bae urban economics

City of Davis

Economic Evaluation of Innovation Park Proposals

July 9, 2015

bae urban economics

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Mr. Mike Webb
Assistant City Manager
City of Davis
23 Russell Blvd.
Davis, CA 95616

Dear Mike:

Attached, please find the revised Economic Evaluation for the Davis Innovation Park Proposals. This version of the report includes a Foreword section that discusses the suspension of processing for the Davis Innovation Center Project. Please do not hesitate to contact me with any questions, or if BAE can provide any further assistance.

Sincerely,

Matt Kowta, MCP
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FOREWORD

BAE Urban Economics, Inc. conducted the research for this study in November and December, 2014, and completed a Draft Report in December 2014. Subsequent to that time, BAE has made minor adjustments to the report as City of Davis staff and consultants that the City of Davis has engaged to analyze the proposed Mace Ranch Innovation Center (MRIC), Nishi Property, and Davis Innovation Center (Davis IC) projects have reviewed and commented on the Draft Report. More recently the applicants for the Davis Innovation Center project requested that the City place their project on hold, and halt further processing of the application.

This report was originally structured to evaluate the potential absorption of MRIC alone, or Davis IC alone, or a cumulative scenario that includes both MRIC and Davis IC, plus the Nishi Property and Mace Triangle properties. Therefore, the portions of this report which contemplate the possibility that MRIC would develop alone still remain valid. With the suspension of the Davis IC application processing, the portions of this report that address the possibility that all three of the Innovation Park projects would be developed may no longer represent a reasonably foreseeable cumulative scenario. Instead, based on the current status of the Innovation Park applications, a new cumulative scenario could be considered to include only MRIC plus the Mace Triangle properties and the Nishi Property development.

At this time, it is not practical to update this report to reflect the change in the status of the Davis IC project; however, readers of this report may still have an interest in how the assessment of the cumulative scenario might change if it only included MRIC/Mace Triangle and Nishi Property developments. Generally speaking, the impacts under the cumulative scenario at buildout would be significantly reduced, if only MRIC/Mace Triangle and the Nishi Property are assumed to develop. For example, Davis IC accounted for about 56 percent of the total building square footage and almost 60 percent of the total employment increase and employee housing demand that the Draft Report projected under the cumulative scenario. If the cumulative scenario is redefined to include only MRIC/Mace Triangle and the Nishi Property, then the estimated absorption period would likely be reduced roughly in proportion to the reduction in building square footage, and the overall employment and housing demand increases estimated in the report for the cumulative scenario would likely be reduced by almost 60 percent. As a result of a substantial reduction in overall employment and housing demand at buildout, the smaller cumulative scenario would generate substantially reduced excess workforce housing demand that would have to be accommodated outside of Davis, and much less re-allocation of job growth that the Sacramento Area Council of Governments currently projects to occur in other jurisdictions in the absence of any of the proposed Innovation Parks.

EXECUTIVE SUMMARY

INTRODUCTION

The City of Davis commissioned BAE Urban Economics, Inc. to prepare this analysis in support of the environmental review for proposed innovation park projects. The analysis considers three development scenarios, which include:

- The Davis Innovation Center (Davis IC) alone
- The Mace Ranch Innovation Center (MRIC) alone
- A cumulative scenario that includes both of the innovation parks plus additional development that could potentially occur adjacent to the Mace Ranch Innovation Center property (Mace Triangle) and at the Nishi Property.

This study reviews the concept of innovation parks as an economic development strategy, and discusses the types of business activity that might be attracted to a local innovation park. The analysis reviews baseline conditions and recent trends in development of office/business park land in Davis and discusses employment growth projections that the Sacramento Area Council of Governments and The Center for Strategic Economic Research previously prepared for the City of Davis. Next, the study reviews a range of factors that exist or that can be expected to exist, which suggest that economic development efforts built around development of one or more innovation parks that leverage the considerable research activity that is conducted at UC Davis could substantially alter the City's employment growth trajectory in the coming decades. The next chapter of this study provides estimates of the potential for the various innovation park development scenarios to generate employee housing demand and analyzes the likely residence locations of the employee households. The final chapters evaluate the potential internally-generated demand within each development scenario to support its associated ancillary retail space and ancillary hotel facilities. The paper concludes with brief comments about additional planning considerations.

The following sections of this executive summary highlight key findings from the analysis, while the research, methodologies, and assumptions that support these findings are explained in detail in the main body of this paper.

POTENTIAL GROWTH IN LOCAL DEMAND FOR BUSINESS PARK/TECH SPACE

After considering historic trends, local conditions and factors that will support growth in the local tech economy, a range of alternative growth projections, and case studies of other cities, business parks, and research parks, BAE estimates that potential absorption for individual innovation parks could average approximately 140,000 square feet per year, and that a cumulative scenario involving development of the two innovation parks plus the Nishi Property could absorb approximately 150,000 per year. The main body of the report also presents an alternative absorption rate that demonstrates that the time to buildout would range from seven years for MRIC alone, to 11 years for Davis IC alone, to 21 years under the Cumulative

scenario. The total building square footage considered in each scenario, the estimated range of years to full absorption, the estimated range of employment by 2035, and the estimated employment by buildout are shown on Table ES-1.[1]

Table ES-1: Project Summary

	Davis IC	MRIC	Cumulative Scenario (a)
Total Project Built Square Footage	4,000,000	2,654,000	7,125,956
Estimated Total Buildout Years	11 to 26	7 to 25	21 to 51
Estimated Employees at 2035	7,012 to 10,842	5,882	6,423 to 14,987
Estimated Employees at Buildout	10,842	5,882	18,390

Note:
(a) Cumulative scenario includes building square footage in addition to Davis IC and MRIC. See main report body for details.

POTENTIAL EMPLOYEE HOUSING DEMAND BY 2035 AND BUILDOUT

Given the absorption estimates provided above, BAE estimated the potential employee housing demand that each of the innovation park development scenarios would generate. BAE then estimated how much of the employee housing demand could be accommodated within the Davis housing supply that would be available by 2035 and by buildout of the innovation park development scenarios, and then how the remaining employee households would be distributed to surrounding areas. Table ES-2 summarizes the employee housing location estimates by 2035 and by buildout. The 2035 estimates reflect the lower end of the 2035 employee estimates shown in Table ES-1.

[1] On Table ES-1, the 7,012 bottom end employee estimate for Davis IC at 2035 comes from Table 8. This is the estimated employment if Davis IC absorbs by itself at 140,000 square feet a year through 2035. The 10,842 high end estimate is based on an aggressive absorption scenario, with Davis IC absorbing by itself at 350,000 square feet per year, thus reaching buildout and maximum employment before 2035.

Table ES-2: Employee Housing Demand and Residence Locations by 2035 and Buildout

Employee Housing Demand by 2035

	Davis IC	MRIC	Cumulative Scenario (a)
A. Employee Housing Unit Demand Accommodated in Davis	**1,238**	**1,238**	**1,888**
Employee Housing Demand Outside of Davis			
Expected Demand from Employees Preferring to Live Outside of Davis	*2,038*	*1,710*	*1,867*
Expected Demand from Employee Households Reallocated to Region	*1,209*	*815*	*354*
B. Subtotal - Employee Housing Demand Outside of Davis	**3,247**	**2,525**	**2,221**
Total Employee Housing Demand = A. + B. (Housing Units)	**4,485**	**3,763**	**4,109**

Employee Housing Demand by Buildout

	Davis IC	MRIC	Cumulative Scenario (a)
A. Employee Housing Unit Demand Accommodated in Davis	**1,238**	**1,238**	**1,888**
Employee Housing Demand Outside of Davis			
Expected Demand from Employees Preferring to Live Outside of Davis	*3,152*	*1,710*	*5,346*
Expected Demand from Employee Households Reallocated to Region	*2,546*	*815*	*4,530*
B. Subtotal - Employee Housing Demand Outside of Davis	**5,697**	**2,525**	**9,876**
Total Employee Housing Demand = A. + B. (Housing Units)	**6,935**	**3,763**	**11,764**

Note:
(a) Davis IC and MRIC do not sum to Cumulative Scenario. See main text body for details.

More detailed breakouts of the projected residence locations of employees who would live outside of Davis are included in the main body of the report (2035) and in Appendix C (buildout).

INTERNAL DEMAND TO SUPPORT ANCILLARY RETAIL SPACE BY 2035 AND BUILDOUT

Table ES-3 summarizes the ancillary retail space included in each of the three development scenarios, by 2035 and by buildout. The analysis indicates that by 2035, based on the more moderate absorption rate assumption from Table ES-1, the Davis IC project alone and the MRIC project alone would each generate sufficient employee daytime spending to provide adequate market support for their respective proposed ancillary retail components. Under the cumulative scenario, with the more moderate absorption rate assumption, there would not be sufficient demand by 2035 to support the total amount of ancillary retail. However, by buildout, there would be more than sufficient internal demand to support the ancillary retail space included in each of the development scenarios. In any event, it would be reasonable for the City to establish phasing controls for ancillary retail development, to ensure that new retail facilities being developed in a given development scenario do not outpace the increase in employee demand for daytime retail, dining and services.

Table ES-3: Internal Retail Support by 2035 and Buildout

	Davis IC	MRIC	Cumulative Scenario (a)
Proposed Ancillary Retail Square Footage	120,000	100,000	293,105
Internal Retail Demand by 2035			
Supportable Retail Space (square feet)	**152,759**	**128,152**	**139,933**
Internal Retail Demand by Buildout			
Supportable Retail Space (square feet)	**236,198**	**128,152**	**400,645**

Note:
(a) Davis IC and MRIC do not sum to Cumulative Scenario. See main text body for details.

INTERNAL DEMAND TO SUPPORT HOTEL SPACE BY 2035 AND BUILDOUT

Table ES-4 summarizes the hotel development included in each of the three development scenarios, and estimates the internal hotel demand, by 2035 and buildout, based on conservative and aggressive hotel demand assumptions. Using conservative demand assumptions indicates that by 2035, none of the three development scenarios (Davis IC alone, MRIC alone, Cumulative) would generate internal demand adequate to support their respective hotel components. Analysis using more aggressive hotel demand assumptions indicates that by 2035, all of the scenarios would generate sufficient hotel demand to support their respective hotel components. By buildout, none of the development scenarios would generate adequate internal demand to support their respective hotel room counts, using conservative demand assumptions. Using aggressive demand assumptions, all of the scenarios would generate substantially more internal hotel demand than would be necessary to support the planned hotel components.[2] Given the range of potential outcomes, it would be reasonable for the City to establish phasing controls for hotel development, to ensure that new hotel facilities being developed in a given development scenario do not outpace the increase in market area demand for hotels (including innovation park business-related demand and other sources).

[2] Note that the hotel room support for MRIC summarized on Table ES-4, at 2035 and buildout, under the aggressive demand scenarios, are very similar - 373 rooms supported at 2035 and 375 rooms supported at buildout. The very slight difference between the two is because at the 2035 time point, in the non-cumulative scenario, MRIC's tech space absorption is projected to be just slightly below buildout. At full buildout, there would be just slightly more occupied space at MRIC than at 2035, and that translates to internal demand for two additional rooms.

Table ES-4: Internal Hotel Support by 2035 and Buildout

	Davis IC	MRIC	Cumulative Scenario
Proposed Hotel Rooms	200	150	350
Internal Hotel Demand by 2035			
Supportable Hotel Rooms			
Conservative Estimate	73	62	67
Aggressive Estimate	373	373	399
Internal Hotel Demand by Buildout			
Supportable Hotel Rooms			
Conservative Estimate	114	62	193
Aggressive Estimate	576	375	1,013

INTRODUCTION

The purpose of this paper is to convey the results of research conducted at the City's request regarding the potential absorption of the proposed Davis Innovation Center (Davis IC) and Mace Ranch Innovation Center (MRIC) projects. In addition to estimates of the absorption potential of each of these projects individually, the analysis also includes an estimate of the absorption of the two parks under a "cumulative" scenario which also includes development of the Nishi Property with a combination of tech office, residential, and retail uses. In addition to estimating the absorption potential for the innovation parks, this memo evaluates the potential internal demand that the office/tech space would generate to support each respective innovation park's proposed retail and hotel components.

Innovation Park Proposals

In response to a Request for Expressions of Interest (RFEI) issued by the City of Davis, as part of the implementation of its Innovation and Economic Vitality Action Plan, two development teams have come forward, each with proposals to develop approximately 200-acre innovation parks. These include the Mace Ranch Innovation Center (MRIC) proposal for a site located near the intersection of Mace Boulevard and I-80, and the Davis Innovation Center (Davis IC) proposal for a site near Sutter Davis Hospital in the northwest part of the community. Table 1 outlines the land use proposals for each of the innovation park projects. In addition, Table 1 includes land use assumptions for potential development of the Mace Triangle property, located between the MRIC property and the current city limits, and the Nishi Property, located southwest of downtown Davis on the southern edge of UC Davis.

The Mace Triangle property is included in this analysis because it is assumed that in order to annex the MRIC property, the City would also need to annex the intervening property, so as to avoid creating an unincorporated island. The MRIC Triangle property is part of the MRIC application but not a part of the proposed innovation center.

The Nishi Property is included in Table 1 because the City and the property owner have been engaged in exploration of the possible development of the property and, therefore, like the Mace Triangle property, the development is considered "reasonably foreseeable" and is considered in the cumulative impacts portion of the CEQA review for each of the two innovation parks.

Table 1: Project Summary

Land Use	Davis IC	MRIC	Mace Triangle	Nishi (a)	Cumulative Scenario
Total Square Footage	**4,000,000**	**2,654,000**	**71,056**	**400,900** (b)	**7,125,956** (b)
Research; Office; R&D		*1,510,000*	*45,901*	*352,950* (b)	
Tech Office; Lab	*3,000,000*				
Manufacturing; Research		*884,000*			
R&D; Assembly; Flex	*680,000*				
Ancillary Retail	*120,000*	*100,000*	*25,155*	*47,950 (c)*	*293,105*
Hotel/Conference	*(200 rooms) 200,000*	*(150 rooms) 160,000*		*Unk (d)*	*360,000*
Total Acres	*208*	*212*	*17 (e)*	*47 (f)*	*484*
Open Space	*85*	*75*		*5*	*165*
Residential (units)	*0*	*0*		*650*	*650*
Location	Northwest area Covell Blvd/SR 113	East area Mace Blvd/I-80	East area Mace Blvd/I-80	South central area I-80/Richards Blvd/RR	

Notes:
(a) Assumes 27,950 sq. ft. offfice and 27,950 sq. ft. of retail on West Olive Drive.
(b) Does not include square footage for residential portion of Nishi.
(c) Includes 20,000 square feet of ancillary retail on Nishi Property and 27,950 square feet of retail on West Olive Drive.
(d) Applicant may propose onsite hotel. Subject to separate review; not a part of the proposed project.
(e) Includes approximately 17 acres (3 parcels) for annexation/prezoning only (City - 3.4 ac, no development; Ikeda - 4.6 ac, 25,155 sq. ft. ag retail/restaurant; Bozorgchami - 8.3 ac, 45,901 sq. ft. office)
(f) Net developable acres 26.5 (13.5 ac business and 13.5 ac residential)

Sources: Davis IC, MRIC, City of Davis, Tschudin Consulting Group; 2014.

Table 2 estimates the potential employment yields for each of the innovation park proposals, the Mace Triangle property, and the Nishi Property separately, and then for a "Cumulative" scenario that assumes development of both of the innovation park proposals plus the Mace Triangle property and the Nishi Property. BAE estimated the employment potential for MRIC using an employment density factor for the office/tech uses that comprise the vast majority of the project's building area, which was selected to yield an overall employment density that is in line with the average weighted employment density in the other research parks studied as part of this analysis (see Table 5). BAE estimated the employment for the retail and hotel components using industry standard employment density factors for these land uses. For Davis IC, BAE utilized the overall employment total furnished by the applicant, but for the purposes of consistency with the MRIC project, has backed out the hotel and retail employment estimates using the same density factors used for MRIC. For the Nishi Property, this analysis assumes an employment density factor of one employee per 250 square feet for office/tech space, based on input from Perkins+Will, the City's design consultant for the Nishi Property, as further refined by City staff and property owner. As shown on Table 2, the resulting overall average employment densities range from highest at the Nishi Property, to the lowest at MRIC. In BAE's judgment, this range is reasonable given the different attributes of the three projects.

Table 2: Estimated Buildout Job Yields

Land Use Summary

Land Use Category	Davis IC	MRIC	Mace Triangle	Nishi	Cumulative Scenario
Research; Office; R&D		1,510,000	45,901	352,950	1,908,851
Tech Office; Lab	3,000,000				3,000,000
Manufacturing; Research		884,000			884,000
R&D; Assembly; Flex	680,000				680,000
Retail (sq. ft.)	120,000	100,000	25,155	47,950	293,105
					0
Hotel (sq. ft.)	200,000	160,000			360,000
					0
Total builidng square feet	**4,000,000**	**2,654,000**	**71,056**	**400,900**	**7,125,956**
Hotel (rooms)	*200*	*150*	*0*	*0*	*350*

Estimated Employment

Land Use Category	Davis IC	MRIC	Mace Triangle	Nishi (c)	Cumulative Scenario
Office/Tech Space	10,536 (a)	5,633 (b)	108	1,412	17,689
Retail	240 (d)	200 (d)	50	96 (d)	586
Hotel	66 (e)	50 (e)		0	116
Total Employees	**10,842**	**5,882**	**158**	**1,508**	**18,390**
Overall Employment Density (sq. ft./employee)	*369*	*451*	*449*	*266*	*387*

Notes:
(a) Davis IC tech employment is derived from applicant's total Davis IC employment estimate of 10,842, less retail and hotel employees per assumptions below.

(b) MRIC office/tech space employment assumes	425	square feet per employee.
(c) Nishi office/tech employment assumes	250	square feet per employee.
(d) Retail (all scenarios) assumes:	500	square feet per employee
(e) Hotel (Davis IC and MRIC) assumes:	0.33	employees per room

Sources: Davis IC, MRIC, City of Davis, BAE; 2014.

INNOVATION PARKS AS AN ECONOMIC DEVELOPMENT STRATEGY

The innovation park proposals seek to tap into opportunities for economic growth that arise from the rapid introduction of technology into all facets of life. The rise of innovation parks, or science and technology parks, is an evolution of the concept of research parks which first appeared in the U.S. in the 1950s. Early examples include Stanford Research Park near Stanford University, and Research Triangle Park, near Durham, Raleigh, and Chapel Hill, North Carolina. According to the National Research Council, "Research parks are seen increasingly around the world as a means to create dynamic clusters that accelerate economic growth and international competitiveness. They are widely considered to be a proven tool to encourage the formation of innovative high technology companies. They are also seen as an effective means to generate employment and to make existing companies more competitive."[3] According to the Brookings Institution, the types of firms attracted to innovation centers includes, "High-value, research-oriented sectors such as applied sciences (from life and material sciences to energy technology to nanotechnology) and the burgeoning "app economy," "Highly creative fields such as industrial design, graphic arts, media, architecture, and a growing hybrid of industries that merge tech with creative and applied design fields, and "Highly specialized, small batch manufacturing such as advanced textile production and small artisan-oriented manufacturing. The Brookings Institution continues to explain key benefits of "innovation districts" to include:

- "First, innovation districts further the ability of cities and metropolitan areas to grow jobs in ways that both align with disruptive forces in the economy and leverage their distinct economic position.

- Second, innovation districts can specifically empower entrepreneurs as a key vehicle for economic growth and job creation.

- Third, innovation districts can grow better and more accessible jobs at a time of rising poverty and social inequality." [4]

Davis is exceptionally well-positioned to capitalize on the types of advantages that innovation parks can bestow on a community, due to the presence of the UC Davis campus within the community. As will be discussed later, UC Davis is among a very elite set of universities

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[3] Wessner, Charles, ed. Understanding Research, Science and Technology Parks: Global Best Practices. National Research Council, 2009.
[4] Katz, Bruce and Julie Wagner. The Rise of Innovation Districts: A New Geography of Innovation in America, Brookings Institution, May, 2014.

nationally and internationally due to the quality and quantity of its academic programs and research activities. As such, UC Davis represents a critical source of innovation that is rooted within the community and which gives Davis advantages in positioning itself as a location for innovative activity that are equaled in only a handful of communities in California, and a very limited number of locations nationally and internationally.

LOCAL BASELINE CONDITIONS

Existing Davis Office and R&D/Flex Real Estate Market

As mentioned previously, Davis has historically been somewhat underdeveloped in terms of commercial land uses in relation to the size of the local base of residential development. For decades, Davis has balanced opportunities for retail development with a desire to protect the downtown and neighborhood retail centers against undue competition from large peripheral retail developments. What is less obvious is that the presence of employment opportunities at UC Davis has masked a distinct imbalance between the local supply of private sector jobs and housing. However, local stakeholders have more recently tied the lack of a robust tax base associated with private businesses (not just retail sales tax generators) to ongoing fiscal strain in the City budget. This is one of the reasons that the City solicited proposals for innovation parks as part of a "Dispersed Innovation Center Strategy".

The CoStar group is a national provider of real estate market data. Their building databases track construction, occupancy rates, and lease information over time. According to CoStar, Davis has a current inventory of approximately 2.3 million square feet of office and Flex/R&D space. Over the time period for which data are available for Davis, (1998 through 3rd Quarter of 2014), average citywide net absorption was about 33,000 square feet. As will be discussed later, this inventory is relatively modest in comparison to a number of other communities examined as part of this study. Although the CoStar data suggest a relatively high vacancy rate within the local office and Flex/R&D buildings, commentary by local representatives of the Cassidy-Turley commercial real estate brokerage indicate that CoStar's estimated vacancy rate is likely an anomaly due to the timing of turnover of space as AgraQuest and Nunhems move from Davis to West Sacramento in order to find larger space as part of their consolidation under the ownership of Bayer CropScience, and before the space they are vacating is largely backfilled by Marrone Bio Innovations and others. Cassidy-Turley estimates the local office vacancy rate at just under ten percent. In addition, Cassidy-Turley notes that there is a distinct lack of move-up building space available in Davis, with only one space of 25,000 square feet or larger available for lease as of the 4th quarter of 2014.[5]

Available Business Park Land Supply

Davis has not only been constrained by limited availability of built space for growing local firms, or for medium or large-sized firms that might be interested in moving to Davis from out of the area, it has also been constrained by a limited selection of land that could be purchased by owner-users or by developers who are interested in catering to the facility needs of businesses that are interested in growing or expanding within the region. According to the

[5] Gray, Jim and Nahz Anvary. Davis Office & Commercial Real Estate Report, 2014 Year in Review, Cassidy-Turley, December 2014.

City's 2010 Business Park Land Strategy, the supply of vacant land available for office/flex or industrial development was approximately 202.4 acres in 2010.[6] Since that time, approximately 66 acres of that supply at the former Hunt Wesson tomato cannery was removed from the supply when the City Council approved the development of the property as The Cannery mixed residential and commercial development, although approximately seven acres in the southwest part of the project are intended to be oriented toward local-serving office and services, small start-ups and technology businesses, and mid-size technology and manufacturing businesses, according to Preliminary Planned Development Ordinance for the project. A total of 14.3 acres in the Mace Ranch area was developed for the construction of the 222,000 square foot Mori Seiki manufacturing plant. The City also approved construction of a new facility for Davis Diamonds gymnastics center on just over one acre of land that was zoned for Industrial Research on Chiles Road in South Davis. A 2.6-acre site at 2726 5th Street has recently been developed as the Carlton Plaza senior residential development. More recently, the City approved construction of 16 live-work units on the site listed as 0.8 acres in the BPLS inventory as 2720 Del Rio Place. In addition, the Cassidy-Turley commercial real estate brokerage reports that one of the nation's largest developers is in escrow to purchase the vacant 14.8-acre parcel just east of the intersection of Cowell Boulevard and Chiles Road, the City's largest currently-zoned business park site, with plans to develop it with up to 250,000 square feet of business space.

Just since 2010, the available inventory of potential business park sites has declined by about 93 acres[7], leaving Davis with a very limited supply of land that is zoned for office/tech/light industrial development. In addition, the remaining sites are relatively small in size and would likely not be suitable to accommodate larger developments that would be capable of supporting effective regional (i.e., at least covering Northern California) business recruitment campaigns and to accommodate relocation of larger companies, or smaller companies that are planning for substantial growth in the future and therefore desire expansion space.

Consultation with staff from the Sacramento Area Commerce and Trade Organization (SACTO) confirms that this lack of available building space has been a hindrance to Davis being able to accommodate interest from businesses that are contemplating a move to the Sacramento Area. SACTO staff reviewed SACTO's business recruiting prospects database for the last two years and found that there were a number of interested companies that would have fit well with the tenant profile for innovation parks, but which could not consider Davis due to a lack of space. This included companies that were primarily looking at entering the region for the first time, or that have/had Davis location(s) and were/are looking to expand within the region.

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[6] Center for Strategic Economic Research, *Business Park Land Strategy, Technical Report*, 2010.
[7] This figure assumes that the approval of The Cannery only removed 59 acres from the inventory of potential business park space, since approximately 7 acres is identified for uses which may be consistent with the needs of tech businesses.

SACTO staff found 15 company prospects that meet these characteristics. In total, they amount to 477,000 square feet of space needs, and represent approximately 360 jobs. This averages 31,800 square feet per facility, and 24 employees per location. Facility sizes ranged from 3,000 sf to 150,000 sf, but the majority was close to the average. During the two years, five of these companies made the choice to locate in the region and none chose locations within Davis. Company industry categories were as follows: 8 in Ag/Food, 3 in Biotech/Life Sciences, 2 in Mechanical Design and Manufacturing, 1 in Alternative Transportation, and 1 in Alternative Energy. SACTO staff also noted that on a regional level, a significant constraint to recruiting smaller life-sciences companies has been an effective lack of wet lab[8] space available for lease. This is particularly an issue for start-up companies, which need to preserve as much capital as possible and therefore cannot afford to undertake extensive tenant improvements in order to outfit offices that are not already configured as labs. Although lease costs are generally higher, a number of companies that would have preferred to locate in the Sacramento area instead chose to lease available lab space in the Berkeley/Emeryville area.[9]

[8] Wet lab space refers to laboratories which require workspaces with specialized furniture and fixtures, plumbing, ventilation, and other utilities that can support testing and analysis of chemicals, drugs, and biological or other materials.

[9] Burris, Bob, Executive Vice President, Sacramento Commerce and Trade Organization. Personal communication, 12-8-2014.

POTENTIAL GROWTH IN LOCAL DEMAND FOR BUSINESS PARK/TECH SPACE

Recent trends provide a starting point for future growth. For example, according to the City's 2010 Business Park Land Strategy (BPLS), Davis absorbed roughly 8.6 acres of Business Park, Office, and Industrial Land Between 1999 and 2008.[10] This would suggest approximately 25-year absorption periods for the individual innovation park proposals, and an approximately 50-year absorption period for the cumulative scenario.

The regional growth projections produced by the Sacramento Area Council of Governments (SACOG) also provide another starting point for growth projections. According to SACOG's projections, which were last prepared in 2012, forecasted employment growth in Davis is 3,842 jobs between 2008 and 2035. See Appendix A. Even assuming that all of this growth estimate could be captured in innovation park space that could be developed under one or more of the scenarios analyzed for this study, this rate of employment growth would imply that only a fraction of either of the individual innovation park proposals could be absorbed by 2035.

The City's 2010 Business Park Land Strategy (BPLS) study developed a series of additional employment growth scenarios for the 2010 to 2035 time period, to assist the City in evaluating policy options for business park development. These scenarios ranged from 3,665 to 8,050 new total jobs, under varying sets of assumptions. If employment growth closer to the upper end of the BPLS scenarios occurred, this could be sufficient to absorb the MRIC project by 2035; however, even under the high end estimate from the BPLS, the Davis IC absorption period would likely extend beyond 2035.

Given the time that has elapsed since preparation of SACOG projections as well as the BPLS projections, it makes sense to take a new look at the absorption potential for innovation parks in light of changed conditions over the last several years as well as a better understanding of the types of development that could be targeted for innovation parks and a range of factors that could affect absorption over time.

What Factors Could Push Davis onto a New Economic Growth Trajectory?

The research for this portion of the analysis involved review of literature about development patterns of tech hubs, information about the types of R&D activity that has sprung up around major universities and other major research institutions, and interviews with numerous stakeholders associated with, or with knowledge of the Davis and Sacramento Region tech

[10] *Business Park Land Strategy Technical Report*, Center for Strategic Economic Research, 2010.

economies. A listing of the individuals interviewed as part this study is included as Appendix B.

Following is discussion of some important factors that could help Davis to significantly ramp up its economic development above historic trends and currently projected growth, by focusing on opportunities to support the growth of the City's existing tech sector, and by taking advantage of overarching trends which will play to some of Davis' key strengths.

Growth in the Existing Davis Tech Sector

Over the last decade, Davis has quietly emerged as one of the Sacramento Region's leading locations for various types of tech-related businesses. The Sacramento Regional Technology Alliance (SARTA) has worked to develop an inventory of the tech businesses located in the Sacramento Region, which total 530 establishments. BAE reviewed the database published on SARTA's website and found that a total of 57 of the businesses, or just fewer than 11 percent of the regional total, are located in the Davis area. Note that a limited number of the 57 are located near Davis but outside the Davis city limits or, in the case of HM Clause (world's fourth largest seed producer), has part of its USA headquarters operations in the city, and part in the unincorporated area. This list includes six businesses in the software/apps category, 11 in the clean tech category, 22 in the med tech category, three in the components/materials category, and 14 in the ag tech category. Note that the SARTA tech business inventory does not include the Davis area SunPower operation which involves the recently acquired Greenbotics company, which makes robotic cleaning systems for large scale photovoltaic arrays. Separately, a City of Davis staff analysis indicates that Davis has the highest concentration of tech businesses relative to the size of the population within the Sacramento Region.

Discussions with various local tech sector stakeholders as well as representatives of the regional economic development community have indicated that the creation of a critical mass of successful local businesses should help to make Davis more attractive to other tech businesses, which will be interested in locating in an area where there is a community of like-minded entrepreneurs, and where there is an established labor pool of skilled employees.

As mentioned previously, the local employment growth in the "knowledge-based" industries was rapid during the 1999 to 2008 time period studied in the BPLS, and this trend appears to be continuing. Following are some highlights of the recent growth in the local tech sector:

- DMG/Mori Seiki completed construction of a 225,000 square foot manufacturing plant in 2012. The facility employs approximately 150; which is in addition to the company's Digital Technology Laboratory (DTL), which has 60+ employees and occupies about 66,000 square feet. DTL was originally established in West Sacramento, but relocated to its site in Mace Ranch in 2009.

- Expression Systems relocated from Woodland to a 27,000 square foot lab/warehouse facility in 2012, specifically with the intent to have a strong relationship with the university.

- HM Clause is one of the largest seed companies in the world and has chosen Davis for its North American headquarters and R&D site. HM Clause relocated its US headquarters from Modesto and occupies office space in Davis at Cousteau Place as well as just south of Davis on Mace Boulevard in research facilities formerly occupied by Harris Moran seed company (which was absorbed in the formation of HM Clause) and a research operation formerly owned by Campbell's (which HM Clause acquired).

- Greenbotics was a Davis area start-up that developed robotic systems for cleaning large-scale photovoltaic arrays. SunPower purchased Greenbotics in 2013 and the local operation is poised for continued growth, as part of a $3 billion company.

- Arcadia Biosciences, founded in 2002 recently closed a Series D[11] financing with $33 million in additional investment, bringing total investment in the company to $101 million.

- Marrone Bio Innovations, founded in 2006, raised $60 million initial public stock offering, and $40 million in a secondary offering, both in 2014. The company is headed by Pam Marrone, a proven entrepreneur who founded AgraQuest.

- In 2012 FMC, a $10 billion dollar company, completed its acquisition of Schilling Robotics. Local management has expressed an interest in expansion from its current five-acre site in Mace Ranch to a site of approximately 30 acres, where an initial phase of construction would involve an approximately 200,000 square foot facility, with possible future expansion to 300,000 or 400,000 square feet.

- Engage3 is a software/app company that wants to grow to 300-400 employees within five years. Engage3 was founded by brothers Ken and Tim Ouimet in Arizona and recently moved its headquarters to Davis. The two previously founded Khimetrics and successfully built the company and sold it to German software giant SAP in 2006. Engage3 recently announced that the McClatchy Company (owner of the Sacramento Bee and more than two dozen other newspapers) had agreed to make a strategic investment in the company.

[11] Series D financing usually refers to a fourth round of investment from external sources.

- Bayer CropScience purchased AgraQuest, a 16 year-old company in 2012 for approximately $500 million. Bayer CropScience moved AgraQuest and Nunhems, another company that it had acquired and relocated to Davis, to a newly acquired 164,000 square foot space in West Sacramento. In total, the move involves about 140 employees who previously occupied about 75,000 square feet of space in Davis. Much of this space will be back-filled by Marrone Bio Innovations, as it expands into its new headquarters facility.

The Bayer CropScience relocation and expansion in West Sacramento might be viewed as a lost opportunity for Davis, had the City had adequate space available to accommodate the consolidation. There are other examples of ag tech businesses that have recently chosen to invest in other locations outside of Davis, such as Monsanto's 90,000 square foot expansion just west of Woodland, and Syngenta's 42,000 square foot expansion also west of Woodland. While any number of factors may have precluding these projects from occurring in Davis, the investments are further evidence of the area's attractiveness.

New Opportunities

Two major worldwide trends that will create new opportunities for economic growth in the coming decades can be expected to provide economic support for the development and absorption of innovation parks in Davis. These include: a) the need to provide food for an ever-expanding world population, and; b) the healthcare needs of an aging population.

Ag Tech/Food

The first trend is compounded by increasing standards of living in developing nations, which will cause per-capita calories consumed to increase; increasing frequency of droughts accompanying climate change; loss of farmland due to urbanization; and increasing concerns about the sustainability of industrial farming techniques. The entire food system "chain" from crop production to processing, to distribution, to retail, will be affected. According to a 2014 report by the Kauffman Foundation:

Total food system demand "is expected to rise 70 percent by 2050, and current growth rates in agriculture are not sufficient to meet this goal. However, the ag sector faces an even greater challenge because of the uncertainty posed by climate change on future production and constraints posed by the limited availability of land, water, and other key resources. These twin challenges of productivity and sustainability translate to countless opportunities for innovation across the complete value chain, from inputs and agricultural production to transport, processing, distribution, storage, and waste disposal. Visionary entrepreneurs will

have the ability to solve pressing societal challenges while capturing the economic value of their new AgTech products and processes."[12]

BioTech/MedTech

Increases in population, an aging population with expectations of increased longevity, and increases in the standards of health care globally, are increasing health care costs. Health care consumes a significant portion of the U.S. gross domestic product. According to analysis by the Centers for Medicare and Medicaid Services, health care is expected to reach 19.3 percent of US GDP by 2023.[13] Combined with concerns about the sustainability of health care systems for which costs have risen dramatically, these factors are driving a constant need for improvements in medical technology, as well as innovations in nutrition and disease prevention, health care delivery, and administration. Domestically, the Affordable Care Act has placed an increased focus on efficiency of the health care system, and government as well as private organizations are seeking means to deliver better health outcomes with lower costs. In addition to biotechnology to solve problems for human healthcare, the biotechnology sector can also help to solve problems facing animals (e.g., veterinary biotech) as well as agriculture (e.g., seed technology, biological crop inputs) and industrial processes (e.g., plant-based renewable materials). According to a 2014 report issued by BIO/Batelle:

"While not immune to the economic crisis and resulting recession, the bioscience industry weathered difficult economic times better than most industries, and is on course to regain its previous high employment levels. Indeed, the promise of bioscience-based solutions to global grand challenges in human health, food security, sustainable industrial production and environmental protection provides an optimistic picture for the biosciences as a key economic development engine in the U.S."[14]

In addition to these important sectors, due to the academic and research activities in a range of departments at UC Davis, particularly the College of Engineering, Davis has potential to compete in other knowledge-intensive sectors such as various "clean tech" (e.g., renewable energy, energy conservation, water conservation, GHG reduction, and other green technologies), advanced manufacturing, and software/apps. In addition to the local human capital that can support innovation and economic development in these sectors, progressive State and local policies regarding energy conservation and sustainability create an environment that is welcoming and supportive of businesses in the green technology arena.

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[12] Dutia, Suren G. *AgTech: Challenges and Opportunities for Sustainable Growth*, Ewing Marion Kauffman Foundation, April 2014

[13] Centers for Medicare and Medicaid Services. National Health Expenditure Projections 2013-2023, Forecast Summary, 2014.

[14] State Bioscience Jobs, Investments and Innovation 2014, Batelle/BIO

Davis' Competitive Advantages

Davis has a number of competitive advantages that can help the community to successfully undertake physical development that is linked to knowledge-based industries. Key among them is the presence of the UC Davis campus. This is discussed below, under Sources of Innovation. In addition to that critical asset, Davis also possesses a number of characteristics that enhance the City's ability to compete regionally, nationally, and internationally to attract the talented workforce and the types of companies that would depend on those employees to successfully establish operations within an innovation park.

Labor Force

The quality of the local labor force is perhaps the most critical asset for development of a robust knowledge-based economy.

- Davis has a highly educated population – In November, 2014, NerdWallet ranked Davis the 11th most educated place in the U.S., second only to Palo Alto in California, and ahead of other noteworthy locations such as Cambridge, MA, Cupertino, Ann Arbor, MI, and Boulder, CO.[15]
- UCD produces a large new crop of highly educated workers each year, with Bachelor's degrees as well as Masters and PhDs. In 2012-2013, UCD awarded 7,015 Bachelor's Degrees, 1,055 Master's degrees, and 1,009 Doctoral degrees (scholarly/research as well as professional practice)[16]. UC Davis indicates that it awards more bachelors and doctoral degrees in life sciences than any other U.S. university.[17] UC Davis Extension provides professional education and continuing education opportunities. The local branch of Sacramento City College also provides the opportunity for students to obtain Associate's degrees and to prepare for transfer into UCD for more advanced degrees.

High Quality of Life

Davis is known for an outstanding quality of life. Numerous studies have drawn a linkage between quality of life and knowledge workers who provide the intellectual capital that drives innovation economies. Economic development practitioners are increasingly realizing that best practices in economic development involve attracting the talented workforce that knowledge-based companies require as a prerequisite to effective business attraction efforts. Davis already has key quality of life assets in place, as well as a highly educated local populace. Following are a number of assets that will help to attract and retain a talented workforce within the community.

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[15] The Most Educated Places in America, NerdWallet.com, http://www.nerdwallet.com/blog/cities/economics/mosteducatedplacesamerica/, accessed 11/18/2014.
[16] National Center for Education Statistics, IPEDS Data Center, November, 2014.
[17] UC Davis, *UC Davis, Internationally Engaged* (presentation), July, 2013.

- Outstanding public schools – the highly educated people who are needed to sustain knowledge-based companies place a high value on education for their own children.
- Community Amenities - Knowledge workers also place a high value on quality public amenities such as parks and recreation facilities, as well as cultural assets such as the Mondavi Center for the Performing Arts
- Continuing Education - UCD, UCD Extension, and Sacramento City College provide convenient local continuing education opportunities for adults
- Diverse Mobility - In addition to its national reputation as a walkable/bikeable community, Davis also enjoys transit access via Capitol Corridor commuter rail system and local bus systems. Davis is also well-situated along the I-80 "Life Sciences Corridor", and close to an international airport. These transportation systems link Davis to the rest of the Sacramento Region as well as to the Bay Area. Key destinations such as the Central Valley, the California coast and the Sierra Nevada mountains are easily accessible for recreational or business purposes.

Located at the Heart of National and World Food Production and Near State Government Offices and Bay Area

Davis' location is extremely beneficial for both agriculture/food-related businesses as well as businesses that are involved in innovations that relate to State government policies and programs regarding sustainability.

- Davis is located in the largest and most productive food producing region in the world
- The area grows many high value crops. Because of this, the economics of farming operations can support early adoption of innovative practices
- The local climate is ideal to support research and seed development for drought tolerance
- The State Capitol and Bay Area is easily accessible from Davis via transit or highway

Sources of Innovation

Expanding the local knowledge-based economy will require access to a steady flow of innovation. This is important not only for new businesses that are commercializing new products, but also for established businesses that must integrate new innovations into their established products and services in order to remain relevant and competitive. Research universities, like UC Davis, are extremely important sources of innovations, due to the research conducted in their labs and the exchange of ideas and knowledge that occurs among faculty, staff, students, including residents and visitors.

Another element that has not been as visible off campus until more recently is the collection of innovation-based businesses and formal and informal networks that connect them to each other as well as to the activities at the university. Davis's tech sector has grown over the last decade, as discussed previously.

- UCD is a world class research institution with annual research activity growing rapidly and approaching $1 billion.
    - Based on the National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey (2012), UCD ranked 21st nationally in R&D expenditures, and 5th in UC system
    - UCD has recently announced formation of the World Food Center, backed by an initial pledge of a minimum $40 million in support from Mars, Inc. Roger Beachy, who was recently named head of the World Food Center was founding president of the Danforth Plant Science Center at Washington University, which is closely linked to the success of the Cortex innovation district in St. Louis
    - UC Davis and SARTA received a $1 million grant from the U.S. Economic Development Administration, to create an AgTech Innovation Center to accelerate innovative technologies in agriculture.
    - In addition to government funded research, UCD is increasing sponsored research activity with private partners (e.g., nearly 1,000 unique research grants in 2011-2012)

- UCD ranks highly on a national and international level for numerous programs relating to the targeted tech sectors, including:
    - Agriculture
    - Food
    - Engineering
    - Life Sciences
    - Business

- There is an established local cluster of AgTech/Life Sciences companies
    - Most of the world's 10 largest seed companies are represented in Yolo County
    - Davis's assets are attractive enough that numerous companies with national and international ties are located in Davis
    - Local companies are attracting capital from national and international investors

- Local med tech companies include Stratovan and Cedaron Medical, which both offer software products used in the medical industry. Gold Standard Diagnostics provides diagnostic materials and equipment. Mytrus was founded in San Francisco but moved its headquarters to Davis. The company provides services to assist drug companies with medical trials, and works with some of the largest pharmaceutical companies in the world.

- UC Davis Medical Center in Sacramento is a major teaching and research hospital. Major health systems are headquartered in the region, including UC Davis Health,

Sutter Health, and Dignity Health. Kaiser also has a major presence in the region. The presence of these large medical organizations within the region creates opportunities for med tech companies to partner with them for R&D and other collaborations.

- Davis has a cluster of clean-tech companies, including Davis Energy Group. In 2014, Blue Oak Energy, a local provider of solar photovoltaic systems was selected for the third year in a row for the Inc. 5000 list, recognizing the fastest growing private entities in the country. The company has approximately 50 employees and increased its sales from $12.7 million to $20 million during 2013. Sierra Energy is another local alternative energy company that has been recognized on the Inc. 5000 list.
- Schilling Robotics and DMG Mori anchor a cluster of research and innovation-driven manufacturers. Greenbotics, a local start-up that makes robots to clean utility-scale solar arrays was recently purchased by SunPower, one of the nation's leading solar power companies. Barobo is a robotics company that specializes in robots used in schools.
- The Mondavi Institute for Food and Wine Science is nationally and internationally recognized and has strong ties with Napa Valley, one of the world's premier grape growing and wine producing regions.
- Compared to statewide and national competitors, Davis enjoys relative ease of access to Bay Area/Silicon Valley tech activity, and leading venture capitalists whose offices are clustered around Silicon Valley. This creates opportunities for business collaboration, while the scarcity of developable land, increasing costs (including employee housing costs), and stiff competition for talent will create opportunities for Davis to host relocations, branch offices, or expansions from the Bay Area.

The Developing Local Innovation Ecosystem

In recent decades, the Davis economy has been dominated by University employment. Moreover, as a community, Davis has not fostered an image as a location that is seeking substantial economic growth but, rather, more limited, incremental growth to meet local needs. Successful development of one or more innovation parks will require that the community adopt a more proactive stance toward fostering economic growth from within the community and attracting a larger share of regional, state, and national growth. A number of relatively new programs and initiatives can help to provide the "network" support that would help to stimulate transfer of knowledge among businesses, and from the academic realm to the commercial realm, in the form of new company formations, growth in existing companies, and attracting companies from other areas to Davis. Following are highlights:

- UC Davis launched its Venture Catalyst group within the Office of Research, in June of 2013. This program aims to help launch successful spinoff businesses. Venture

Catalyst reports that in the 2013-14 fiscal year, an all-time record of 14 start-up businesses were launched, which was a substantial increase from the eight startup businesses in the prior fiscal year.[18] Following are several key Venture Catalyst programs:

- Smart Toolkit for Accelerated Research Translation (SMART) program to assist with company formation
- Science Translational and Innovative Research (STAIR) grants to assist with commercialization
- DRIVE program to create a distributed network of business incubators in the local area

- UC Davis Child Family Institute for Innovation and Entrepreneurship, housed in the Graduate School of Management, runs a number of programs to foster entrepreneurship within the campus community, including:
  - Entrepreneur's academy
  - Sustainable Ag Tec Innovation Center (SATIC)
  - Seed Fund

- UC Davis Seed Biotechnology Center seeks to mobilize the research, educational and outreach resources of UC Davis in partnership with the seed and biotechnology industries to facilitate discovery and commercialization of new seed technologies for agricultural and consumer benefit.

- UC Davis Engineering Translational Technology Center formed in 2010 is an on-campus business incubator.

- UC Davis Biomechanical Engineering Translating Engineering Advances to Medicine (TEAM) Fabrication, Prototyping and Design Space

- Davis Roots is a non-profit organization that is a partnership between the City of Davis, UC Davis, and the private sector to serve as an incubator for start-up businesses, located in the City-owned Hunt Boyer Mansion in downtown Davis.

- Davis-based Business Funding – historically, there has been limited access to business funding from local sources. In the last several years, at least three locally-based funds have been announced:

[18] Note that although this increase in the number of University-affiliated spinoffs is impressive, it does not represent all businesses that have been established by UCD faculty, staff, or students/graduates. Only those businesses with a need for a formal relationship with the University, such as an intellectual property licensing agreement are counted in these numbers.

- Capitol Corridor Fund – at least $2 million in funding
- AgTech Venture Fund – closing on an initial round of $15 million in funding with goal to reach $50 million
- Almond Tree Capital Fund - $1 million raised with plan to raise $2 million, with a focus on med tech

- Other Supportive Initiatives and Programs – Regional economic development efforts are recognizing a number of the same economic development opportunities that have caused Davis to seek proposals for innovation parks. These include:
  - Next Economy Regional Economic Development Strategy (Capital Region Prosperity Plan)– this is a regional economic development strategy with broad public and private sector support, unveiled in 2013, which includes among its targeted industries Agriculture & Food, Life Sciences & Health Services, Clean Energy Technology, and Advanced Manufacturing
  - Seed Central – This a trade and networking organization for the seed industry, sponsored by SeedQuest and UC Davis. It has broad industry participation and regularly holds networking and educational meetings in Davis, which according to a representative of a prominent local seed company, are becoming "must attend" events for industry participants.[19] A representative of a prominent local seed company indicates that the group is becoming influential enough that its activities in the Davis area are a key asset in attracting additional firms to the area. Seed Central, UC Davis, and industry partners are considering the potential to develop the CoRe Lab, ad plant and seed collaborative research laboratory with industry partners
  - The Sacramento Regional Technology Alliance (SARTA) is a tech-based economic development group based in Sacramento that includes several key program areas, including Ag Tech, Med Tech, and Clean Tech, which align very well with the types of businesses targeted by the innovation park proposals as well as Davis existing tech clusters. To support growth in these industries, SARTA has established the AgStart, MedStart, and CleanStart programs
  - The founders of the Almond Tree Capital fund have also announced the formation of the MedForce med tech business accelerator program
  - City of Davis Innovation and Economic Vitality Action Plan, which charts a course for Davis to more actively pursue innovation-based economic development, including issuance for the request for expressions of interest (RFEI) for the innovation park proposals

[19] Gaines, Tamiko, Director of Institutional Relations and Development, HM Clause. Personal communication. November 21, 2014.

- Davis Chamber of Commerce 2020 Prosperity Plan Initiative announced in Fall 2014 contains numerous programs to provide marketing and other activities to support the growth of tech-related businesses within the local community
- Tech Davis was recently formed and, among other accomplishments, successfully raised private funds for economic development activities.
- JumpStart Davis is a grass-roots effort to provide networking opportunities for local entrepreneurs. In addition, the group has announced plans to establish a downtown co-working space and to raise $1 million in seed funding for local businesses
- Davis Makerspace is a non-profit organization that has established a shared workshop space in downtown Davis
- Sacramento's successful Hacker Lab has indicated interest in establishing a facility in Davis
- Businesses in Davis can also benefit from the State of California's Innovation Hub (iHub) program, which an initiative to prioritize the commercialization of innovation and technology as an economic development strategy. The City of Davis is a member of SARTA and Innovate Northstate, two of the State's i-Hubs.

Addressing Factors That Have Historically Limited Economic Development Growth

As part of the research for this analysis, BAE interviewed numerous representatives of the Davis tech sector, as well as representatives of local and regional economic development organizations, and real estate professionals. There was strong consensus among those interviewed that Davis' limited availability of buildings and land for businesses to start-up and grow in Davis or for existing businesses to relocate to Davis has been a major limiting factor in Davis' historic growth. Secondarily, a general perception of Davis as a community that is not particularly welcoming of growth has also been a factor limiting Davis' ability to attract new businesses. Finally, over the years, UC Davis has had a reputation as an institution that is difficult for businesses to work with, when it comes to technology transfer issues. With the number of new UC Davis programs mentioned above, and an increased focus on technology transfer issues since Chancellor Katehi joined the university in 2009, the University appears to be making progress in this regard.

Case Studies of Tech Related Growth in Other Communities

After conducting the research to compile the information presented in the previous section, it is clear that developing one or more Technology Parks in Davis, combined with continued development of the local ecosystem that will provide the necessary support to entrepreneurs represents an opportunity to substantially change the trajectory of economic development in Davis. The trends and activities described signal the potential for changes in the City of Davis' historic and currently projected pattern of economic development.

After reviewing the available studies and talking with numerous stakeholders involved with the local and regional tech economy, it is evident that there is no reliable, quantitative means to project the specific amount of new growth that could occur in Davis, if the City chooses to pursue development of one or more technology parks as an economic development strategy. However, for planning purposes, the City of Davis desires to understand the potential quantity of absorption for new innovation park buildings (and the related local employment growth) that could be expected over time if one or more of the innovation parks are developed.

To develop estimates of the potential absorption of space in the proposed innovation parks, BAE considers the 3,800-job SACOG growth projection for the 2008 to 2035 time period to provide a baseline, or status quo, growth projection. The various employment growth scenarios modeled by the Center for Strategic Economic Research in the Business Park Land Strategy also illustrate a range of alternative growth possibilities for the City; however, for the purposes of this study, it is useful to consider examples of what has occurred in other communities that have some characteristics that are similar to Davis. To do this, BAE compiled data on office/business park development and absorption rates in a number of other cities that have some similarities with Davis, as well as reviewed some examples of other northern California business park developments and examples of a range of other research parks associated with major research institutions.

Table 3 summarizes the office and flex/R&D inventories and average annual absorption rates for nine other communities.

- Folsom is included because it is often considered a "peer" city for Davis, and because it has a substantial tech sector anchored by Intel's R&D campus.
- Vacaville is considered because it is a nearby city located along the I-80 corridor that has captured some growth in the biotechnology sector.
- College Station, TX; Boulder, CO; Eugene, OR; Madison, WI; and St. Louis, MO are included because they are mid-sized cities that host major universities and have established reputations as tech hubs specializing in some of the same sectors that would be targeted by Davis innovation parks.
- Sorrento Valley – Torrey Pines – La Jolla is included because it is a suburban sub-market in the San Diego area that includes the UC San Diego campus, which like UC Davis is noted for research strengths in life sciences.

As shown in the table, aside from Vacaville and College Station, Davis has a notably small existing office and R&D/flex commercial building inventory. In terms of community population, Folsom is most directly comparable with Davis, yet its inventory of built space is about 2.4 times the size of Davis' according to CoStar. Even if the roughly 1.5 million square feet of building space associated with Intel is completely discounted as an anomaly, Folsom still has developed about 1.75 times more office and flex/R&D space as Davis. Boulder is also similar

in population and, in addition, has other similarities to Davis, including its image as a college town, its long-standing population growth management policies, and its reputation as a highly educated, environmentally conscious community. Boulder's office and flex/R&D inventory is approximately seven times that of Davis. Eugene is another community that is often compared to Davis and, although it is about 2.4 times the population of Davis, Eugene has an office and flex/R&D inventory that is more than 4 times that of Davis. Madison, St. Louis, and Sorrento Valley-Torrey Pines-La Jolla all represent much larger real estate markets than Davis; however, like UC Davis, they boast world class research universities that have strengths in life sciences. Washington University in St. Louis has a research budget that was comparable to UC Davis, as of 2012. UC Davis' annual R&D expenditures have been trending strongly upward over the last decade.

Table 3: City Case Study Summaries

	Davis	Folsom	Vacaville	College Station, TX
Population (2009-2013 ACS)	65,770	72,424	93,137	96,000
Anchor Institution	UC Davis	n.a.	n.a.	TX A&M
2012 R&D Expenditures ($1,000s)	$713,292	n.a.	n.a.	$693,421
Built Space				
Office Inventory	1,753,735	4,690,988	1,423,568	1,518,167
Flex/R&D Inventory	521,595	817,086	492,332	477,346
Total	**2,275,330**	5,508,074	**1,915,900**	**1,995,513**
Average Annual Absorption				
Time Period	1998 to Q3 2014	1998 to Q3 2014	1998 to Q3 2014	2007 to Q3 2014
Office	29,419	134,125	26,142	8,402
Flex/R&D	3,120	(907)	18,932	(1,058)
Total	**32,539**	**133,218**	**45,074**	**7,344**

	Boulder, CO	Eugene, OR	Madison, WI	St. Louis, MO
Population (2009-2013 ACS)	100,363	157,318	237,395	318,955
Anchor Institution	Univ. CO Boulder	Univ. of Oregon	Univ. WI Madison	Washington U.
2012 R&D Expenditures ($1,000s)	$392,004	$105,030	$1,169,779	$706,410
Built Space				
Office Inventory	10,374,974	7,904,420	23,453,909	52,702,244
Flex/R&D Inventory	5,470,144	1,689,185	3,145,239	2,772,993
Total	**15,845,118**	**9,593,605**	**26,599,148**	**55,475,237**
Average Annual Absorption				
Time Period	1999 to Q3 2014	2003 to Q3 2014	2006 to Q3 2014	2000 to Q3 2014
Office	117,601	(13,955)	(37,186)	153,278
Flex/R&D	24,501	(885)	35,429	11,082
Total	**142,102**	**(14,840)**	**(1,757)**	**164,360**

	Sorrento Valley-Torrey Pines-La Jolla
Population (2009-2013 ACS)	n.a.
Anchor Institution	UC San Diego
2012 R&D Expenditures ($1,000s)	$1,073,864
Built Space	
Office Inventory	24,180,004
Flex/R&D Inventory	13,280,686
Total	**37,460,690**
Average Annual Absorption	
Time Period	1999 to Q3 2014
Office	338,294
Flex/R&D	98,611
Total	**436,904**

Sources: U.S. Census Bureau, 2008-2012 American Community Survey; CoStar Group, 2014; BAE; 2014.

Table 4 summarizes information regarding built space and absorption rates for four traditional business parks that are located in suburban locations in northern California, including two in the Sacramento Region and two of the largest business park examples in the suburban Bay Area. None of these examples has been developed specifically as research parks/innovation centers, but rather, they represent traditional business park developments that have a range of professional office users, tech companies, and others. Along with the Sorrento Valley-Torrey Pines-La Jolla area summarized on Table 3, Bishop Ranch and Hacienda Business Park represent examples of larger sub-regional job centers that have managed to generate considerable absorption over time, and they represent examples of how singular business park developments or suburban real estate sub-markets can capture substantial demand over time.

Table 4: Traditional Business Park Case Summaries

Name	Hacienda Business Park	Bishop Ranch
Location	Pleasanton, CA	San Ramon, CA
Established	1984	1978
Acres	875	585
Built Sq. Ft.	11,000,000	9,000,000
Time Period	1984-2014	1978-2014
Average Annual Absorption	366,667	250,000
Jobs	18,000	n.a.
Bldg. Sq. Ft./Employee	611	n.a.
Source:	Hacienda Business Park	Bishop Ranch

Name	Stanford Ranch	El Dorado Hills Bus. Park
Location	Rocklin, CA	El Dorado Hills, CA
Established	1987	1993
Acres	n.a.	800+
Built Sq. Ft.	1,409,167	2,352,670
Time Period	1998 to Q3 2014	1998 to Q3 2014
Average Annual Absorption	48,821	72,763
Jobs	n.a.	n.a.
Bldg. Sq. Ft./Employee	n.a.	n.a.
Source:	City of Rocklin, CoStar	El Dorado Hills PB Owners Assn, CoStar

Sources: Sources as noted above plus CoStar, BAE; 2014.

Table 5 summarizes characteristics of a number of specific science and technology parks projects that are associated with major research universities. For comparison purposes, the table lists the 2012 R&D budgets reported for the associated universities by the National Science Foundation. BAE collected information regarding dates established, inventory, and jobs from various sources as noted. BAE calculated average annual absorption and average job density using the available data. Although the sample is too small to draw statistical inferences and there are many factors beyond research budgets that can affect the absorption of science and technology park projects, there does appear to be a loose correlation between the size of the anchor institution's research budget and the average annual absorption rates.

Table 5: Science and Technology Park Case Study Summaries

Name	Cortex	U of A Sci. & Tech Park	Stanford Research Park
Location	St. Louis, MO	Tucson, AZ	Palo Alto, CA
Research University/Institution	Washington Univ.	University of AZ	Stanford University
Research Budget	$706,410,000	$625,365,000	$903,328,000
Established	2002	1995	1951
Acres	200	1,345	700
Built Sq. Ft.	1,500,000	2,000,000	10,000,000
Average Annual Absorption	125,000	105,263	158,730
Jobs	2,850	6,500	23,000
Bldg. Sq. Ft./Employee	526	308	435
Source:	Brookings Institution	University of AZ	Stanford Research Park

Name	Purdue Research Park	Research Triangle Park	Research Park
Location	West Lafayette, IN	Raleigh, Chapel Hill, Durham	Urbana Champaign, IL
Research University/Institution	Purdue University	NC State, UNC, Duke	Univ. of Illinois
Research Budget	$602,501,000	$2,298,927,000	$583,754,000
Established	1999	1959	2001
Acres	725	7,000	200
Built Sq. Ft.	1,500,000	22,500,000	664,000
Average Annual Absorption	150,000	409,091	51,077
Jobs	2,800	50,000	1,400
Bldg. Sq. Ft./Employee	536	450	474
Source:	National Research Council (a)	Research Triangle Park	University of Illinois

Name	Sandia Science & Tech Park	University Research Park	CU-ICAR
Location	Albuquerque, NM	Madison, WI	Greenville, SC
Research University/Institution	Sandia National Laboratories	U of WI, Madison	Clemson University
Research Budget	n.a.	$1,169,779,000	$142,096,000
Established	1998	1984	2007
Acres	340	255	250
Built Sq. Ft.	1,100,000	1,800,000	372,000
Average Annual Absorption	68,750	60,000	53,143
Jobs	2,292	3,419	770
Bldg. Sq. Ft./Employee	480	526	483
Source:	Sandia National Laboratories	University Research Park	Clemson University

Note:
(a) Data for Purdue Research Park are from National Research Council, as of 2009.

Sources: National Science Foundation, National Center for Science and Engineering Statistics, Higher Education Research and Development Survey, 2013; CoStar Group, 2014.

Potential Absorption Scenarios for Davis Innovation Parks

For planning purposes, BAE developed four different absorption scenarios for innovation park development in Davis, as explained below. These scenarios are summarized in Table 6.

The first scenario is based on the land absorption pattern documented in the Business Park Land Strategy, which indicated that average absorption office and business park land in Davis between 1999 and 2008 was approximately 8.6 acres per year. At this rate, the individual innovation parks might each require approximately 25 years to absorb if developing as the only innovation park in Davis during that time frame. Under the cumulative scenario, which considers the possibility that both innovation parks, along with the Mace Triangle property, and the Nishi Property project would all be developed, the absorption time frame would be approximately 51 years.

The second scenario is based on an absorption assumption that involves Davis entitling and developing only one innovation park. The assumption of 140,000 square feet of absorption

potential per year is derived from the absorption performance of the City of Folsom and the City of Boulder, which each have different attributes that provide comparability to Davis. In addition, the 140,000 square foot figure is within the middle range of individual science and technology parks profiled for this analysis. At this absorption rate, the Davis IC would require approximately 26 years to absorb and the MRIC would absorb more quickly, in approximately 17 years, due to its smaller proposed tech space square footage.

The third scenario is a cumulative absorption scenario that acknowledges the potential for slightly accelerated overall absorption, if the City entitles and develops Davis IC, MRIC, and the Nishi Property. The small increase in annual average absorption is meant to recognize that although there is significant overlap in the types of business spaces that can be accommodated in the individual innovation park projects, providing multiple innovation park options will increase the City's flexibility to accommodate the widest possible range of users. Additionally, with more than one project actively developing in Davis, the additional regional and national marketing efforts could help to boost awareness of Davis as an innovation hub, and enhance business attraction efforts. For this scenario, BAE assumes the absorption potential would be approximately 150,000 square feet per year, which would result in full absorption of the cumulative scenario within about 49 years.

Finally, an upper end absorption scenario is provided, which utilizes an annual absorption rate of 350,000 square feet per year. This is within the range of absorption observed in the locations profiled for this study that had the most robust absorption over time, including the Sorrento Valley-Torrey Pines-La Jolla area, Research Triangle Park, Hacienda Business Park, and Bishop Ranch business park. This scenario illustrates that Davis IC would require 11 years to absorb at this rate, MRIC would require seven years, and the cumulative scenario would require 21 years. Although it may not be sustainable consistently from year to year, large expansion projects, such as Schilling Robotics, which could expand from 200,000 to 400,000 square feet, or relocations of larger established businesses from out of the area could propel absorption to this level in a given year.

Table 6: Estimated Innovation Park Absorption Periods

	Years to Absorption		
Baseline Historic Absorption Trend (a)	**Davis IC**	**MRIC (b)**	**Cumulative (c)**
8.6 acres/year	24	25	51
Individual Innovation Park Absorption Trend (d)			
140,000 square feet per year	26	17	n.a.
Multiple Innovation Park Absorption Trend (e)			
150,000 square feet per year	n.a.	n.a.	49
Upper End Absorption Trend			
350,000 square feet per year	11	7	21

Notes:
(a) From 2010 Business Park Land Strategy Report, based on 1999-2008 absorption of Office, Business Park, and Industrial land in Davis.
(b) Includes only acreage included as part of MRIC; does not include Mace Triangle property acreage.
(c) Includes 13.5 net acres of Nishi Property land or 500,000 square feet of building space that would involve business park development. Includes 8.3 acres at Mace Triangle assumed to be developed offfice/R&D/tech space.
(d) Assumes either Davis IC or MRIC is the only Innovation Park developed. Applies to office/tech space; not retail or hotel.
e) Assumes that Davis IC, MRIC, Mace Triangle, and Nishi Property are all developed and the expanded marketing efforts and expanded range of product offerings creates additional absorption activity versus only one innovation park. Applies to office/tech space; not retail or hotel.

Source: BAE, 2014

POTENTIAL EMPLOYEE HOUSING DEMAND BY 2035

For planning purposes, BAE estimated the potential employee housing demand by 2035 under the scenarios involving Davis IC alone, MRIC alone, and the cumulative scenario involving development of Davis IC, MRIC, Mace Triangle, and Nishi Property. These calculations assume that employment by 2035 in each scenario is equal to total employment for the scenario, multiplied by the proportion of office/tech space that is projected to be absorbed under the 140,000 square foot per year scenario for the individual innovation parks and 150,000 square feet per year for the cumulative scenario. Based on input from both of the Innovation Park development teams, it is assumed that the earliest that either of the Innovation Parks could deliver building space ready for occupancy would be late 2018. For the purposes of this analysis, it is assumed that this would allow for 17 full years of absorption by 2035.

First, Table 7 provides data regarding the commute patterns of existing workers who are employed in the Davis area, including the City of Davis and the UC Davis main campus. These data show that approximately 55 percent of Davis area workers live in the City of Davis and the rest of the local employees live in scattered residential locations (including UC Davis campus), as shown in the table.

Table 7: 2006-2010 Place of Residence for Davis Area Workers

Place of Residence	Davis Area Workers	% of Total
Davis	17,805	54.55%
Woodland	3,065	9.39%
University of California Davis CDP	1,450	4.44%
West Sacramento	960	2.94%
Winters	280	0.86%
Other Yolo County	825	2.53%
Sacramento	3,005	9.21%
Dixon	500	1.53%
Elk Grove	405	1.24%
Vacaville	355	1.09%
Roseville	230	0.70%
Citrus Heights	175	0.54%
Arden-Arcade CDP	215	0.66%
Carmichael CDP	180	0.55%
Folsom	150	0.46%
Rancho Cordova	190	0.58%
San Francisco	190	0.58%
Berkeley	150	0.46%
Foothill Farms CDP	135	0.41%
Rosemont CDP	125	0.38%
Fairfield	140	0.43%
Florin CDP	105	0.32%
Orangevale CDP	95	0.29%
Vallejo	75	0.23%
Vineyard CDP	70	0.21%
Yuba	140	0.43%
Rocklin	65	0.20%
All Other Locations	1,557	4.77%
Total	**32,637**	**100.00%**

Note:
(a) The American Community Survey (ACS) data used for the most recent Census Transportation Planning Package (CTPP) uses demographic estimates based on statistical sampling conducted between 2006-2010. Data are reported for workers age 16 and over.

Sources: 2006-2010 Census Transportation Planning Package, 2014; BAE, 2014.

This analysis assumes that new employees in Davis innovation parks would have the same general propensity to live in Davis as existing employees, assuming housing availability. Table 8 first calculates the projected employment increases associated with each of the scenarios between 2018 and 2035. This calculation assumes that the 2035 employment increase associated with each scenario would be proportionate to the total employment projected on Table 2, multiplied by the proportion of the total project square footage that would be absorbed by 2035, per the assumptions listed in Table 6. The 140,000 square foot annual absorption figure is used for the Davis IC and MRIC scenarios and the 150,000 square foot annual absorption figure is used for the cumulative scenario.

Next, Table 8 estimates the total number of employee households that would be associated with the estimated employment gains. Based on American Community Survey data analyzed by BAE, the average number of employed workers per household in the Davis area, for households that have at least one employed worker, is 1.62. Dividing the estimated 2035 employees by the average persons per household yields the number of employee households. BAE then calculated the number actual housing units that would be necessary to accommodate the employee housing demand, assuming a 3.5 percent vacancy rate.[20]

Based on these calculations, Table 8 shows the estimated employee housing demand at 4,485 units for Davis IC by 2035, 3,763 for MRIC, and 4,109 under the cumulative scenario. Note that although slightly more square footage could be expected to be absorbed under the cumulative scenario than under the Davis IC scenario, the cumulative scenario employee housing demand is somewhat less than the Davis IC employee housing demand due to the fact that it is assumed that Davis IC and MRIC share building square footage absorption during the 2018 to 2035 time period, and because of MRIC's lower overall employee density, the total number of new employees is reduced.

[20] This vacancy assumption is used to represent a blend of a five percent vacancy rate for multifamily rentals and two percent for single-family homes. These vacancy rates are often considered indicative of a reasonable balance between supply and demand for these different housing types.

Table 8: Estimated Employee Household Generation and Housing Demand, 2018 to 2035

	Davis IC	MRIC	Cumulative Scenario
Total Employment Increase by 2035 (a)	7,012	5,882	6,423 (b)
Estimated Employee Households (c)	4,328	3,631	3,965
Estimated Housing Demand (units) (d)	**4,485**	**3,763**	**4,109**
Estimated Portion of Employees Seeking Housing in the City of Davis	54.6%	54.6%	54.6%
Estimated Number of Housing Units Demanded by Innovation Park Employees Outside of Davis	**2,038**	**1,710**	**1,867**
Estimated Number of Housing Units Demanded by Innovation Park Employees Inside of Davis	**2,447**	**2,053**	**2,242**
Estimated City of Davis Housing Development Potential (units) (e)	2,231	2,231	2,881
Portion of Housing Development Potential Assumed to be Consumed by Non-Innovation Park Employment Growth between 2015 and 2035 (units) (f)	993	993	993
Estimated Innovation Park Employee Housing Demand Accommodated in Davis (units)	**1,238**	**1,238**	**1,888**
Innovation Park Employee Housing Demand Re-Distributed to Region through 2035 (units)	**1,209**	**815**	**354**

Notes:
(a) For Davis IC and MRIC, assumes job creation associated with 140,000 square feet of absorption per year. For the cumulative scenario, assumes job creation with 150,000 square feet per year. Assumes 17 years of absorption for each scenario.
(b) This figure is less than Davis IC alone because it represents a mix of employment densities in the different projects which is lower overall than Davis IC.
(c) Estimated employed residents per household 1.62
(d) Housing vacancy allowance 3.50%
(e) Per city of Davis, includes units at The Cannery, plus other currently zoned residential sites. Also assumes yield of 600 additional units from "Green Light" sites identified by 2008 General Plan Steering Committee as having strong potential for housing development. Cumulative Scenario assumes an additional 650 units would be developed at the Nishi Property
(f) SACOG's current 2008 to 2035 employment growth projection for Davis, pro-rated for 2015 to 2035 time period equals 2,845 jobs. Conservatively, this analysis assumes that all of this employment growth would occur elsewhere in Davis, in addition to innovation park employee generation, and associated employee housing demand would absorb housing unit potential following the same assumptions used to calculate innovation park employee housing demand on this table.

Sources: American Community Survey, 2009-2013; City of Davis, 2014; BAE, 2014.

Assuming that 54.6 percent of new innovation park employees would prefer to live in Davis, similar to existing Davis area employees, Table 8 calculates the new employee housing demand within the City. Through the 2035 time period, Davis has an estimated residential development capacity of 2,231 housing units. This includes a City staff estimate of 1,631 new housing units that can be accommodated on sites currently zoned for housing (including The Cannery), plus an additional 600 units of residential development potential on other sites that the City of Davis General Plan Steering Committee identified as having strong potential for housing development, but which are not currently zoned for housing development. 600 units is at the low end of the capacity that City staff estimated for these sites. For the cumulative scenario only, the available increase in the Davis housing supply includes 650 additional units that are assumed to be developed at the Nishi Property in addition to tech space and ancillary retail.

Before allocating the potential increase in housing supply to new innovation park employee households, it was necessary to acknowledge that a portion of the local housing supply could be consumed by employees associated with other employment growth elsewhere in Davis (e.g., retail, service, and other growth outside of innovation parks). Conservatively, BAE assumed that SACOG's entire currently projected 3,842 employee growth figure for Davis between 2008 and 2035, pro-rated for growth during the 2015 to 2035 time period, would

occur in addition to the projected innovation park employment, resulting in local demand for 993 housing units under each of the three scenarios, leaving 1,238 units available to satisfy the local housing demand from innovation park employees in the Davis IC and MRIC Scenarios and 1,888 units in the Cumulative Scenario. The last line on Table 8 then calculates the excess local innovation park employee housing demand that cannot be accommodated in Davis in the expected increase in local housing supply.

Based on these calculations, Table 9 summarizes the expected innovation park employee housing residence location under each of the scenarios. Table 10 shows the expected distribution of residence locations for employees living outside of Davis, based on the current residence pattern for Davis area employees who do not live in Davis.

For transportation planning purposes, the number of employees associated with the employee housing units demanded can be calculated by first multiplying a given employee housing demand figure by 96.5, to back out the housing vacancy allowance and estimate the number of employee households, and then multiplying the result by 1.62 employees per household, to estimate the number of employees.

Table 9: Innovation Park Employee Housing Demand by Location, 2035

	Davis IC	MRIC	Cumulative Scenario
A. Employee Housing Unit Demand Accommodated in Davis	**1,238**	**1,238**	**1,888**
Employee Housing Demand Outside of Davis			
Expected Demand from Employees Preferring to Live Outside of Davis	*2,038*	*1,710*	*1,867*
Expected Demand from Employee Households Reallocated to Region	*1,209*	*815*	*354*
B. Subtotal - Employee Housing Demand Outside of Davis (a)	**3,247**	**2,525**	**2,221**
Total Employee Housing Demand = A. + B. (Housing Units)	**4,485**	**3,763**	**4,109**

Note:
(a) These employees can be expected to be spread among residence locations outside of Davis similar to the proportions shown in Table 10.

Source: BAE, 2014.

Table 10: Projected Location of Housing for Workers Not Living in Davis, 2035

Place of Residence	% of Total	Davis IC	MRIC	Cumulative
In Yolo County, Except Davis				
Woodland	20.66%	671	522	459
University of California Davis CDP	9.78%	317	247	217
West Sacramento	6.47%	210	163	144
Winters	1.89%	61	48	42
Other Yolo County	5.56%	181	140	124
Outside of Yolo County				
Sacramento	20.26%	658	512	450
Dixon	3.37%	109	85	75
Elk Grove	2.73%	89	69	61
Vacaville	2.39%	78	60	53
Roseville	1.55%	50	39	34
Citrus Heights	1.18%	38	30	26
Arden-Arcade CDP	1.45%	47	37	32
Carmichael CDP	1.21%	39	31	27
Folsom	1.01%	33	26	22
Rancho Cordova	1.28%	42	32	28
San Francisco	1.28%	42	32	28
Berkeley	1.01%	33	26	22
Foothill Farms CDP	0.91%	30	23	20
Rosemont CDP	0.84%	27	21	19
Fairfield	0.94%	31	24	21
Florin CDP	0.71%	23	18	16
Orangevale CDP	0.64%	21	16	14
Vallejo	0.51%	16	13	11
Vineyard CDP	0.47%	15	12	10
Yuba	0.94%	31	24	21
Rocklin	0.44%	14	11	10
All Other Locations	10.50%	341	265	233
Total Housing Units	**100.00%**	**3,247**	**2,525**	**2,221**

Note:
(a) The American Community Survey (ACS) data used for the most recent Census Transportation Planning Package (CTPP) uses demographic estimates based on statistical sampling conducted between 2006-2010. Data are reported for workers age 16 and over.

Sources: 2006-2010 Census Transportation Planning Package, 2014; BAE, 2014.

Employee Housing Demand by Buildout

For EIR analysis purposes, the City of Davis requested analysis of housing impacts by buildout of the different innovation park development scenarios. Appendix C, Tables C1, C2, and C3 replicate Tables 8, 9, and 10, for buildout of each of the three scenarios, instead of for the quantity of absorption projected by 2035.

INTERNAL DEMAND FOR ANCILLARY RETAIL SPACE

Both the Davis IC and MRIC have proposed to include ancillary retail space within the innovation parks, in order to provide employees and visitors with basic convenience shopping and dining opportunities in close proximity to the businesses. Davis IC proposes approximately 120,000 square feet of ancillary retail space and MRIC proposes approximately 100,000 square feet. In the cumulative scenario, additional retail square footage would be included as part of development of the Mace Triangle property and the Nishi Property, for total retail development potential of 293,105 square feet.

Table 11 calculates the amount of internal demand that new employment estimated in the innovation parks would generate to support ancillary retail development, by 2035. Table 11 assumes the employees present in 2035, from Table 8. Table 11 then estimates total employee daytime spending based on a 2011 national survey of office workers conducted by the International Council of Shopping Centers. This analysis uses the national average figure, for expenditures on goods, dining, and services in and around their place of work, and excludes transportation expenditures and online purchases. The quantity of retail space that could be supported by these expenditures is estimated by dividing the total daytime employee expenditures by an average retail productivity figure of $326 per square foot, based on average sales in a national survey of neighborhood shopping centers conducted by the Urban Land Institute. As shown at the bottom of Table 11, new employment in Davis IC alone by 2035 would generate sufficient internal retail demand to support about 153,000 square feet of retail space by 2035. New employment in MRIC alone would be sufficient to support 128,000 square feet of retail space by 2035. Under the cumulative scenario, new employment spread across Davis IC, MRIC/Mace Triangle and Nishi Property would be sufficient to support 140,000 square feet of retail space. This figure is lower than the figure for Davis IC alone, because the cumulative scenario involves lower average densities than Davis IC alone and therefore the number of employees would be less and spending would be less.

The nature of retail shopping is that employees who work in the innovation parks will not make all of their daytime expenditures within the ancillary retail facilities located in the innovation park where they work. At the same time, the innovation park retail facilities will also attract shoppers from the surrounding community, who do not actually work in the innovation park. However, the important consideration is that the increase in innovation park employment will generate an overall increase in the retail expenditures within the community, and will equate to or exceed the increase in expenditures needed to support the increase in retail space that is proposed, ensuring that the overall balance of retail supply and demand within the community will not be adversely affected.

It should also be noted that the retail demand estimates only account for the personal spending of workers on retail goods and services. In addition to employee spending, the City can expect that businesses will also make retail purchases (business to business spending). For this reason, the retail expenditure estimates could be considered conservative.

The conservative calculations indicate that if Davis IC or MRIC are developed as the only innovation park in Davis, they will generate sufficient internal demand to support their retail components by 2035. If all of the locations are being developed simultaneously, only a portion of the cumulative 293,105 square feet of retail space estimated on Table 1 could be supported by 2035. Thus, particularly under a cumulative development scenario, it will be important that the City institute a controlled phasing program for the ancillary retail development on each of the innovation park sites so as to ensure that the increased supply of retail space does not exceed the anticipated demand increase from new employees, unless it can be shown that excess demand from other sources within the City of Davis justify new retail development beyond that supported by new employee expenditures (e.g., existing retail leakage). For either the Davis IC or the MRIC alone or the cumulative scenario, phasing should also be established so that the retail components are not constructed ahead of the actual demand needed to support them, and therefore will not divert sales from existing Davis retail establishments.

Table 11: Internal Retail Demand from Innovation Parks, 2035

	Davis IC	MRIC	Cumulative
Number of Employees by 2035	7,012	5,882	6,423
Estimated Annual Retail Expenditure Per Employee (a)	$6,459	$6,459	$6,459
Total Annual Retail Expenditure	**$45,290,157**	**$37,994,688**	**$41,487,587**
Average Annual Retail Sales Per Square Foot (c)	$326	$326	$326
Total Supportable Square Feet (d)	**152,759**	**128,152**	**139,933**

Notes:
(a) This figure represents the 2011 national average expenditure per office workers on goods, services, and dining at establishments in and around the place of work. This figure excludes expenditures on transportation, as well as online purchases made in the office. The figure assumes workers receive two weeks of vacation leave annually.
(c) Represents the national average sales per square foot for neighborhood shopping centers, as reported by the Urban Land Institute.
(d) Includes a 10 percent vacancy allowance.

Sources: ICSC, 2012; ULI, Dollars & Cents of Shopping Centers, 2008; BAE, 2014.

Internal Retail Demand by Buildout

Appendix D, Table D1 contains a duplicate of Table 11, which has been modified to calculate the internal retail demand from the employee counts that would be expected in each of the innovation park development scenarios by the time they reach buildout. Table D1 shows that internal demand would be more than sufficient to support the increase in retail space associated with each scenario by the time they reach buildout.

INTERNAL DEMAND FOR HOTEL FACILITIES

The local hotel market appears relatively healthy. Consultation with the Yolo Convention and Visitor's Bureau indicates that the market easily absorbed the Hyatt Place's recent 55-room expansion, without affecting occupancy rates in other local hotels. Further, the YCVB and a number of tech businesses surveyed indicate that the Davis market is currently leaking hotel demand due to a lack of higher end offerings and/or due to a lack of extended stay offerings. Depending on the market segments targeted by a given hotel project, new hotels included in the innovation park projects may capture currently unmet demand without affecting demand available to support existing hotels.

In addition to the qualitative information above, similar to the retail analysis, BAE also estimated the internal demand from innovation park development that could support the hotel components of the Davis IC and MRIC proposals. Table 12 estimates the potential internal support for hotels within the different innovation park scenarios based on the current estimated number of Davis area hotel room nights associated with business travel. First, BAE conducted a survey of Davis lodging establishments in order to ascertain the approximate portion of their business associated with business travel, as opposed to leisure travel. Based on a weighted average response of the responding hotels, an estimated 56.4 percent of current Davis hotel room nights are associated with business travel. BAE distributed this percentage across the estimated number of total Davis hotel room nights estimated in a 2013 analysis prepared for the City of Davis by PKF Consulting, a leading lodging industry consultant. BAE calculated the average annual room nights per local employee, using the local employment base as an indicator of the amount of business travel that is attracted to the Davis area. The resulting figure, 2.68 room nights is then used to estimate the number of room nights demand that would be induced by a given increase in population.

As shown in the upper part of Table 12, using this methodology, neither the Davis IC nor the MRIC would generate sufficient internal hotel demand to support their respective hotel components, by 2035. However, for a number of reasons this is likely a very conservative result. First, interviews with a number of local tech companies indicate that these types of companies, particularly given their national and international scope of operations and business relationships, may actually induce much more hotel demand than would be indicated by existing Davis market averages. For example, BAE reviewed an analysis conducted by Cushman & Wakefield, a national real estate brokerage firm, which calculated the estimated number of hotel room-nights induced by occupied office space in a number of markets across the U.S. The Cushman & Wakefield analysis indicated that induced hotel room night demand averaged 77 occupied room nights per 1,000 square feet of occupied space in a range of

large city markets.[21] This study did not attempt to isolate business travel from other types of travel; thus, it is likely an overstatement of the potential demand in locations that do not have robust tourism bases, also.

A 2007 analysis by the Pinnacle Advisory Group attempted a more nuanced analysis and found that after isolating hotel demand associated with corporate travel, the induced hotel demand was approximately 40 hotel room nights per 1,000 square feet of newly occupied office space.[22] As shown in the lower part of Table 12, if this lower figure is applied to the office/tech absorption projected under the Davis IC, MRIC, and cumulative scenarios, using the 140,000 square foot annual absorption figure for the first two and the 150,000 square foot absorption figure for the cumulative scenario, estimated supportable room hotel rooms by 2035 are as follows: Davis IC alone – 373; MRIC alone – 373; Cumulative – 399. Using this methodology and this set of assumptions, each of the scenarios would generate more than sufficient demand to support their associated hotel components by 2035.

In addition to potentially tapping into currently under-served market niches (e.g., upscale or extended stay) and catering to the needs of a growing tech sector, an increased hotel local supply associated with one or more hotels developed as part of innovation park projects may also help to induce additional leisure travel demand within the local market, by expanding the ability to accommodate larger events with more overnight visitors.

Although they are likely conservative, the results from the calculations in the upper part of Table 12 indicate that it would be appropriate for the City to proceed carefully with new hotel development. For example, to protect against development of hotels before the market can support additional hotel rooms, the City could, as a condition of approval for any innovation park, require that a market analysis demonstrate that there is adequate demand to support the existing hotels as well as the new hotel(s), prior to commencing hotel construction. Such a study could more comprehensively analyze the supply and demand factors for the various market segments that the proposed hotel would serve and, at that time, there would be much more detailed information about the exact type of hotel that would be constructed.

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[21] *Business Briefing: The Impact of Office Occupancy on Hotel Demand*, Cushman & Wakefield, Valuation & Advisory, Hospitality & Gaming Group, 2013.
[22] *Quantifying the Effect of Newly Occupied Office Space on Lodging Room Night Demand*, Pinnacle Advisory Group, 2008.

Table 12: Internal Hotel Demand from Innovation Parks, 2035

Internal Hotel Demand Based on Existing Employment/Busines Hotel Demand Relationship

Estimated 2014 Davis Hotel Occupancy (a)

Market Segment (b)	Occupied Room Nights	Percent of Total (a)
Business	95,090	56.4%
Leisure	73,510	43.6%
Total	**168,600** (b)	**100%**

Total Davis Area employment (c)	35,506 jobs
Current Business-Oriented Room-Nights Per Job	2.68

	Davis IC	**MRIC**	**Cumulative**
Projected Job Increase by 2035	7,012	5,882	6,423
Projected Increase in Business-Related Hotel Room Demand (nights)	18,779	15,754	17,202
Supportable Hotel Rooms (d)	73	62	67

Internal Hotel Demand Based on 40 Room Nights Demand per 1,000 Square Feet Occupied

	Davis IC	**MRIC**	**Cumulative**
Projected Office/Tech Absorption	2,380,000	2,380,000	2,550,000
Projected Increase in Business-Related Hotel Room Demand (nights)	95,200	95,200	102,000
Supportable Hotel Rooms (d)	373	373	399

Notes:
(a) Based on weighted average from BAE survey of local hotels.
(b) Estimate from 2013 PKF hotel feasibility study and BAE survey of Davis area hotels.
(c) Includes UC Davis main campus, from American Community Survey, 2008-2012
(d) Assumes 70 percent average occupancy.

Sources: PKF Consulting 2013; American Community Survey, 2008-2012; Pinnacle Advisory, 2007; BAE, 2014.

Internal Hotel Demand by Buildout

Appendix E, Table E1 contains a duplicate of Table 12 that has been modified to calculate the internal hotel demand that would be generated by the increased employee counts that would be present under each of the innovation park development scenarios, at buildout. As with the estimates of 2035 internal hotel demand, the upper part of the Table E1 estimates that the hotel demand generated by innovation park employees may not be adequate to support the hotel rooms associated with the different scenarios; however, the more aggressive assumptions used in the lower part of Table E1 suggest that new innovation park employment would be more than adequate to support the hotel rooms proposed under each scenario. Given the uncertainty, it would be reasonable for the City to impose requirements for further analysis prior to commencing hotel construction, to ensure against adverse impacts within the local marketplace.

PLANNING CONSIDERATIONS

Based on the research and analysis conducted as part of this study, as well as BAE's professional experience working with other communities on land planning and economic development issues, following are additional perspectives that the City may wish to consider as it reviews the innovation park projects.

- Land planning should allow for the fact that some businesses may wish to acquire excess property in order to ensure they have room to grow. This could result in some land being held vacant for extended periods of time. Under these circumstances, actual land availability may be less than indicated by building absorption projections.

- The City should consider allowing for a buffer beyond projected land needs (i.e., include a greater supply of land than is strictly needed to meet anticipated absorption over a given time period), in case development proceeds more rapidly, or in case some of the land is not developable or not made available for development.

- Although absorption for an individual property may be slower, due to competition for finite demand, providing multiple options controlled by different owners will ensure that there is healthy competition in the local market. Phasing strategies could be utilized to ensure orderly development.

- The MRIC and Davis IC, with different building types (as indicated by FAR differences) will overlap to some degree, but can also address the space needs of a wider range of future business needs, from lower intensity manufacturing uses to higher intensity offices.

- Innovation parks could be modified to more explicitly accommodate greenhouses and small experimental growing plots, specifically to target the needs of seed companies. In addition to having these types of features in immediate proximity to research buildings within the innovation parks, developers could also seek arrangements to provide tenants access to larger acreage outside the parks, but conveniently accessible, for larger scale experimental growing operations.

- At the current conceptual planning level, neither of the proposed innovation parks has provided firm details on their development and tenant recruiting strategies. During the course of interviews with numerous stakeholders as part of this study, the importance of having a supply of speculative building space as a way to capture demand from companies that require occupancy on relatively short time-frames was mentioned repeatedly. Build-to-suit opportunities are only suitable for companies that have sufficient lead time to negotiate design details and lease terms, wait for construction

plans to be drawn up and approved, and wait for construction to be completed. By ensuring that innovation parks provide speculative buildings for lease or sale, build to suit opportunities, and opportunities for businesses to purchase parcels of varying sizes and build their own buildings, the City and developers will have maximum flexibility to accommodate prospective tenants.

- Finally, dynamic, mixed-use environments are increasingly viewed as a key ingredient to innovation park attractiveness and success. Short of expanding the mix of uses in the parks themselves, anything that can be done to enhance connectivity between innovation parks and the City's neighborhoods, shopping, recreation, and other business districts will be beneficial from an environmental standpoint (e.g., traffic and GHG emissions) and will likely also be beneficial from an innovation park marketing and competitiveness standpoint. If the innovation parks were to incorporate housing along with greenhouse facilities that use 'round the clock illumination, extra care would be necessary to prevent conflicts with residential uses.

APPENDIX A: SACOG 2008-2035 GROWTH PROJECTIONS

Appendix A: SACOG 2008-2035 Growth Projections, City of Davis

	2008	2020	2035	Growth 2008 to 2035
Population	63,923	69,301	78,060	14,137
Households	25,462	27,994	29,311	3,849
Housing Units	25,639	26,899	28,683	3,044
Employment	16,015	17,061	19,857	3,842

Source: SACOG 2012

APPENDIX B: PERSONS CONSULTED AND INTERVIEWED

Adams, Cary, Med Start Chair, SARTA/CEO, Medforce LLC

Anvary, Nahz, Broker, Cassidy-Turley

Burris, Bob, Executive Vice President, SACTO

Chan, David, Senior Vice President, Engage3

Cobb, Kyle, Product Manager, SunPower/Founder, Greenbotics

Coots, Jack, Ag Start Chair, SARTA

Costello, Anthony, CEO, Mytrus and Co-founder, Davis Roots

Gaines, Tamiko, Director of Institutional Relations and Development, HM Clause

Gray, Jim, Broker, Cassidy-Turley

Hatamiya, Lon, representing Davis IC team

Hodgson, John, representing Davis IC team

Humason, Alan, CEO, Yolo Convention and Visitor's Bureau

Lockett, Steve, Associate Director, Venture Catalyst - Economic Engagement, UC Davis

Marrone, Pam, CEO, Marrone Bio Innovations/Founder, AgraQuest

Morris, David, CEO, Tech Davis/Capitol Corridor Fund

Pathak, Dushyant, Associate Vice Chancellor for Technology Management and Corporate Relations, UC Davis

Ramos, Dan, representing MRIC team

Ramos, Kevin, representing MRIC team

Selep, John, Managing Partner, Ag Innovation Fund

White, Rob, Chief Innovation Officer, City of Davis

Yancey, Matt, CEO, Davis Chamber of Commerce

APPENDIX C: EMPLOYEE HOUSING DEMAND BY BUILDOUT

Table C1: Estimated Employee Household Generation and Housing Demand, Buildout

	Davis IC	MRIC	Cumulative Scenario
Total Employment Increase by Buildout (a)	10,842	5,882	18,390
Estimated Employee Households (b)	6,693	3,631	11,352
Estimated Housing Demand (units) (c)	6,935	3,763	11,764
Estimated Portion of Employees Seeking Housing in the City of Davis	54.6%	54.6%	54.6%
Estimated Number of Innovation Park Employee Households Seeking Housing Outside of Davis	**3,152**	**1,710**	**5,346**
Estimated Number of Employee Households Seeking Housing in Davis	**3,784**	**2,053**	**6,418**
Estimated City of Davis Housing Development Potential (d)	2,231	2,231	2,881
Portion of Housing Development Potential Assumed to be Consumed by Non-Innovation Park Employment Growth between 2015 and 2035 (e)	993	993	993
Estimated Innovation Park Employee Households Accommodated in Davis	**1,238**	**1,238**	**1,888**
Excess Innovation Park Employee Housing Demand Re-Distributed to Region through 2035	**2,546**	**815**	**4,530**

Notes:
(a) Assumes complete absorption of all development included in the different scenarios.
(b) Estimated employed residents per household 1.62
(c) Housing vacancy allowance 3.50%
(d) Per City of Davis, includes units at The Cannery, plus other currently zoned residential sites. Also assumes yield of 600 additional units from "Green Light" sites identified by 2008 General Plan Steering Committee as having strong potential for housing development. Cumulative Scenario assumes an additional 650 units would be developed at the Nishi Property
(e) SACOG's current 2008 to 2035 employment growth projection for Davis, pro-rated for 2015 to 2035 time period equals 2,845 jobs. Conservatively, this analysis assumes that all of this employment growth would occur elsewhere in Davis, in addition to innovation park employee generation, and associated employee housing demand would absorb housing unit potential following the same assumptions used to calculate innovation park employee housing demand on this table.

Sources: American Community Survey, 2009-2013; City of Davis, 2014; BAE, 2014.

Table C2: Innovation Park Employee Housing Demand by Location, Buildout

	Davis IC	MRIC	Cumulative Scenario
A. Employee Housing Unit Demand Accommodated in Davis	**1,238**	**1,238**	**1,888**
Employee Housing Demand Outside of Davis			
Expected Demand from Employees Preferring to Live Outside of Davis	*3,152*	*1,710*	*5,346*
Expected Demand from Employee Households Reallocated to Region	*2,546*	*815*	*4,530*
B. Subtotal - Employee Housing Demand Outside of Davis (a)	**5,697**	**2,525**	**9,876**
Total Employee Housing Demand = A. + B. (Housing Units)	**6,935**	**3,763**	**11,764**

Note:
(a) These employees can be expected to be spread among residence locations outside of Davis similar to the proportions shown in Table B3.

Source: BAE, 2014.

Table C3: Projected Location of Housing for Workers Not Living in Davis, Buildout

Place of Residence	% of Total	Davis IC	MRIC	Cumulative
In Yolo County, Except Davis				
Woodland	20.66%	1,177	522	2,041
University of California Davis CDP	9.78%	557	247	965
West Sacramento	6.47%	369	163	639
Winters	1.89%	108	48	186
Other Yolo County	5.56%	317	140	549
Outside of Yolo County				
Sacramento	20.26%	1,154	512	2,001
Dixon	3.37%	192	85	333
Elk Grove	2.73%	156	69	270
Vacaville	2.39%	136	60	236
Roseville	1.55%	88	39	153
Citrus Heights	1.18%	67	30	117
Arden-Arcade CDP	1.45%	83	37	143
Carmichael CDP	1.21%	69	31	120
Folsom	1.01%	58	26	100
Rancho Cordova	1.28%	73	32	127
San Francisco	1.28%	73	32	127
Berkeley	1.01%	58	26	100
Foothill Farms CDP	0.91%	52	23	90
Rosemont CDP	0.84%	48	21	83
Fairfield	0.94%	54	24	93
Florin CDP	0.71%	40	18	70
Orangevale CDP	0.64%	36	16	63
Vallejo	0.51%	29	13	50
Vineyard CDP	0.47%	27	12	47
Yuba	0.94%	54	24	93
Rocklin	0.44%	25	11	43
All Other Locations	10.50%	598	265	1,037
Total Housing Units	**100.00%**	**5,697**	**2,525**	**9,876**

Note:
(a) The American Community Survey (ACS) data used for the most recent Census Transportation Planning Package (CTPP) uses demographic estimates based on statistical sampling conducted between 2006-2010. Data are reported for workers age 16 and over.

Sources: 2006-2010 Census Transportation Planning Package, 2014; BAE, 2014.

APPENDIX D: INTERNAL RETAIL DEMAND BY BUILDOUT

Table D1: Internal Retail Demand from Innovation Parks, Buildout

	Davis IC	MRIC	Cumulative
Number of Employees by Buildout	10,842	5,882	18,390
Estimated Annual Retail Expenditure Per Employee (a)	$6,459	$6,459	$6,459
Total Annual Retail Expenditure	**$70,028,478**	**$37,994,688**	**$118,783,939**
Average Annual Retail Sales Per Square Foot (c)	$326	$326	$326
Total Supportable Square Feet (d)	**236,198**	**128,152**	**400,645**

Notes:
(a) This figure represents the 2011 national average expenditure per office workers on goods, services, and dining at establishments in and around the place of work. This figure excludes expenditures on transportation, as well as online purchases made in the office. The figure assumes workers receive two weeks of vacation leave annually.
(c) Represents the national average sales per square foot for neighborhood shopping centers, as reported by the Urban Land Institute.
(d) Includes a 14 percent non-retail adjustment and 10 percent vacancy allowance.

Sources: ICSC, 2012; ULI, Dollars & Cents of Shopping Centers, 2008; BAE, 2014.

APPENDIX E: INTERNAL HOTEL DEMAND BY BUILDOUT

Table E1: Internal Hotel Demand from Innovation Parks, Buildout

Internal Hotel Demand Based on Existing Employment/Busines Hotel Demand Relationship

Estimated 2014 Davis Hotel Occupancy (a)

Market Segment (b)	Occupied Room Nights	Percent of Total (a)
Business	95,090	56.4%
Leisure	73,510	43.6%
Total	**168,600** (b)	**100%**

Total Davis Area employment (c)	35,506 jobs
Current Business-Oriented Room-Nights Per Job	2.68

	Davis IC	**MRIC**	**Cumulative**
Projected Job Increase by Buildout	10,842	5,882	18,390
Projected Increase in Business-Related Hotel Room Demand (nights)	29,037	15,754	49,252
Supportable Hotel Rooms (d)	114	62	193

Internal Hotel Demand Based on 40 Room Nights Demand per 1,000 Square Feet Occupied

	Davis IC	**MRIC**	**Cumulative**
Projected Office/Tech Absorption, Buildout	3,680,000	2,394,000	6,472,851
Projected Increase in Business-Related Hotel Room Demand (nights)	147,200	95,760	258,914
Supportable Hotel Rooms (d)	576	375	1,013

Notes:
(a) Based on weighted average from BAE survey of local hotels.
(b) Estimate from 2013 PKF hotel feasibility study and BAE survey of Davis area hotels.
(c) Includes UC Davis main campus, from American Community Survey, 2008-2012
(d) Assumes 70 percent average occupancy.

Sources: PKF Consulting 2013; American Community Survey, 2008-2012; Pinnacle Advisory, 2007; BAE, 2014.

APPENDIX F: REALLOCATION OF REGIONAL EMPLOYMENT GROWTH

Based on the absorption estimates discussed in this report, the innovation park growth scenarios (Davis IC alone, MRIC alone, cumulative scenario) would involve levels of employment growth within Davis that exceed the growth levels that SACOG forecasted for Davis by 2035. BAE and Fehr & Peers staff consulted with SACOG staff regarding how the projected increases in the Davis employment levels should be treated in relation to SACOG's regional employment projections and sub-regional employment growth allocations. Based on those discussions, it is assumed that to the extent that innovation park development scenarios involve overall increases in Davis employment that exceed SACOG's employment projections for Davis, this involves re-allocation of employment growth that SACOG had projected for other jurisdictions.

Following the approach outlined above, BAE re-allocated the regional employment growth, to accommodate the projected increases in Davis employment associated with each of the innovation park development scenarios using the following steps:

1. Estimate the innovation park employment, for each of the three innovation park development scenarios. Table 8.
2. Estimate the portion of SACOG's current 2008 to 2035 employment projection for Davis office and industrial jobs (2,230) that would include innovation park employment, at 25 percent (557 jobs). 25 percent is chosen as a conservative figure which means that most of the innovation park job growth is assumed to be in addition to job growth that would otherwise occur elsewhere in Davis.
3. 557 is subtracted from the estimated total innovation park employment for each scenario (from #1, above), to estimate the portion of innovation park employment that is assumed to be reallocated from employment growth that SACOG projected for other parts of the region.
4. The resulting 2035 innovation park employment portion that is re-allocated from the region is then divided by SACOG's total 2008-2035 regional office and industrial employment growth projection, less the growth projection for the City of Davis, to produce an "employment growth" re-allocation factor. As shown in Table F1, this adjustment factor is fairly small, ranging between 4.0 and 4.8 percent.
5. The employment growth re-allocation factor is then used to reduce the SACOG office and industrial employment growth projection for each jurisdiction other than Davis.
6. The Davis citywide office and industrial employment growth projection for 2008 to 2035 is adjusted to equal SACOG's 2008-2035 growth projection for the City, plus the applicable innovation park 2035 employment growth estimate, minus the 557-job overlap.

This methodology maintains the overall regional employment growth figure from SACOG's original projections, but allows Davis' employment growth to increase to reflect the employment associated with development of each of the innovation park development scenarios. Office and industrial employment growth projections for each of the other SACOG jurisdictions are reduced slightly, according to the appropriate adjustment factor for each development scenario. In this way, jurisdictions which SACOG assigned the highest office and industrial employment growth projections would have the largest job reductions, and those with the smallest office and industrial growth projections would receive the smallest job reductions.

Table F1: SACOG 2008-2035 Office and Industrial Employment Growth Projections and Reallocation

	Davis IC	MRIC	Cumulative
2035 Innovation Park Employment	7,012	5,882	6,423
Assumed % of SACOG-projected Davis Office/Employment growth included in IP Employment	25%	25%	25%
Number of SACOG Baseline included (assumes # new SACOG projected jobs elsewhere in Davis is constant)	557	557	557
2035 IP Employment Reallacated from Region	6,455	5,325	5,866
% Regional (less Davis) Office/Industrial Employment to Reallocate	4.8%	4.0%	4.4%

Jurisdiction	SACOG Office & Industrial Employment Projection	Reallocated Employment Growth 2008-2035 Davis IC	MRIC	Cumulative
City Of Placerville	204	194	196	195
Unincorporated El Dorado County	7,059	6,720	6,779	6,751
El Dorado County Total	**7,263**	**6,914**	**6,975**	**6,946**
City Of Auburn	537	511	515	513
City Of Colfax	213	203	205	204
City Of Lincoln	-177	-168	-170	-169
Town Of Loomis	181	173	174	173
City Of Rocklin	1,243	1,184	1,194	1,189
City Of Roseville	9,755	9,285	9,367	9,328
Unincorporated Placer County	9,367	8,916	8,995	8,957
Placer County Total	**21,119**	**20,103**	**20,281**	**20,195**
City Of Citrus Heights	2,198	2,092	2,111	2,102
City Of Elk Grove	6,347	6,042	6,095	6,069
City Of Folsom	3,080	2,932	2,958	2,945
City Of Galt	1,270	1,209	1,219	1,214
City Of Isleton	36	34	34	34
City Of Rancho Cordova	12,737	12,124	12,232	12,180
City Of Sacramento	30,590	29,117	29,375	29,251
Unincorporated Sacramento County	24,993	23,790	24,000	23,900
Sacramento County Total	**81,250**	**77,340**	**78,024**	**77,696**
City Of Live Oak	-134	-128	-129	-128
City Of Yuba City	3,893	3,706	3,738	3,723
Unincorporated Sutter County	1,326	1,262	1,273	1,268
Sutter County Total	**5,085**	**4,840**	**4,883**	**4,862**
City Of Davis	**2,230**	**8,684**	**7,555**	**8,095**
City Of West Sacramento	12,004	11,426	11,527	11,479
City Of Winters	401	382	385	384
City Of Woodland	3,269	3,111	3,139	3,126
Unincorporated Yolo County	623	593	598	596
Yolo County Total	**18,527**	**24,197**	**23,205**	**23,680**
City Of Marysville	228	217	219	218
City Of Wheatland	48	46	46	46
Unincorporated Yuba County	2,813	2,678	2,702	2,690
Yuba County Total	**3,089**	**2,940**	**2,966**	**2,954**
Regional Total	**136,333**	**136,333**	**136,333**	**136,333**

Sources: SACOG, 2012; BAE, 2014.

BAE prepared Appendix Table F2 at the request of Fehr & Peers, to illustrate the potential re-allocation of regional employment growth upon full buildout of the Davis IC, MRIC, Mace Triangle, or Nishi Property sites alone, or the cumulative scenario including buildout of all the sites just mentioned. As shown at the top of the table, buildout of the Mace Triangle site alone would not be sufficient to cause re-allocation of regional employment growth; however,

buildout of the Nishi Property alone could lead to re-allocation of less than one percent of regional employment growth, while buildout of MRIC and Davis IC, each alone, could lead to re-allocation of 4.0 percent and 7.7 percent, respectively. Under a cumulative scenario, with all the areas fully building out by 2035, approximately 13.3 percent of the regional employment growth would be re-allocated.

Table F2: SACOG Office and Industrial Employment Growth Projections and Reallocation, Buildout by 2035

	Davis IC	MRIC	Mace Triangle	Nishi Property	Cumulative
Buildout Employment	10,842	5,882	158	1,508	18,390
Assumed % of SACOG-projected Davis Office/Employment growth included in IP Employment	25%	25%	25%	25%	25%
Number of SACOG Baseline included (assumes # new SACOG projected jobs elsewhere in Davis is constant)	557	557	557	557	557
Buildout Employment Reallocated from Region	10,285	5,325	0	950	17,833
% Regional (less Davis) Office/Industrial Employment to Re Allocate	7.7%	4.0%	0.0%	0.7%	13.3%

Jurisdiction	SACOG Office & Industrial Employment 2008-2035 Projection	Reallocated Employment Growth (a)				
		Davis IC	MRIC	Mace Triangle	Nishi Property	Cumulative
City Of Placerville	204	188	196	204	202	177
Unincorporated El Dorado County	7,059	6,518	6,779	7,059	7,009	6,121
El Dorado County Total	**7,263**	**6,706**	**6,975**	**7,263**	**7,212**	**6,297**
City Of Auburn	537	495	515	537	533	465
City Of Colfax	213	197	205	213	212	185
City Of Lincoln	-177	-163	-170	-177	-176	-153
Town Of Loomis	181	167	174	181	180	157
City Of Rocklin	1,243	1,148	1,194	1,243	1,235	1,078
City Of Roseville	9,755	9,006	9,367	9,755	9,685	8,457
Unincorporated Placer County	9,367	8,649	8,995	9,367	9,301	8,122
Placer County Total	**21,119**	**19,500**	**20,281**	**21,119**	**20,970**	**18,311**
City Of Citrus Heights	2,198	2,029	2,111	2,198	2,182	1,906
City Of Elk Grove	6,347	5,860	6,095	6,347	6,302	5,503
City Of Folsom	3,080	2,844	2,958	3,080	3,058	2,670
City Of Galt	1,270	1,173	1,219	1,270	1,261	1,101
City Of Isleton	36	33	34	36	35	31
City Of Rancho Cordova	12,737	11,761	12,232	12,737	12,647	11,044
City Of Sacramento	30,590	28,244	29,375	30,590	30,373	26,522
Unincorporated Sacramento County	24,993	23,076	24,000	24,993	24,816	21,669
Sacramento County Total	**81,250**	**75,019**	**78,024**	**81,250**	**80,675**	**70,446**
City Of Live Oak	-134	-124	-129	-134	-133	-116
City Of Yuba City	3,893	3,594	3,738	3,893	3,865	3,375
Unincorporated Sutter County	1,326	1,224	1,273	1,326	1,316	1,150
Sutter County Total	**5,085**	**4,695**	**4,883**	**5,085**	**5,048**	**4,408**
City Of Davis	**2,230**	**12,514**	**7,555**	**2,230**	**3,180**	**20,063**
City Of West Sacramento	12,004	11,083	11,527	12,004	11,919	10,407
City Of Winters	401	371	385	401	399	348
City Of Woodland	3,269	3,018	3,139	3,269	3,246	2,834
Unincorporated Yolo County	623	575	598	623	619	540
Yolo County Total	**18,527**	**27,561**	**23,205**	**18,527**	**19,361**	**34,192**
City Of Marysville	228	210	219	228	226	197
City Of Wheatland	48	44	46	48	48	42
Unincorporated Yuba County	2,813	2,598	2,702	2,813	2,793	2,439
Yuba County Total	**3,089**	**2,852**	**2,966**	**3,089**	**3,067**	**2,678**
Regional Total	**136,333**	**136,333**	**136,333**	**136,333**	**136,333**	**136,333**

Note:
(a) This is a re-allocation of SACOG's 2008-2035 employment growth projection; thus, it assumes buildout occurs by 2035.

Sources: SACOG, 2012; BAE, 2014.