State of Arizona Office of the Auditor General

PERFORMANCE AUDIT

ARIZONA UNIVERSITIES' RESEARCH PARKS

Report to the Arizona Legislature
By Douglas R. Norton
Auditor General
November 1997
Report # 97-20

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OFFICE OF THE

AUDITOR GENERAL

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November 24, 1997

Members of the Arizona Legislature

The Honorable Jane Dee Hull, Governor

Dr. Frank H. Besnette, Executive Director
Arizona Board of Regents

Dr. Lattie Coor, President
Arizona State University

Dr. Peter Likins, President
University of Arizona

Transmitted herewith is a report of the Auditor General, A Performance Audit of the Universities' Research Parks. This report is in response to a June 10, 1996, resolution of the Joint Legislative Audit Committee.

This is the second in a series of reports to be issued on the university system in response to the requirements of A.R.S. §41-2958. This report addresses ways in which the ASU Research Park and the UA Science and Technology Park can become financially viable and generate more relationships between park tenants and the universities. Although the research parks were planned to become financially self-sufficient, both have needed assistance from the universities. In particular, ASU has transferred $7.5 million to its park since fiscal year 1990 and UA has paid $2.5 million of its park's start-up and operating costs. Even the most successful research parks nationally have struggled for many years before achieving financial self-sufficiency, in part because the pool of potential tenants is limited by entry restrictions. Although ASU's park was unable to lease land during some past years, it has leased significant amounts of land to new tenants during recent years. The report recommends reevaluating the ASU park's occupancy progress after three to five years. The report also recommends that management at both parks use other strategies to attract tenants, such as developing more effective relationships with university faculty as contacts for potential tenants. In addition to working toward financial self-sufficiency, the report recommends that the research parks develop stronger links between tenants and the universities. One strategy to facilitate more effective tenant-university relationships involves enhancing ties between the parks and the universities' technology transfer offices. Another strategy involves park management meeting more frequently with tenants to determine their research needs and interests.

As outlined in their response, the universities agree with all of the findings and recommendations.

My staff and I will be pleased to discuss or clarify items in the report.

This report will be released to the public on November 25, 1997.

Sincerely,

Douglas R. Norton
Auditor General

Enclosure

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SUMMARY

The Office of the Auditor General has conducted a performance audit of the Arizona State University Research Park and the University of Arizona Science and Technology Park, pursuant to a June 10, 1996, resolution of the Joint Legislative Audit Committee. This audit is the second in a series of four performance audits of the universities performed in response to the requirements of A.R.S. §41-2958.

In 1983, the Board of Regents created the ASU Research Park on 320 acres that had previously been used for the ASU experimental farm. The nonprofit Price-Elliott Research Park Corporation operates the park, and contracts with 2 private companies to market and manage the park, which currently has 27 tenants.

The UA Science and Technology Park was created in 1995, when the Board of Regents purchased an IBM facility on the southeast side of Tucson. This transaction transferred IBM's ownership of this facility to the Board of Regents, while IBM continues to be managing operator of 70 percent of the park. The nonprofit Campus Research Corporation markets and leases the park, and a university office is responsible for the park's management. The park currently has 14 tenants.

Both research parks were created for several reasons. They were intended to further the universities' research missions by encouraging the transfer of university-developed technology to the private sector. In addition, ASU's research park was intended to provide income to the university by generating lease revenues from tenants. Finally, the parks were meant to contribute to the State's economic development by attracting high-technology businesses to the area.

Research Parks Are Not Financially Self-Sufficient

(See pages 9 through 18)

Although the ASU and UA research parks were intended to become financially self-sufficient, and it was hoped that the ASU park would provide income to the university, both have required financial assistance from the universities. The poor real estate market in the late 1980s contributed to the ASU park's inability to meet its expenses. As a result, ASU has transferred $7.5 million to its park since fiscal year 1990. Although the UA's park is much newer, the park has needed the university to cover $2.5 million of its costs.

Nationally, research parks have struggled to achieve financial self-sufficiency. Experts cite several factors that often hamper research parks' efforts to attract tenants. First, parks

typically take a long time to attract sufficient tenants to be self-supporting, and many parks are not fully leased. Parks that are considered successful, such as Stanford Research Park, Research Triangle Park, and the University of Utah Research Park, have all been operating for over 20 years. Additionally, the entry requirements to locate at a research park often limit the pool of potential tenants, as does the intense competition for tenants among research parks and traditional business and industrial parks. Finally, research parks often lease rather than sell land to tenants, which can deter potential tenants who prefer to own their land.

Arizona research park officials predict that the ASU and the UA parks will repay their debts to the universities and begin to generate income within the next 5 to 16 years. The projections for the ASU park are based on the assumption that the park will lease 10 acres of land each year. However, these projections could turn out to be too optimistic, if the real estate market experiences a downturn similar to the one that occurred in the 1980s. And although most of the UA park's available building space is currently leased, its financial projections depend on retaining its current tenants, and could be affected by the cost of adapting existing buildings to suit future tenants' needs.

The universities, the Board of Regents, and the research parks' management should consider methods to ensure that the parks attain financial viability in the future. The agreement between the Board of Regents and IBM prevents the sale of the UA park for at least 17 years. Although the ASU park could be sold, the park may be responsible for paying taxes levied on some tenants, and the university would lose the potential financial return it expects to receive from the park. One option would be for the Board and ASU to track the ASU park's occupancy progress and evaluate it after three to five years. If projected lease rates are not met in this period, a cost benefit analysis could be performed to determine whether the potential costs to sell the park would be less than the projected losses associated with keeping the park. In addition, management at both parks should employ other strategies to attract tenants, such as developing more effective relationships with university faculty as contacts for potential tenants, informing potential and existing tenants about available services, and possibly constructing another building to house additional companies.

Research Parks Have Generated Few Links Between Tenants and Universities

(See pages 19 through 23)

Although the research parks were created primarily to foster relationships between the universities and the private sector, the parks have generated few such relationships. One important link is technology transfer, which is the implementation of university-developed technology by the private sector. This is generally done through licensing agreements, which grant companies the right to use an innovation in return for royalties paid to the

university. Other important relationships include faculty-industry collaboration on research projects, recruiting students, and tenant access to university resources.

However, the parks have created few of these relationships between tenants and the universities. During the audit, a survey of all tenants at both universities was conducted to determine the extent of the tenants' ties with the university. The survey results showed that a third of the ASU park tenants, and half of the UA park tenants, have had no contacts with the university, such as collaborating with faculty or staff or providing internships for students. In addition, only one tenant at each park has ever implemented university-developed technology. The relationships that do exist are generally the result of the tenant's initiative, rather than of park management's actions.

The research parks have made some efforts to link tenants with the university, but additional steps are needed. Other research parks have used several strategies successfully. One such strategy involves developing a strong relationship between the university's office of technology transfer and the research park. Also, more frequent meetings with tenants are important to determining their research needs and interests. Park management should also better inform university faculty and administration about the parks. Finally, there are databases at both universities listing faculty research activities and interests, which could be used to link faculty with tenants on specific research projects.

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INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of the Arizona State University Research Park and the University of Arizona Science and Technology Park, pursuant to a June 10, 1996, resolution of the Joint Legislative Audit Committee. This audit is the second in a series of four performance audits of the universities performed in response to the requirements of A.R.S. §41-2958.

A university-related research park is a real estate development affiliated with a university that sells or leases space to private companies and government agencies. Research parks are different from industrial or business parks because they offer tenants a relationship with a university, and serve a particular type of tenant. Most parks have strict criteria for tenancy, usually including a requirement for high-technology or science-based functions.

Universities generally develop research parks for three reasons: to transfer technology from a university to industry, to generate income for the university, and to enhance the community's economic development. The primary goal of establishing a research park is usually to promote technology transfer, which is the implementation of university research by the private sector. Universities can benefit from technology transfer, since they receive royalties from the licensing of university-developed technology. In addition, companies with university links often promote university research through grants or gifts of equipment.

History of Research Parks

University-related research park development has spanned nearly 50 years, beginning in 1951 with the Stanford Research Park. Research park development gained momentum in the 1960s and 1970s. There are currently 122 research parks in the United States, and there are plans to establish 18 more, according to the Association of University Related Research Parks. The 1980s saw the largest increase in the number of parks. Sixty-five percent of all parks were started during that decade, when universities predicted government cutbacks in university funding and began to seek other opportunities for generating income to support rising research costs.

Universities across the country hoped to replicate the success of parks like the Stanford Research Park, where 660 acres of land was leased to Eastman Kodak, Hewlett-Packard, and other high-technology companies. These leases were prepaid at rates ranging from $10,000 to $195,000 per acre, and resulted in direct revenue to Stanford's endowment fund. By 1983 the park was fully leased, and housed 80 tenants with over 28,000 employees.

While some parks have benefited their universities and communities through technology transfer and economic development, other parks have been less successful. According to the Association of University Related Research Parks, parks often need a long time to achieve their financial goals of attracting tenants and financing themselves. Additionally, many parks experienced setbacks during the late 1980s, when an economic downturn led to a poor commercial real estate market. However, the Association reports that parks are now employing strategies such as building better relationships with local economic development agencies and strengthening their relationships with their universities. Further, the economic recovery of the past four years has helped parks move toward financial viability.

In 1983, the Arizona Legislature enacted Laws 1983, Ch. 284, which authorized the Board of Regents to create research parks at Arizona's universities. The Legislature later created a 100 percent property tax exemption for qualified research park tenants. The ASU Research Park was created in 1983, and construction began in 1984. The UA research park was not created until 1995, when the Board of Regents purchased an existing facility from IBM.

Requirements for Park Tenancy

Arizona's statutes and the parks' covenants, conditions, and restrictions (CC&R's) restrict the types of tenants who can use the parks, as well as those who are eligible for the property tax exemption. A.R.S. §15-1636 prohibits unlimited manufacturing in both parks and identifies the following types of uses that qualify for the property tax exemption in both parks:

- Laboratories, offices, and other facilities for testing, consulting, and information processing related to research and development;
- Production, assembly, or sale of products pursuant to research and development activities;
- Pilot plants in which processes planned for use in production elsewhere can be tested and assembled;
- Regional or national headquarters of the lessee or its subsidiaries that are engaged in research and development or education activities;
- Education and training facilities; and
- Operations required to maintain or support any permitted use.

Each of the park's CC&R's permit certain types of tenants who can locate at the parks; including but not limited to the tenants whose uses are eligible for the tax exemption.

ASU Research Park

The Board of Regents created the ASU Research Park for several reasons. First, it intended to encourage commercial research and development in areas that match the university's research interests. Also, both industry and university faculty were expected to benefit from collaborative efforts between park tenants and the university. In addition, the park was intended to produce a flow of income for the university, which could be used to enhance university programs and facilities. Finally, the park was planned to contribute to the City's and the State's economic development by encouraging the establishment of research-based companies that would add to the income tax base, as well as creating jobs for the community.

The ASU Research Park comprises 320 acres west of Price Road between Elliot and Warner Roads, property that was formerly the ASU Experimental Farm. In 1979, the Arizona Board of Regents phased out the university's agricultural production program at the farm, and local business leaders and ASU officials proposed using the land for a university-sponsored research park. In 1982, the Board of Regents approved the concept of a research park, and authorized ASU to hire a professional director to implement the project.

Currently, the research park has 27 tenants that lease either land or space in one of the park's multi-tenant buildings. Motorola, its largest tenant, has two free-standing facilities at the park: Motorola University and the Motorola Flat Panel Display Division, which is developing displays for computers, cellular phones, and televisions. In addition, Motorola leases space in two of the park's three multi-tenant buildings. Twelve smaller companies or entities also occupy space in these buildings, all three of which are fully leased. Overall, the park has leased 50 percent of its land.

- **Park governance—**In 1984, the Board of Regents authorized ASU to create a nonprofit corporation to plan, design, develop, market, and administer the park on ASU's behalf. Price-Elliott Research Park, Inc., with 15 board members from the business community and from ASU, operates the research park. Price-Elliott leased the land from the Board of Regents for a term of 99 years for $1 a year. In 1992, the park contracted with PCI Associates, Ltd., and Sunbelt Holdings Management, Inc., to provide development, marketing, and management services. Fees paid to these companies in fiscal year 1997 totaled $275,841.

  ASU and the Board of Regents oversee different aspects of park management. The ASU president appoints some of the board members of the Price-Elliott Corporation. Additionally, the ASU comptroller monitors the park's finances, since the bonds issued

to construct the park's infrastructure are secured by university monies. The Board of Regents reviews the park's annual reports. In addition, two regents are members of the Price-Elliott Corporation's board of directors.

- **Park financing—**In 1984, the park issued bonds to construct $12,500,000 of park infrastructure, which included streets, utilities, and lakes. The park refinanced this debt in 1987, 1991, and 1995. Although the park issued the bonds, ASU is obligated to pay the debt service, if not paid by the park, since the bonds are secured by ASU revenues.

Table 1

ASU Research Park (Price-Elliott Research Park, Inc.)
Statement of Activities
Years Ended June 30, 1995 and 1996

	1995	1996
Revenues:		
Rental income	$ 1,074,503	$ 1,211,710
Donated administrative support from Arizona State University	55,442	24,820
Interest income	11,853	48,092
Other income	35,785	36,537
Total revenues	1,177,583	1,321,159
Expenses:		
Interest expense	1,501,312	891,455
Depreciation and amortization expense	630,716	557,733
Grounds maintenance expense	402,868	434,788
Outside professional services	256,983	284,102
Other general and administrative expenses	148,667	164,451
Salaries and employee-related expenditures	173,369	176,524
Amortization of bond discount and issuance costs	27,481	90,433
Total expenses	3,141,396	2,599,486
Excess of expenses over revenues	(1,963,813)	(1,278,327)
Accumulated deficit, beginning of year	(13,732,972)	(15,696,785)
Accumulated deficit, end of year	$(15,696,785)	$(16,975,112)

Source: Financial statements of Price-Elliott Research Park, Inc. audited by Deloitte & Touche, LLP.

- **Park budget—**The park receives no legislative appropriation, but as Table 1 shows, derives revenue mainly from lease payments. In addition to generating monies through lease payments, the park has also needed financial assistance from ASU. ASU plans to advance the park $917,000 for fiscal year 1997, and cumulatively, the park owes ASU $7.5 million as of June 30, 1997. These monies are income from investment of auxiliary enterprise revenues from sources such as the bookstore and dormitory rooms. According to the repayment agreement between the park and the Board of Regents acting for and on behalf of ASU, this debt is repayable with interest to ASU when the park generates sufficient revenues. As reported in Finding I (see pages 9 through 18), park management projects that the park will begin to make payments to ASU in fiscal year 2000 and the debt to ASU will be repaid with interest in fiscal year 2014.

UA Science and Technology Park

The UA Science and Technology Park was created in 1994 when the Board of Regents purchased an IBM facility southeast of Tucson. The park is intended to further the university's research mission by facilitating collaboration between industry and university faculty. It is located approximately 18 miles from the main campus, adjacent to Interstate 10 between Kolb and Rita Roads. The entire parcel is approximately 1,340 acres, but the portion designated as a research park is 316 acres (the undeveloped remainder is not part of the park and is controlled by the university). IBM leases almost 80 percent of the park, and subleases part of it to Hughes Missile Systems. The Board of Regents leases the remainder to the nonprofit corporation that subleases space to tenants. As of August 1997, the nonprofit corporation leases 12 percent of the park, with the remaining 88 percent leased to other tenants.

- **Park governance—**The park's operation is handled by the university, IBM, and the Campus Research Corporation (CRC), a nonprofit corporation that markets and leases the park. The CRC board of directors is composed of 15 persons, 7 of whom are appointed by the President of the University of Arizona and 8 of whom are selected by the CRC's board itself. The UA's Community Affairs and Economic Development Office and the park's Executive Committee, composed of senior university officials, provide oversight. The university and CRC have hired a consulting firm to create a master plan, due to be issued in December of 1997, to guide the park's future development.

  IBM acts as the park's managing operator, and operates and maintains the utility systems, provides fire and security services, and maintains the park's common areas. IBM collects a fee from those occupying space at the park for costs incurred in providing these services. The UA is responsible for paying these costs on unoccupied park space.

- **Park financing—**To finance the purchase of the park, the Board of Regents sold bonds through the Arizona Research Park Authority[1] (ARPA) to IBM. At the same time, IBM leased a large part of the research park back from ARPA. If IBM vacates the park before 2014, the park's remaining debt to IBM will be canceled. IBM's annual rent payments of $9.3 million to ARPA are the same amount as the bond payments to IBM; therefore, there is no net transfer of monies. As a result, although the purchase price was $98 million, the expense to the university was only $686,000 in legal fees and closing costs. IBM's lease expires in 2014, but it has the option of two five-year extensions, rent-free.

- **Park budget—**Similar to the ASU park, the UA park does not receive a legislative appropriation, but generates revenues from lease payments. The park has required financial assistance from the university, but the park plans to repay this money and generate a positive cash flow by fiscal year 2003. The park currently owes the UA approximately $2.5 million.

During fiscal year 1996, the university paid approximately $132,000 in personnel costs and $200,000 in legal costs for the research park, as shown in Table 2 (see page 7). Additionally, the park and the university are paying approximately $450,000 to a private consulting firm over a two-year period to complete a master plan for the park that will help guide its future.

[1] The Arizona Research Park Authority (ARPA) is an industrial development authority that was authorized by the Legislature in 1983 to provide financing for Arizona research parks. The ASU Research Park did not use ARPA when creating its park, but instead issued bonds through the City of Tempe.

Table 2

University of Arizona Science and Technology Park
Statement of Budgeted Cash Flows
Years Ended June 30, 1995 and 1996
(Unaudited)

	1995	1996
Sources of cash:		
Rental fees	$ 149,462	$ 345,627
Other		88
Total sources of cash	149,462	345,715
Uses of cash:		
Closing costs	685,921	
Personnel	58,862	131,973
Legal services	14,148	199,864
Building operational expenditures	210,282	341,765
Business services	14,148	207,200
Site improvements		184,364
Building improvements		6,495
Capital equipment	13,922	
Office operations and travel	8,357	26,212
Other	232	1,496
Total uses of cash	1,005,872	1,099,369
Excess of uses of cash over sources of cash	(856,410)	(753,654)
Accumulated cash deficit, beginning of year		(856,410)
Accumulated cash deficit, end of year	$ (856,410)	$(1,610,064)

Source: Auditor General staff analysis of cash flow budgets prepared by the University of Arizona Science and Technology Project Office for the years ended June 30, 1995 and 1996.

Audit Scope and Methodology

This audit focused on the financial viability of Arizona's university-related research parks, and whether the parks have generated relationships between their tenants and the universities. The audit used several methods to review these issues, including:

- Surveying 11 university-related research parks in the United States[1], selected because they are considered to be successful or innovative;

- Surveying the 41 research park tenants at the ASU and UA research parks to determine the extent of their collaboration with the universities;

- Interviewing experts in the university-related research park field to identify innovative methods to foster collaborative relationships between park tenants and universities;

- Reviewing the parks' financial analyses and projections to determine the parks' financial condition; and

- Interviewing experts in the real estate market to help determine the validity of the parks' financial projections.

This report presents findings and recommendations in two areas:

- The Arizona Board of Regents, Arizona State University, the University of Arizona, and park management should consider several strategies to ensure that the research parks become financially viable.

- ASU park management and UA park management should improve their efforts to foster relationships between park tenants and the universities.

This audit was conducted in accordance with generally accepted government auditing standards.

The Auditor General and staff express appreciation to the ASU Research Park and the UA Science and Technology Park staff, research park board members, and park tenants for their cooperation and assistance during the audit.

[1] Parks contacted were Cummings Research Park in Huntsville, Alabama; Research Triangle Park in Research Triangle, North Carolina; Dandini Research Park in Reno, Nevada; University of Utah Research Park in Salt Lake City, Utah; University of Nebraska Technology Park in Lincoln, Nebraska; North Carolina State University, Centennial Campus in Raleigh, North Carolina; University City Science Center in Philadelphia, Pennsylvania; Rennselaer Technology Park in Troy, New York; Central Florida Research Park in Orlando, Florida; University Research Park in Madison, Wisconsin; and Stanford Research Park in Menlo Park, California.

FINDING I

RESEARCH PARKS ARE NOT FINANCIALLY SELF-SUFFICIENT

Neither the ASU Research Park nor the UA Science and Technology Park has achieved the goal of financial self-sufficiency. Both parks have needed significant financial assistance from the universities. Like most university research parks, the Arizona parks face inherent obstacles to quickly becoming fully leased. Specifically, the parks' entry criteria limit the types of businesses that can locate at the parks, and other business and industrial parks compete with the research parks for tenants. However, the Board of Regents, the universities, and the parks' management could do more to attract tenants and ensure the parks continue to progress toward the goal of financial success.

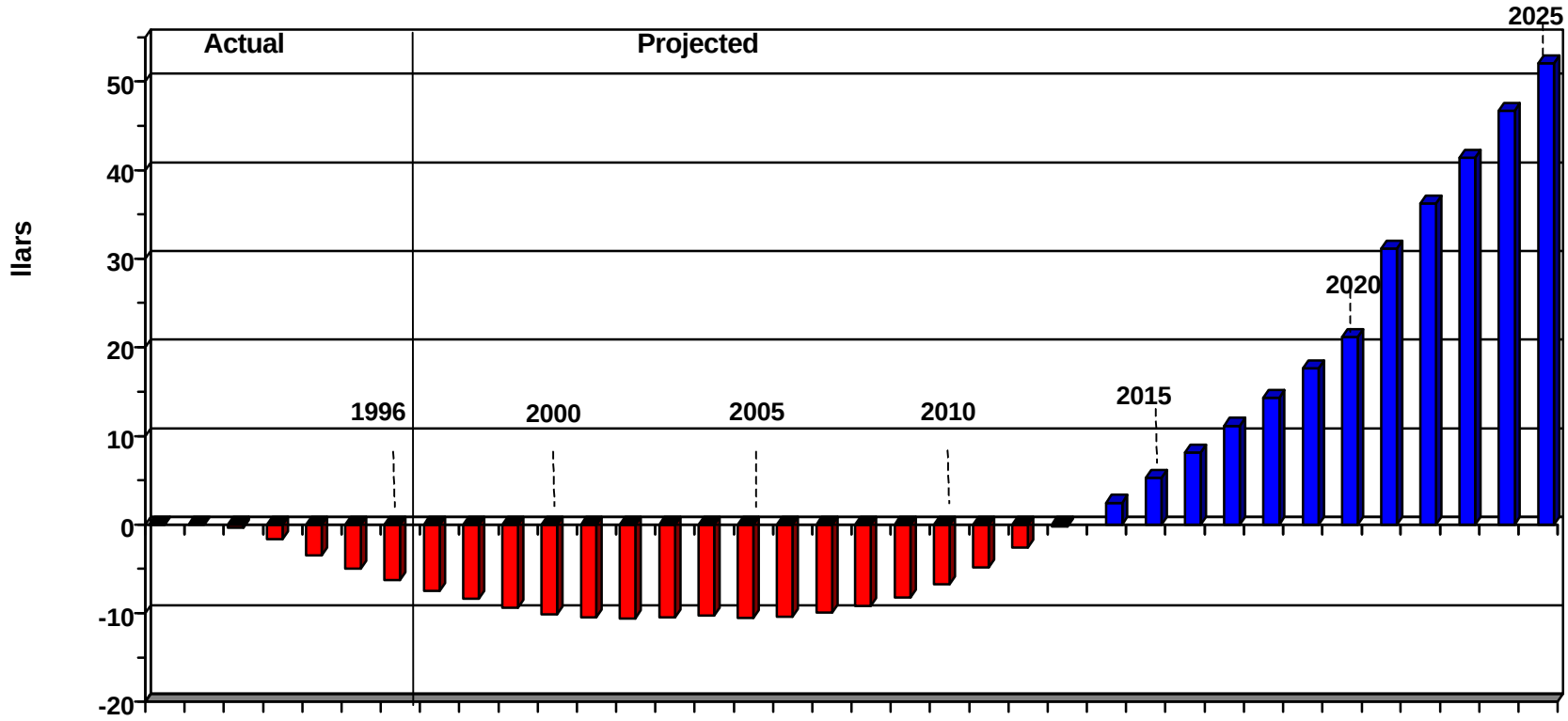
Research Parks Were Intended to Be Financially Self-Sufficient

According to historical documents, the research parks were intended to achieve financial self-sufficiency and, for ASU's park, to eventually generate sufficient lease revenues to provide a financial return for the university. When the Board of Regents granted conceptual approval for the proposed ASU research park in 1982, it was hoped that the park would support itself by generating enough lease revenues to meet its expenses. In fact, these documents stated the park would produce a flow of income for the university, making it possible to "enrich programs and facilities beyond what can be achieved with resources otherwise available." Similarly, when the Board approved the proposed acquisition of an IBM facility for a UA research park in 1994, UA administrators indicated the park would neither gain nor lose revenues for the university, and currently, one of the park's missions is to generate revenues for the university.

Park managements' most recent projections, shown in Figures 1 and 2 (see pages 10 and 11), illustrate these expectations. ASU's park management expect the park to pay its annual debt service requirements by fiscal year 2000 and expect to pay its debt with interest to ASU by fiscal year 2014. In addition, management expect the park to provide a total of $52 million to ASU by fiscal year 2025. The UA's park management indicate that they expect the park to become self-supporting by fiscal year 2003 and to generate $1.9 million for the university by the end of fiscal year 2004.

Figure 1

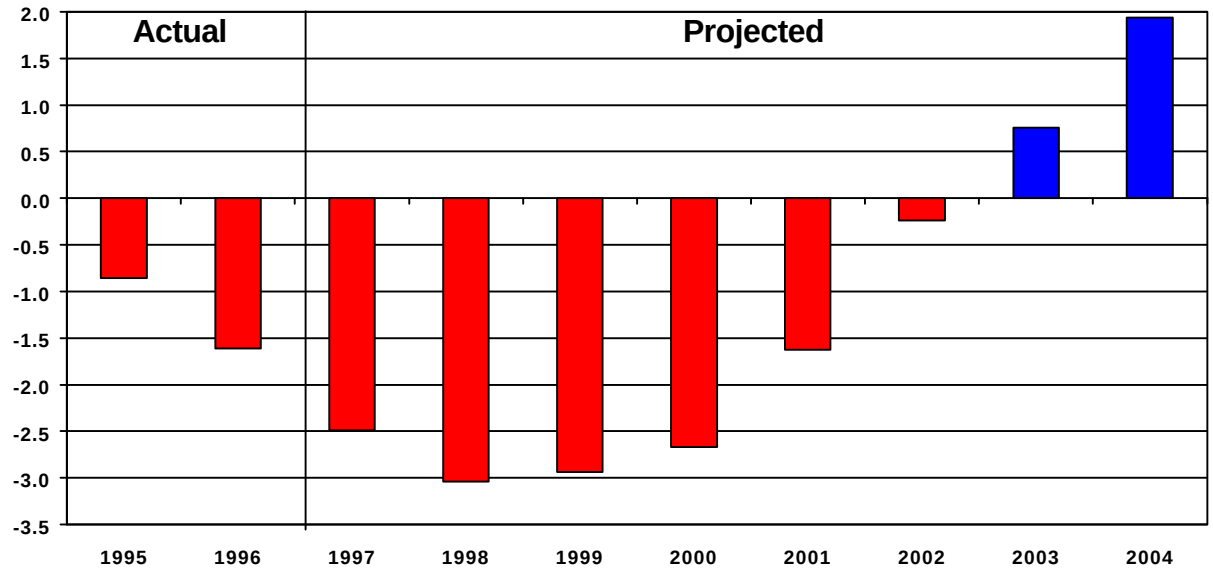
ASU Research Park (Price-Elliott Research Park, Inc.)
Cumulative Yearly Projected Debt/Return
to Arizona State University
Years Ended or Ending June 30, 1990 through 2025



Source: Price-Elliott Research Park, Inc. Long-Term Planning Analysis.

Figure 2

The University of Arizona Science and Technology Park
Cumulative Yearly Projected Debt/Return
to the University of Arizona
Years Ended or Ending June 30, 1995 through 2004



Source: The University of Arizona Science and Technology Project Office projections as of May 27, 1997.

Parks Have Needed Financial Assistance from the Universities

Although the universities expect to eventually receive income from the parks, so far, both research parks have needed financial assistance from the universities. The poor real estate market in the late 1980s contributed to the ASU park's continuing inability to meet its expenses without assistance from ASU. UA's park is much newer, so the university's contributions to date have centered on start-up expenses, but agreements between the park and the Board of Regents, acting on the university's behalf, could result in additional university support for the park's expenses in certain circumstances.

ASU park has required assistance—The ASU Research Park was self-supporting for its first six years of operation, but has required $7.5 million in financial assistance from ASU since fiscal year 1990. Economic factors in the late 1980s prolonged the park's dependence on the university. Initially, the park's lease revenues were sufficient to cover its expenses because the park had received some up-front lease payments that covered its operating costs. However, in the late 1980s, the economic downturn in the Phoenix area, combined with a sur-

plus of available property on the market, hampered the park's marketing efforts and created cash flow problems. A steering committee established to guide the park's future development determined that, although the park's long-term prospects were promising, the university would need to provide interim financial support to meet short-term cash flow needs.

Since fiscal year 1990, payments from ASU have helped the park meet operating expenses, including principal and interest payments on the park's bonds. ASU uses income generated from the investment of revenues such as dormitory room revenues and bookstore sales to make these payments. A repayment agreement states the park will repay these monies with interest when the park's revenues exceed its expenses.

UA park has also required university help—The UA park was intended to be financially self-sufficient, but has required financial assistance from the UA. Although the UA park's buildings were already built when the university acquired the park three years ago, the university has provided some support for operating expenses. When combined with the costs of acquiring the park, the university had paid $2.5 million in park expenses as of June 30, 1997.

Under the agreement between the park and the Board of Regents acting on behalf of the UA, the UA pays the nonprofit corporation that runs the park "rent" on one of the park's unoccupied buildings each month in the amount by which the park's expenses exceed its revenues. Currently, these payments average $37,351 per month. The university and the park do not have a repayment agreement like the one between ASU and its park, and the UA does not charge the park interest on this money.

Nationally, Research Parks Struggle to Attract Tenants

Like Arizona's parks, many other university research parks have struggled to lease enough space to achieve financial self-sufficiency. Several factors contribute to parks' difficulty in obtaining tenants. First, parks usually require companies to meet certain criteria before they can qualify to become park tenants. Additionally, research parks often compete for tenants with business and industrial parks. Finally, leasing land rather than selling it can pose a barrier to attracting tenants, who sometimes prefer to own the land on which they build.

Most parks need time to fully lease space—Most research parks take considerable time to fully lease park facilities. The executive director of the Association of University-Related Research Parks states that "while most had hoped parks would mature within 5 to 10 years, most now know it takes up to 20 years to build out a park." The 46-year-old Stanford Research Park took over 30 years to reach this status. Two other successful parks, the 38-year-old Research Triangle Park and the 27-year-old University of Utah Research Park, have leased about 70 percent of their land. By comparison, ASU's park has leased about 50

percent of its land and the UA park has yet to begin leasing land, although both parks have leased all or most of the space in their existing buildings.

According to some higher education analysts, the success record of research parks nationwide, in terms of attracting and retaining tenants, has been uneven, with several authors reporting that about half of all research parks do not achieve viability.[1] As a result, the majority of research parks do not successfully generate income for their universities.

***Parks' entry requirements limit tenants*—**The requirements tenants must meet to locate at a university research park contribute to the difficulty in obtaining tenants. To locate at the ASU or the UA park, tenants must qualify under the permitted uses identified in the parks' covenants, conditions, and restrictions. A.R.S. §15-1636 prohibits "unlimited manufacturing" in both parks and identifies the uses that can qualify for the tax exemption in both parks. These uses are limited to research and development activity, headquarters of firms conducting research and development, education and training facilities, and operations supporting these uses. In addition, potential tenants must comply with the parks' Covenants, Conditions, and Restrictions (CC&Rs), which contain further restrictions, such as building specifications.

Many parks have found it difficult to stay true to their research and science-oriented mission when they need to increase their cash flow, and consequently, have relaxed their standards to attract more companies. Research park experts Harvey Goldstein and Michael I. Luger state that of the approximately one-half of research parks that are financially viable, about half of these parks have been forced to diversify their activities beyond research and development in order to survive. Such changes blur the distinction between university research parks and common business or industrial parks, and raise questions about the appropriateness of university involvement in the parks.

***Competition for tenants is high*—**University research parks across the country compete with each other for the same tenants. According to a nationally recognized expert in this field, Mark L. Money, the competition for research park tenants is intense. He states, "There are not enough 'high-tech' companies starting, expanding, or relocating to make all these new parks successful . . . [As more research parks are developed], the competition for technology-related and science-oriented companies will be increasingly severe."

In addition, research parks compete with local industrial and business parks. According to ASU Research Park staff, several potential research park tenants chose to locate at a business or industrial park rather than the ASU Research Park.

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[1] Peddle, Michael T. Planned Industrial and Commercial Developments in the United States: A Review of the History, Literature, and Empirical Evidence Regarding Industrial Parks and Research Parks. *Economic Development Quarterly*, Feb. 1993. Vol. 7, No. 1.

***Leasing also poses a barrier*—**Many research parks, including Arizona's, do not sell land, but only lease, which often deters potential tenants from locating at the parks. According to experts, leasing can offer benefits to tenants in the form of reduced costs. However, leases are complicated financial transactions, and some companies may not recognize their benefits. Further, any improvement a tenant makes to the land, including constructing a building, reverts to the park upon termination of the lease. Many business owners prefer to own rather than lease the land on which their buildings are located.

Parks' Financial Projections May Be Optimistic

Arizona research park officials predict the parks will repay the universities the money they owe and begin to generate income for the universities within the next 5 to 16 years. However, ASU's projections depend on the assumption that the park will lease 10 acres each year. In the past, the ASU park has leased, on average, 9.36 acres per year, although the park had several years during the late-1980s real estate slump when no land was leased. The 10 acres per year assumption could turn out to be too optimistic if the real estate market in the future experiences another downturn like the one in the late 1980s. At UA's park, most available building space is currently leased, and the projections depend on retaining the current tenants as well as leasing space to new tenants, and could be affected by the cost of adapting existing buildings to suit future tenants' needs.

***In the past, the ASU park had difficulties leasing land*—**While the ASU Research Park has made progress leasing land in recent years, its historical leasing performance has not been as strong. From 1985 to 1997, the park leased a total of 124 acres, or approximately 50 percent of its available land.[1] The park leased the largest share of its land during 1995 and 1996, due in part to the efforts of two private firms hired to market and operate the park. However, the park leased no land during 1988, 1989, 1991, and 1994.

The park's inability to offer building space has contributed to its difficulties in obtaining tenants. It is often easier to find tenants to lease space in a building than to find tenants willing to make the investment to construct a building on leased land. However, the park currently has no building space available, since the three multi-tenant buildings located at the park are already fully leased.

Although the ASU park made progress leasing land since hiring PCI, Ltd. and Sunbelt Holdings Management Inc., this progress has occurred during a strong real estate market in the Phoenix area. The next several years should show if the current trend will continue and will give park management a chance to assess the park's long-term success. A slow-

[1] The park consists of 324 acres, 78 of which is a common area unavailable for lease. Therefore, the park has 246 acres available for leasing to tenants.

down in the real estate market, similar to what occurred in the late 1980s, could negatively impact the feasibility of the park's financial projections.

Other factors could hamper the UA Park from becoming self-sufficient—The UA park plans to become self-sufficient by fiscal year 2003; however, there are potential costs that could preclude the park from achieving this goal. First, the UA is responsible for paying the common service charges on any unoccupied space in the part of the park that the Campus Research Corporation controls. Therefore, if tenants leave, the university will be required to cover these costs. One of the park's large tenants could vacate as early as 1999, leaving the university with close to 600,000 square feet of unoccupied space for which it would have to pay the common service charges. Second, five of the park's buildings (64 percent of the park's total space), were built to support specialized activities such as distribution, warehousing, and light manufacturing. According to the consultant working on the park's master plan, modifying buildings for new tenants could require a significant investment.

Park management originally projected the park to be self-sufficient by fiscal year 2000; however, this projection had to be adjusted, due to the loss of expected governmental assistance. The park was scheduled to receive $4 million from the Arizona Commerce and Economic Development Commission, the City of Tucson, and Pima County. These entities pledged this money to pay for park improvements, including roof repair, and these improvements were used to encourage Microsoft Corporation to locate at the park. However, when Microsoft decided to leave the park, the city and county rescinded their pledges, although the Arizona Commerce and Economic Development Commission still contributed $500,000.

Several Strategies Exist for the Universities, the Board of Regents, and Park Management to Ensure the Parks' Viability

The universities, the Board of Regents, and the research parks' management should consider methods to ensure that the research parks are successful in the future. Unlike past years, the ASU park is worth more than its debt. However, if the park were sold, legal complications would likely arise and the park's potential benefits would be lost. Instead, both parks' management should consider strategies to increase and maintain occupancy.

Barriers to sale of ASU park still exist—Although some barriers that prevented the Board of Regents from selling the ASU park in the past are reduced, the option of selling the park should be considered with caution. During the audit, the question was explored whether the Board of Regents could be prevented from selling the ASU Research Park. Auditors found that although the Board of Regents could sell the park, it would need to be studied cautiously. In past years, this option was not considered since the park was worth less than the amount of its debt. Now the value of the park's land is worth more than its debt. How-

ever, if the park were sold, the university would not realize the potential financial return and the benefits of future university industry ties.

Further, if the park were sold, significant financial complications would likely arise, since park tenants' tax-exempt status would be lost. While some tenants would likely be responsible for paying the appropriate taxes, Price-Elliott Inc. may be responsible for paying other tenants' taxes. Additionally, the president of the ASU park's Board said that since park tenants moved into the park under the assumption that they would likely be exempt from property taxes for the length of their leases, the park has a moral responsibility to them to ensure that the tax exemption continues.

One option, due to the current strong real estate market, would be for the Board of Regents and ASU to track the park's occupancy progress and carefully evaluate it after three to five years. If projected lease rates are not met in that period, a thorough cost-benefit analysis could determine whether the potential costs to sell the park would be less than the projected losses associated with retaining the park. In addition, the Board and ASU could consider whether intangible factors, such as the moral obligation referred to by the park Board president, should supersede considerations of financial cost. The ASU Research Park Board president agrees with this recommendation, stating that the park's key opportunity for success will occur during the next three to five years.

UA park would be difficult to sell—The UA research park would be more difficult to sell than the ASU park. While the approximately 1,000 acres of vacant land that is not officially designated as part of the research park could be sold, the research park itself cannot be sold until IBM's lease is terminated. Some of IBM's lease does not expire until 2014, and IBM has the option of extending this lease for two additional five-year periods.

Parks' management could do more to attract tenants—To enhance the parks' ability to attract and retain tenants, and to increase the likelihood that projected financial benefits are realized, both parks' management should:

- **Work more effectively with university faculty and staff—**Both parks' management should work more effectively with university faculty and staff to market the parks to potential tenants. According to those involved with research parks, there are no shortcuts to building relationships with university faculty. Strategies cited include inviting faculty to functions at the park and meetings with deans and faculty to discuss the park and its goals. Although ASU park management has formed some relationships with ASU staff, this continues to be a challenge. As reported in Finding II (see pages 19 through 23), relationships between park management and the universities are critical for parks to achieve their technology transfer mission as well as marketing the parks to potential tenants. At the UA, park management initially worked with faculty through the Faculty Senate Task Force on the UA Science and Technology Park. While this task

force recommended that faculty continue to give input to the park and participate in park activities, it has since disbanded.

Experts note that parks need faculty's support and participation. One expert states that faculty participation may be the most critical of all factors determining a park's success, and also states that the best marketing programs make use of faculty relationships to generate tenant leads. Deans and faculty sometimes have business contacts, know about companies looking for a place to locate, and can inform them of the park and its benefits. According to the economic development consulting firm Hammer, Siler, George Associates, having access to faculty and deans' business relationships" is essential if the research park is to thrive and take full advantage of the university relationship."

Other parks contacted during the audit receive considerable assistance from faculty at their universities. For example, the Research Triangle Park receives assistance from faculty and staff at the universities affiliated with the park, who let them know about potential tenants. Additionally, the University of Nebraska Technology Park president states that relationships with university deans are important links for research parks to foster since the deans have numerous research contacts, who are potential tenants. Also, North Carolina State University Centennial Campus receives assistance from faculty, who inform the park about potential tenants. According to this park's Coordinator of Development, the park's marketing strategy is to build relationships with the faculty as a source of tenant leads.

- **Parks should better inform potential tenants about services**—Additionally, both the ASU and UA park management should better inform prospective tenants about services available to them as research park tenants. According to Hammer, Siler, George Associates, park tenants should not just receive space at a park, but should also have access to university services, such as use of its library and equipment. ASU park management is currently working with ASU to identify what services are available and to inform potential and existing tenants about these services.

- **Consider building additional space**—Another option open to both parks' management is to build additional tenant space. According to management at the parks, many companies have expressed interest in leasing space that is already built; however, the parks have had to turn these potential tenants away since the ASU park lacks available space and the UA park lacks space suited to fit some potential tenants' needs. The ASU park board has already approved the construction of another building, but construction cannot begin until it is 50 percent pre-leased and the park has secured a loan for the building. UA's park management is currently evaluating the possibility of constructing additional building space.

Recommendations

1. The Arizona Board of Regents and Arizona State University should track the ASU Research Park's leasing progress and carefully reevaluate its financial progress after three to five years.

2. The ASU and UA park management should form closer relationships with university faculty and staff to market the parks to potential tenants by continually meeting with faculty and staff groups and informing them about the park.

3. To more effectively market the parks' benefits to potential tenants, ASU and UA park management should identify appropriate university services, negotiate agreements with the universities to make the services available to tenants, and then inform potential and existing tenants about the services.

4. The ASU and UA park management should consider building additional tenant space to attract companies that prefer to lease space that is already built.

FINDING II

RESEARCH PARKS HAVE GENERATED FEW LINKS BETWEEN TENANTS AND UNIVERSITIES

Arizona's research parks were created in order to foster relationships between the universities and the private sector and to facilitate the private-sector implementation of university-developed technology. However, few relationships have been created between park tenants and the universities, and there has been little transfer of new technology to the private sector. Park management and the universities should take more action to link tenants with the universities.

Parks Were Intended to Link Industry with Academia

Although one of the goals in creating the parks was to create an endowment for the universities, the parks were also intended to generate relationships between academia and industry. These relationships include faculty collaboration with business on research projects, and "technology transfer," which is generally the implementation of university-developed technologies by private companies, often through licensing agreements. The relationship with the university is what distinguishes university research parks from business parks. According to one research park expert, the most important criterion for the success of a research park is its link with the university.

These relationships benefit the tenants as well as the university. A company involved in research and development can access university facilities that it might not be able to develop on its own. According to Coopers & Lybrand's "Trendsetter Barometer" survey, growth companies that use university resources have productivity rates 59 percent higher than comparable firms without such relationships, in terms of revenue per employee.

Few Relationships Exist Between Tenants and the Universities

Although the research parks were created to promote relationships between tenants and the universities, they have not successfully fostered significant relationships, and the relationships that do exist are generally initiated by the tenants. Consequently, a major mission of the parks has not been accomplished.

Limited associations between universities and tenants—While the parks were intended to bring together universities and industry, few such relationships have been generated. During the audit, a survey of all of the ASU and UA park tenants was conducted to determine the extent of ties between tenants and the universities. The survey asked whether the company had ever had any of the following types of relationships with the university: implementing university-developed technology, collaborating with faculty on a research project, meeting with faculty to discuss potential collaboration, hiring faculty as consultants, establishing joint educational programs, using university resources, providing gifts to the university, hiring students, providing internships for students, sponsoring university activities, or serving on university advisory councils. Twenty-two of the 27 ASU park tenants and all 14 of the UA park tenants responded to the survey. The survey results showed that, overall, there is a limited number of associations between tenants and the universities. For example:

- More than a third of the 22 ASU research park tenants who responded to the survey, and half of the UA park tenants, have had no contact with the university.
- Only 1 tenant at each park has ever implemented university-developed technology: a small firm at the UA park, and a nursery at the ASU park.
- At the ASU park, only 4 of the 22 tenants responding to the survey have used university resources.
- Only 4 tenants at each park have ever collaborated with faculty, and fewer than 30 percent at both parks have met with university faculty or staff to discuss potential collaboration.
- Only 2 tenants at each park have made gifts to the universities.

Relationships benefit tenants and universities—Some park tenants do have significant relationships. The following examples of such relationships illustrate the benefits to both the universities and businesses:

- The headquarters of the National Association of Purchasing Management (NAPM) is located at the ASU research park. NAPM and the ASU College of Business established the Center for Advanced Purchasing Studies, the only purchasing research center in the nation. In 1996, NAPM donated $1 million to the department for an endowed chair.
- The ASU College of Business offers a master's degree in technology management at Motorola University, a tenant of the ASU research park.

- IBM is a tenant of the UA park, and has made substantial donations of laboratory equipment to the UA. In addition, IBM has hired undergraduate and graduate students from the UA.

- Hearing Innovations, Inc., another tenant of the UA park, has a research agreement with the UA Speech and Hearing Sciences Department for work on a device that would enable the deaf to hear. University facilities are used to test the device.

While these relationships are significant, the majority of the relationships were the result of the tenant's initiative or existed before the park was created. Increased effort by park management and the universities could result in more of these benefits being realized.

Parks Can Do More to Facilitate These Relationships

While both parks' management have made some efforts to promote these relationships, additional steps are necessary to more effectively link tenants with the universities. Other research parks with more significant university-tenant links are more proactive in facilitating these relationships.

Few of the relationships that exist are the result of park management's actions. Both parks' management have acknowledged that more should be done, and they plan to focus their efforts on promoting these relationships. Several strategies exist for linking tenants with the universities:

- **Involving technology transfer offices—**One important avenue to promoting links between tenants and the universities is the universities' offices of technology transfer, whose mission is to facilitate the transfer of university-developed technology into commercial use. Experts agree that a close relationship between research park management and the university technology transfer office is crucial, as these offices can be instrumental in identifying potential links. According to the president of the University of Nebraska Technology Park, park management can develop an effective relationship with university technology transfer offices through meetings, phone calls, and hosting functions at the park. However, neither park has had significant contact with their respective university's office of technology transfer. The UA Technology Transfer Office has had no contact with the UA park, and the corresponding office at ASU has started to become involved with its park only within the past few months.

- **Meeting with tenants—**Another strategy to foster links is for park management to meet more regularly with tenants to determine their research needs and interests. At the Cummings Research Park in Huntsville, Alabama, a committee of representatives from

each of the tenants meets to discuss concerns, to schedule functions, and to learn about each company's activities. The director of the Central Florida Research Park said his role is to find companies that can work with the university. He arranges meetings between tenants and people from the university. Although the ASU research park currently holds annual tenant luncheons for this purpose, more frequent meetings could more effectively find potential links with the university. UA park management recently began holding bimonthly meetings with tenants.

- **Informing university faculty and staff—**In addition, park management could better inform university faculty and administration about the parks. A 1995 study of ASU staff found "very little knowledge of the research park or its mission." Developing an informed faculty is one of the UA park's long-term goals. According to the directors of several other parks, the key to fostering research relationships is that park management develop relationships with university faculty and deans. The director of the Cummings Research Park, for example, speaks often on campus about the park and technology transfer.

  Making an effort to involve faculty and staff is especially important given the distance between the parks and universities. The ASU park is located 7 miles from campus, and the UA park is located 18 miles from the university. Research park experts agree that a park's proximity to the university helps to promote these relationships.

- **Using research databases—**Another method for linking tenants with faculty is for park management to inform tenants of faculty research activities. This can be accomplished through the use of databases listing faculty research interests and activities. The University Research Park in Madison, Wisconsin, for example, uses such a database to foster tenant-faculty relationships. Management at the ASU and UA parks could facilitate tenant access to similar databases that already exist at the two universities, so that tenants can learn about current university research and identify areas for potential collaboration.

Nature of some tenants may preclude ties—Although these strategies are important to linking tenants with the university, a few tenants, by their nature, may not have a need for research relationships with the universities. Walgreens Healthcare Plus, for example, is an ASU research park tenant whose main activity is filling mail order prescriptions. At the UA park, Keane, Inc. operates a customer-service center, providing technical support for computer programs. Neither business has had significant contacts with the respective university. If park management were more restrictive in leasing space, it could possibly gain ties, but at the cost of forfeited lease revenue.

Recommendations

To better facilitate ties between tenants and the universities, both parks' management should:

1. Work closely with the university's office of technology transfer to identify potential areas for links.

2. Become more knowledgeable about tenants' research activities by holding frequent meetings with tenants.

3. Establish closer relationships with faculty, department chairs, and deans to gain a better understanding of research being conducted at the universities.

4. Educate tenants regarding databases listing university research, and arrange access for them if necessary.

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Agency Response

University of Arizona

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Research Parks at Arizona's Universities

Response to the Auditor General's Draft Report

Submitted by The University of Arizona
November 19, 1997

The University of Arizona (UA) and the Campus Research Corporation (CRC) are pleased to provide this response to the Auditor General's report on the performance audit on research parks at Arizona's Universities.

General Observations:

(1) The audit report compares and contrasts the performance of the ASU Research Park and The UA Science and Technology Park (UASTP). This is a fair approach. Both parks are owned and governed by the Arizona Board of Regents (ABOR). Both parks share goals and purposes common to most university-related research parks. However, it is important to note that the parks were acquired and developed under different financial arrangements. They have different styles of governance and management. Each park faces unique financial, developmental and operational opportunities and constraints. Additionally, the parks operate in distinct commercial and real estate markets, face different sets of community expectations, and interact within different university settings and cultures. The performance of each park should be evaluated and judged with these differences in mind.

(2) The audit report cites technology transfer and revenue generation as primary goals of the research parks. We believe this observation needs clarification.

The universities have articulated the goals of the research parks. These goals used to guide the development process and serve as the basis for evaluating the performance of the parks.

The primary goals of UASTP are (1) to strengthen and enhance the University's research and educational missions, (2) to expand the University's traditional land grant mission by providing assistance to the state's high technology companies, and (3) to support local and statewide economic development efforts and programs. Technology transfer and revenue generation are important, but secondary goals of UASTP.

The Science and Technology Park is a key element in the UA's efforts to remain a top research university. To this end, we plan to locate selected university educational and research programs and projects at the park. The park will help the UA to recruit the best faculty and students in science, engineering and medicine and will strengthen our ability to compete favorably for government and industry research contracts.

The nature of the research enterprise has changed significantly in recent years. Increasingly, we are required to participate in joint research projects with our government and industry sponsors. The Science and Technology Park provides us with a world class venue for joint research. In addition, the park provides a setting where our students can have a practical, "hands-on" experience with large and small high tech companies through joint research projects, internships and cooperative educational programs.

UASTP will allow the University to provide direct assistance to new and existing high tech companies. We are able to assist companies in the technology development process from the laboratory to the market place.

Technology transfer is an important, but secondary goal of UASTP. Technology transfer is but one element of the technology development process. It is often a difficult, complicated and protracted process. Not all university technology is suitable for transfer into the market place. Nor is the research park always the right place to incubate a company using university licensed or patented technology.

We acknowledge that technology transfer can be a powerful economic development tool, and that we need to build stronger ties between the UA Office of Technology Transfer and UASTP. We are working closely with the Vice President for Research to this end.

We agree with ASU's observation that the "relationship between tenants and universities should be expanded beyond the traditional definition of technology transfer".

Revenue generation is also an important, but a secondary goal of the park. The University and CRC are committed to achieving financial self-sufficiency through sound management of the park. In the near to medium term (3-10 years) revenue generated beyond operating expenses will be invested in developing the park. The revenue will be used to build new facilities, install additional infrastructure and fund projects such as a high technology business incubator and a skills training and education center.

In many states, university research parks are supported from state funds and are not expected to generate profits. The value of the research park is judged in terms of its contribution to the educational and research mission of the University and its impact on overall economic growth and development.

Finding I: The Research Parks are Not Financially Self-sufficient

Financial self-sufficiency of UASTP:
The report accurately observes that most university related research parks are not financially self-sufficient. The report goes on to note that UASTP is not currently financially self-sufficient and may be overly optimistic in its projections of self-sufficiency by FY 2003.

We believe our financial projections are accurate and based on conservative estimates of the revenue that will be generated from the leases in place. UASTP will generate sufficient revenue to fully cover its current operational expenses (including annual debt payments) by FY 2000-2001. Additionally, CRC will have repaid the University for its "investment" in the park by FY 2002-2003, including repayment of the $686,000 in closing costs. By FY 2003-2004, the park should be generating a positive cash flow (projected to be $1.9 million). The financial stability of the park is supported by a 10 year lease with the Microsoft Corporation.

Nationally, research parks struggle to attract tenants:
It is true that many university-related research parks have struggled to attract tenants. Our research found that these unsuccessful parks lacked the advantages of The Science and Technology Park (i.e., developed infrastructure and large anchor tenants). In addition, these unsuccessful parks lost their connection to the university and evolved primarily into real

estate developments. We have no intention of charting a similar course. The Science and Technology Park will be first and foremost an enterprise of The University of Arizona.

We have had remarkable success in attracting companies to the park given the short life of the Park and the absence of a formal marketing plan. As the audit team has noted, most parks require a long period of time (20 -30 years) to reach self-sufficiency and to fully lease their property. In a short two and a half years, The UA Science and Technology Park has grown from two tenants (IBM and Hughes Missile Systems) to twelve tenants occupying 90% of the leaseable space. Employment at the Park has increased from slightly more than 2000 in 1994 to slightly more than 3700 in 1997.

Parks' entry requirements limit tenants:
We intend to operate within the limits imposed by A.R.S. 15-1636 and direct our recruitment efforts to high tech companies in the GSPED targeted industry clusters. We believe this recruitment strategy will help to attract high quality companies to the park. Our experience with Microsoft and Keane suggest that many companies are looking beyond the traditional amenities of an industrial park. They want access to high tech facilities and a working relationship with a research university. Few university-related research parks can offer a relationship with a top ten research university and the quality of facilities offered at the Science and Technology Park.

Competition for tenants is high:
We have yet to compete for a tenant with another university-related research park. Our tenants have either been companies looking to locate in the Southwest or have been local companies looking for high tech facilities (e.g., clean rooms).

Leasing also poses a barrier:
We have found nothing to support the assertion that leasing serves as a barrier to attracting tenants. In fact, our experience is to the contrary. Many large high tech companies prefer to lease space. In recent years, companies like IBM, Hughes Missile Systems, and Microsoft have divested themselves of their real estate holdings. Leasing allows these companies to respond more quickly to the rapidly changing demands of the high tech world.

Finding II: Research Parks Have Generated Few Links Between Tenants and Universities

The relationship between the University and the Park:
The UA agrees that a strong relationship must exist between the University and the park, and between the University and park tenants. We have taken active steps this past year to accomplish these goals.

It is important to note that the Science and Technology Park is a new enterprise. It is only two and a half years old. Few university-related research parks have emerged as mature, full-blown enterprises. Our efforts to date have concentrated on addressing the financial, operational and planning aspects of the park. Our activities have included: conducting a comprehensive assessment of the park and its facilities, initiating a planning process, developing a methodology for governance and management, developing a collaborative relationship with the managing operator (IBM) and the contract operator (Facilities and Plant Services, Inc.), developing a public relations and marketing plan, implementing a financial management system and converting from a single to a multi-tenant facility.

In recent months, we have begun to explore ways to facilitate links between the University and the park. We have examined ways in which other university-related research parks have been successfully linked to their faculty and tenants.

There are a number of direct ties between university faculty and the park. Several faculty members serve on the board of directors of the CRC, including the Vice President for Research, the Dean of the College of Business and Public Administration, the Associate Dean of Medicine and the Director of the Optical Sciences Center. Three former presidents of the UA (Koffler, Schaeffer and Pacheco) serve as members of the CRC board. An internal oversight committee (UASTP Executive Committee) composed of the senior leadership of the University and, more recently, a representative of the Faculty Senate regularly reviews the management and operation of the park. Faculty representatives also serve on the park's two planning committees—the Project Coordinating Committee and the Citizens Planning Advisory Committee.

The UA Department of Community Affairs and Economic Development has surveyed and interviewed a large segment of the research faculty regarding their research projects and industry ties. These studies have included faculty interested in optics, environmental technology, software development, micro-electronics, bio-technology, and medicine. Using the results of these studies, individual faculty members will be used to help recruit companies to the park.

The UASTP project office has also provided members of the University's staff and faculty with briefings on the park and tours of the facilities. Information on the park has been disseminated to staff through the staff newspaper, *Lo Que Pasa*, and through university memoranda.

Tenant Relations:

The UASTP project office has worked aggressively to establish close ties to the park's tenants. This past Spring we formed the Park Users Group (PUG). This committee is composed of representatives from each of the tenants of the park. The PUG meets every other month. Members discuss operational issues, share information regarding research and development activities, and explore ways to improve ties between the University and the tenants. In addition, the Senior Officer and Project Director are meeting regularly with the leadership of each of the companies.

Several specific initiatives have been launched jointly by the University and park tenants in recent months. SIDDCO and the Department of Chemistry are developing a joint instructional package, based on SIDDCO software technology. Keane Inc. is exploring joint training and educational programming with the departments of Computer Science and Management Information Systems. The University is working with Hughes Missile Systems and ASU to headquarter the JACMET program at the UASTP. This program is a collaborative effort of the UA/ASU Colleges of Engineering to provide post-graduate engineering courses to the employees of high-tech companies, including those located at the park. Hughes is also working with the project office to develop a proposal for an on-site skills training and educational center.

Hughes and IBM sponsor contract research at the University, provide student internships, and donate equipment to university departments.

Recommendations:

Findings I. The Research Parks are Not Financially Self-sufficient

Recommendations:

1. *The Arizona Board of Regents and Arizona State University should track the ASU Research Park's leasing progress and carefully reevaluate its financial progress after three to five years.*

   Response: non applicable

2. *The ASU and U of A park management should form closer relationships with university faculty and staff to market the parks to potential tenants by continually meeting with faculty and staff groups and informing them about the park.*

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

3. *To more effectively market the parks' benefits to potential tenants, ASU and the U of A park management should identify appropriate university services, negotiate agreements with the universities to make services available to tenants, and then inform potential and existing tenants about the services*

   Response : The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

4. *The ASU and U of A park management should consider building additional tenant space to attract companies that prefer to lease space that is already built.*

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

Finding II: Research Parks have Generated few Links Between Tenants and Universities

Recommendations:

1. *Work closely with the university's office of technology transfer to identify potential areas for links.*

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

2. *Become more knowledgeable about tenants' research activities by holding frequent meetings with tenants.*

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

3. *Establish closer relationships with faculty, department chairs, and deans to gain a better understanding of research being conducted at the universities.*

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

4. *Educate tenants regarding data bases listing university research, and arrange access for them if necessary*.

   Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

Research Parks at Arizona's Universities

Response to the Auditor General's Report

Submitted by
The University of Arizona
November 19, 1997

Technical corrections to the November 12, 1997 draft:

1. error of fact -- page i, paragraph 3, line 2, should read: "… while IBM currently retains a leasehold on 72 percent of the existing built space and serves as managing operator of the developed portions of the park."

2. correction -- page 2, paragraph 2, line 2, should read: "created a 100% real property tax exemption for qualified research park tenants."

3. correction -- page 5, paragraph 2, line 4, should read: "13 miles"

4. correction -- page 5, paragraph 2, line 6, should read: "(the undeveloped remainder is not part of the research park …)"

5. correction -- page 5, paragraph 2, line 7. should read: "IBM leases 72 percent of the developed portion of the park, and subleases part of it to the Hughes Missile Systems Company and Moltech Corporation."

6. correction -- page 5, paragraph 4, line 4, should read "… CRC and IBM are responsible for paying these costs on unoccupied park space in their respective leaseholds."

RESEARCH PARKS AT ARIZONA'S UNIVERSITIES

ARIZONA STATE UNIVERSITY
RESPONSE TO AUDITOR GENERAL'S REPORT

Arizona State University is pleased to present our response to the Auditor General's report on the performance audit on the Research Parks at Arizona's Universities. We note that the report references both the ASU Research Park and the U of A Science and Technology Park. Our response refers only to that portion of the report dealing specifically with the ASU Research Park.

In general, we concur with the recommendations included in the report. In fact, we have implemented many of these recommendations as a part of our strategic planning and long-term goal setting process for the Park. To that end, many of the programs and practices suggested in the report are already in place.

This response addresses the findings and recommendations in the order presented in the report. As requested we have responded to each recommendation in accordance with the requirements of the Joint Legislative Audit Committee's procedures, as outlined in the cover letter. In addition, we have commented on the findings contained in the report, providing clarifications and updating information where necessary.

We appreciate the opportunity to comment on the final report.

FINDINGS

We are providing the following information to update that provided in the report to accurately present the current status of the ASU Research Park.

FINANCIAL STATUS OF THE ASU RESEARCH PARK

The ASU Research Park is currently financially self-sufficient, with the exception of payment of debt service obligations on certain bonds used to originally build the Park's infrastructure. Our most current projections reflecting the recent activity described below indicate that the Park will no longer require funding from ASU for debt service for infrastructure bonds beginning in FY 1999. Furthermore, we estimate that the cumulative total of funds advanced by ASU including interest, approximately $8.5 million, will be repaid in the year 2008.

Thereafter, our projections indicate an initial return of $2.4 million beginning in 2009 from the Park's cash flow to ASU's endowment. This amount will escalate in future years as the bonds are repaid and as rents increase.

Recently, the Park secured a new ground lease with Ryan Companies to develop a Headquarters and corporate training facility for ASM Lithography. In addition, we have received commitments from two additional new tenants for ground leases. Two existing tenants have also expressed a desire to exercise options granted to them under their existing leases, which will require the payment of pre-paid ground rent. Pre-paid ground rent is typically invested in government securities, with the interest used (in part) to fund operations and debt service.

In addition, current demand for building space at the ASU Research Park exceeds available supply. Recent interest by two prospective tenants could generate enough activity to meet the pre-lease requirement for the next multi-tenant facility at the Park. When the Park proceeds to develop an additional park-owned multi-tenant building, additional ground lease income alone

from that facility is projected to add $124,277 in annual revenue, again accelerating the Park's financial success.

The additional rental revenue from these sources is outlined below.

	Budgeted Net Cash Flow	+	Projected New Annual Income	=	Projected Net Cash Flow
Funding from ASU based upon 97/98 Budget:	$(876,879)				
Beginning annual rent from Ryan/ASM:			186,368		(690,511)
Beginning annual rent for Lots 13-14 (projected):			244,372		(446,140)
Beginning annual rent for Lots 35-37 (projected):			238,948		(207,191)
Interest from pre-paid ground rent for options:			120,288		(86,963)
Park-owned multi-tenant building ground rent:			124,277		37,314

The leases currently in negotiation, or recently executed, total 32.91 acres. The options anticipated to be exercised total 14.34 acres. Recent activity exceeds the Park's expectation of successfully leasing an average of 10 acres per year.

It is apparent from the foregoing data that recent activity will serve to escalate the financial success of the Park.

UNIVERSITY/RESEARCH PARK RELATIONSHIPS

ASU recognizes the importance of strong relationships between the University and the ASU Research Park. The Deans of the Colleges of Engineering and Applied Sciences, Business, and Liberal Arts and Sciences, as well as the Senior Vice President and Provost, and Interim Vice Provost for Research are members of the Research Park Board of Directors. ASU and Park management will continue to foster and expand these relationships through the continuing implementation of the marketing plan, which has included scheduled presentations to University faculty, staff and leadership organizations, sponsorship and participation in University affiliated events, collaboration with the University public relations office regarding research park activities and information, and routine dialogue with University personnel. Park management is continually working with ASU's Office of Economic Development to identify enhanced ASU services that could be made available to Park tenants.

TENANT RELATIONS

We believe that the definition of "relationships" between tenants and Universities should be expanded beyond the traditional definition of technology transfer. Current and past relationships between Park tenants and the University include the following:

Contracted Research	Iridium, Fiberite, Inc.
Donated Equipment	VLSI Technology, Fiberite, Inc., ASM Lithography (underway)
Hiring of ASU Graduates	Most tenants look to ASU to fill their employment needs

Support of ASU Curriculum	
Distance Learning	VLSI Technology
ASU Degree Programs	Motorola University
Support of Student Interns	NAPM, VLSI Technology, Motorola
Endowments	NAPM, Motorola

Motorola, the Research Park's largest tenant, recently gifted $11 million to the University. In addition, Albers Technology, a Park tenant company established by Walt Albers and Dr. Jim Beckman, a member of the faculty at ASU, developed and patented a technology through Arizona State Research Institute, an affiliated entity of ASU, and has grown that technology into a marketable business. Iridium has had strong ties to the ASU College of Engineering and Applied Sciences.

Park management continually works to foster tenant and University relationships through meetings with University faculty, staff and Park tenants, campus tours for tenants, participation by Park tenants in University sponsored job fairs, development of an ASU enhanced services package for Park tenants, and regular meetings with the ASU's Research Deans. In addition, Park management will continue to develop, implement and support strategic initiatives designed to increase opportunities for University and corporate partnerships and collaborations similar to the Education Coalition, a program for shared training facilities, that resulted in the location of Motorola University to the Park. A current strategic initiative involves assessing the opportunity for the development of a research site within the Research Park where ASU researchers can develop new technologies.

As we expand the traditional definition of research relationships beyond technology transfer, tenants identified in the report as "not having a need for relationships with the Universities" become tenants with significant opportunities for collaboration. Walgreens Healthcare Plus' planned expansion of their existing facility to incorporate a fully automated robotic delivery system with state-of-the-art software and virtual reality technology creates opportunities within the Colleges of Engineering and Applied Sciences and Business as Walgreens utilizes technology and strategic business practices to support their business.

In collaboration with ASU's Office of Technology Collaborations and Licensing, Park management continues to organize tenant meetings to discuss licensable technologies that are available through the University.

Finding I: Research Parks Are Not Financially Self Sufficient

RECOMMENDATIONS:

1. The Arizona Board of Regents and Arizona State University should track the ASU Research Park's leasing progress and carefully reevaluate its financial progress after three to five years.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

2. The ASU and U of A Park Management should form closer relationships with University faculty and staff to market the parks to potential tenants by continually meeting with faculty and staff groups and informing them about the park.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

3. To more effectively market the parks' benefits to potential tenants, ASU and U of A park management should identify appropriate University services, negotiate agreements with the universities to market the services available to tenants, and then inform potential and existing tenants about the services.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

4. The ASU and U of A park management should consider building additional tenant space to attract companies that prefer to lease space that is already built.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

Finding II: Research Parks Have Generated Few Links Between Tenants and Universities

Recommendations:

To better facilitate ties between tenants and the universities, both parks' management should:

1. Work closely with the University's Office of Technology Transfer to identify potential areas for links.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

2. Become more knowledgeable about tenants' research activities by holding frequent meetings with tenants.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

3. Establish closer relationships with faculty, department Chairs, and Deans to gain a better understanding of research being conducted at the universities.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

4. Educate tenants regarding databases listing University research, and arrange access for them if necessary.
- *The finding of the Auditor General is agreed to, and the audit recommendation will be implemented.*

November 18, 1997