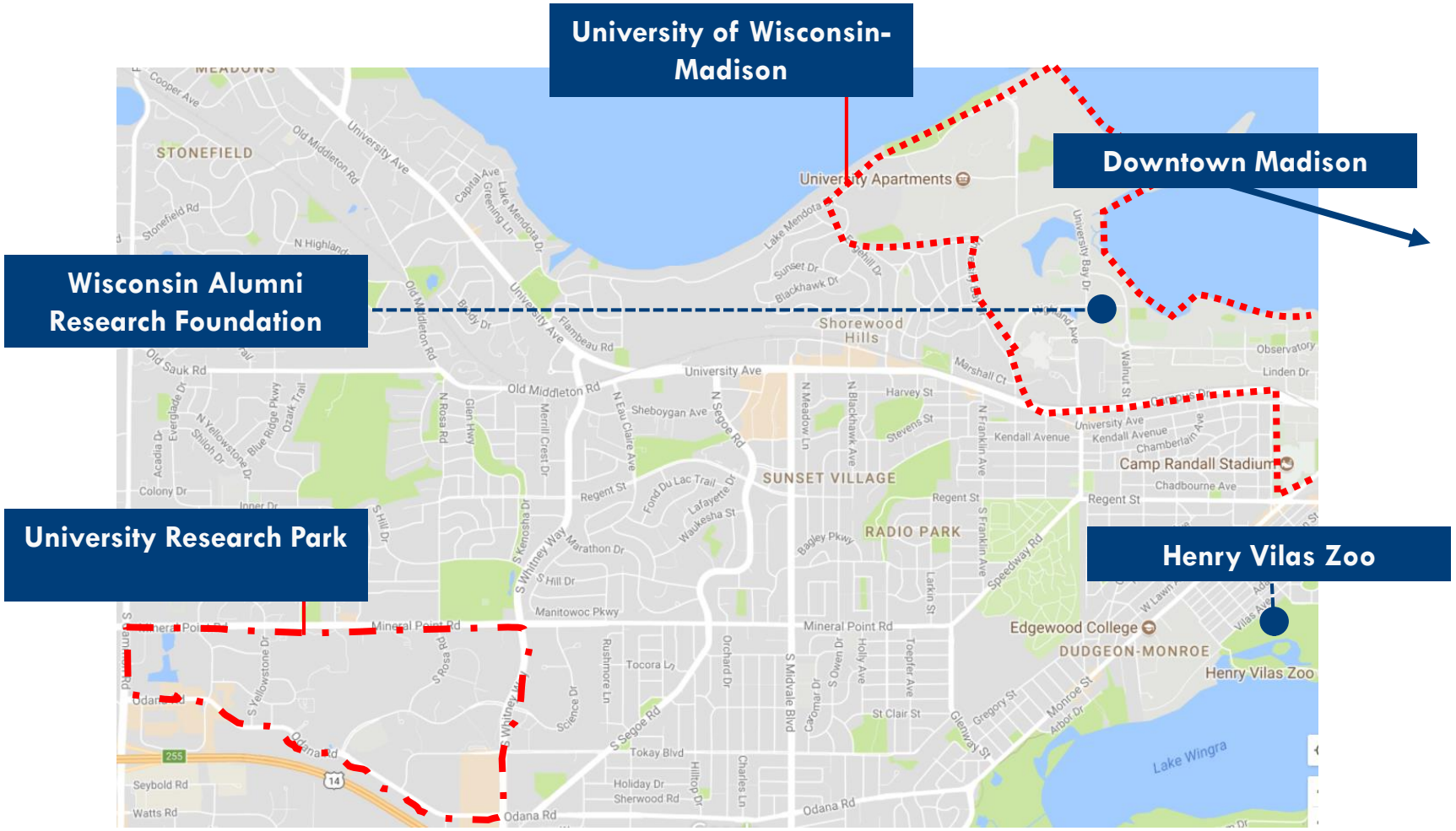
Madison, WI

Madison's independent technology transfer organization has supported the commercialization of intellectual property for decades; flexible University-leased space encourages entrepreneurs to stay in the community.

CONTEXT | University of Wisconsin-Madison (UW-Madison) is renowned for its College of Agricultural & Life Sciences.

Comparison Metrics	UC Riverside	University of Wisconsin-Madison
Total Students	22,920	43,338
Total Faculty	960 FTE	2,020 FTE
Metropolitan Statistical Area Population	4.3 M	627,618
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	College of Agricultural & Life Sciences Wisconsin School of Business School of Education School of Human Ecology College of Letters & Science School of Nursing School of Pharmacy
Graduate Programs	42 Ph.D programs, 52 Masters programs	102 Ph. D programs, 162 Masters programs
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	Law School School of Medicine and Public Health School of Veterinary Medicine
University Extension	UCR Extension	University of Wisconsin-Extension

CONTEXT | University Research Park (URP) is a key component of Madison's innovation ecosystem and is located five miles west of the UW-Madison.



OVERVIEW | University Research Park focuses on biotechnology and life science corporations.

University Research Park supports early-stage, and growth-oriented businesses in a range of sectors, primarily biotechnology, and life sciences.

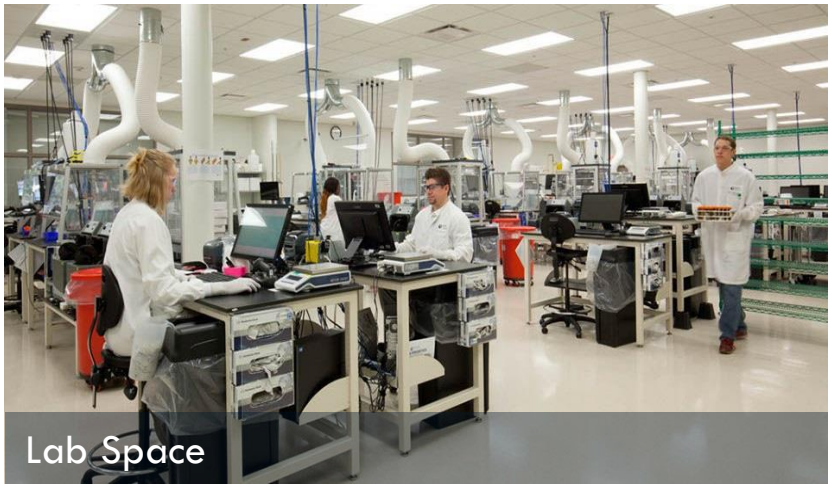
COMPONENTS

- Established in 1984
- Originally 351 acres – 260 acres developed
- 37 buildings
- 1.8 million square feet under roof
- 121 tenants
- More than 3,800 employees

ANCHOR PARTNERS

- Third Wave
- Roche NimbleGen
- Stemin
- Cell Line Genetics
- Stratatech
- Mentor
- Ultratec
- Stemina Biosciences


University Research Park

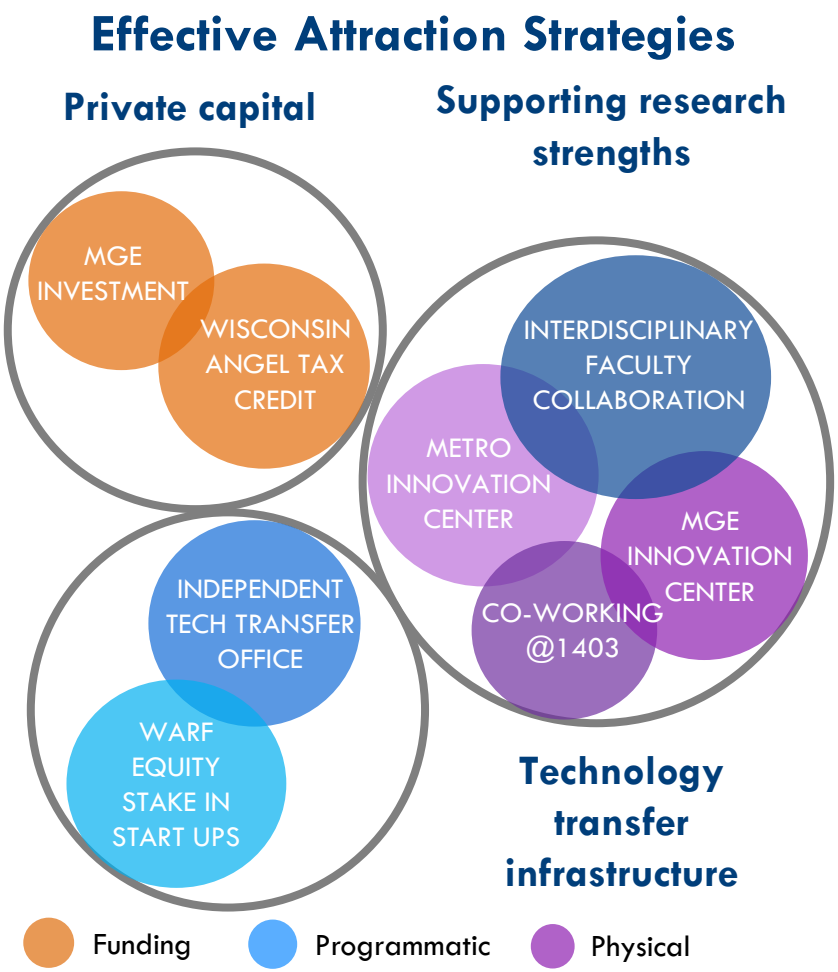

Lab Space

INDUSTRY ATTRACTION SUCCESS | UW-Madison's technology transform platform has provided significant support for faculty to commercialize their research and establish companies for almost a century.

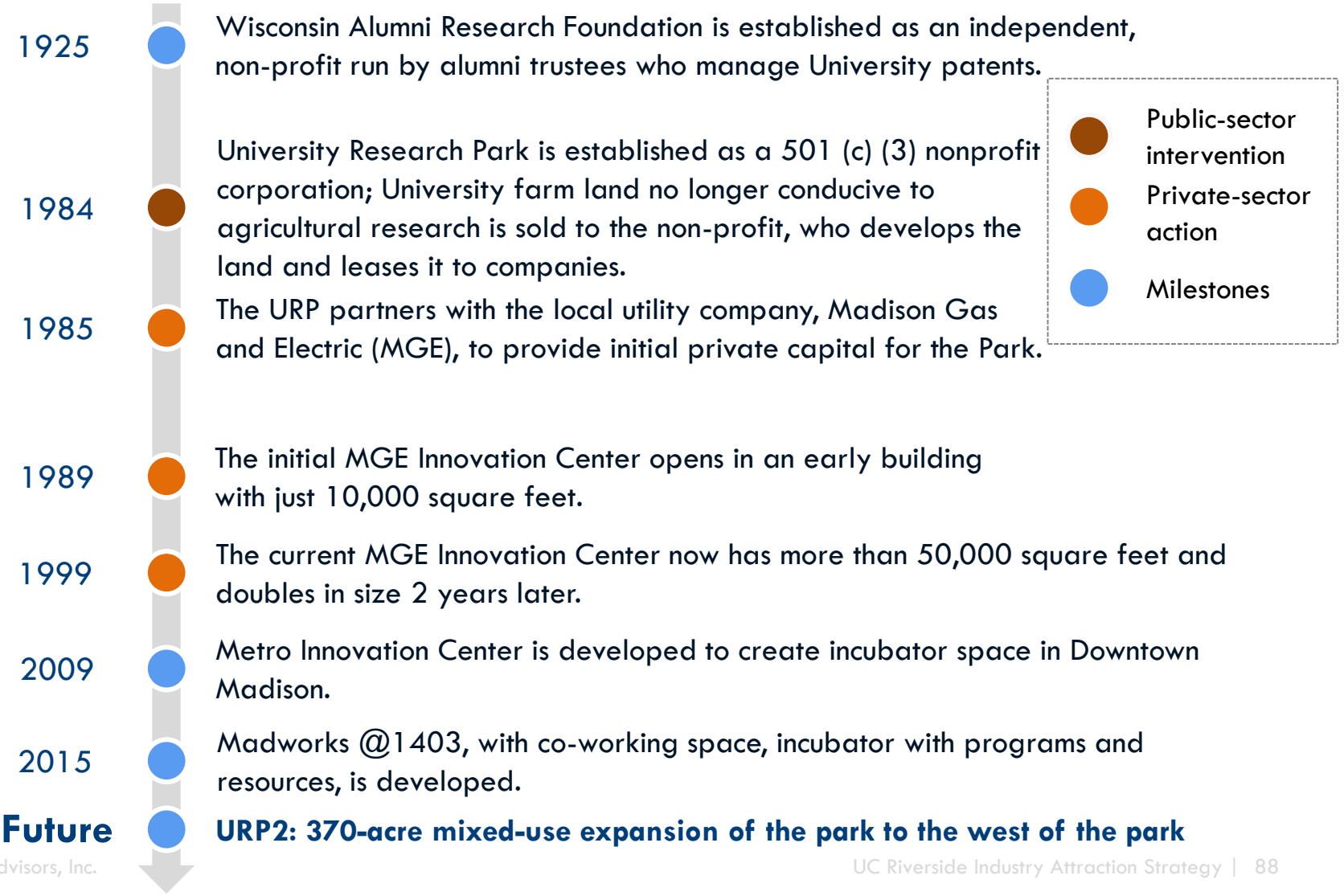
UW Madison has a strong technology commercialization culture, driven by the establishment of the Wisconsin Alumni Research Foundation (WARF) in 1925. An independent organization, WARF is tasked with and effective at commercializing faculty research, and offers equity grants to faculty start-ups in lieu of patent fees.

In 1984, the University, inspired by Stanford's research park, decided to develop a physical presence to grow life science corporations. **URP was established as a 501(c)3 nonprofit.** University-owned land no longer conducive to agricultural research was sold to the non-profit, which developed the land and leased it to companies. URP initially **partnered with Madison Gas and Electric (MGE)** to provide private capital.

About 70% of companies at URP have emerged from discoveries at the University. Other large biotech companies who locate at the park are attracted to UW-Madison for its **growing student talent** in agri-science and health care.



TIMELINE AND PARTNERSHIPS | UW-Madison's initial partnership with MGE allowed it to quickly develop into a research park.



ECOSYSTEM FACILITATION: UW-Madison has developed programmatic, financial and physical infrastructure to support entrepreneurship.

In addition to resources at University-related incubators, the **interdisciplinary faculty culture** and **the support WARF provides** for start-ups are key to the commercialization of research and the significant number of start-up companies in Madison.

TECHNOLOGY TRANSFER INFRASTRUCTURE

- WARF is an independent nonprofit foundation with an endowment close to $3 billion.
- Instead of charging licensing fees, **WARF offers start-ups the option to provide WARF an equity stake in new companies,** lowering the bar to success. Frequently, WARF also invests in faculty-run companies.

THREE INCUBATORS:

- Incubators in Downtown Madison and on campus have resources including office, lab, co-working space, entrepreneurship resources, access to WARF and legal resources.

REGIONAL PRIVATE CAPITAL

- In 2012, State of Wisconsin established an **angel tax credit** that has increased venture capital which has supported start-ups in the area.


MGE Innovation Center

Madworks Coworking

University of Wisconsin, Madison | Relevant lessons and key takeaways for UC Riverside

1. UW-Madison's **strong technology transfer infrastructure** has allowed research at the University to be commercialized and to form the basis for companies in Madison. WARF collaborates with faculty to successfully support start-up creation.

2. UW-Madison's **partnership with MGE Electric and associated capital investment** was essential for URP's inception and initial development.

3. UW-Madison's **incubator spaces at the Research Park and in Downtown** provide a variety of resources and programming to early stage tech companies and researchers seeking to commercialize their technologies.

UNIVERSITY OF CALIFORNIA, IRVINE

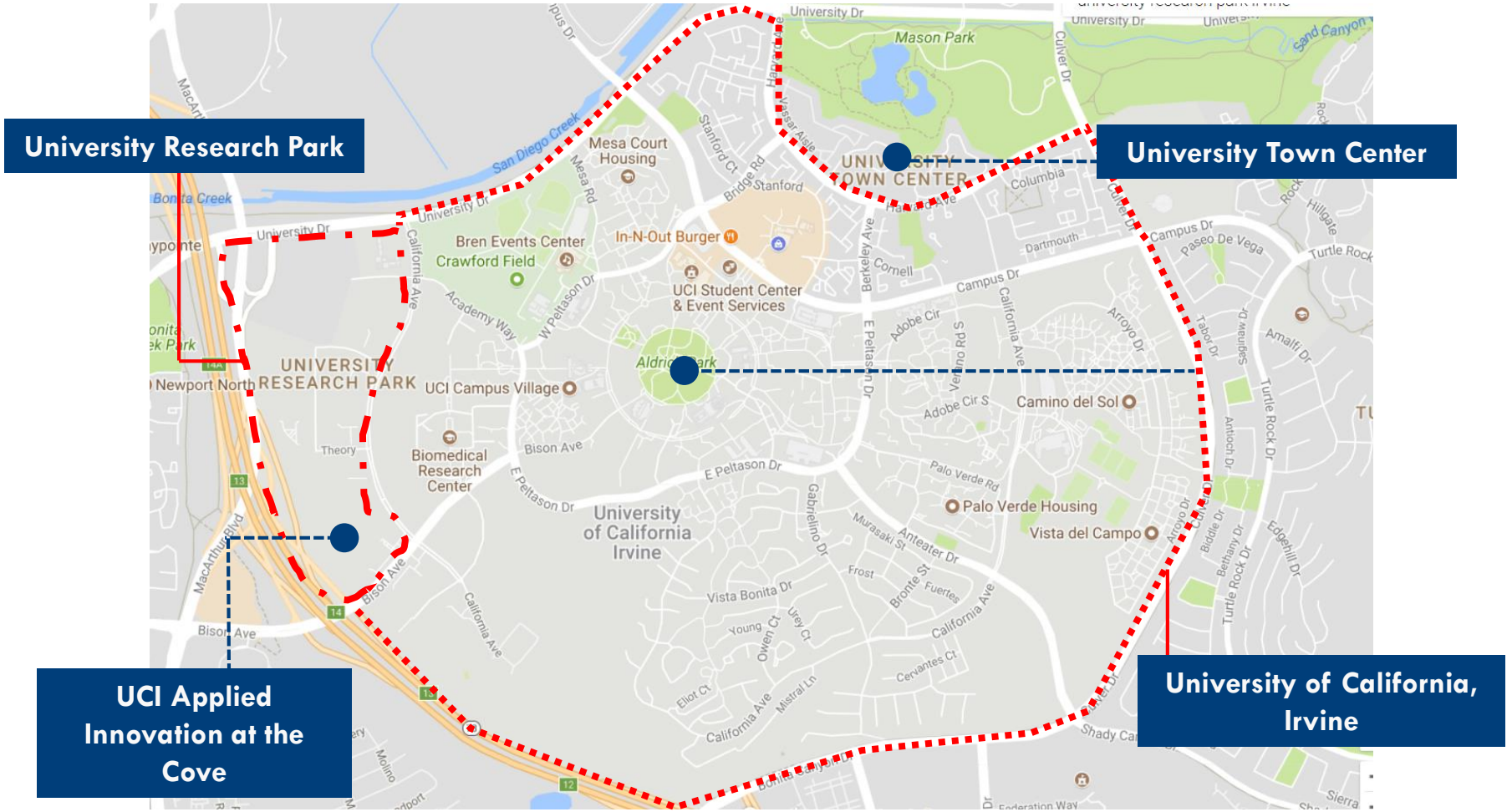
Irvine, CA

After decades of a private developer-led office development, recent University programs and resources have begun to stimulate entrepreneurship.

CONTEXT | UC Irvine well-known for its School of Information and Computer Sciences.

Comparison Metrics	UC Riverside	UC Irvine
Total Students	22,920	33,460
Total Faculty	960 FTE	985 FTE
Metropolitan Statistical Area Population	4.3 M	3.1 M
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	School of the Arts School of Biological Services School of Business School of Education School of Engineering School of Humanities School of Information and Computer Sciences School of Physical Sciences School of Social Sciences
Graduate Programs	42 Ph.D programs, 52 Masters programs	100+ Ph.D and Masters programs
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	School of Medicine School of Nursing School of Law
University Extension	UCR Extension	UCI Continuing Education

CONTEXT | The City of Irvine and Orange County have a strong innovation ecosystem, driven in part by UC Irvine's strengths, as well as regional attractiveness.



OVERVIEW | The Irvine Company developed a 185-acre park that has attracted large Fortune 500 companies to the desirable City of Irvine.

OVERVIEW

In 1996, The Irvine Company spearheaded an effort to develop 185 acres next to UC Irvine and create the University Research Park (URP). The area houses a mix of large tech companies, and recently UCI's Cove which includes an incubator, office and event space and local businesses.

COMPONENTS

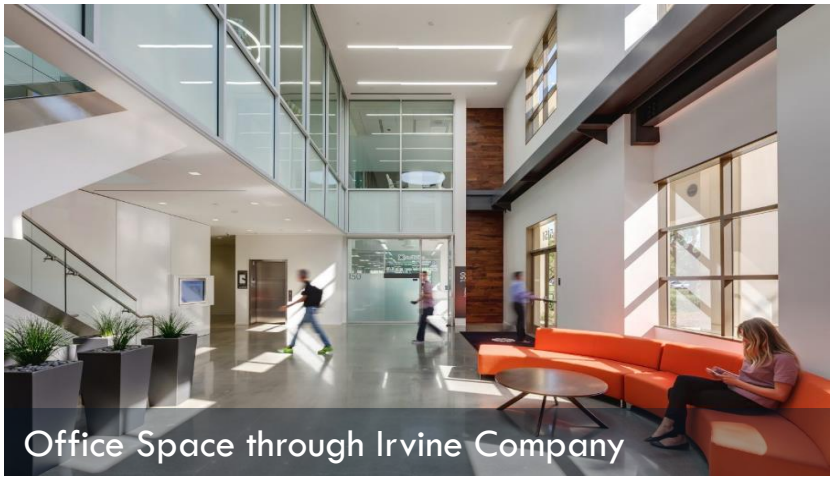
- **185** acre park
- **8,000** employees
- More than **75** companies

ANCHORS

- UC Irvine
- The Cove (home to UCI Applied Innovation Institute)
- The Vine (an Irvine Company, EvoNexus and ROC partnership)

MAJOR PRIVATE FIRMS

- Toshiba America Inc.
- Broadcom
- Cisco Systems & Intel



Office Space through Irvine Company

The Vine

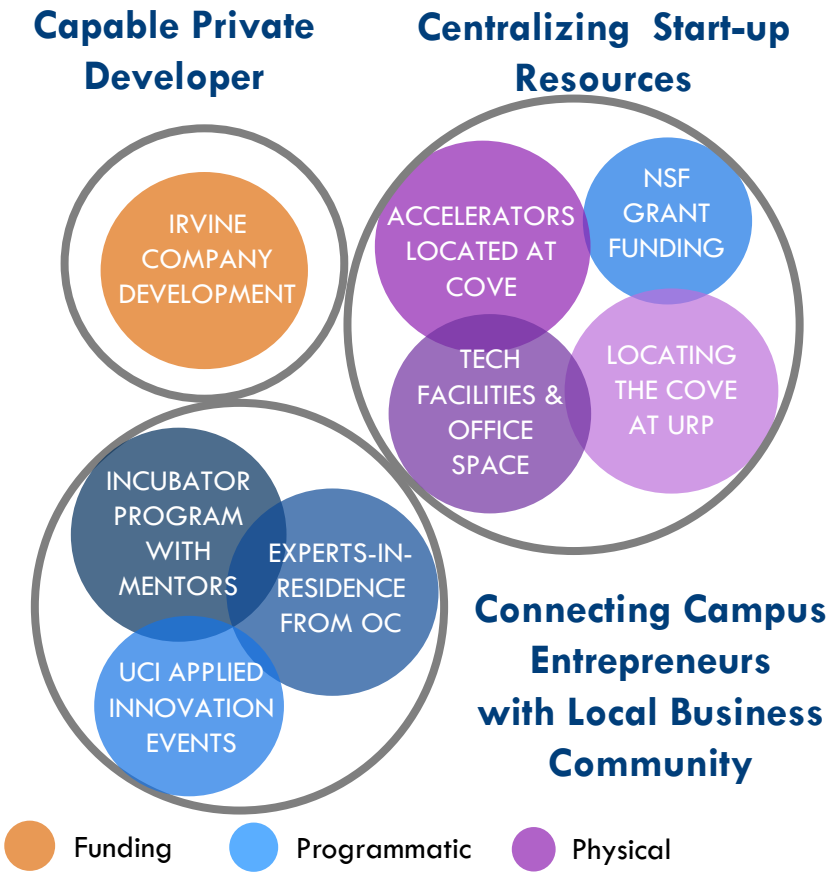
INDUSTRY ATTRACTION SUCCESS | UCI has recently developed an innovation center in an attempt to better connect the University Research Park's business community to university research, faculty and students.

University of California, Irvine is located in the City of Irvine, **a desirable community with an educated workforce.** The URP was developed in 1988 and is managed by the Irvine Company, the City's master developer, who has effectively leveraged URP's prime location to fill office space.

Large companies have located at URP, although historically, **it has had little or no programmatic connection to the University**. The University's technology partnerships have generally been broadly focused, including a partnership with Orange County's life sciences and technology accelerator, OCTANe, which has contributed to regional biotechnology and pharmaceutical strengths.

In recent years, UCI's "Applied Innovation" program at The Cove has **developed programs to support entrepreneurship;** events at The Cove have shown initial success in **drawing venture capitalists to the area.** Notably, one of the largest tenants at the park, will be leaving and the University is exploring options to increase synergies as the Irvine Company fills this space.

Effective and Pending Attraction Strategies



TIMELINE AND PARTNERSHIPS | UC Irvine's partnership with the developer, the Irvine Company, was central to the park's inception and still is critical for its ongoing development.

1989 — University Research Park idea is conceived as part of UCI's Long Range Development Plan.

1996 — The Irvine Company has started the first phase of development on 95 acres of land neighboring the UCI School of Medicine.

1998 — UC Regents approves proposal to lease 85 acres of undeveloped campus land to The Irvine Co. for creation of the Park. Both parties agree to a land lease arrangement under which the Company will develop the land, fund the infrastructure and improvements to the property, estimated at $20 million, and pay $6 million to help finance buildings in UC Irvine's adjacent Biomedical Research Center.

2014 — UC Irvine establishes UCI Applied Innovation and builds the Cove, the physical space including incubator, office and event space.

Future — **Relocation of a large company, Broadcom, will initiate re-tenanting of over ½ million SF of space.**

- Public-sector intervention
- Private-sector action
- Milestones

ECOSYSTEM FACILITATION | UCI has centralized innovation-related resources and created physical space to support commercialization and entrepreneurship.

URP has developed two successful spaces dedicated to ecosystem facilitation. **The Vine** is a partnership between Evo Nexus and the Irvine Company that provides office space and an incubator program for tech companies. **UCI Applied Innovation at The Cove** is intended to expose campus-based research to the broader Orange County business community through one main incubator and several key programs:

RESOURCES

- Invention disclosure resources, experts-in-residence from OC business community; NSF grant programs that provide training and pathway to funding; funding and mentorship specifically for University research based start-ups

EVENTS:

- Well-attended programming have offered workshop series, tech panels, and have connected venture capitalists to Cove entrepreneurs.

UCI Applied Innovation Gathering

The Cove in Workshop with Students

UC Irvine | Relevant lessons and key takeaways for UC Riverside

1. **The Irvine Company**, a private developer, spearheaded the development and direction of the University Research Park.

2. Because of this structure, activity at the **URP is relatively disconnected from UC Irvine,** its faculty and students, and its research strengths.

3. The Irvine Company's marketing emphasizes the growing OC tech economy and the **amenities of the City of Irvine that make the City a desirable place for families and entrepreneurs.**

4. UCI **centralized its key incubator resources** through the creation of the Applied Innovation center at The Cove, which is located at the research park. Applied Innovation's physical presence at the URP offers funding resources, event programming, and mentorship to members of the UCI and regional entrepreneurial communities.

UNIVERSITY OF CALIFORNIA ECOSYSTEMS: UC SAN DIEGO UC DAVIS

CONTEXT | UC San Diego and UC Davis are larger than UC Riverside, but also have a very robust set of strengths and long-established relationships with industry.

	UC Riverside	UC San Diego	UC Davis
Total Students	22,920	35,820	34,415
Total Faculty	960 FTE	1,215 FTE	1,285 FTE
Metropolitan Statistical Area Population	4.3 M	3.2 M	2.5 M
Colleges & Schools	Bourns College of Engineering College of Humanities, Arts & Social Sciences College of Natural & Agricultural Sciences	6 Undergraduate Colleges	College of Agricultural & Environmental Sciences College of Biological Sciences College of Engineering College of Letters and Science
Graduate Programs	42 Ph.D programs, 52 Masters programs	Scripps Institution of Oceanography School of Global Policy and Strategy School of Management School of Engineering	Graduate School of Management
Professional Schools	School of Medicine Graduate School of Education School of Business School of Public Policy	School of Medicine School of Pharmacy	School of Education School of Law School of Medicine School of Nursing School of Veterinary Medicine
University Extension	UCR Extension	UC Davis Extension	UCSD Extension

CONTEXT | UC Riverside's peers at UC Davis and UC San Diego have developed innovation ecosystems under significantly different circumstances.

UC Davis

UC Davis is a premier agricultural research institution and has led the Sacramento-Davis region's evolution into an **agriculture innovation ecosystem**. However, there is no formal research park in Davis, and recently, two research park initiatives were voted down by residents. **Davis faces physical and political constraints**, but companies have nevertheless spontaneously located within Davis, West Sacramento and Woodland.

ANCHORS

- California Institute for Food and Agriculture Research & Seed Biotechnology Center
- Agricultural Issues Center & Plant Breeding Center

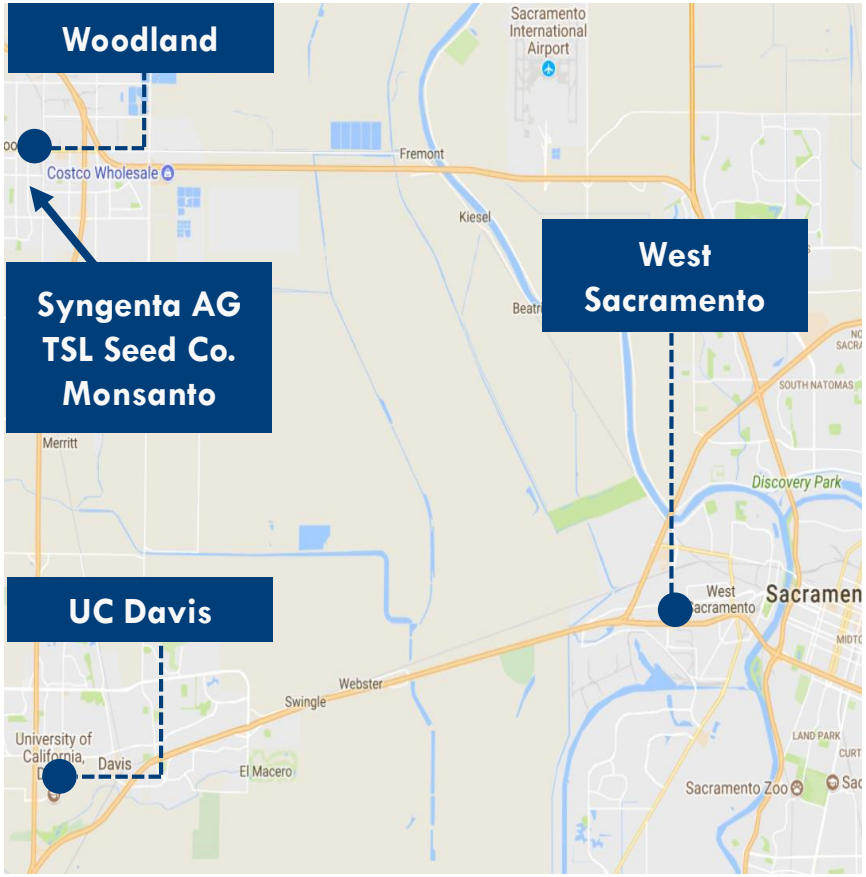
UC San Diego and Torrey Pines Mesa

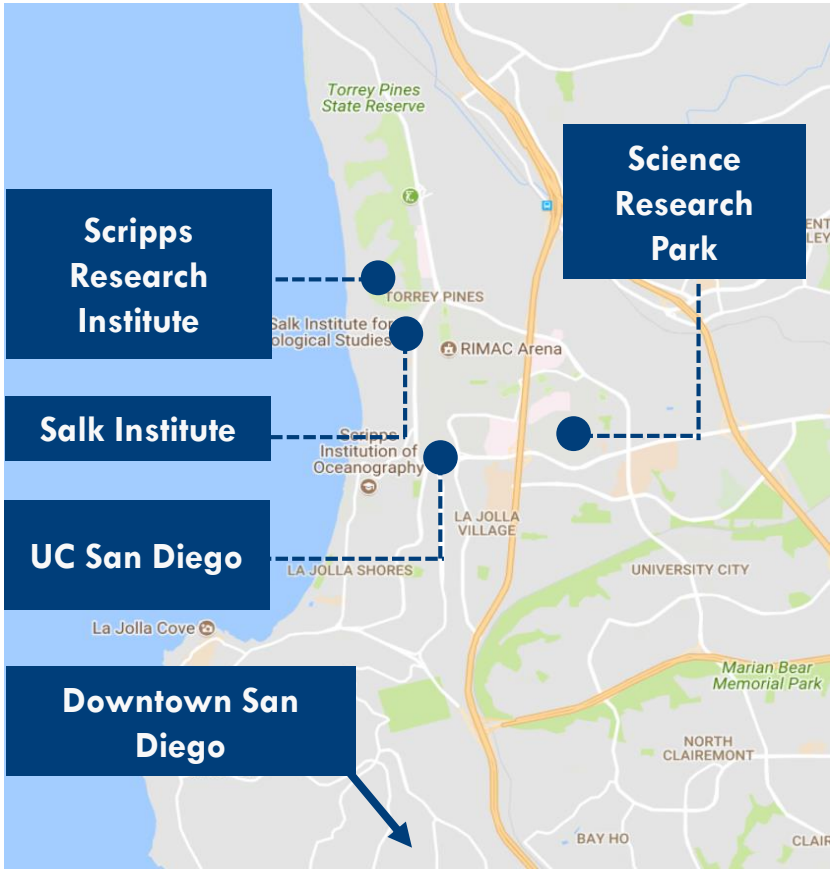
UC San Diego and over a dozen other institutions located on Torrey Pines Mesa comprise one of the **largest research hubs** in the Country, which is known for its talent, entrepreneurial climate and quality of life. **Over 400 biotech & pharmaceutical companies** are located within the area, and have begun to spill over to Downtown San Diego. In addition to office space, the area contains a significant concentration of laboratories, and testing facilities.

ANCHORS

- Salk Institute for Biological Studies; Scripps Research Institute & Medical Center
- Three hospitals

CONTEXT | While Davis' agriculture ecosystem is spread across the surrounding region, the biotech, communications and technology sectors are highly-concentrated in and around Torrey Pines and La Jolla.





PARTNERSHIPS FOR SUCCESS | Both Davis and San Diego's research, technology and entrepreneurship ecosystems were supported by key partnerships.

UC Davis

The Sacramento region, including Woodland, Davis and West Sacramento, has evolved into a robust cluster of agriculture companies who desire to proximity to UC Davis, associated industry organizations and one of the most fertile growing regions in the Country. Within an hour drive from UC Davis, there are 50 seed companies; including eight of the 10 largest groups in the world.

Partners: University and Regional partnerships have further catalyzed the Davis region's ecosystem.

- **Seed Biotechnology Center:** This UC Davis center, which is closely connected to industry, supports commercialization of key research.
- **SeedCentral:** Seed Central, developed by UC Davis and SeedQuest in 2010, facilitates research collaboration between industry and the University, and has been a compelling draw for companies to the region.
- **The Sacramento Regional Technology Alliance (SARTA):** SARTA was founded in 2001 to support the region's tech companies and was a key player in supporting start-up growth until its demise in 2015.

Torrey Pines Research Park, UC San Diego

San Diego's massive biotechnology cluster has evolved over last few decades through a series of prescient and impactful decisions. Today, San Diego is ranked third in global biotech venture capital funding, totaling $2 billion in 2016. It is home to 700+ biotech companies.

Partners: Institutions, political action and business partnerships supported the growth of Torrey Pines.

- **Research Institutions:** The Salk Institute, Scripps Research Institute and UC San Diego were founded between 1955 and 1965 and their collective life science research strength is unparalleled.
- **Zoning:** In 1965, with an academic foundation in place, business leaders pushed the City to designate Torrey Pines Mesa for science and research development, preventing land from being developed for unrelated uses.
- **Venture Capital Ecosystem:** The purchase of Hybritech by Eli Lily fueled an explosion of venture capital and entrepreneurship in San Diego, which today has many senior executives who support the ecosystem by mentoring start-ups, providing angel investments, and support incubators/accelerators.

ECOSYSTEM FACILITATION | UC Davis has recently expanded its initiatives for start-up creation, while UC San Diego has a program in the pipeline and one core entrepreneurial center.

UC Davis

The University has undertaken efforts to increase the number of local start-ups, including through the **Institute for Innovation and Entrepreneurship & Venture Catalyst**, which provides:

- A network of business incubators;
- Legal resources to start-ups; and
- Grants for university-based research start-ups.

UC Davis has also recently collaborated with companies through a range of initiatives to expand on its research strengths, although their impact cannot yet be measured.

- **Innovation Institute for Food and Health**: Mars, Inc. promised $40 million to fund this institute; however plans have not been fully implemented.
- **Sacramento Angels:** This organization, which has developed partnerships with UC Davis, connects angel investors to early-stage technology companies.
- **HM.CLAUSE Life Science Innovation Center:** UC Davis developed this incubator space in partnership with HM.CLAUSE to support the incubation of biotechnology and seed start-ups.

Torrey Pines Research Park, UC San Diego

Although entrepreneurship is core to Torrey Pines Mesa's innovation ecosystem, UC San Diego's **Institute for the Global Entrepreneur**, formerly the von Liebig Center, provides many important resources:

- Courses that include technology management, leadership, and product development through NSF's I-Corps Training;
- A technology accelerator program;
- Commercialization resources; and
- The "Basement" hub for mentorship and entrepreneurship resources.

RECENT INITIATIVES:

The **Collaboratory for Downtown Innovation**, a partnership between UC San Diego Extension and the Downtown San Diego Partnership will help shift entrepreneurship resources toward downtown San Diego and will include:

- Workforce development programs;
- A talent accelerator for disadvantaged youth; and
- An "entrepreneur exchange."

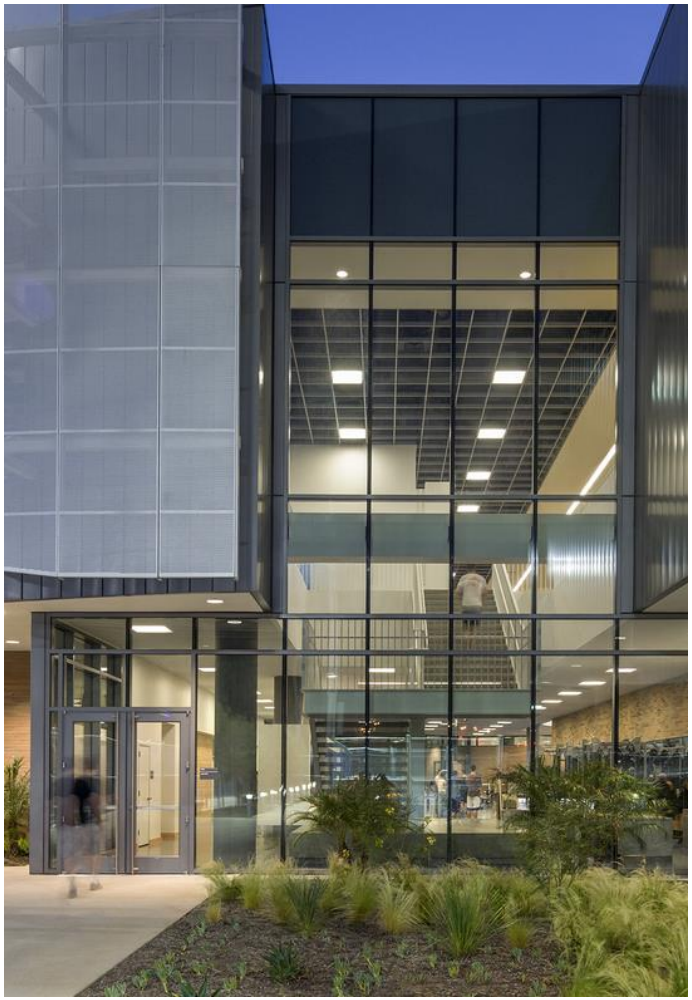
PURPOSE | In alignment with its mission, UC Riverside aims to attract industry to Riverside, benefiting faculty, students, research and the region.

UNIVERSITY OF CALIFORNIA, RIVERSIDE MISSION STATEMENT

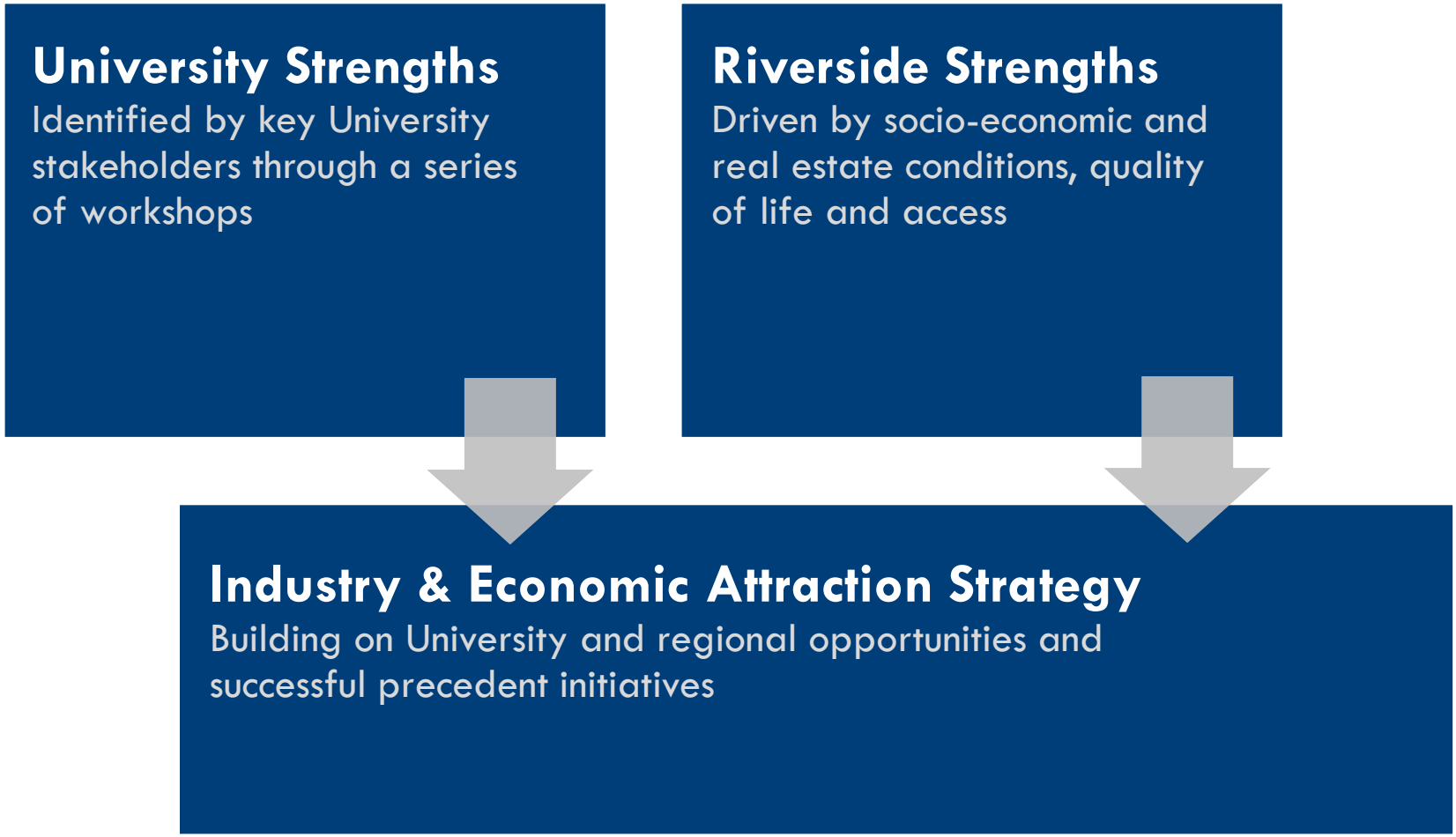
"The University of California, Riverside will transform the lives of the diverse people of California, the nation, and the world through the discovery, communication, translation, application, and preservation of knowledge – thereby enriching the state's economic, social, cultural, and environmental future." – UCR 2020: The Path to Preeminence

GOALS | An industry attraction strategy should generate specific and tangible benefits for the University, its partners, and its community.

- Lower barriers to entry for entrepreneurship
- Create opportunities for industry collaboration
- Generate opportunity for alumni and community members
- Support broadly-shared economic development through the creation of high-quality jobs
- Leverage the breadth of research at the University, and increase its application



STRATEGY FOUNDATION | Any strategy must be rooted in existing University and regional strengths.



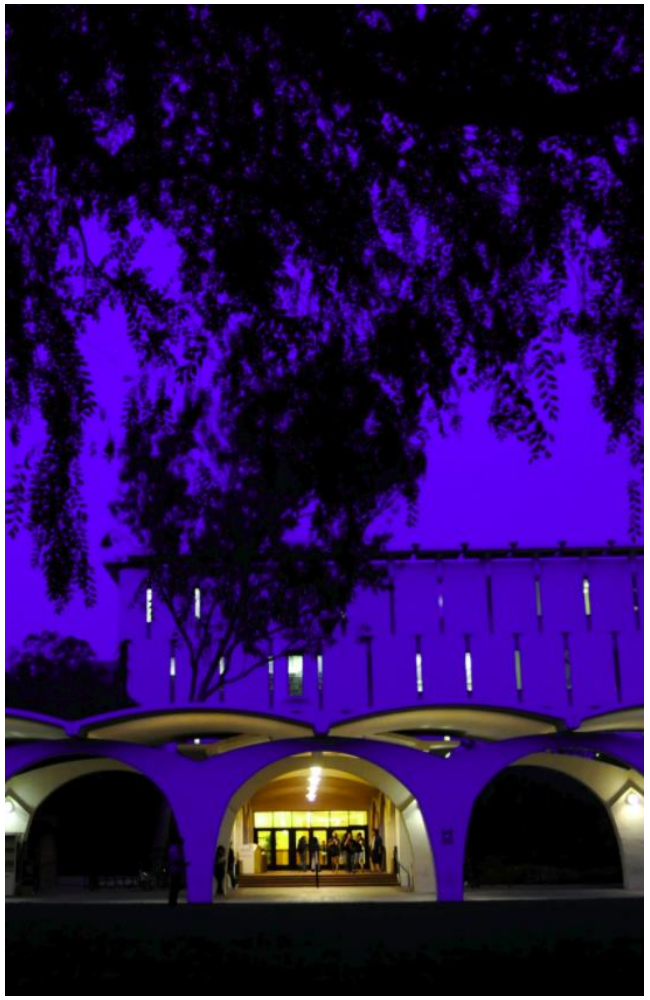
STRATEGY COMPONENTS | Success for UC Riverside will require internal co-ordination, formalized regional collaboration, and physical infrastructure.

HR&A has developed an interconnected, three-pronged strategy to leverage and strengthen the University's potential regional partnerships and ultimately grow the scale and impact of industry partnerships:

Internally **re-imagining** the University's message to industry, and clearly communicating its value to partners

Simultaneously, **re-connecting** externally to ensure that momentum is sustained and mission-aligned

Ultimately, sharing resources to **re-develop** and create an "identifiable place" for innovation

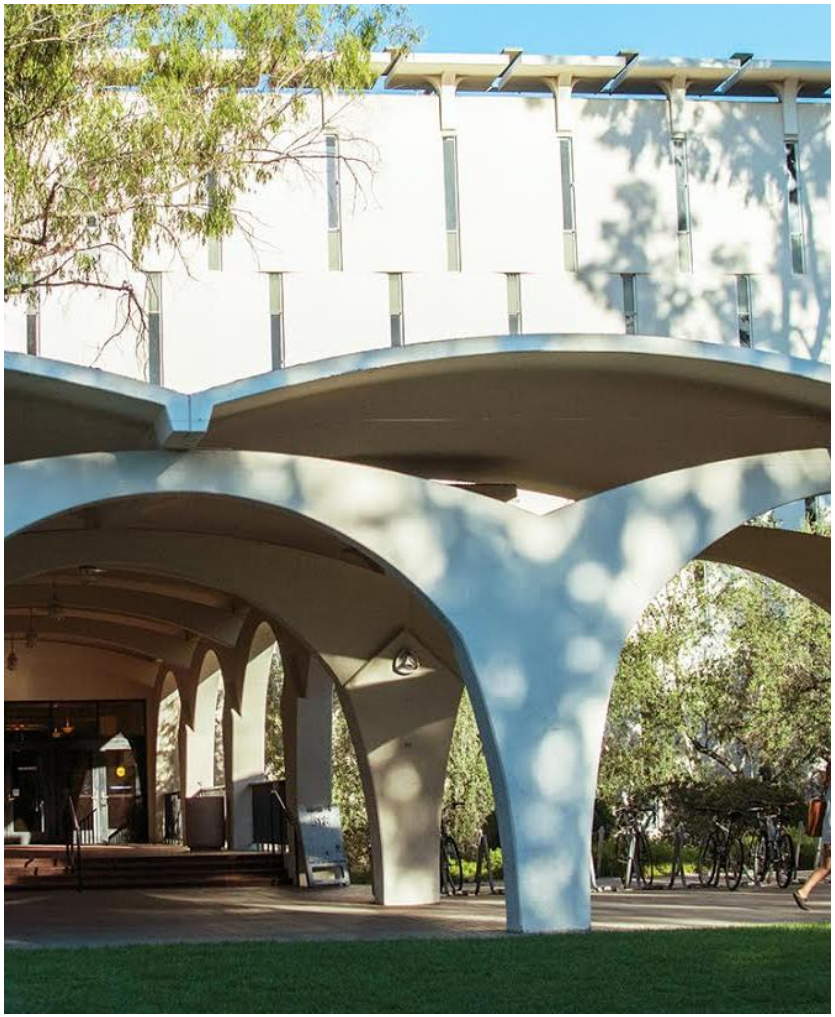


REIMAGINE

STRENGTHS | UCR should identify and bolster its key strengths to communicate distinct "value propositions" to industry partners.

Through "Living the Promise," the University markets thematic strengths and notable research achievements. As discussed in stakeholder workshops, the University has industry-leading expertise in a range of specific areas, but does not communicate its key strengths well. The University should develop a set of value propositions that clearly communicate the University's current achievements and its desired direction. This might entail:

- **Branding the University of California, Riverside as a Leader in Sustainability** through robust interdisciplinary research, or as a leader in a similar, cross-cutting and digestible theme.



ACTION ITEM: Strength/Value Proposition Refinement

The University should develop statements communicating key strengths, with concurrence from leadership and faculty. These should be strengthened and regularly updated with relevant research, institutional metrics and notable achievements.

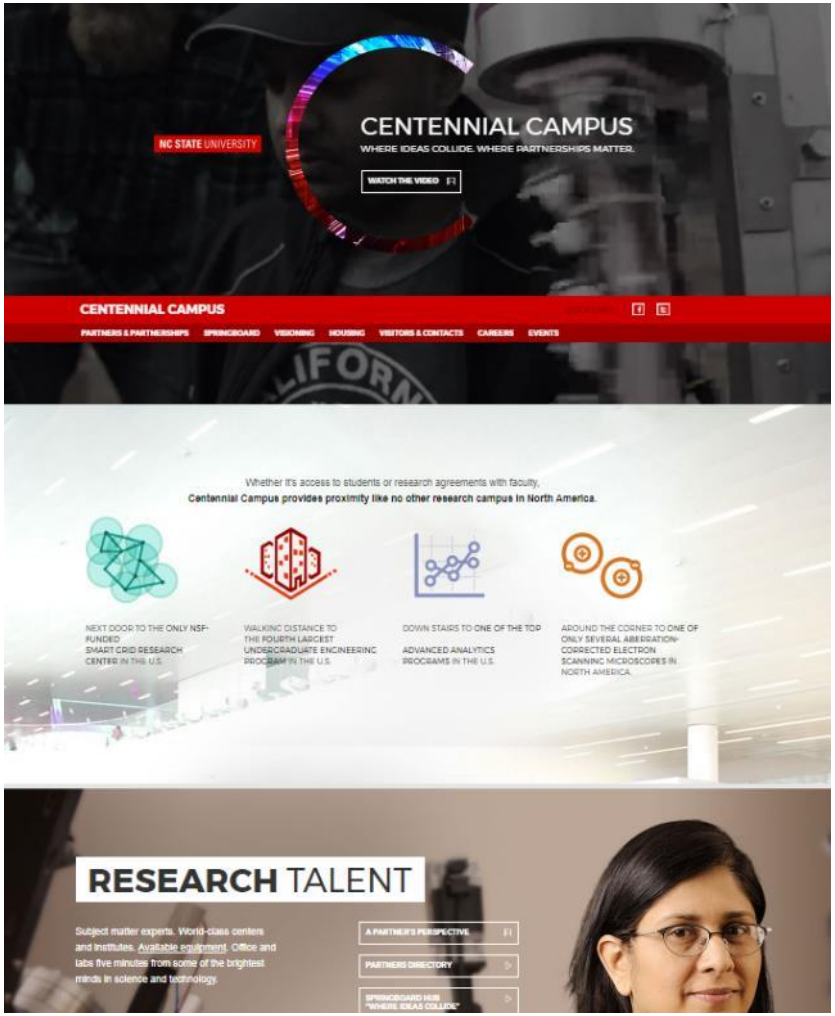
MARKETING | UCR should regularly message this shared vision, in coordination with the City and County of Riverside.

Regional stakeholders (likely mirroring industry partners) demonstrated an incomplete understanding of the University's resources and value proposition. Once a clearly value proposition message is developed, the University should regularly and consistently:

- **Communicate the Value Proposition of Collaborating with the University** to industry, public and private partners, alumni. This should identify talent, research and resources that industry can access (including intellectual property, physical space and tools).

ACTION ITEM: Website & Marketing Materials

The University should retain a designer and/or marketing firm to develop a new innovation, entrepreneurship and industry-focused website that consolidates resources that are now on the independent websites of RED, OTP and CE-CERT. These should also incorporate and supplant content from Riverside County's innovation website and others.



UNIVERSITY RESOURCES | UCR should continue to expand the resources it provides to industry, entrepreneurs and regional stakeholders.

As the University has grown, the type and quantity of resources, notably within Research and Economic Development related to entrepreneurship and external funding, have also increased substantially. The University should continue to invest in these resources and ensure that they are visible and accessible through a single point of contact to industry. The University's initial success related to the following initiatives should be recognized and built on with additional internal University investment:

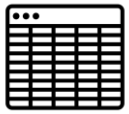
- **Office of Technology Partnership Staff Size & Capacity**, facilitating access to intellectual property, "on-call" faculty who are primary points of contact, and staff awareness of regional incentives and opportunities.
- **Faculty Incentives for Collaboration and Resources to Increase Invention Disclosures**, encouraging faculty to collaborate with industry.
- **Symposia and Entrepreneurship-Related Programming** accessible to the broader community, in collaboration with City and County Efforts.


RECONNECT

INDUSTRY ENGAGEMENT | Leveraging existing relationships, UCR should take a strategic approach to industry outreach.

As noted previously, the University's greatest opportunity to grow collaboration with industry involves supporting its talented faculty, students, and alumni. Simultaneously, UCR must look to expand existing relationships with industry. This should entail the following actions by researchers and University staff, which are further described on the following page and should be financially incentivized to ensure implementation.

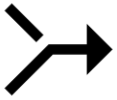
Establish University **Industry Attraction Advisory Team**



Develop a database of existing industry partnerships and contacts

Identify **opportunities for attraction,** driven by specific research strengths, including specific value propositions for each industry partner

Pursue opportunities and **track progress**



Engage **community partners** to further advance industry outreach

INDUSTRY ENGAGEMENT | Leveraging existing relationships, UCR should take a strategic approach to industry outreach.

Action Item: Industry Engagement

1. Establish University Industry Attraction Advisory Team *(Led by Research and Economic Development ["RED"])*

- Identify and invite members of University leadership (including RED, External Affairs, Government and Community Relations, CE-CERT, and the Highlander Fund) and research faculty representation to join an internal Advisory Team

2. Develop a database of existing industry partnerships and contacts *(RED with assistance from the Advisory Team)*

- Identify and consolidate existing industry partnership lists (patents/licensing, research/funding, career services) including a key faculty contact for each industry partner and corresponding contact
- Survey faculty and staff to expand existing lists of industry relationships once annually

3. Identify opportunities for industry attraction, including a specific value proposition for an industry partner

(Faculty Leaders/Researchers)

- Task department, center, and institute heads with regularly identifying current and potential future industry partnerships
- For each, identify "point persons" able to make locational decisions and knowledgeable about research needs
- Identify unfunded research needs and other potential opportunities to collaborate with industry

(RED, Advisory Team)

- Review industry database and faculty leader/ researcher industry partnership recommendations
- For promising opportunities and key current partnerships, identify a single University "point person" to be the key contact for each industry partner; this person must understand University and regional value propositions

4. Pursue opportunities and track progress *(RED, Advisory Team, and University "Point People")*

- Through Advisory Team, set goals for making contact, identifying opportunities, and engaging partners
- Vet and track quarterly goals

5. Bring in external partners to further advance industry outreach *(RED and Advisory Team)*

- As the University's Advisory Team develops initial "wins," engage external partners (likely through the regional "Green Team") to join the Advisory Team and coordinate on industry engagement efforts

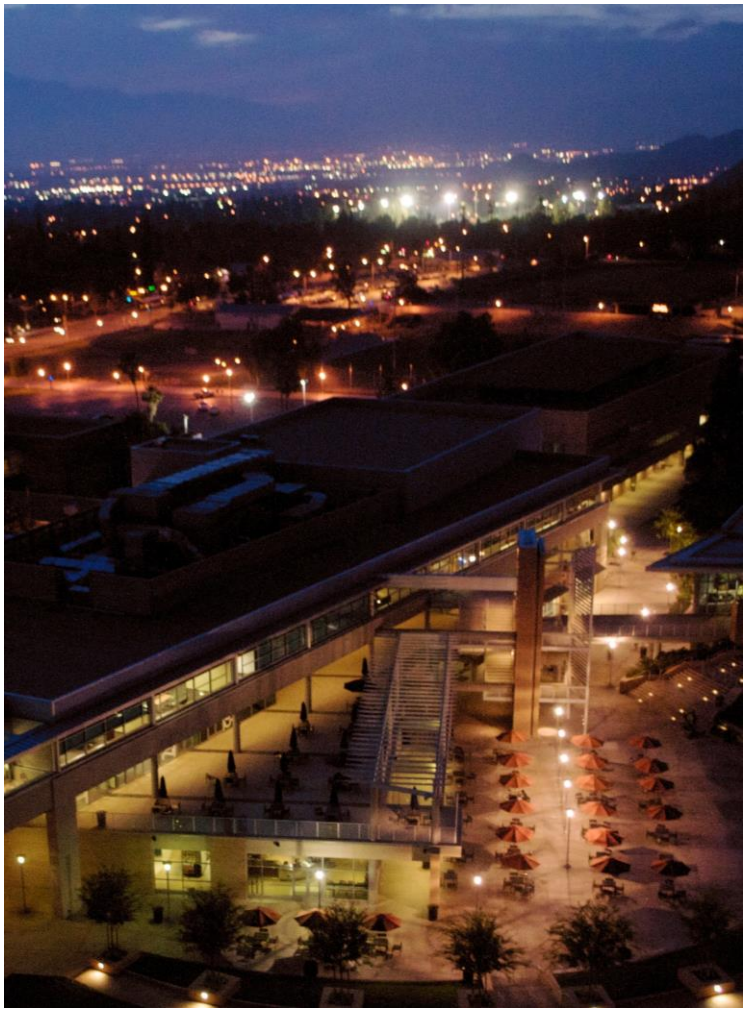
REINFORCED PARTNERSHIP | Building on its vision, UCR should formalize a partnership with the City and County to lead industry attraction efforts.

The University, City and County of Riverside and other partners have had substantial success uniting to secure the relocation of CARB, although partners and the University indicate that closer coordination is needed. Ongoing success should be bolstered by formalizing collaboration by **creating an independent non-profit organization or JPA**; this partnership will be critical to develop a common set of goals, mitigate partners' lack of land and real estate, and leverage the City's land use control. It should:

- **Sustain and coordinate momentum related to innovation and industry attraction** that capitalizes on UCR's programmatic strengths and locational advantages.
- **Leverage partners' strengths and resources,** (including land, entitlements, funding, and research) while pursuing external funding and pooling assets.

ACTION ITEM: MOU Between Partners

The University should lead efforts to formalize the "Green Team" and draft a Memorandum of Understanding that lays out a mission and goals, governance structure and membership, and commit start-up revenue for initial years.



COORDINATED RESOURCES | The new partnership should work to develop a toolbox of resources to attract industry.

Riverside is already well-known as a business-friendly environment. The University should work with the City and County to enable the new partnership to **develop targeted incentives and dedicated resources** that will support collective efforts to grow the region's innovation ecosystem. These may include the following, which should be broadly communicated:

- **Local and State Tax-Related Incentives**, Including Tax Subventions and Tax Credits via the Governor's Economic Development Initiative. The partnership should advocate in Sacramento to expand available incentives.
- **Streamlined Permitting for Research & Development Uses**, that may be delayed or rejected by present regulations.
- **Continued and Expanded Access to University Resources**, including physical space and research tools, as well as access to high-speed internet via the University of California system.


REDEVELOP

SPACE FOR INNOVATION | The new partnership should work to facilitate the availability of space for industry, including an expanded incubator.

Many stakeholders noted that there is significant unmet demand for physical space for start-ups and other University-related businesses in Riverside. The University, and ultimately the new partnership, should support relationships between landlords and industry and minimize barriers to entry. The partnership should work to:

- **Expand ExCITE and Support New Incubation/Co-Working Space**, which collectively allow companies to right-size based on current space needs and expand with flexibility.
- **Support Industry's Local Presence** by partnering with real estate professionals, including via financial guarantees where possible, to make space available to start-ups and entrepreneurs.

ACTION ITEM: Engage and Educate Brokers

The University should engage brokers to document available space suitable for entrepreneurs via an electronic platform, describe the University's efforts, and identify key broker contacts for industry partners.

PLACE | A next step of the new partnership should be to focus efforts to create a critical mass of innovation-related uses.

Cities across the United States are struggling to adapt to companies' changing preferences, as traditional office parks struggle in favor of urban centers. The University, building on momentum of City of Riverside, should collaborate through the new partnership to **implement a vision for an innovation district**. This district must focus initial efforts in close proximity to the University, Air Resources Board and existing critical mass of student housing. A successful district will require both careful planning and investment in amenities, public realm, infrastructure and potentially speculative space.

ACTION ITEM: Coordinated Effort to Master Plan Riverside's Innovation District

The University should coordinate via the partnership and and landowners to develop a master plan for an walkable and dynamic innovation district. This plan should identify a robust program of investments and align zoning and other regulations with shared objectives.

INVESTMENT | Where possible, UCR should support realization of the innovation district by responsibly committing key resources.

Although creating an innovation district and the associated placemaking required will require a significant capital outlays, the University should leverage its resources to attract investment and interest. These actions, which include the following, should be accompanied by a coordinated program of City and County investment in infrastructure and open space:

- **Co-Locating CE-CERT and New University Facilities,** including a shared wet lab facility, with or near ARB and commercial development opportunities to encourage collaboration and generate critical mass.
- **Committing to Lease Space within Speculative Development**, which could support developers to secure financing.
- **Ground Leasing University-Owned Land or Public-Private Partnerships**, for new innovation-related commercial space, which could allow the University or City to absorb development risk (and reward) and accelerate implementation.

TIMELINE AND RESPONSIBILITIES

MATRIX OF TIMING AND RESPONSIBILITY

NEAR-TERM (0-1 YEARS)

UNIVERSITY

- Vision Development
- Website & Marketing
- Advisory Team Establishment

PARTNERSHIP

- Broker Partnerships
- MOU
- New Organization

MID-TERM (1-3 YEARS)

PARTNERSHIP

- Coordination of Public/University Resources
- Master Plan Initiation

LONGER-TERM (4+ YEARS)

UNIVERSITY

- University Investment within Innovation District

PARTNERSHIP

- Master Plan Completion

APPENDIX: UNIVERSITY-WIDE SWOT | UCR's foundational research is strong and investments in entrepreneurship and the Medical School provide new opportunities; however, the University has struggled to communicate its strengths internally and externally.

Strengths	Opportunities
▪ Research strengths are Riverside's "best kept secret," especially pertaining to **sustainability** as a broad theme. ▪ New **entrepreneurship programming** will provide free coaching, mentorship, and classes to students, faculty, and the community. ▪ The **Highlander Fund** provides critical seed capital to entrepreneurial faculty, students and community members.	▪ Growth at the **Medical School** and **UCR Health** are a major opportunity for research, jobs, and community impact. ▪ **Land near university** can be leveraged to support development and attract users that will catalyze the "clean and green" ecosystem. ▪ Research done collaboratively with desert communities and other underserved populations within Riverside can provide a major social impact. ▪ The University's **relationship with Mexico** may provide collaborative opportunities.
Weaknesses	**Threats**
▪ The University has been reaching out to large companies, but has not been good at setting up strong, long-term partnerships; the partnership with Esri is an example of a relationship that can be further expanded. ▪ Over 80% of graduating **UCR engineers leave greater Riverside after graduating**; many go to Silicon Valley and San Diego. ▪ Local technology incubator ExCITE may **need larger spaces** to graduate start-ups into spaces with affordable rent and facilities. ▪ There are possibilities to communicate more effectively across the University. . ▪ There is not a lot of involvement off-campus to bring attention to the broader region of UCR's strengths. ▪ There is currently no effective consortium between UCR and other colleges in the area.	▪ **Funding sources for research and entrepreneurship must be expanded** or research with significant commercialization potential will be lost to the Bay Area and San Diego.

APPENDIX: GREEN ENERGY SWOT | UCR faculty are conducting cutting-edge applied research on renewable fuels and electricity, frequently with industry; however, there is a lack of ecosystem (professional services, financing, and space) to support start-up expansion.

Strengths	Opportunities
▪ Faculty members at CE-CERT are doing **applied research**, several of whom have **launched spin-off companies** based on their research. ▪ Several technologies developed at of UCR are **currently being licensed to private companies.** ▪ A **research partnership with SoCalGas**, focused on emissions reduction and increasing the using of renewable energy in California, has been successful so far. ▪ CE-CERT is an established testing facility and is **working as a contractor to industry** to optimize gasification technologies. ▪ Gasification companies frequently approach CE-CERT **to use the existing infrastructure that has been permitted by the City.** ▪ Researchers at UCR have produced **30 battery technology invention disclosures.** Faculty is already working with industry to license some of these technologies.	▪ A **"pilot lab"** could be an opportunity to catalyze certain biomass conversion technologies being developed at UCR; this facility needs space for office, wet labs, and engineering. Such a lab could prove that smaller-scale conversion can be profitable. ▪ Much biomass generated in Southern California is being transported outside the region (which is expensive); several local counties have expressed an interest in **donating biomass waste for UCR research**, but this would require a custom facility. A pilot lab for battery technology will also allow the faculty working on this space to accelerate the validation and transfer of these technologies. ▪ The UC systemwide goal of carbon neutrality could be an opportunity for UCR to become more aggressive around renewable energy on its campus, in collaboration with CE-CERT. ▪ **Co-locating uses** would be very beneficial.
Weaknesses	**Threats**
▪ There is a **lack of professional services** (legal, accounting, etc.) in Riverside to support technology-focused start-ups. ▪ Start-ups in Riverside are not widely active because of a **lack of financing opportunities** and lack of a strong cadre of CEOs and business executives interested in getting involved. ▪ Permitting for experimental commercial/industrial activities **can take a prohibitive amount of time** for some start-up businesses and there is limited or no space available for startups to lease.	▪ There is **significant competition** in terms of both research and testing facilities in California and elsewhere.

APPENDIX: WATER AND AGRICULTURE SWOT | UCR is particularly strong at the intersection of agriculture, water and technology; however, a lack of proactive marketing and technology transfer weaken the University's pitch to industry.

Strengths

- The College of Natural and Agricultural Sciences (CNAS) is **highly-regarded for urban water pricing and policy**.
- UCR's **entomology program is #2 in the world;** other strengths include disease management, plant biology and plant pathology.
- At the edge of both a major urban center and the desert, UCR is **well-positioned to study water and agriculture** in a way most agriculture schools cannot.
- UCR's research is especially strong as relates to **growing food in hostile environments** and considering **the impact of climate change**.
- The Highlander Fund is focused on supporting entrepreneurship in energy and the environment.
- UCR has had a long and **strong partnership with the citrus industry**, which funded an $8 million research facility adjacent to campus.

Opportunities

- There are many opportunities to engage local government entities related to water and agricultural issues.
- **Big tech firms** (IBM, Google) are increasingly interested in water issues.
- **Indoor agriculture and inland water management:** few places can do it, but Riverside has the right set up.
- A potential "**living museum**" could showcase the work of UCR (and possibly be sponsored by industry).
- **Precision agriculture** offers significant commercial opportunities at the intersection of IT, robotics and agriculture
- If UCR can answer the question for **how insects affect food**, it can be a world leader on the subject.
- **"Big ag"** is interested in the university's work, especially as the business model changes.

Weaknesses

- There is **not as a strong of a "culture of patents"** as at MIT and other universities where commercialization is significant.
- Faculty participation from CNAS in the patent disclosure is not as active. However, UCR generates over $6 million in royalties from the licensing of its agriculture portfolio.
- **Poor marketing** means that people don't know what's going on at UCR from a research standpoint.
- Few alumni are at the senior levels of companies, largely because the programs are still relatively new.

Threats

- **UC Davis** has been much better at marketing their expertise; most Central Valley farmers go to them for cooperative extension support.
- There are no water and agriculture startups.
- There is **no room at incubators and start-ups to expand**.

APPENDIX: INFORMATION TECHNOLOGY SWOT | UCR's IT faculty and students are highly entrepreneurial and are increasingly focused on "big data" science, but there is little physical space for expansion and a lack of local entrepreneurs to engage with.

Strengths	Opportunities
▪ **½ of UCR's start-ups come from IT,** and many are located at the **downtown incubator, ExCITE**. ▪ UCR is strong with respect to the **applications of big data, especially related to agriculture.** ▪ The **computational entomology** program is #2 in the world. ▪ High demand from different disciplines for access to the computational component of a bioinformatics facility led to the new **High-Performance Computer Center (HPCC).** ▪ NASA has supported IT research through a robust grant.	▪ The new **Spatial Analysis Center** will enable more intentional partnerships with industry (including Esri). ▪ Recent **cluster hires in data science** will strengthen UCR's big data, data mining and **cybersecurity** capabilities. ▪ Silicon Valley has a diversity problem; Riverside can be a place to cultivate a **diverse IT talent pool**. ▪ The relationship with **NAVSEA and other military installations** could be capitalized upon. ▪ There is an opportunity to position UCR as a **precision agriculture expert** at the intersection of GIS, big data and agriculture. ▪ The **campus acreage** provides an opportunity for companies to evaluate their products with support from faculty experts.
Weaknesses	**Threats**
▪ **Start-ups locate in Riverside until they get too big** and can't find more space; one is currently renting out space in a doctor's office. ▪ While the HPCC is in high demand, it can be accessed remotely, so there is no major gain to being in proximity to the campus. ▪ There is a **lack of local entrepreneurs** to support the start-up community.	▪ There is **significant competition** from private, well-endowed research universities and other UC campuses.

APPENDIX: HEALTH SWOT | UCR's growing Medical School and UCR Health are already conducting interdisciplinary research and offering critical health services.

Strengths	Opportunities
▪ UCR Health is doing some **industry sponsored research,** including some translational research with City of Hope. ▪ Health-related research is **very interdisciplinary** (e.g., air-quality and health). ▪ UCR recently launched **EPIC,** an electronic medical records platform that will soon provide the ability to conduct "big data" analysis. ▪ **Bioengineering faculty are entrepreneurial;** several receive SBIR grants. ▪ The Neuroimaging Center has a **top-of-the-line MRI scanner** which is widely used. ▪ UCR launched the Center for Molecular and Translational Medicine to **accelerate translation of biomedical discoveries.**	▪ UCR should aim to develop a **"research-friendly" community** which collaborates with the local community on research to analyze and address their unique health needs. ▪ The **Medical Assistant Scribe program** can make primary care significantly more efficient. ▪ BREATHE (Bridging Regional Ecology & the Health Effects) is a new **interdisciplinary program** based on UCR's strengths to study the intersection of air quality and health. ▪ **Outpatient clinics** are an area of potential private sector partnerships. ▪ There is a severe **physician shortage** in the Inland Empire.
Weaknesses	**Threats**
▪ The Inland Empire **exports its medical care** to the coast communities. ▪ **Location, partnership and capital are all barriers** to getting more tertiary care and quaternary care in Riverside. ▪ UCR Medical School must work with for-profit hospitals and the County hospital, which is struggling. ▪ For bioengineering start-ups, **there are no wet labs within 25 miles,** so research goes to San Diego. ▪ There are significant language and cultural barriers to care. ▪ **Residents are skeptical** of University promises. ▪ UCR lacks a teaching hospital.	▪ **Mental health care needs** are significantly on the rise, in particular due to threats of deportation, racism, and poverty. ▪ The County hospital is struggling financially.

APPENDIX: TRANSPORTATION & INTELLIGENT SYSTEMS SWOT | UCR has strong interdisciplinary applied research around sustainable transportation and environmental monitoring, but this message is not widely marketed.

Strengths	Opportunities

▪ CE-CERT
  ▪ Nearly 90% of proposals receive funding, and **a third of funding is from industry**.
  ▪ Research focuses are in transportation infrastructure, renewable energy production through fuels, renewable electricity production, and air pollution.
  ▪ **CE-CERT facilities are already permitted**, so many companies come to UCR for testing.
  ▪ CE-CERT pulls in significant sponsorship funding at its consortium.
▪ UCR has a unique **niche at the intersection of sensing, robotics and environmental monitoring.**
	▪ CE-CERT could become an "institute" to solve new problems through **interdisciplinary research**
	▪ Companies have reached out to partner with CE-CERT **to impress ARB.**
	▪ Despite a lack of marketing, CE-CERT feels there is **an opportunity to bring in more work.**
	▪ In the fields of renewable energy and vehicle technology, especially, there are significant **new commercialization opportunities.**

Weaknesses	**Threats**
▪ CE-CERT has done **very little marketing and/or branding** to spread the message about its work more widely to industry. ▪ **Industry cannot use CE-CERT equipment**, but can hire them to test. Sometimes, industry subleases space at CE-CERT to operate. ▪ **Almost all research universities conduct similar intelligent systems research.**	▪ Talent is leaving Riverside; **most PhD students go to the Bay Area.**

APPENDIX: REGIONAL ANCHORS SWOT | When there are opportunities, community leaders join together and are highly effective; however, there is no formalized partnership to make these opportunities happen regularly.

Strengths	Opportunities
▪ When an opportunity arises, **community partners collaborate effectively** to make it happen. ▪ Economic development entities have historically been good at small and medium business engagement. ▪ There are several major **military installations** in and around Riverside which have an economic development mission. ▪ There are **strong relationships with the Ports of Long Beach and Los Angeles** pertaining to logistics. ▪ The **Chamber is effective at bringing parties together** and as a clearinghouse of business leads.	▪ The potential of **UCR's Medical School** is yet to be realized. ▪ UCR has an opportunity to partner with **March JPA and NAVSEA to shape economic development initiatives** related to photonics and "MARS": Manufacturing, Aerospace, Research and Science. ▪ The City's **General Plan Update** process is an opportunity to align interests. ▪ As the only UC campus in Inland Southern California, there is an opportunity to solidify the relationship with wealthy **Coachella Valley** residents. ▪ Regional anchors can align behind the County's marketing efforts and goals around specific industry clusters. ▪ Positioning of Riverside with a clear message of its value to industry is needed.
Weaknesses	**Threats**
▪ Community partner collaboration is ad hoc and not formalized to ensure ongoing and coordinated attraction efforts. ▪ The community has **struggled to engage large companies**; there are few headquarters and CEOs in Riverside. ▪ Despite proximity, **collaboration with San Bernardino County across the "invisible line" is weak**. ▪ **Philanthropic dollars per capita are significantly lower** than coastal communities.	▪ The City of Riverside has 18 specific plans, many of which are outdated.

APPENDIX: RIVERSIDE SOCIOECONOMIC/GEOGRAPHY SWOT | Riverside has strong educational institutions and an increasingly civic-minded population; however, the region's real estate inventory and lack of amenities are deterrents to highly-skilled employers.

Strengths	Opportunities
▪ **Other strong educational institutions** in Riverside complement UCR, including RCC, Cal Baptist, and La Sierra. ▪ The community has **demonstrated support for significant investment** in unprecedented numbers through recent ballot measures. ▪ The community has **largely overcome its "impostor syndrome."**	▪ **Land near university can be leveraged,** including within the proposed "Innovation District." ▪ With many underserved communities in the local area (especially in the desert), there is a great **opportunity for research to have a positive social impact.**
Weaknesses	**Threats**
▪ A **stigma** about Riverside endures outside of the Inland Empire. ▪ There is **a lack of real estate product that can accommodate small to medium sized businesses** who may want to move to the area, or for start-ups to expand. ▪ There is a **lack of amenities** that attract highly-skilled workers and employers. ▪ Significantly **more wet lab space is needed** for start-ups.	▪ Key **regional industries are very cyclical** (including construction and logistics); as a consequence, it takes Riverside longer to recover from economic shocks. ▪ Recent job growth has been focused heavily in the logistics industry. ▪ Significant **traffic issues** are present because of the expansion of the logistics industry in Riverside County.

APPENDIX: GLOSSARY OF REAL ESTATE TERMINOLOGY

Community Center - Typically offers a wider range of apparel and other soft goods than neighborhood centers. Among the more common anchors are supermarkets, super drugstores, and discount department stores. Community center tenants sometimes contain value-oriented big-box category dominant retailers selling such items as apparel, home improvement/furnishings, toys, electronics or sporting goods. The size of such a center ranges from 100,000 to 350,000 square feet.

Power Center - The center typically consists of several freestanding (unconnected) anchors and only a minimum amount of small specialty tenants, ranging in total from 250,000 to 600,000 SF. A Power Center is dominated by several large anchors, including discount department stores, off-price stores, warehouse clubs, or "category killers," i.e., stores that offer tremendous selection in a particular merchandise category at low prices.

Lifestyle Center - An upscale, specialty retail, main street concept shopping center. An open center, usually without anchors, about 300,000 SF GLA or larger, located near affluent neighborhoods, includes upscale retail, trendy restaurants and entertainment retail. Nicely landscaped with convenient parking located close to the stores.

Source: CoStar.

Outlet Center - Usually located in a rural or occasionally in a tourist location, an Outlet Center consists of manufacturer's outlet stores selling their own brands at a discount. 50,000 -- 500,000 SF. An Outlet Center does not have to be anchored. A strip configuration is most common, although some are enclosed malls and others can be arranged in a village cluster.

Regional Mall - Provides shopping goods, general merchandise, apparel, and furniture, and home furnishings in full depth and variety. It is built around the full-line department store with a minimum GLA of 100,000 square feet, as the major drawing power. In theory a regional center has a GLA of 400,000 square feet, and may range from 300,000 to more than 1,000,000 square feet. Regional centers in excess of 750,000 square feet GLA with three or more department stores are considered Super Regional.

Super Regional Mall - Similar to a regional mall, but because of its larger size, a super regional mall has more anchors, a deeper selection of merchandise, and draws from a larger population base. As with regional malls, the typical configuration is as an enclosed mall, frequently with multiple levels.

Flex Building - A type of building(s) designed to be versatile, which may be used in combination with office (corporate headquarters), research and development, quasi-retail sales, and including but not limited to industrial, warehouse, and distribution uses.

Flex Space - This type of space is only found in Flex buildings. It can be used as office, medical, industrial, warehouse, distribution, quasi-retail, or research and development space

APPENDIX: CASE STUDY METHODOLOGY

HR&A conducted a **precedent analysis to identify relevant best practices** for UCR's attraction strategy by evaluating universities which have been successful in attracting industry and supporting entrepreneurship. Lessons learned were informed by a **series of interviews** that HR&A conducted with key leaders of innovation and entrepreneurship initiatives.

These conversations focused on universities' **industry attraction strategies, partnerships and incentives** critical to success and core strengths that universities successfully leveraged.

Interviews Conducted	
St. Louis Cortex Innovation Community	Phyllis Ellison, *Director of Entrepreneurial Services and Institutional/Corporate Partnerships*
NC State University	Centennial Campus Partnerships and Industry Alliances Leah Burton, *Director* Dennis Kekas, *Associate Vice Chancellor*
University of Illinois at Urbana-Champaign	Laura Bleill, *Associate Director of the University of Illinois at Urbana-Champaign Research Park*
University of Wisconsin-Madison	Aaron Olver, *Managing Director of University Research Park*
UC Irvine	UCI Applied Innovation Carolyn Stephens, *Associate Director and Chief of Staff* Matt Bailey, *Director of Communications and Ecosystem Development*
UC Davis	UC Davis Venture Catalyst: Joe Koepnick, *Associate Director* Zane Starkewolfe, *Associate Director* Ryan Sharp, *Associate Director*