IS WASHINGTON BUILDING THE FOUNDATION FOR A STRONG ECONOMIC FUTURE?

AN ECONOMIC COMPETITIVENESS REPORT FROM THE TECHNOLOGY ALLIANCE

PREPARED FOR:

The State of Washington

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In late 2002, the Technology Alliance set out to understand how well Washington state is competing against other leading states to build the foundation for a vibrant 21st century economy. The race to ensure our long-term prosperity pits Washington against dozens of other regions, states, and some countries for the best companies, the most highly skilled workers, and the top researchers, facilities, and ideas. The Technology Alliance is a statewide consortium of leaders from technology-based businesses, research institutions, and organizations who are dedicated to Washington’s success. We wanted to know if Washington is winning and, if not, what we need to do to stay competitive.

The research assessed the state’s performance on the nationally recognized drivers that underlie a technology-based economy—sound educational systems, strong research capacity, and a robust entrepreneurial environment.

The results alarmed us. Washington is at a crossroads. Our coveted national standings and the opportunities for our children are in jeopardy unless all of us step forward to actively support the institutions, businesses, and people who will sustain our positions and help build our future.

“Today, Washington—like most businesses—is competing on a worldwide scale. If our state is to remain a great place to live and work, we need the brightest minds to pioneer new discoveries and the infrastructure where these ideas can grow into new businesses.”

Steve Davis
President & CEO, Corbis
Chair, Technology Alliance
Seattle
Technology Is Key to Washington’s Future Prosperity

In a thriving economy, Washington’s public and private research institutions spawn an abundance of new and exciting ideas; our companies provide plentiful job opportunities; and, our schools, colleges, and universities produce the best and brightest graduates. Most importantly, everyone shares the optimism and pride that come from living in a vibrant region with broad cultural offerings, strong infrastructure, excellent public and private institutions, and a high quality of life. Today, technology and entrepreneurism are inextricably linked to Washington’s vision of prosperity.

Benchmarking Tells Us Where We Need to Focus

The conclusions presented here are based on a commissioned report, “Drivers for a Successful Technology-Based Economy: Benchmarking Washington’s Performance,” prepared by economist Paul Sommers. (A copy of the report is available at www.technology-alliance.com.) The report compares Washington against eight peer states (California, Colorado, Georgia, Maryland, Massachusetts, Michigan, Texas, and Virginia) on the three drivers for successful technology-based economic development:

- Sound Education Systems (both K-12 and Higher Education)
- Capacity to produce a high volume of quality Research
- A robust Entrepreneurial Climate

Washington State’s Technology Leaders Have High Standards

In the worldwide race for a successful 21st century economy, an average performance just isn’t good enough. Excellent companies and the people behind them gather in places with strong educational and research institutions, enthusiastic supporters, and other businesses and individuals who share similarly high standards. Many other areas are working aggressively to produce this kind of environment. Washington cannot accept anything less than excellence if we are to compete successfully for our future.

“Today, research and development in the fruit packing industry focus on improving the eating quality of fruit. New technologies now ensure excellent sweetness and firmness. This drives demand because customers consistently get a high-quality product when they buy our fruit.”

Hans van Someren Gréve
General Manager
Stemilt Growers, Inc.
Wenatchee
K-12 Education Benchmarks

Technology-based businesses thrive in states with strong education systems that produce graduates with solid critical thinking and communication skills, and an excellent grounding in math and science. Top education systems also are one of the leading reasons business and research leaders choose to locate facilities and families in a particular area. We compared Washington to other states on the four key indicators included in the table below to determine how well the state is preparing K-12 students to enter higher education. As the rankings below show, we have significant work to do.

High school graduation rates help us understand how many students are prepared for higher education and potential careers in the 21st century economy. In Washington, just 68% of our students who began their first year of high school in 1996 graduated four years later with a diploma—a rate below the average for both our peer states and all states. Clearly, we need to improve.

Less than a third of Washington’s 8th graders score at or above “proficient” on nationally recognized math, reading and writing tests. If our students are to have access to the jobs that increasingly require these skills, then we must do a better job preparing them. Additionally, the state lacks critical information about how proficient our middle and high school students are in science and how many of our students participate in higher-level math. Without this information, we cannot adequately assess our performance and address any shortcomings.

The number of Washington’s high school seniors scoring in the top 20% on SAT and ACT tests is disconcertingly low. Washington ranks fifth among our peers. Of even greater concern is the fact that our ranking has dropped from 13th in 2000 to 18th in 2002 among all 50 states.

Finally, per-student investments in Washington fall in the middle of the pack of all states, and have been trending downward for several years. Although dollars alone cannot solve all problems, investment levels provide an indicator of the level of resources and support available to our teachers and schools. This trend is extremely troubling.

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**Knowledge is our most valuable resource. It is also remarkably simple to cultivate, provided one key element is accessible: excellent education systems.**

LeRoy Nosbaum  
CEO  
Itron  
Spokane

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<table>
<thead>
<tr>
<th>Indicator</th>
<th>Ranking as compared with peer states</th>
<th>National ranking 1-50</th>
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<tr>
<td>The percentage of students graduating from high school within four years</td>
<td>5th of 9</td>
<td>32nd</td>
</tr>
<tr>
<td>The percentage of middle school students participating in science and mathematics courses, and achieving proficiency in math, science, reading and writing (4 measures)</td>
<td>Incomplete*</td>
<td>Incomplete*</td>
</tr>
<tr>
<td>The percentage of the state’s students scoring in the top 20% of those who take college entrance examinations (SATs and ACTs)</td>
<td>5th of 9</td>
<td>18th</td>
</tr>
<tr>
<td>Amount of money invested per K-12 student in Washington state</td>
<td>6th of 9</td>
<td>26th</td>
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* Participation and proficiency rates for Washington’s middle school students are not currently available for all measures
Higher Education Benchmarks
A strong higher education system is critical to Washington’s success for two reasons. First, Washington’s residents leave these institutions with the skills to compete for the best jobs in technology-based businesses. Second, small and emerging technology companies that do not have the resources to recruit people from outside the state are more likely to find local specialists and managers to build their businesses.

The Technology Alliance’s report looked at five indicators to determine both the extent to which Washington’s higher education system prepares students for the 21st century economy and whether we are investing in order to sustain a high-quality higher education system. The results are clear. Washington’s higher education system is not generating the numbers of well-educated people needed for our future economy. Furthermore, although many of our colleges and universities currently enjoy strong national reputations, our investments are not high enough to maintain these top competitive positions.

Washington ranks among the lowest third of all 50 states in the number of bachelor’s degrees granted per capita by state institutions, and in science and engineering degrees. Our schools are not producing enough students with bachelor’s degrees to meet current demand, or enough advanced degree graduates in science and engineering to lead our technology-related companies into the future.

The state’s investment in higher education is low and has declined consistently throughout the past decade. Funding levels for two-year, four-year, and research institutions consistently fall below comparative institutions throughout the country. Washington is already suffering: admission into our institutions is more difficult than ever, and high-quality teaching is being diluted as classes grow larger and larger.

The number of high school students continuing on to two- and four-year colleges is low, and the trends are disturbing. The percentage of Washington’s 9th graders enrolling in college within four years dropped from 42% in 1998 to 37% in 2000, placing us among the bottom half of our peer states. One reason for this drop is the lack of available seats at our colleges or universities. In 2002, every four-year public college in Washington state was overenrolled. Clearly, our state is not meeting current demands—much less the future demands—of the economy.

Continuing education is widely accepted as an important tool for upgrading skills and ensuring that our workforce has opportunities to compete as employment conditions change. Washington ranks among the lowest third of our peer states in percentage of adults enrolled in part-time post-secondary education. Although we need additional research to understand the reasons behind these low enrollment levels, this statistic is potentially very troubling.

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<tr>
<td>The percentage of state residents who earn a bachelor’s degree, per capita</td>
<td>6th of 9</td>
<td>32nd</td>
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<tr>
<td>The percentage of state residents who earn a science or engineering degree, per capita</td>
<td>6th of 9</td>
<td>34th</td>
</tr>
<tr>
<td>The percentage of state residents who earn an advanced degree in science or engineering, per capita</td>
<td>7th of 9</td>
<td>29th</td>
</tr>
<tr>
<td>State investment per student as compared to HECB peers for research institutions, 4-year and 2-year colleges (3 measures)</td>
<td>N/A</td>
<td>Bottom third of all states</td>
</tr>
<tr>
<td>Participation levels, including the percentage of high school grads who enroll immediately in 2 and 4-year higher ed., 18-24-year-olds enrolled in 2 and 4-year higher ed., and adults seeking continuing ed. (3 measures)</td>
<td>5th through 8th of 9</td>
<td>10th through 18th</td>
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“Washington’s young companies rely on locally available, highly educated workers to grow our businesses. That’s why excellent education systems are so critical to our success.”

H. Stewart Parker
President & CEO
Targeted Genetics Corporation
Seattle
Research Capacity Benchmarks

Top-flight research institutions are vital to our future because they produce the ideas that drive innovation in information technology, life sciences, and other fields. Additionally, successful research and development (R&D) programs attract new talented scientists and researchers who make their careers in Washington's laboratories and can become the founding scientists for new local companies.

We looked at the four key indicators included in the table below to determine how well research institutions and the people who fuel them are supported in this state. The data revealed that without a change of direction, particularly from the public sector, our position of national prominence is highly vulnerable. Although Washington enjoys a strong national reputation now, we are living off a legacy of public and private investments from past decades.

Research and development can be considered as two components of a single process. We distinguish between them in this study because major research programs generally result in long-term benefits after more than a decade of investment. Development programs, on the other hand, most often focus on bringing the results of research efforts to market.

These programs tend to be product-focused and usually produce results in just a few years. R&D programs at institutions emphasize the “R”; R&D programs in companies emphasize the “D”.

World-class research institutions like the University of Washington and the Fred Hutchinson Cancer Research Center have built Washington’s international reputation as a center of excellence. However, other leading states of similar size have many more private universities and institutions. On a per capita basis, Washington’s performance on research measures only places us among the middle to lower half of our peers.

If we are to enjoy a robust research sector in the future, Washington must actively build and support the institutions we have. This means supporting nodes of excellence throughout our state including Battelle/Pacific Northwest National Laboratory and Washington State University.

The results of the state’s development measures look better than our research scores. Washington ranks toward the middle of the pack of peer states in our ability to generate patents. The number of licenses per capita is among the top 10 in the country, although the top states vastly out-produce us. However, most of Washington’s industrial R&D investment occurs at two companies, Microsoft and Boeing. If the state is to enjoy the benefits of vigorous development efforts, then more companies must become actively involved.

Our most notable weakness is state support for research. Washington ranks among the bottom four states in the nation. State investments in research activities are crucial because they provide the “seed capital” for programs that focus on long-range results, produce students as well as ideas, and are leveraged many times over by federal grants that further accelerate research activities.

Top-tier scientists and engineers, whether well-established or “rising stars,” are magnets for the brightest students and doctorate candidates. They also consistently receive research grants. On a per capita basis, the state has a fairly good showing of top-tier senior scientists and engineers, as measured by the number of National Academies of Science and Engineering and the Institute of Medicine members. However, on an absolute basis, Washington falls far behind the leading states. California has 1,320 members and Massachusetts has 682, while Washington has just 147. Additionally, Washington has not successfully attracted many of the newest “rising stars” in these fields, as measured by the number of Sloan Research Fellowship recipients in the state.

Research institutions are the single most important factor in establishing a leading technology economy. These institutions develop and commercialize new technologies, helping grow existing businesses and creating new companies.

Ed Fritzky
Retired Chairman,
CEO & President
Immunex Corporation
Seattle
Entrepreneurial Climate Benchmarks

Young companies thrive in places with a tradition of entrepreneurship and risk taking. They also need the financial resources and qualified workforce to support them. We examined these and the other indicators below to identify how well Washington’s entrepreneurial climate supports new company creation—particularly in high technology. The results are consistent with what we’ve already seen. A few years ago, Washington was touted as one of the best places to found and grow a new high-tech company. Since then, we’ve slipped.

Washington ranks second among our peers and 11th in the country in our ability to create all kinds of new companies. But we rank among the bottom on the list of peers and 20th in the country in terms of creating new high-tech companies.

Washington’s business ecosystem does not do a good job sustaining the growth of startup businesses. We are at the bottom of our peers and 36th nationally in terms of the number of rapidly growing (Inc. 500) companies in the state.

The venture capital industry views the nation in terms of 18 regional markets. Washington, Oregon, and Idaho form the core of the Northwest market, which falls 10th among the 18. The Northwest market is far behind the leading markets in California and New England in the total amount invested in emerging companies. Investment is key to healthy growth rates for emerging companies, and this is clearly an area where we need to improve.

The brightest spot in this benchmarking report is our strong workforce. During the past decade, many well-educated people relocated to Washington. As a result, today we rank tops in the number of highly skilled people in our workforce, including recent science and technology graduates. However, anecdotal evidence points to a shortage of senior managers experienced in running technology companies.

Washington must continue to foster an environment where these entrepreneurs remain confident so that we can build on our competitive advantage.

Chad Waite
General Partner
Olympic Venture Partners
Bellevue

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<tr>
<td><strong>OUTPUTS</strong></td>
<td></td>
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<tr>
<td>New companies created, including high tech companies (5 measures)</td>
<td>2nd through 8th of 9</td>
<td>5th through 20th</td>
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<tr>
<td>Fast growth companies that have sustained their growth, including Inc. 500 companies that are 5 years old and have fewer than 1,000 employees (2 measures)</td>
<td>7th and 9th of 9</td>
<td>12th and 36th</td>
</tr>
<tr>
<td>Venture capital invested in new companies</td>
<td>N/A</td>
<td>10th of 18 regional markets</td>
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<tr>
<td><strong>INPUTS</strong></td>
<td></td>
<td></td>
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<tr>
<td>Technical talent (5 measures) available to staff new and growing companies</td>
<td>1st through 5th of 9</td>
<td>1st through 9th</td>
</tr>
<tr>
<td>Managerial talent available to staff new and growing companies</td>
<td>Incomplete</td>
<td>Incomplete</td>
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“Are we fulfilling our obligation to stand on the shoulders of those who went before and make our region’s contribution still greater to the world?”

Mike McGavick
Chairman, President & CEO
Safeco Corporation
Seattle

Remarks at the Greater Seattle Chamber of Commerce Annual Meeting
September 19, 2002
The release of this benchmarking report comes at a time of economic uncertainty. Washington’s unemployment rate is high, the state faces a significant budget deficit, and public services are strained. Tolerance for risk among business leaders and investors is low, and voters are resisting tax hikes unless they see clear economic returns. Yet without fresh ideas and a recommitment to investing in programs that reap long-term benefits, we jeopardize Washington’s future.

It is helpful to remember that Washington has a tradition of being a highly entrepreneurial state, and that taking risks and making smart investments has paid off for us in big ways. The University of Washington Medical School is a great example of a wise investment that has returned dramatic benefits. The Medical School was founded in 1945 by an act of the state legislature.

Fifty-seven years later, it boosts the Washington economy by $4 billion annually, employs 14,000 people, has launched at least 44 companies, and is consistently ranked as the top primary care medical school in the country. Furthermore, the state’s biotechnology and medical device industries, with nearly 20,000 employees, can be traced to that key strategic decision.

Other smart ideas include launching Washington’s wine industry, which leaped forward during the early 1960s when some enterprising winemakers and a Washington State University horticulturalist saw the potential for growing premium wine grapes. The industry is now the second largest in the country, with 11,000 employees and a total economic impact of $2.4 billion annually.

Of course, The Boeing Company has invested millions with each new airplane it has built. And, in 1991, Microsoft devoted substantial resources to creating its own computer science research organization. Microsoft saw the need to support long-term computer science research so future employees could build upon its technology breakthroughs.

CAN WE MAKE SMARTER CHOICES?
WHAT SMART CHOICES CAN WE MAKE NOW?

We must set a bold agenda for our future that drives us to improve. The Technology Alliance has identified the following four goals as critical to Washington’s long-term success. We will continue to measure and benchmark the state’s progress toward making them a reality.

1. All Washington’s graduating high school students must have the necessary math and science skills to participate successfully in higher education and compete for jobs in our 21st century economy.

2. Every Washington citizen interested and qualified to pursue a four-year degree, especially in a science or technology field, should be able to do so at a Washington state institution.

3. Washington must become a leader in state support for academic research and industrial research and development.

4. Washington must, once again, become a recognized leader in creating and sustaining technology companies.

We call on Washington’s citizens and political leaders to support these goals and be willing to make the tough decisions and short-term sacrifices necessary to achieve them. For our part, during this next year, the Technology Alliance will focus our programs, research, and outreach on realizing them.

- The Technology Alliance is joining Governor Locke and leading institutions to launch a public-private partnership to leverage Washington’s strong research capabilities, rich business presence, and vibrant entrepreneurial capacity in both life sciences and information technology/computer science, and to take advantage of the synergies between these sectors.

- Washington’s business, research, and federal and state legislative leaders must work collaboratively to recruit additional private and federal research activities to the state. The leading scientists who create new economic opportunities need to be actively recruited and supported. The Technology Alliance will actively participate in this process.

- The Technology Alliance will actively support efforts to better prepare our students, particularly in math and science skills, and to address the issues underlying our low high school graduation level. We will leverage our existing network of principals and school leaders to bring inquiry-based science and math into the classroom. Across the state, we will work with others to find smart strategic investments that improve student learning and achievement.

- Even in tough times, this state can strengthen our higher education system by leveraging its funding sources and by reforming the management of its finances. The Technology Alliance supports giving institutions greater flexibility to manage their financial assets and destinies. Washington state should use our bonding authority to put people to work and build badly needed college buildings. We should continue to pursue alternative funding sources and investigate dedicated sources for education.

- The Technology Alliance will work with government and research leaders to develop policies and programs to improve technology transfer from our research institutions. We need to find ways to streamline the movement of cutting-edge research ideas into emerging new businesses. Tomorrow’s great companies are being started today, and we need more of them to be in Washington.

Washington is at a crossroads. We can make smart choices and stay competitive with other high-tech states or we can make poor choices and be left behind. In the past, our biggest mistakes have not come from doing bold things badly, but by doing nothing or thinking too small.
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Bill Gates, Sr. founded the Technology Alliance (TA) in 1996 by bringing together leaders from Washington’s diverse high-tech, education, and community sectors to focus on improving the underpinnings of our technology-based economy. That vision continues to guide the TA today. A CEO-level board from high-tech companies and research institutions around the state directs the TA’s work.