7. HIGH TECHNOLOGY

High technology is Oregon's third largest industry, with a work force of 36,000 people. Following periods of rapid growth in the 1970s, employment has leveled off during the 1980s as some major firms were forced to cut back employment while others grew.

Oregon's high technology industry can be divided into three categories:

■ Older native firms and branch plants such as Tektronix, Electro Scientific Industries, Intel, Hewlett Packard, Wacker, and Litton

■ Younger spinoffs such as Mentor Graphics, Sequent Computer Systems, and Planar Systems

■ Newer foreign branch plants such as Fujitsu Microelectronics, Fujitsu America, Epson, and NEC America.

High tech firms produce a wide variety of instruments, computers, equipment, and components, with many uses. Although much of the industry is concentrated in Washington County, high technology companies are located throughout the state.

Vision
The high technology industry in Oregon will prosper. Market demand for most high technology sectors will grow at a healthy pace in the near future. In many of the established companies, employment growth will be dampened by increases in productivity needed to maintain competitiveness. Younger spinoffs and recently established branch plants will be the major source of new jobs. Changes in the marketplace due to shortened product life cycles will make the fortunes of any one firm uncertain, however. One particular area where Oregon will become a leading center is in design and production of parallel processing computers, where the state already is home to many of the ascending companies in the field.

The state's high quality of life, available low-cost land, good primary and secondary schools, and uncongested transportation system will facilitate expansion of the industry. Oregon's high technology industry will benefit from its location midway between Japan and the eastern U.S. To further support the industry, Oregon's universities and community colleges will be more fully geared to support high technology skill training and continuing education.

Strategy for Achieving the Vision
To foster our high technology industry in Oregon, we must adapt our education

systems to meet the work force and growth needs of the high technology industry. Key elements of this strategy include 1) expansion of programs to provide the engineers, managers, and technicians needed by the industry, 2) more widespread use of continuing education programs to keep industry employees abreast of the latest developments, and 3) greater effort to facilitate the transfer of technology.

There is much momentum now to support the industry. The Oregon Center for Advanced Technology Education (OCATE) is building its program to support continuing education needs in Washington County. The Oregon Institute for Advanced Computing (OIAC) is now supporting the emerging parallel computing industry. Further technology centers are under consideration. These kinds of efforts to link education resources in support of the industry must be accelerated.

Efforts to foster small business startups would help spark new industry developments. Because the industry depends on suppliers of metal and plastic component parts, the State should make an effort to foster such companies in Oregon.

Actions To Implement the Strategy

■ The Oregon State System of Higher Education (State System) should assure that its programs support the high technology industry as fully as possible in providing trained work force, continuing education, and flow of ideas. Oregon must focus its resources wisely, if it is to be competitive with other states. The State System needs to work closely with the high technology industry to:

   ■ Make capital investments in research libraries as proposed by State System.

   ■ Provide pay increases that recognize merit, and target hard-to-recruit, hard-to-retain faculty in disciplines such as electrical, computer, and mechanical engineering, and computer science, optical, and materials sciences. Pay increases should recognize merit. Create an Oregon faculty recruitment fund to attract faculty to Oregon.

   ■ Create a formal partnership between the State System, the Oregon Graduate Center, and the high technology industry through continued funding of OCATE.

■ The State System should review its policy towards continuing education, and develop a program to meet the needs of the high technology industry. There is a need for improved upper division and graduate-level continuing

education programs, and for off-campus education programs. Rapid technological changes make training and retraining of professional and technical personnel a priority for the high technology industry. Currently, continuing education programs receive no State support, and are funded on a pay-as-you-go basis. While there is a role for the market in determining which programs to offer, the current practice lacks coordination, prioritization, funding, and focus. Therefore:

- The Board of Higher Education should re-examine its policy decision not to fund continuing education.

- The State System should provide a focal point for planning and coordination of continuing education -- perhaps a vice chancellor position.

- The State should improve incentives for administrators and faculty to provide off-campus continuing education.

- The State should promote the construction and use of the ED-NET telecommunications network, connecting all of Oregon's two- and four-year colleges with interactive televideo course and data transmission capabilities.

- Additional funds should be provided to support the Oregon Advanced Computing Institute to build it as a catalyst for the growth of Oregon's parallel computing industry. In addition, other opportunities for technology research institutes should be explored.

- The long-term role that elementary, secondary, and community college education plays in the high technology industry should be better acknowledged, particularly the community colleges in providing skilled workers for the industry. Because the current shortage of trained workers could become a constraint to growth in the years ahead, the Economic Development Department and the Office of Educational Policy and Planning should sponsor a conference with community colleges and industry representative to discuss labor force issues and design programs to avoid labor shortages.

- Support the efforts described elsewhere in this plan to strengthen access to information, resources, and incubator facilities for small business startups. This will be particularly helpful to new ventures in high technology. To support the financing needs for high technology startups, the Oregon Resource and Technology Development Program should receive additional

funds.

■ The Economic Development Department should continue efforts to increase the availability and quality of in-state production of parts for the high technology industry (plastic, metal fabrication, electronic parts, and components) by facilitating discussions between suppliers and the industry. A well-developed supplier network represents both an economic opportunity for the state as well as a lure to attract additional industries. Targeted training funds and other assistance is needed to help existing suppliers adapt to the requirements of high technology companies, particularly newer Japanese branch plants.