

IV WYOMING'S INSTITUTIONS: STATUS, REQUIREMENTS, AND OPPORTUNITIES

The previous two sections have examined the human and natural resources of Wyoming, the building blocks for the future. But if Wyoming's people are to guide their state into a strong and desirable future, they need to consider more than the state's economic health. No vision of Wyoming's future will be complete without considering a strong educational system, ways of meeting social and cultural needs, preserving a heritage tied to the land, and protecting land and water. At the same time, the people need public roads, water supply systems, and the other items that make up a physical infrastructure, and they need responsive government at all levels. This section discusses four institutional areas--education and training, physical infrastructure, social and cultural amenities, and problem-solving capacity--that affect the overall quality of Wyoming life. It examines the status of Wyoming's capabilities and recommends actions that will improve the capacity of the state's key institutions.

Education and Training

Wyoming's education system has four components: the University of Wyoming, the community colleges, the state's K-12 primary and secondary school system, and private training institutions.

The University of Wyoming Today

The University of Wyoming (UW) is the state's oldest institution. It was founded as a land grant college in 1886, 18 years after the Wyoming Territory was founded and 4 years before statehood. From a single building

with seven professors, and 42 students, UW has grown to seven colleges on a 780-acre campus with nearly 800 faculty members serving over 10,000 students. In addition to its Laramie campus, UW currently maintains a permanent faculty and academic programs in Casper and Cheyenne, and further serves the state through extension classes, field offices, and extension and research centers.

Figure IV-1 shows four important trends at UW over the past 10 years. After growing by 23% between 1975 and 1983, enrollment peaked at 10,270 in 1983 and began to decline to 10,100 in 1985, paralleling the state's overall population pattern. While the percentage of graduate students in the student body has remained stable, the percentage of nonresident students has fallen slightly--from about 30% in 1977 to 22% in 1984.

Primary OW growth areas are in two academic disciplines--business and engineering. The College of Commerce and Industry, producing the business graduates, has almost doubled its enrollment since 1975 and now 18% of all students are business majors. The College of Engineering has also seen a 685 student increase since 1975; its share is now 14%. On the other hand, the number seeking degrees in the College of Arts and Science declined from about 40% of all students in 1974 to 30% in 1984, although 54% of all student credit hours are earned in this college.

As enrollment increased, so did appropriations from state general funds--from \$73 million for the period July 1975 through June 1977 to \$196 million for the 2-year period beginning July 1982. These large increases reflect a number of organizational moves (e.g., the transfer of the School of Human Medicine to the University's budget, the establishment of the Wyoming Water Research Center, the transfer of the Wyoming State Veterinary Laboratory), adjustments for inflation, adjustments for enrollment increases, and adjustments for physical plant services added between 1975 and 1983. The remaining 30% of the increase went to support the Educational Services and Outreach program, Agricultural Extension Services and to establish or expand programs in applied mathematics, computer science and computer services, research centers such as Red Buttes Biological Research

Laboratory and the Wyoming Infrared Observatory, remediation, biochemistry, and veterinary medicine.

Socioeconomic changes and changes in higher education (such as the decline in humanities graduates) are nationwide. Although UW is adapting, many find the adaptation slow--perhaps because change is coming more quickly now. Thus, UW has a mixed image in the state today, while graduates generally express warm feelings about their alma mater and staff members generally are proud about being a part of the state's leading academic institution, there is an unusually pervasive feeling among the 120 public and private leaders and residents contacted by SRI during the project that somehow UW isn't what it should be. (In 1984, however, a poll of 940 randomly chosen residents conducted by the University showed 64% responding favorably to a broad question, giving UW high marks for "the quality of its work.")

To some, UW appears to be disconnected from industry, from other educational institutions, from communities, and from the legislature. As a result, UW doesn't always have the kind of broad support a university needs to fulfill its mission. As the state's only university, UW faces a particularly difficult problem--trying to balance the claims of those who say it does too much with those who say it does too little.

UW is not alone in this regard. Institutions of higher education across the country have suffered similar problems and are increasingly examining ways of bridging gaps to build constituencies. Specifically, they are seeking industry linkages as policy makers push for greater economic returns from public expenditures in higher education. High-visibility initiatives like applied research centers, business parks, management extension services, small business incubators, and innovation centers for commercializing university research are developing all over the country. These initiatives address different needs in each state, but all are intended to build relationships between universities and industry (and sometimes government). The result can be a broad, supportive constituency,

improvement in education quality, and a two-way exchange of social, cultural, and economic benefits.

UW has taken some steps toward industry linkages (discussed later), but most seem isolated efforts rather than parts of an overall strategy. For example, the Union Pacific Railroad gave UW 100 acres of land in Laramie for a future research or industrial park; however, little has been done either to develop the site or to determine how such a facility could best support UW's mission.

UW's cultural, academic, and research programs are diverse, particularly for a university of approximately 10,000 students with an open admissions policy for Wyoming high school graduates. Yet, in its role as Wyoming's only university, UW faces pressure to retain marginal programs (when resources could be put to more critical uses) and to constrain the growth of others so that widespread coverage can be maintained. An alternative is to focus and reallocate resources into the increasingly popular "centers of excellence," discussed later.

A general review of the instructional, research, and service programs of UW illustrates how the university is addressing its mission at present.

Undergraduate Classroom/Laboratory Teaching--UW has developed and maintained a broad instructional program. Efforts have been made to provide undergraduates with a full range of major programs, all of which undergo systematic evaluation and development. For the most part, the faculty/student ratio rivals that of many small private schools. Most classes are small and UW officials feel that the quality of instruction is good. The internal consequences of this small scale and instructional diversity, however, are two fold: significant faculty diversity and relatively higher costs.

Laboratory instruction, increasingly important as employers seek employees with practical skills, is also a major component of the UW

teaching program. The physical and computational sciences, languages, arts, agriculture and life sciences, and engineering provide laboratory instruction that consumes major portions of departmental equipment and supplies budgets.

Graduate Instruction--UW offers an unusually large number of programs (154) leading to graduate degrees. The education of the 1,700 graduate students is seen by officials as relatively expensive because classes are small, because quality instruction is expensive, and because advanced analytical and research techniques are required for training quality graduate students.

Off-Campus Instruction--UW has been guided by straightforward principles in the off-campus instructional program. Officials say that UW is pledged to the same quality instruction off campus as exists in Laramie and to being as responsive as possible to demonstrated needs and interests of prospective students across Wyoming.

Basic Research--A broad cross-section of UW faculty are pursuing basic research to advance knowledge in a variety of areas. Examples include an unusually broad variety of topics including: the effects of acid rain; enhanced oil recovery; Alzheimer's disease; the effects of zinc and copper imbalance; infrared telescopic observations and detection systems; laser experimentation; pre-storm experimentation; seismic reflection in volcanic rock; basic, molecular genetic mechanisms; sensory physiology; and basic psychological phenomena.

The basic research component of UW's activities is sometimes faulted as being too esoteric and draining. Although time may be drained from the classroom, resources do not appear to be drained. During FY 1984-85, UW research activities attracted a total of \$16 million, including nearly \$2 million from the National Science Foundation and \$1.5 million from the Public Health Service and the National Institutes of Health. UW officials

feel that a broad variety of research projects contributes to the broadly defined instructional mission of the university by keeping faculty current in their fields and providing intellectual excitement in the classrooms.

Applied Research and Service--Applied research and service are other functions of UW which support its instructional mission. While these functions are performed by a large number of campus units, seven institutes and two service entities are responsible for initiating and coordinating specific activities. The activities for each are summarized below:

Wyoming Water Research Center--develops hydrologic and climatologic information, has research projects totaling \$538,000 funded by state and local entities.

Institute for Policy Research--facilitates social science research on campus, publishes Wyoming Quarterly Update and Census Retrieval and Information Service Reports, conducts surveys. Research funding totals \$300,000-\$500,000 per year.

- . Mining and Minerals Research Institute--fossil fuel research funded at \$150,000 per year from U.S. Geological Survey; projects on enhanced oil recovery and other subjects.
- Wyoming Industrial Fund--a mechanism for sponsoring at UW research of interest to Wyoming Industrial Associates (over \$400,000 to date).
- . Enhanced Oil Recovery Institute--started in 1984 with \$225,000 from the legislature and some matching funds from industry.

Institute of Business Management Services--in 1984-85, arranged 30 seminars, provided consulting to 73 companies, and placed 60 summer interns in businesses.

Government Research Bureau--carries out biennial Wyoming election surveys and special-purpose studies.

UW Agricultural Extension Service-provided agricultural information to nearly 64,000 people and home economics information to 44,000 in 1984-85; administers 4-H program for 21,000 Wyoming youths.

- UW Research Corporation--will operate Wyoming Research Institute when federal funding ends.

In addition, the University supports a number of cultural and sports programs (art museum, Fine Arts Center, Arena-Auditorium, War Memorial

Fieldhouse). The university's Cultural Outreach Program was responsible for 275 events in 1984-85, for 88 communities. The proposed American Heritage Center and new UW Art Museum will further enhance Wyoming's cultural environment and overall quality of life.

The University of Wyoming Tomorrow

While top UW officials point to favorable public opinion polls they and some faculty members acknowledge that the University has a mixed image and that it lacks a broad and supportive constituency. Nevertheless, it seems clear that UW has many of the essential ingredients to become a more central institution in Wyoming. Other states have led their universities to a more promising and active role within the state; Wyoming must do the same.

To help UW grow stronger, a reallocation of resources and some additional funding may be required. Signs of additional funding are already apparent. The Wyoming Legislature has provided \$2.5 million to UW's Centennial Campaign, to be available on a matching basis, for distinguished professorships, departmental chairs, endowed scholarships, and funds for the development of plans for the Art Museum. UW must pursue additional matching funds at both the state and federal levels. A statewide effort is now underway to obtain some funds from the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR).

This NSF program with its matching grant component could serve as leverage for strengthening UW in the areas of academic excellence, research, and service. EPSCoR is designed, in part, to establish centers of excellence to serve as focal points for drawing together academic, research, and service-related activities. This aspect of the EPSCoR opportunity is important because UW needs to define a few focal areas.

While UW should be commended for its efforts to provide variety and breadth in its programs (e.g., 154 programs leading to a graduate degree, research on basic psychological phenomena), escalating costs and the

increasing need for publicly supported universities to play a more direct role in statewide development argue for UW to focus, at least at the graduate level and in its research, on a few key areas. UW must change the criteria used to decide how the University is to expand. Higher priority, for example, must be given to the criterion that any new initiatives demonstrably strengthens the state. As a practical matter this might mean deciding not to develop yet another program leading to a graduate degree, or not to start another research program that serves the nation's but not necessary Wyoming's interest (e.g., Alzheimer's Disease).

New initiatives must be planned with the aim of strengthening the state, and existing programs and activities should be reexamined with this as the objective. One question that might be asked is: "Which will make the most difference to Wyoming in 10-years time: this new way of earning a graduate degree, or applied research that develops a product or process suited to Wyoming and fitting a known market niche?" This doesn't mean UW should simply abandon its broad program to serve Wyoming's young people, but the University should not s read itself so thin that it can't ensure excellence in the areas important to the state's future.

Examples of focal points--new centers of excellence--funded from new sources like the NSF program, and perhaps reallocation of existing funds, include the following that relate directly to strengthening Wyoming's base:

- Mineral resources, particularly academic programs on mineral economics, applied research in innovative products and processes and extension service programs in support of the state's small mineral companies.
- Agriculture, particularly academic programs in advanced agricultural economics, applied research in new agricultural products and production methods, and extension service to support innovative agricultural operations.

Travel and tourism, particularly academic programs in the economics and business of hotel and restaurant operation, and outfitter and guide operations. Applied research is necessary to acquire and analyze Wyoming travel data and to monitor changes in values and lifestyles that affect patterns of recreation and leisure time use. An extension service that would work directly with businesses in Wyoming's tourism industry is also needed.

Small business operation, particularly academic programs to train entrepreneurs in forming and operating small businesses, applied research to help identify specific opportunities for creating new businesses, and extension service to directly support existing and new small business.

Centers of excellence as described above are necessary to provide focus, and UW is the best institution to operate them. Centers such as these should be a high priority on UW's planning agenda.

In general, research beyond basic science will be needed from UW, particularly applied research in direct support of Wyoming industry. UW should strive to turn applied research into opportunity for new small business. An Innovation Center, perhaps patterned after the Utah Innovation Center, would be one way of bridging the research-application gap. Intermediary, technology transfer and commercialization organizations like the Utah Innovation Center are being formed with university assistance throughout the country and make a further connection between academia and industry.

In addition, the University may wish to establish more collaborative working relationships with universities in neighboring states. Several Midwestern states have recently formed the Midwest Technology Development Institute as a new vehicle to expand research and technological cooperation among the Big 10 universities and regional industry. UW could develop new relationships with individual institutions in the Mountain States region or take the lead in organizing a Mountain States Technology Consortium. Either way, UW could then increase its access to knowledge-based resources needed to promote the state's economic growth and diversification.

Finally, service to the state must be elevated to a higher level of importance. New faculty and staff incentives must be established to better connect UW's dominant resource, its people, to activities and other institutions throughout the state. Additional extension services, expanded small business development activities, and applied technology centers are all ways that UW's efforts can serve to further develop the Wyoming economy.

Rapid advances in educational technology and the spread of personal computers may provide yet other special opportunities for UW to develop whole new educational approaches. Courses could be beamed by satellite or microwave to remote parts of Wyoming. The University is using telecommunications technology to deliver classes from the campus to several outlying communities at the same time and to receive instant feedback from all the outlying sites. Advanced computer hook-ups and additional networks could be established between UW and local schools or community colleges. "Techcommunicated education" or "distance learning" is a field in which Wyoming could develop national stature.

The University of Wyoming may be more important to Wyoming's economic future than any other institution in the state. To be prepared for its future role, UW must be supported in initiatives to adopt a broader mission with emphasis on academic excellence, research appropriate to Wyoming's needs, and additional service to the state. To do so requires not only the vision of a new role but broad support.

In particular, UW needs appropriate legislative authorities. Reallocations, unrestricted private sector grant support, and any new increases in spending should be targeted at those areas--such as centers of excellence and improved communications capabilities--that will result in substantial educational and economic benefits. In short, to build beyond past contributions to the state's economy and quality of life, UW will need clear policy direction and resources from both the public and private sectors.

Community Colleges Today

Wyoming's first community colleges were organized as two-year university extension services. The first college district was formed in 1945, when Casper College was formed. Three other colleges were created over the next 3 years, and in 1956 the colleges became independent of UW. Between 1956 and 1968, four additional community colleges were established.

Figure IV-2 shows both the total enrollment in all seven colleges and total state funding. Between 1975 and 1983, community college enrollment increased by 93%, from 6,300 to 12,171 students--an even greater growth than that experienced by UW. Following the downturn, enrollment dropped to approximately 11,000 students in 1984.

Community colleges have also seen dramatic growth in state funding in current dollars. State funding has grown from \$16 million for the July 1975-July 1977 period to \$58 million for 1983-1984. Although community college funds from the state are 263% of what they were in 1975 in current dollars, they have increased only 112% in constant dollars. Per-student funding has gone from \$1,032 to \$2,640, a 156% increase in current dollars, but only 49.4% in constant dollars. In addition to state appropriated funds, the seven community college districts expended their own receipts of \$28 million in the 1983-84 biennium.

The seven community colleges present a wide variety of academic and other kinds of programs. Special attention is paid to three areas: preparing students for graduation from a 4-year institution (and providing associate degrees in academic fields such as applied science), vocational-technical training (in areas such as agribusiness), and community service (such as noncredit courses in basic adult education). While generally perceived as capable institutions in all three areas, community colleges seem to show the most growth in community service. The community colleges seem to be moving toward new programs and new community relationships, strengthening their institutional positions within the state. However, there are those in the state who feel that the community colleges (and UW) should stick to narrow, academic missions to keep costs under control.

In addition to expanding into the communities, the community colleges have also been relatively successful in reaching out to Wyoming's private sector. Their vocational-technical training programs are shaped, in part, by the requests of the companies that hire their graduates. While the overall relationship between the colleges and local industry varies, it is generally good.

There is no impending crisis in Wyoming's community college system, which is meeting a significant institutional need. The individual colleges serve the academic, training, and service needs of their communities. As a result, they are mostly well received and, more important, are often relied on as key institutional resources in the state.

Community Colleges Tomorrow

Even though the colleges are individually strong, the system as a whole could be improved by strengthening and broadening relationships among the colleges, with UW, and with the public and private sector. This requires additional joint projects--academic programs, applied research initiatives, and service activities. Specific needs for joint projects should be worked out with interest groups and potential beneficiaries from across the state in broad-scope meetings. While cost control is always important, today higher education must do more than just provide academic lessons.

Higher Education as a whole

Overall, Wyoming's higher education system is good but can be made much better without necessarily costing more. The best way of making the system better at no additional cost is by organizing it better and drawing together its strengths into centers of excellence. While the system may not be any more fragmented than that of other states, Wyoming would benefit greatly from much more institutional integration, including new links between educational institutions. Joint programs to identify and meet the job skills needs of Wyoming employers represent one area of opportunity. Programs of hands-on business assistance are another. Like the University, the community colleges must seek new ways of interacting with, and supporting other sectors in the state. Casper College has proposed a program to administer a statewide network of small business development centers. If not overemphasized, service--to the state, to business, and to

communities--is an appropriate role for higher education, especially the community colleges.

SRI's analysis suggests that now is a good time to establish a Higher Education Consortium to help seek new kinds of relationships between (and among) UW and the community colleges and between higher education and industry, government, and communities. Specific areas of focus should be job skill needs and addressing needs in the public and private sector for the kind of knowledge-information-technology capacity higher education can provide.

The Primary-Secondary System Today

The population of Wyoming is well educated, especially through the primary and secondary levels. Seventy-eight percent of residents over the age of 25 have completed high school; the median number of years of education is 12.7. Recent trends show that although enrollment gains have not been as steep in the K-12 schools as in UW or the community colleges, the increase is nonetheless significant. Since 1975, K-12 enrollment has climbed almost 15% to 101,261. Also unlike UW and the community colleges, K-12 enrollment has leveled off rather than showing a sharp decline. Evidence reflected in new family formations indicates that enrollment will climb again. This year's kindergarten enrollment is over 9,000, a group 50% larger than the 1985 high school graduating class of slightly over 6,000.

Wyoming's State Department of Education and its Superintendent of Education are responsible for the general supervision of the state's public schools. However, it is the many local school boards and their administrators that operate Wyoming's primary and secondary schools. These local boards, with considerable public input, set local educational policies and oversee administration.

The cost of K-12 education has been rising rapidly as student enrollment has increased. Figure IV-3 shows both the costs of K-12 education and recent

increases in K-12 enrollment. The student population today stands at about 100,000, and should stay level for a while. The 1985 Department of Education annual report shows average district expenditures per pupil of between \$4,000 and \$5,000, considerably higher than the \$3,000 to \$3,500 figure for other states.

Wyoming can be justifiably proud of its primary-secondary school system. A variety of national professional organizations rank Wyoming's schools in the top 10 of all school systems in the country (USA Today recently ranked Wyoming first). However, there is a disturbing downward trend in standardized test scores. While test scores have been dropping across the country, local analyses have shown Wyoming's scores to be dropping faster than those in other states.

Standardized test scores move up and down for many reasons, not only the performance of individual school systems. Nevertheless, Wyoming education and legislative leaders are considering ways to correct the situation. State public and private leaders cannot afford to move slowly--the risk of any deterioration in Wyoming's outstanding school system is alarming. Wyoming's primary-secondary school system is one of the state's strongest and most effective institutions--it must not be allowed to deteriorate.

The Primary-Secondary System Tomorrow

There are two specific opportunities for strengthening Wyoming's K-12 system. First, links between the K-12 system, UW, and the seven community colleges could be strengthened. Joint faculty initiatives could be developed to keep K-12 faculty informed of advances in the various disciplines. Special initiatives could be developed to provide outstanding high school students with early access to university and college programs, in both academic and cultural areas. Such initiatives could help encourage outstanding students to continue their higher education in the state, rather than going out of state. Schools too small for specialized instructors

might be served well by teleconferencing instruction from UW. Oklahoma and Texas are experimenting with "distance learning," using advanced telecommunications to beam university-based classes into sparsely settled areas.

Second, stronger business/education partnerships could be developed at the K-12 level. Such partnerships could both strengthen the school system and provide students with a better understanding of the business and employment opportunities available in the state. Again, such initiatives could encourage more of Wyoming's "best and brightest" to stay in the state.

Private Training Institutions Today

Private, proprietary training institutions are nearly insignificant in Wyoming's overall education sector. There are probably fewer than 30 privately operated schools, most with enrollments of 10 to 15 students. They typically provide vocational or recreational training. Examples include flying schools, beautician academies, and technical training institutes. Total enrollment in these schools is probably fewer than 1,000.

One proprietary school, because of its relatively large enrollment, deserves mention. The Wyoming Technical Institute in Laramie, with an enrollment of around 500, offers vocational education programs in auto repair, auto mechanics, and diesel engine maintenance and repair. No academic course work is offered nor does the Institute offer a degree program.

Schools like the Wyoming Technical Institute serve as an alternative to public schools offering skills training. Employers can sometimes request specialized courses from proprietary schools that public schools cannot provide. In a situation where the breadth of course offerings is limited because of a small population, proprietary schools can fill unmet needs.

Private Training Institutions Tomorrow

Wyoming should encourage development of proprietary training schools.

The new economy is placing increasing emphasis on new technologies requiring that the workforce have new, often specialized skills that cannot be provided only by public institutions. Further, in addition to filling unmet educational needs, these schools can be a source of a few new jobs.

Education and Training Overall

Education and training form one important component of a high quality of life. Education, of course, is vitally important in its own right and as a means of ensuring that the skills of the workforce match the needs of emerging and existing businesses, education and training play a key role in economic development. In this regard, UW and the community colleges are in many ways the most important institutions in Wyoming. By developing centers of excellence, undertaking applied research appropriate to the state's economy, and extending service to others, higher education will make a significant economic and quality-of-life contribution to a better Wyoming.

Wyoming's K-12 system is also very important, especially so at this time when basic skills are increasingly important but, across the country, are increasingly lacking. Wyoming's primary and secondary schools are strong and provide the state with unusually well educated young people. The state's schools are strong, in large part, because of the values and lifestyle in Wyoming. As it looks to the future, a well educated population will be among Wyoming's strongest comparative economic and social advantages.

Physical Infrastructure

Most of Wyoming's public infrastructure is sound and well-suited to its current needs. In 1984, its highway system was successful in maintaining a huge system at below projected costs. Public utilities like electricity

also seem adequate for meeting the demands of Wyoming's public and private sectors. However, three areas must be addressed if Wyoming is to be well positioned for the future. Each of these three areas--water, air transportation, and telecommunications--presents Wyoming with opportunities to shape the course of its future growth.

Water Today

Water--called by one observer "Wyoming's scarcest mineral resource"--became the most controversial and emotional issue in Wyoming's history because of the early significance of agriculture in the state and the "use it or lose it" thinking that clouds the debate over water today. Even though major development projects over the past 25 years now make it possible to transport water to where it is needed, the 1970s still saw some of the most intense debate over water use. Along with expectations of an explosion in the demand for alternative energy sources that would use water-intensive production processes came projections of a serious water shortage. As with Wyoming's other responses to growth, the state was forced to scramble to develop the necessary resources to deal with the once-expected need for large new water developments. Much of the fear generated by that scare seems to remain in the current debate over the issue.

There are several elements to the water issue: demand, who pays for development, and supply are all important. The lack of current national demand for alternative energy sources has clearly reduced the projected demand for water in Wyoming. During the 1970s, many feared that the projected increases in industrial use of water would come at the expense of agricultural users. However, the synfuels industry and proposed coal slurry pipelines failed to materialize, and so did the additional demand for water. Although the State Engineer's Office projected that industrial water use would increase from a level of 90,000 acre feet per year in 1973 to 250,000 acre feet in 1982 and 460,000 acre feet by the year 2000, 1981 figures for actual use showed that industrial and municipal use together totaled only 200,000 acre feet (7% of the total average annual

consumption). Agriculture continues to consume about 2 million acre feet per year, 79% of the state total. SRI's projections of little, if any, growth in both agriculture and the resource industries suggest that overall water needs can probably be met by existing and planned projects through the year 2000.

A second, related element in the water issue is the question of who can use the water flowing through Wyoming. Because of falling demand, the issue is not the supply of water but rather legal issues concerning water rights. Wyoming is a party to seven different interstate river water compacts that allocate water use among the states through which each river or its tributaries flow. Wyoming currently holds senior rights to 5.9 million of the 15.8 million acre feet produced within the state. Of this, 2.9 million--an amount equal to that in current use--remains undeveloped. However, there are legal questions concerning whether the compacts will allow Wyoming to move its allocated water to those parts of the state where it is needed. Legal questions also exist over those waters within the state to which Indian tribes have partial rights. Finally, resolution of the recently debated instream flow issue also depends, in part, upon clarification of the water allocation issue.

Although water resources will always be a necessary component of economic development, it is not water that is limiting Wyoming's growth. Recent studies in Wyoming have shown that the total supply of water is adequate to meet the state's foreseeable needs. However, if uncertainties as to legal rights to the water persist and regionalism over the idea of diverting water to needy areas prevails, Wyoming will continue to face some water shortage in parts of the state, and the issue of water supply will again be a potential weapon to block development projects. (This will be likely even though developers of industrial projects have shown an increasing willingness to pay for the necessary development.)

The final element of the water issue is who must pay for water development. Until the late 1970s, almost all water development projects were funded primarily by federal agencies. Now, federal funding has been

virtually eliminated, shifting the financial burden to the state. Most projects since about 1980 have been funded by severance tax revenues. However, a recent James J. Lowrey & Co. report stated that projected revenues in the state's two water development accounts may be insufficient to fund existing development projects. Thus, although the conclusions of this analysis can be argued, it is clear that any shortfall will have to be made up by some combination of other state, local, and private sources. The state's planning agencies will need to keep a close watch on the water issue, particularly as the economy changes water demand.

Water Tomorrow

Over the next 10 to 15 years the manner in which the water issue is framed may have more consequences for Wyoming's future growth than whether or not there is sufficient water. In the past, the water issue has been used to kill certain development projects because the issue was framed in terms of water availability. The water issue is a prime candidate for this misuse because of its emotional basis throughout Wyoming's history. Wyoming's goal for the future should be to address the water issue in an atmosphere of public-private collaboration, with decisions based on factual grounds.

Because it is essential that debate and discussion focus on current realities, rather than past projections and emotions, the following steps should be taken so that individual water issues can be resolved in a constructive manner:

- (1) Undertake an in-depth analysis of Wyoming's water needs and supply. This analysis would require two separate components: one dealing with the still-disputed facts concerning physical supply and demand, another with the legal issues of who holds the rights to the water. Of the latter, the most important questions concern the Yellowstone River Compact, which covers over 75% of Wyoming's undeveloped water rights. It is recommended that UW perform such a study, through the combined efforts of its Water Resources Research Institute and Law School. Once completed, the analysis should be updated periodically.

- (2) Build consensus concerning the nature of the water issue. Water has been a divisive issue in the past, and it is possible that the above analysis could go unnoticed without support from various agricultural, industrial, and political groups. Therefore, a Public-Private Partnership on Water, comprising expert representatives from these various fields, should be responsible for analyzing and commenting on the UW report. This type of acceptance of the facts concerning water--if not agreement on the uses--is essential.
- (3) Develop public sector plans and expenditures that are consistent with Wyoming's future. The UW report and Partnership review should provide a basis for public sector action on water development. Policy makers will then need to make decisions regarding state needs and priorities for water development projects. Future water needs must be considered because of the long lead time required for water development projects. The process should also include consideration of how Wyoming should proceed in resolving the ambiguities in existing interstate river compacts. Finally, after needs have been agreed on, a fiscal analysis should be done to determine whether current Wyoming Water Development Account funds can cover the necessary projects, or whether alternative types and sources of financing will be required.

One final issue involving water is the extent to which agriculture interests receive state funds for irrigation. The Wyoming Farm Loan Board provides large water development loans for irrigation. As of June 1984, more than \$36 million had been lent to Wyoming agriculture for water development. This industry contributes less than 2% of the gross state product and employs only 6% of the workforce. Wyoming should review the proportion of all state loans that go to agriculture, whether for operations or for water projects.

Water will continue to be an important issue in Wyoming, but it must be put in proper perspective in regard to the state's total economy and most likely future. An analytic, cooperative approach can develop a factual and broadly supported basis on which future decisions can be made.

Transportation Today

Some of Wyoming's transportation problems, such as rail rates, while difficult for state government to affect, might be addressed by creative public policy. Others, such as those resulting from trucking deregulation, are likely to be resolved by the private sector, route by route. However, one problem area, air transportation, is particularly troubling one that can probably be addressed within the state by joint public-private effort--and it is a problem that must be dealt with.

Reliable air transportation, critical because of the distances that separate most of Wyoming's population, has been an elusive goal. The state has a history of failed commuter airlines. Physical facilities are not the root of this problem; Wyoming has 25 airports, with 3 more currently under development. These facilities are in good condition, even though repairs slowed last year due to a decrease in matching funds from local communities. Some contend that the past failures have stemmed from the fact that Wyoming simply lacks the population to support a profitable commuter system. However, others argue that improper scheduling and aircraft choices, rather than a lack of demand, have been responsible for the lack of profit.

Improved air transportation is critical to Wyoming's future. Access within the state and to areas outside Wyoming can help improve Wyoming's capacity to diversify its economy and better integrate the state. Businesses increasingly cite reliable air transportation as a primary consideration in their locational decisions. Ready access to other parts of the state will also be important to Wyoming firms looking to expand their operations outside a single community. Finally, improved air transportation can provide a means of bringing in more tourists without more roadside damage.

Transportation Tomorrow

Recent proposals aimed at developing an effective air transport system point in the right direction for Wyoming's future. To reach the goal of a stronger Wyoming through enhanced public and private sector capacity, Wyoming must assist in the formation and near-term operation of a commercial, scheduled airline company(ies).

Assistance to a private carrier could take several forms; two possibilities are:

Financial assistance through a system of phased-out subsidies (either direct grants or "seat guarantees") that contain a sunset provision have been examined in states like Colorado that have similar locational characteristics and needs. Wyoming should seriously consider and carefully study such an approach to subsidizing air transport.

Scheduling oversight and assistance--perhaps in the form of a temporary advisory committee comprising both government and business representatives--can help to protect the viability of the state's investment by ensuring that service is consistent with demand. Wyoming should form such an Air Transport Development Advisory Committee.

The ultimate choice as to which option to pursue should follow a further examination of the issue, one that includes an analysis of whether subsidies are required or whether more careful scheduling will be enough to guarantee profits. Such subsidies might, however, require a change in Wyoming's constitution. Some action in this area is important, because a successful airline would result in a number of public benefits--new jobs and economic opportunity and improved capacity for drawing the state's people together.

Telecommunications Today

In terms of conventional technologies, Wyoming's public telecommunications infrastructure appears equal to that in most other states in the region. The telephone equipment that links the entire state is