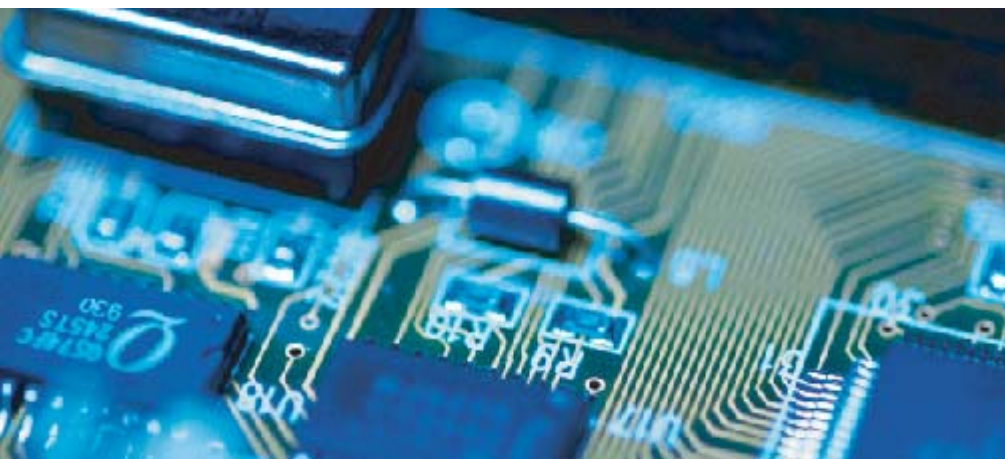
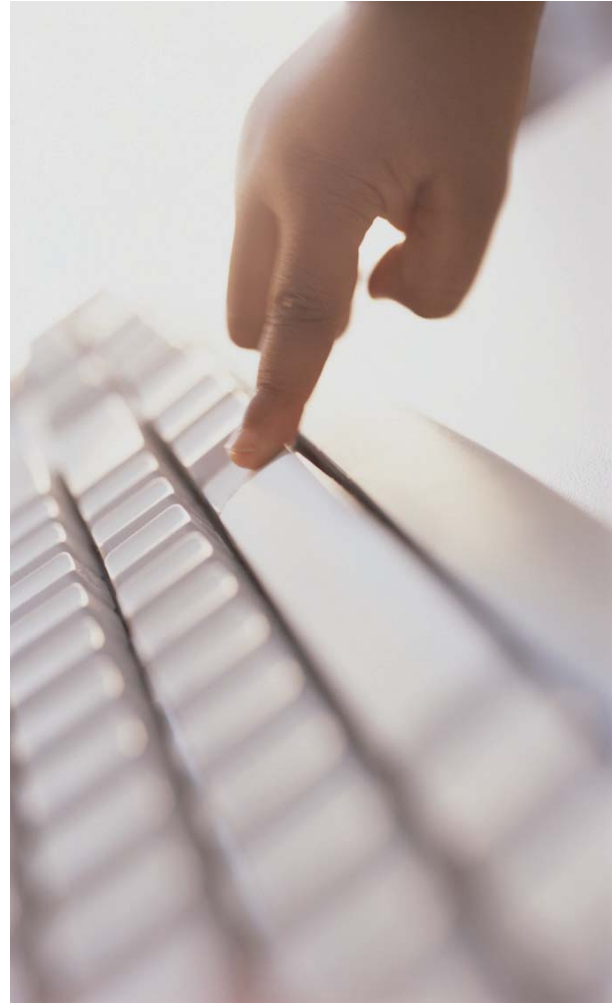
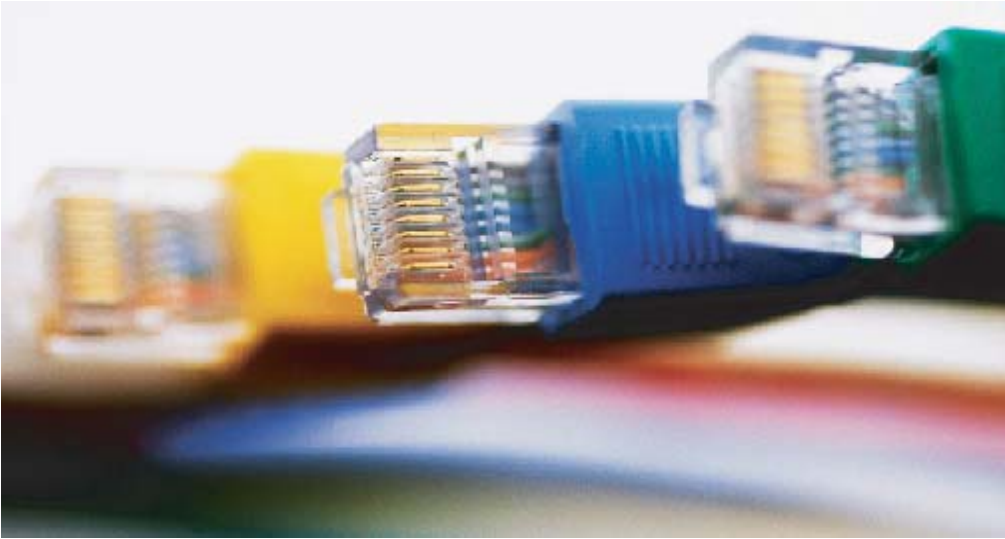


INDUSTRY

TECHNOLOGY INSIDER 2007



WITH ACKNOWLEDGMENT AND APPRECIATION TO LOCAL KEY BUSINESSES
SUPPORTING SONOMA COUNTY ECONOMIC DEVELOPMENT:

CHAIRMAN'S CIRCLE:



EXECUTIVE TIER:



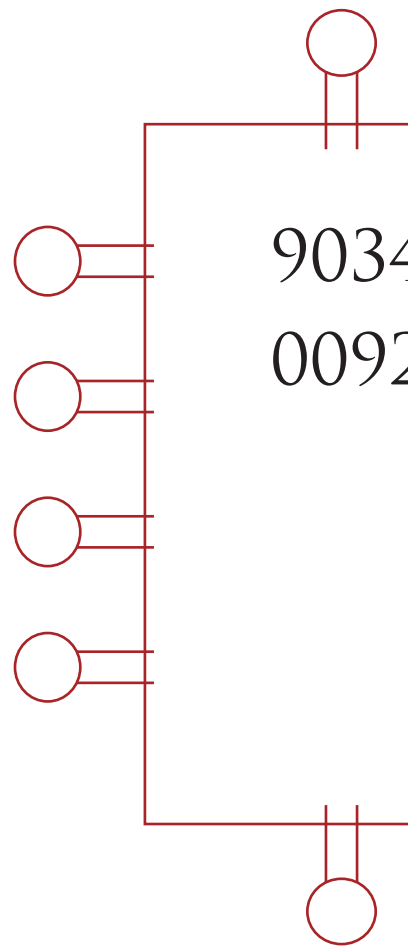
ASSOCIATE TIER:



- Sonoma County Permit & Resources Management
- Community Development Commission
- Sonoma County Health Services
- Sonoma County Transportation & Public Works

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2007

TECHNOLOGY INSIDER

October 2007

The Sonoma County Economic Development Board (EDB), in partnership with the Sonoma County Workforce Investment Board (WIB), is pleased to bring you the 2007 Technology Insider. Our research partner, Moody's Economy.com, produced the first portion of this report for the EDB.

Highlights from the 2007 Technology Report include:

- The Sonoma County tech sector enjoyed improved performance. Most of the area's technology-producing firms report improved growth of demand and production, and there has been a moderate gain in the industry's employment.
- The number of patents issued in Sonoma County has risen steadily since 2000. From 2004-2006, Sonoma County surpassed the California average in the number of patents issued per 100,000 people.
- Output per worker in the high-tech industry has increased steadily over the past six years. Projections indicate that employment in this industry will increase slightly from 2007-2012.
- Sonoma County continues to shine in the area of math education. During the 2005-2006 school year, 69% of Sonoma County students proved proficient in math compared to 59% statewide. Further, the Sonoma County average SAT math score of 542 surpassed the California average of 516.

Thank you for your continued interest in the Economic Development Board's research. As always, if you have questions or suggestions, please feel free to contact us at (707) 565-7170.

Sincerely,



Ben Stone
Executive Director

This information is presented as a convenience to the public, and should not be the sole source used in making business decisions. Individuals/businesses should consult with recognized professionals regarding their specific business issues involving economic data.

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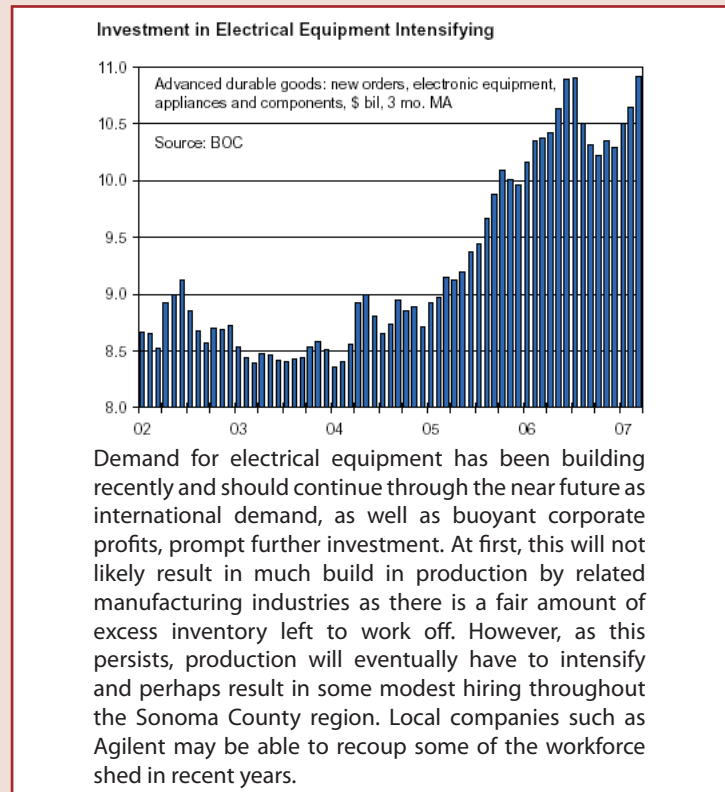
Recent Trends. The Sonoma County technology industries have witnessed improved performance. Most area industry leaders are reporting news of strong growth, though thus far with only limited employment gains. A strong global economy and a weakening in the U.S. dollar have been the main catalysts for growth as they have bolstered demand for locally produced high-tech goods.

In the telecom equipment industry, improvement is being helped by a rebound in business investment spending. Internet access and networking equipment firms are doing well. The number of households in the U.S. with broadband internet access has surged over the past two years. As telecom service providers jump into the TV and wireless markets, they will need to boost the capabilities of their networks and update existing infrastructure. This is not just a domestic trend, but a global one as well. Teknovus, a local manufacturer of chipsets for broadband networks, has established deals to use its chipsets thus far in broadband networks in China, Japan, and Korea.

The past year has seen improving performance for the medical device and supplies industry as a whole. The one weakness has been in the cardiac rhythm management business. However, innovation in the region is high; Medtronic recently introduced its Endeavour drug-eluting stent to U.S. markets, and it has been available in several international markets for some time. Furthermore, Oculus is moving forward on clinical trials for its wound care product Microcyn, also already internationally available.

Sonoma County is also developing an affinity for specialized software firms focused on the wine industry. There are already several local industries that are involved in the field, and one more is being added to the mix. A new company, NetBooks, is leasing the once vacated Next Level Communications building with plans to provide management solutions to wineries.

The interest in energy conservation is growing, thus alternative energy sources are garnering increased demand. For instance, Marin Solar has witnessed a ten-fold increase in sales from 2004 to 2006 alone. This type of trend is also playing a role in tangential industries such as light bulb manufacturing. Deposition Sciences Inc. is working toward developing LEDs for widespread use in the future.



Macro Drivers. Despite slow first quarter growth and a most recent four-quarter GDP growth rate of only 2%, second quarter GDP numbers are positive. Preliminary numbers show that the economy exceeded its expected potential of 3%. Nevertheless, the economy is expected to moderate as the year progresses as the momentum built up in 2006 continues to fade. Among the primary drags on growth will be the continued correction in the residential housing market, eroding consumer credit quality, and more moderate personal consumption growth.

With healthy corporate balance sheets, this slowdown is not expected to seep into business investment. While real investment in communications equipment increased more than 11% in 2006, a majority of the gain was front-loaded last year with a fallout late in the year. Early signs so far this year have been positive. Real investment in communication equipment increased by 28% at an annualized rate in the first quarter of 2007, after declining 8% in the previous quarter. Similarly for electrical equipment, spending increased by 71% at an annualized rate in the first quarter compared to the 15% decline to finish out last year.

Nationally, there is currently an ongoing hospital building boom, and many hospitals are upgrading existing facilities. New diagnostic and patient care equipment, as well as information technology upgrades, form a significant portion of these capital expenditures, promising strong demand for device manufacturers in the near term. This will help to mitigate some of the drag stemming from consumers' hampered ability to pay for healthcare services.

Long term, demographic trends are the strongest macro driver for the industry. The growing ranks of the

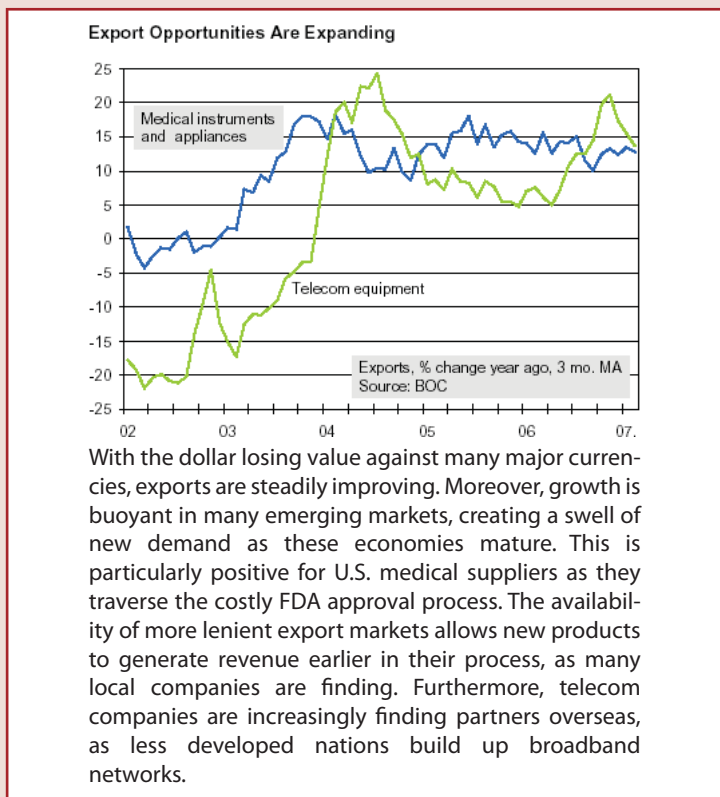
response to the ongoing M&A activity on the telecom services side. Coupled with growing competition from Asian manufacturers, more consolidation in the equipment market is likely forthcoming as businesses look to cut costs and remain competitive. This is also very much the case in the medical supplies field, as big players such as Johnson & Johnson acquire smaller firms with enticing ideas.

In the telecom industry, the hot market is the ramping up in investment in 3G wireless technology as well as the rollout of fiber globally and nationally by telecom giants such as Verizon and AT&T. Sonoma County is particularly rooted in the latter. Local companies Calix and Teknovus, among others, have a strong footing in providing the necessary infrastructure for internet protocol based services. These new services are the key for the telecom industry as they will allow it to service all of the consumers' voice, video, and data needs and could prove to be a significant boon for the regional communications equipment providers.

Compliance with the Food and Drug Administration (FDA) is always an important driver in the medical supplies industry, as the FDA ultimately determines what devices and treatments make it to the market. In the interim, medical suppliers are generally able to offer the solutions in markets in Europe and Asia while the product undergoes clinical trials in the United States.

Pricing. Pricing power in the telecom equipment industry remains weak. According to PPI data, the prices for communication equipment on a six-month moving annualized average are nearly flat. This reversed some of the last year's improvement when it appeared that telecom equipment prices were finally turning the corner after edging lower for several years. The paring of excess capacity, sturdy demand and increased consolidation have gradually boosted pricing power for equipment manufacturers. Domestic manufacturers also have to compete with Chinese manufacturers, whose influence over pricing will only expand in the years to come. Overall, any long-term price gains are likely to be modest.

The outlook for pricing of medical devices and supplies varies greatly across categories. Pricing power for general medical supplies is quite weak, with little prospect for improvement. However, pricing power tends to be strongest early in a product's lifecycle when



aged population globally will necessitate increased medical care.

All technology companies should continue to receive a boost from the positive trade conditions with both European and Asian markets. The dollar has depreciated against many major currencies, particularly the Chinese yuan and the euro. A weak dollar, combined with increasing demand for technology in emerging markets, should provide a healthy boost to demand for U.S. technology producers.

Industry Drivers. Industry consolidation is playing an important role in the technology industry. Telecom equipment providers are often eager to merge in

few substitutes exist. Given the nature of the specialization among many Sonoma County medical suppliers such as Medtronic and Oculus, who are often bringing new products to market, pricing power should remain relatively firm.

One of the primary limitations on medical industry pricing power lies in the influence stemming from third party payors, including the government and private insurers. The Centers for Medicare and Medicaid Services (CMS) set reimbursement rates that are also often adopted by private insurers.

Operating Expenses. Tech equipment manufacturers have managed to reduce expenses substantially over the past couple of years, but there is still a focus on cost containment. Labor has borne the brunt of cost containment efforts and will continue to do so. Indeed, even with the increase in production over the past two years, manufacturers have shown no desire to significantly increase their workforce. Manufacturers in Sonoma County have been no different; Agilent and JDS Uniphase alone cut 550 jobs over the past year. Evidently, productivity enhancements throughout the supply chain have successfully mitigated the need to hire additional workers.

The Medical Device User Fee and Modernization Act add to development costs in the industry. Although the purpose of the act was to speed the approval process, thereby shortening the time to market for new devices, implementation of the act has been criticized by industry trade groups. Additionally, the FDA has become increasingly dependent on these fees to cover its operational costs. After the spate of product recalls and warnings, firms may be required to submit more rigorous evidence of device safety and pay higher fees for improved FDA oversight, inflating the cost of product development even further.

Higher input costs are weighing on tech equipment manufacturers. Elevated prices for both oil and industrial metals are a significant cost burden on these industries.

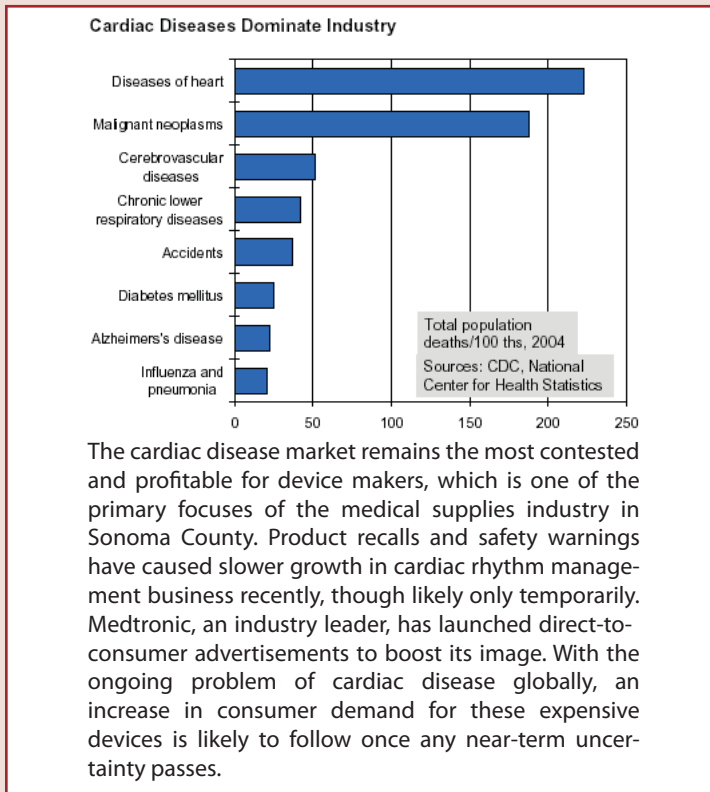
Profitability. Stable demand and cost containment across high-tech industries have led to improved industry profitability. In the near term, the bottom line of telecom equipment manufacturers should be buoyed by increased business investment and the infrastructure buildup by the Baby Bells. However, ongoing unit price depreciation, as well as elevated production costs, could harm industry bottom lines over the forecast horizon. Moreover, heightened foreign competition will force the

industry to trim margins further to compete in the expanding global market. Industry growth is unlikely to ever again reach the heights of the 1990s and 2000.

Near-term profits in the medical supplies and devices industry have been squeezed by increasingly high operating expenses. The long-term profitability in the industry, however, will be driven by innovation and new product introductions. Steady growth of the market with the entry of the large phalanx of baby boomers into retirement, as well as increased application of devices in medical care, will support profit growth. Combating these positives

are attempts to limit healthcare cost inflation by third party payors and consumer groups.

Specialization is the trend among many high-tech firms. Many of the layoffs at JDS Uniphase and Agilent were with the goal of focusing the company's product lines. With margins in the tech business largely decided by the flow of new products, this trend toward specialization will spur innovation and profitability in the medium term.



Long-Term Outlook. The long-term outlook for the Sonoma County high-tech industries remains positive, though there will continue to be a shift in the functional aspects of local firms. High-tech industries will have a harder time competing with lower-cost regions of the world. Although this trend is not unique to Sonoma County, the region's higher costs make manufacturing all the more difficult. Thus, the region's long-term advantage lies in innovation. Though the U.S. still has a formidable lead in engineering talent in the world, other emerging markets such as China are fast closing the gap.

Sonoma County's comparative advantage lies on the research and development side of the tech industry. The county has a highly qualified and specialized labor pool that is difficult to find elsewhere. Thus, while the manufacturing arms of many area tech companies may move abroad or to cheaper domestic locations, much of the R&D of companies such as Medtronic is likely to remain in Sonoma.

Going forward, technological advances, easing of regulatory barriers and demands for data, internet and wireless services all bolster the long-term outlook for communications equipment companies. Telecom investment will eventually return to more sustainable levels, with growth tied more closely to carriers' cash flows. In the meantime, some segments of telecom equipment have stronger prospects, namely broadband, IP technologies, and wireless.

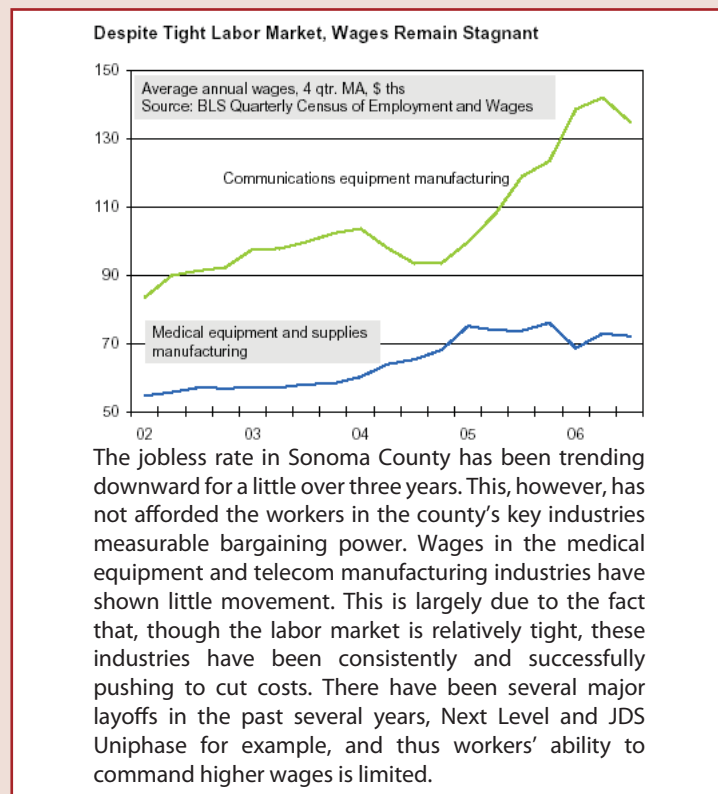
Upside Risks. Widespread recognition of WiMax, the newest wireless format, would certainly be a boon for the telecom industry but not as much as Wi-Fi has been. WiMax has the ability to send signals over miles, not the feet that currently limit Wi-Fi access. This means that the industry would sell fewer units, although it would certainly try to compensate by charging a higher price.

Helping to cement the county's position as a hotbed for R&D is the possibility of a new graduate program in biotechnology at Sonoma State University. The process is still in its early stages, but the existing infrastructure at the university, due to its engineering program and community links, make this sound like a viable option. This development would open the door for research partnerships with area firms and further solidify the area's talent pool of biotech expertise.

The marriage of TriVascular Inc. and Boston Scientific is over. This is after the latter decided to part ways with

their aortic aneurysm system and, with it, the 270-employee Santa Rosa division. However, investors, including TriVascular's founder, are trying to keep the biotech company going and the facility operational. Their success would offer continued stability for biotech in Sonoma County and keep talent in the area that may have otherwise left.

Downside Risks. The growing share of out-of-pocket contributions for consumers for healthcare is a risk to the



outlook of the medical supplies industry. This trend will effectively raise the price for the consumer, potentially curbing their demand for superfluous medical devices. In addition, efforts to constrain government spending on healthcare may adversely affect the introduction of more advanced equipment.

Consolidation among service providers presents further downside risk. If only a handful of telecom services firms are purchasing equipment, they would enjoy more bargaining power over prices.

*Andrew Gledhill
September 2007*

EMPLOYMENT

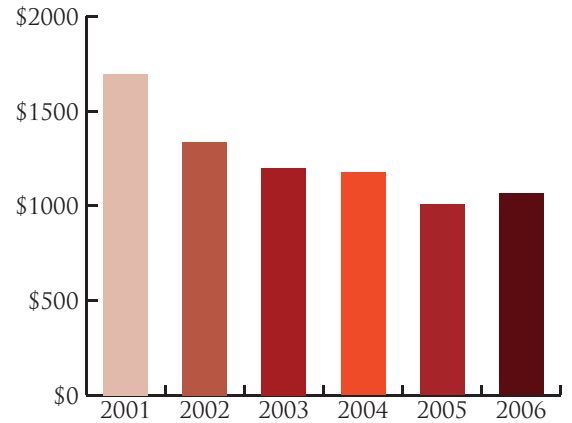
Since 2003, High-Tech real output (Figure A) has been on the decline and faced negative growth until 2005. In 2006, the industry witnessed a slight growth in output of \$58 million, bringing the 2006 High-Tech real output up to \$1.1 billion.

Since 2001, employment in Information Technology, High-Tech Electronics, High-Tech Instruments Optical and other High-Value Manufacturing (Figure B) has decreased significantly and for the past two years, employment has hovered around 7,000. Projections illustrate that employment will increase only very slightly from 2007 to 2012.

Output per worker in the High-Tech Industry (Figure C) has increased steadily over the past six years. Positive growth continues, although from 2005-2006 it occurred at a slower rate.

Figure A

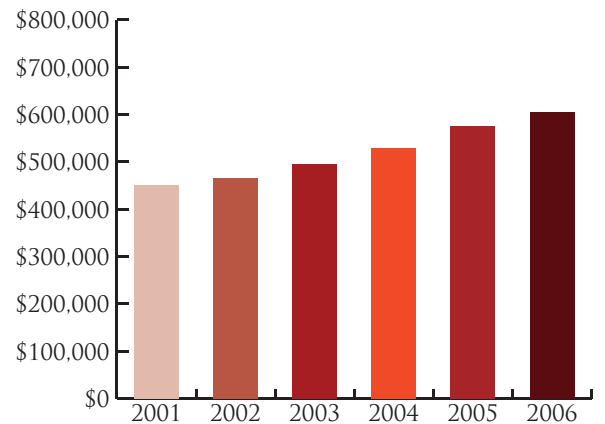
HIGH-TECH REAL OUTPUT (GROSS PRODUCT), MILLIONS OF 2007 \$)



Source: "Economic Briefing 2007," Moody's Economy.com, May 2007

Figure C

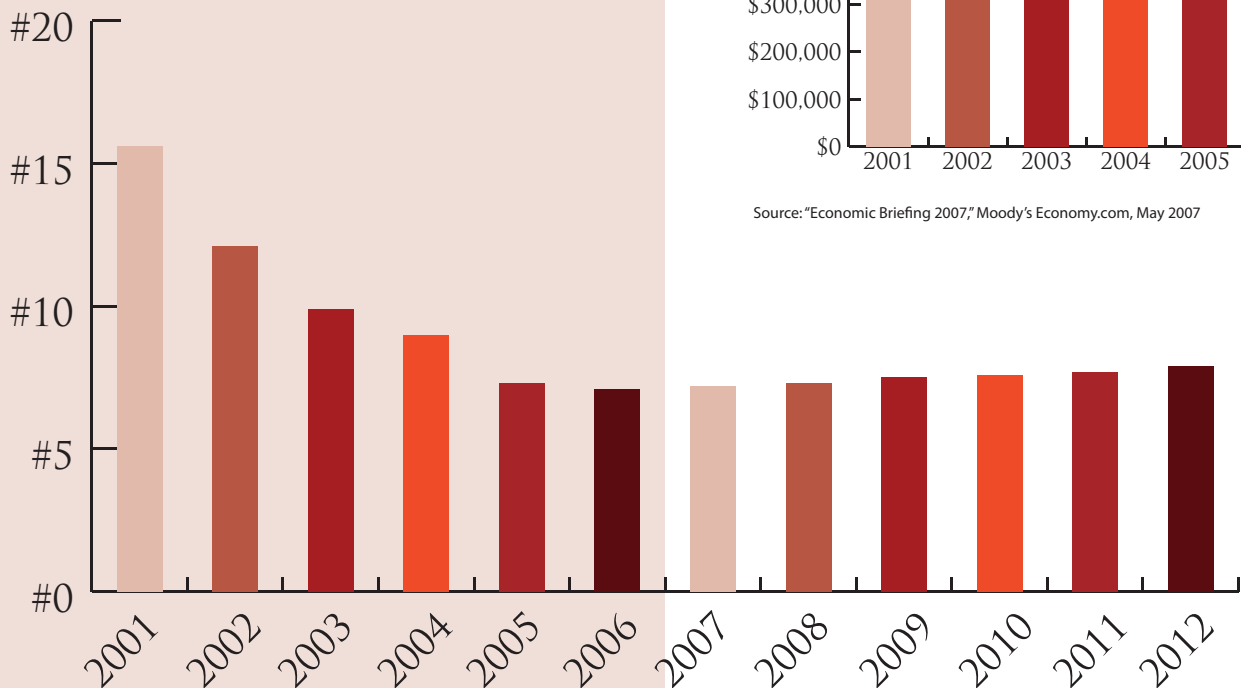
HIGH-TECH REAL PRODUCTIVITY (OUTPUT PER WORKER, 2007 \$)



Source: "Economic Briefing 2007," Moody's Economy.com, May 2007

Figure B

HISTORICAL AND PROJECTED EMPLOYMENT IN THE TECHNOLOGY CLUSTER (# OF PERSONS, THOUSANDS)



Source: "Economic Briefing 2007," Moody's Economy.com, May 2007

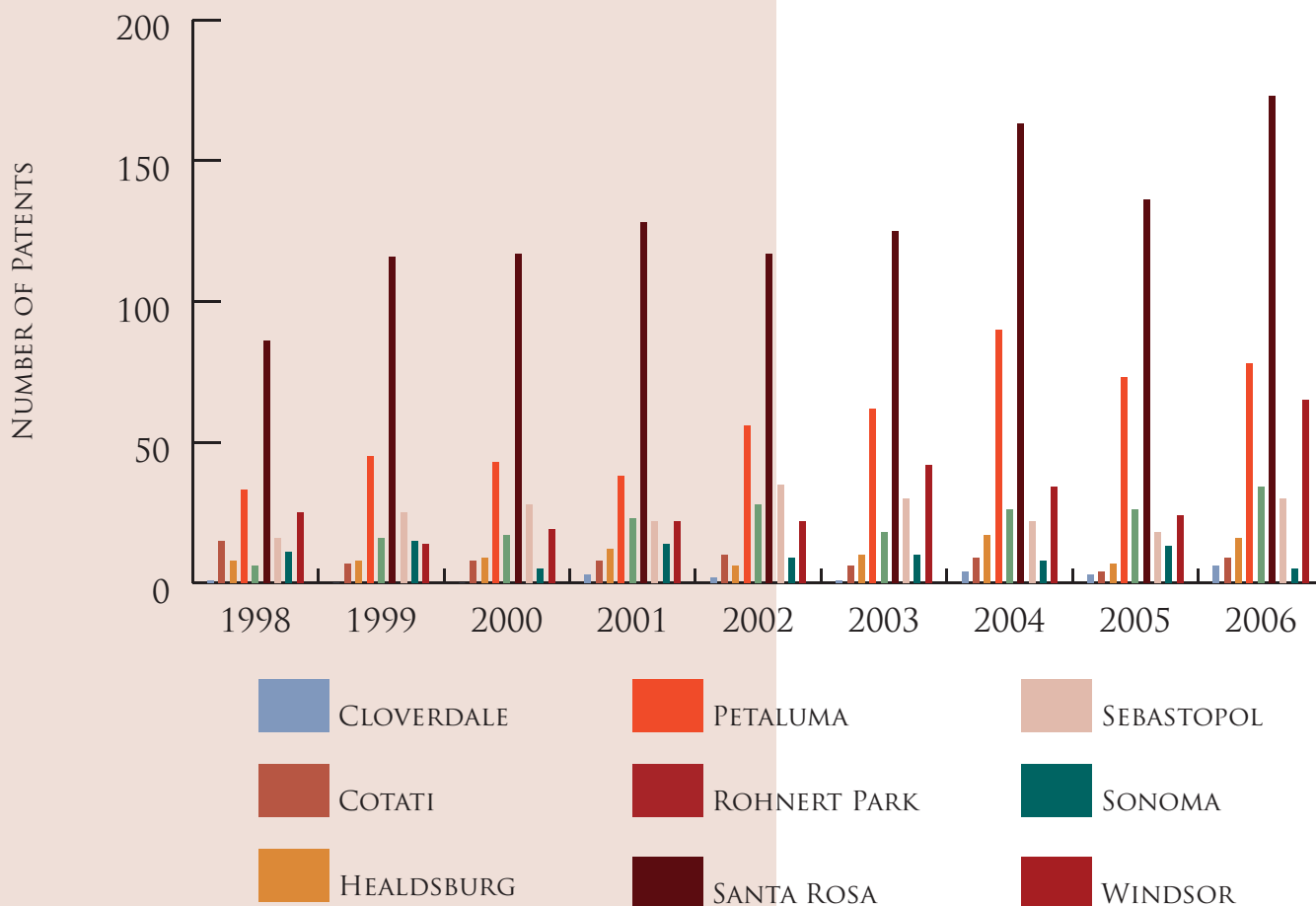
PATENTS

From 2000 - 2004, patent grant issuance for Sonoma County increased steadily. In 2005, patent issuance decreased markedly only to see a growth in the following year. In 2006, the U.S. Patent and Trademark Office issued 86 grants per 100,000 people, signifying an increase of 23 issued patents since 2005. Further, from 2004-2006, Sonoma County exceeded the California average of patents issued per 100,000 people.

Santa Rosa, the largest city in Sonoma County, has led the county's patent grant issuance from 1998-2006. Petaluma and Windsor boast the second and third largest number of issued patents, respectively.

Figure E

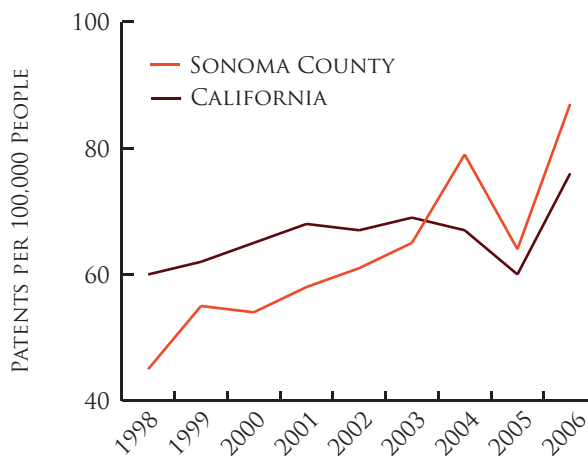
ISSUED PATENTS BY CITY



Source: U.S. Patent and Trademark Office

Figure D

PATENTS PER CAPITA



Source: U.S. Patent and Trademark Office

EDUCATION

Eligibility (Figures F & G)

For the past six years, the percentage of Sonoma County high school graduates that meet the UC/CSU eligibility requirements has hovered around 35%. This is on track with general California UC/CSU eligibility, which is 35.7%.

Sonoma State University (SSU) (Figure H)

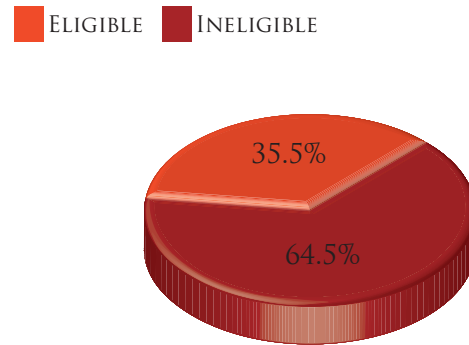
The number of applicants to the Engineering Science Program at Sonoma State University increased for the 2007-2008 school year by 19 applicants, with 188 students applying to the program. Of these 188 applicants, 117 were admitted and 23 enrolled. SSU hopes to have 180 students enrolled in the program by 2010.

Distances (Figure I)

Twenty-seven percent of the students that applied to Sonoma State University's BSES program for the 2007-2008 school year are from geographical areas of 1-50 miles from Santa Rosa, while 31% of applicants are 51-100 miles. The remainder of applicants, approximately 42%, applied from areas 100-600 miles from SSU.

Figure F

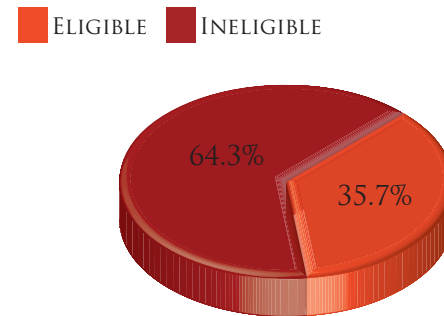
SONOMA COUNTY PUBLIC HIGH SCHOOL GRADUATES' UC/CSU ELIGIBILITY, CLASS OF '06



Source: CDE Dataquest

Figure G

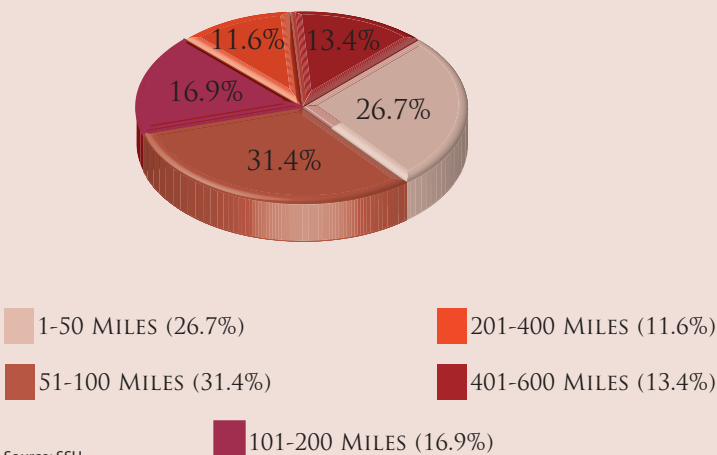
CALIFORNIA PUBLIC HIGH SCHOOL GRADUATES' UC/CSU ELIGIBILITY, CLASS OF '06



Source: CDE Dataquest

Figure I

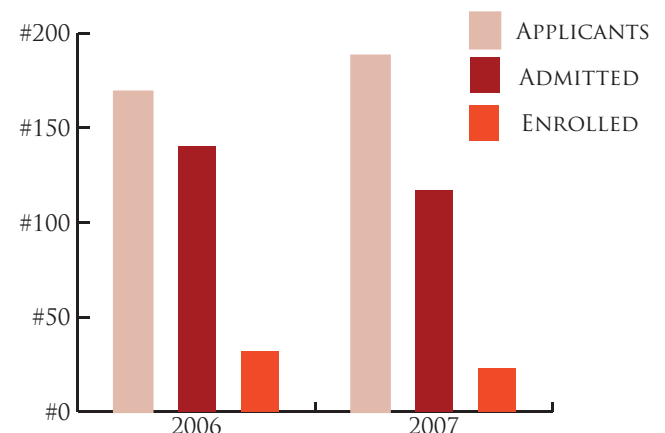
DISTANCES FROM SANTA ROSA OF 2007 B.S. ENGINEERING SCIENCE PROGRAM APPLICANTS



Source: SSU

Figure H

SSU B.S. ENGINEERING SCIENCE DEGREE ENROLLMENT IN 2006 & 2007



Source: SSU

EDUCATION

SAT Math Scores (Figure J)

Sonoma County's average SAT math scores have remained well above the national and California state averages for the past six years. In the 2005-06 school year, Sonoma County's average SAT math score of 542 exceeded the California average of 516.

Student-to-Computer Ratio (Figure K)

Sonoma County's student-to-computer ratio has been improving. According to the California Department of Education, during the 2005-06 school year there were 4.37 Sonoma County students per computer. This number compares closely to California's stronger 4.19 student-to-computer ratio, which has also seen improvement.

Math Proficiency (Figure L)

Sixty-nine percent of Sonoma County students who took the California High School Exit Exam during the 2005-06 school year were proficient in math. This number exceeds the California average of 59%.

VENTURE CAPITAL (Figure M)

Venture capital funding in Sonoma County is expected to have its most significant year since 2002. According to Dow Jones VentureOne in San Francisco, the 2007 financing rate in Sonoma County is greater than in the past five years and, after the second quarter of 2007, has already surpassed all venture capital revenues for 2006. Out of five top-performing companies in the North Bay, Calix Networks attracted \$57.5 million out of the \$100 million raised. This venture capital incline reflects increased global venture capital trends, which are at their highest levels since 2001.

Source: Dow Jones VentureOne, Ernst & Young LLP

Figure M

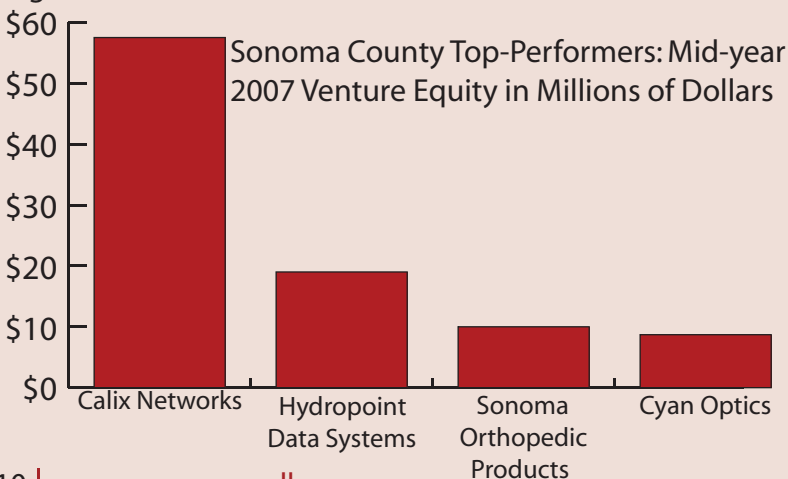
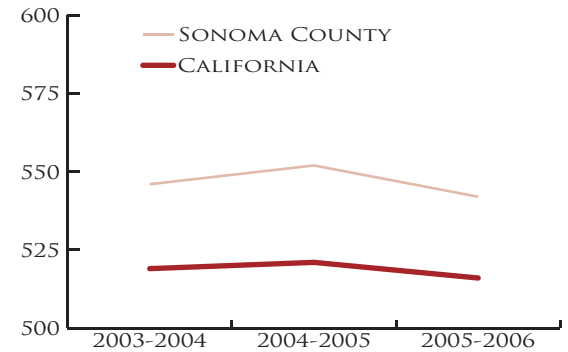


Figure J

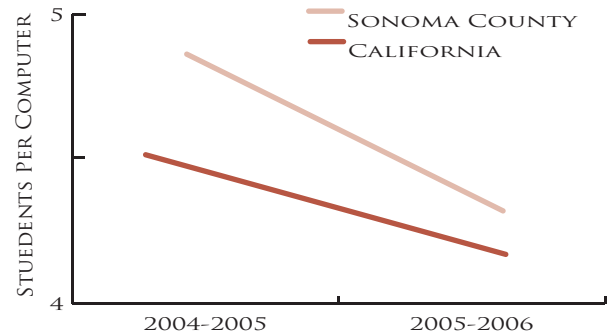
AVERAGE SAT MATH SCORES



Source: CDE Dataquest

Figure K

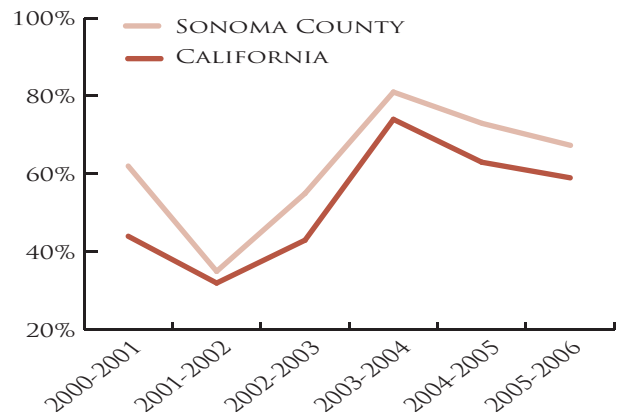
STUDENT-TO-COMPUTER RATIO



Source: CDE Dataquest

Figure L

MATH PROFICIENCY



Source: CDE Dataquest

SOURCES: EDUCATION AND PATENTS DATA

CDE Dataquest

California Department of Education. 2007. Education Planning and Information Center, Dataquest. www.cde.ca.gov/dataquest/

SSU

Sonoma State University. 2007. Program Statistics: Undergraduate Program. Department of Engineering Science. www.sonoma.edu/engineering/

U.S. Patent and Trademark Office

United States Patent and Trademark Office. 2007. US Patent Collection. www.uspto.gov/

METHODOLOGY

The 2007 Technology Insider is the product of the Sonoma County Economic Development Board (EDB) and our research partner, Moody's Economy.com. The annual Technology report provides a "snap-shot" overview of trends and county progress related to technological development and education. The EDB does not intend the report to be construed as accurate for every industry's 2007 performance or as a set prediction for future occurrences. Moreover, some graphs and statistics, such as those for Education, are imperfect in their ability to convey a connection to technology; they are meant merely as indicators to measure change from previous years. Finally, some numbers and percentages have been rounded for the sake of clarity and ease-of-use.

Moody's Economy.com produced pages three through six of the report. Sections entitled Employment, Patents, and Education represent the compilation of statistics and graphs by the EDB. Data for these sections was extracted from Moody's Economy.com "Economic Briefing 2007," the U.S. Patent and Trademark Office, the California Department of Education (CDE) Dataquest tool, and Sonoma State University (SSU). In past years, the Technology report has included sections on housing and traffic. However, since 2005, the EDB has chosen to focus on the growing biotechnology industry and on telecom powerhouses that provide new regional Internet service possibilities, including WiMax. Further, the 2007 report discusses the promise of the Engineering Science program at Sonoma State University and the potential for a graduate-level biotechnology program, which would feed directly into the area's R&D growth network.

ACKNOWLEDGEMENTS

As noted, Economy.com produced pages three through six of this report on behalf of the EDB. Kristina Copplin and Benjamin Herbert, Project Coordinators for the EDB, merit special thanks for producing this report. A great deal of their time and effort was directed toward the production of the latter half of the resulting work. Julia Roberts, also a Project Coordinator, was responsible for finalizing the edits and presentation of the report.