Economic Development Planning, Summary 29

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Title: Preparing for an Arizona of 10 Million People: Meeting the Infrastructure Challenges of Growth: Background Report: A Report from the Productivity and Prosperity Project

Year: 2008

Source: Center for Competitiveness and Prosperity Research, Arizona State University; and L. William Seidman Research Institute in the W.P. Carey School of Business, Arizona State University.

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Prepared for: The Arizona Investment Council, with the support of William Post, CEO of Pinnacle West Corp., and other industry leaders. A shorter version of this report was presented at a statewide infrastructure conference in November 2008.

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Summary: Over the next 25 years, Arizona has the opportunity to strengthen its position as a regional economic center and to promote economic growth and prosperity by meeting the infrastructure needs of a projected 10 million residents. By 2032, it's estimated that an additional $288 billion will be needed, beyond what is already expected to be spent, to support such public sector infrastructure as roads, transit, electricity, drinking water, health care, and public education.

Sectors: Infrastructure, including education, energy, health care, public safety, telecommunications, transportation and water.

Geographic impact: Arizona
**Key actors:** Local, state and county governments; business community; Arizona Department of Transportation; Arizona Corporation Commission; Arizona governor and Legislature; hospitals; Arizona Public Service; Salt River Project; Tucson Electric Power; AT&T Inc.; CenturyLink Inc.; Verizon Communications; K-12 schools; University of Arizona, Arizona State University and Northern Arizona University; community colleges; Sky Harbor International Airport; councils of government; Arizona Department of Education and Arizona Board of Regents

**Major challenges:** Build the political consensus to close the huge gap between what local and state governments are expected to spend on infrastructure over the next 25 years, and the additional $288 billion that it’s projected will be needed. Such options as raising taxes, finding new sources of revenue and arranging for other financing will loom large with the average projected deficit per year a staggering $11.5 billion to meet infrastructure challenges.

**Progress to date:** Tight budgets and a slowly recovering economy have made it difficult for Arizona to spend money in the five years since 2008 on anything but the most basic or pressing needs. The state’s gas tax of 19 cents has not been increased in 22 years, making it difficult to keep up with highway needs.

The American Society of Civil Engineers, in its *2013 Report Card for America’s Infrastructure*, awarded Arizona a “C” for its infrastructure, which was better than the “D+” it gave the country. Among its findings: Arizona has 247 structurally deficient bridges, 142 high hazard dams and 52 percent of the roads are poor or mediocre quality, costing motorists $205 each a year.

To maintain or upgrade Arizona’s drinking systems over the next 20 years, ASCE estimates it will cost $7.4 billion. Another $5.2 billion will be needed for wastewater. The libertarian Reason Foundation ranked Arizona’s highway system 23rd in the nation in overall performance and efficiency in its 2012 Annual Highway Report, up from 26th in the previous report.

Arizona ranked first in three key categories: lowest amount of urban interstate mileage with poor pavement, lowest amount of rural interstates with poor pavement condition and fewest percent of deficient bridges, with just over 10 percent deficient or functionally obsolete. Arizona spends twice as much per mile as the average state, ranking 41st in disbursements per mile and spends three times the national average in administrative costs, ranking 44th.

**Major implications:** Infrastructure is critical to Arizona’s long-term economic growth, including the exporting of goods and services, creation of jobs and ensuring the vitality of the state. Failure to confront the challenges of infrastructure will result in a lower quality of life, limit Arizona’s opportunity to become a leading economic center and eventually stifle economic and population growth.
Opportunities for alignment: It will take public and private sectors working together to address costly infrastructure challenges. As part of that cooperation, collaboration is required of local, state and federal governments, businesses, and non-profit institutions, among other entities. It would likely take a coalition of business leaders or a top state leader to lead any initiative to address infrastructure needs if the state is to maintain a high quality of life and enjoy prosperity.

Background: Arizona’s population is projected to grow from 6.4 million in 2008 to 10 million in 2028. Meeting the infrastructure needs – education, energy, health care, public safety, telecommunications, transportation and water – of that population will require commitment and creativity on the part of business and political leaders, and an investment of billions of dollars.

Arizona’s public sector infrastructure, particularly transportation, has not kept pace with the state’s growth. The water infrastructure is aging. Capital outlays for K-12 and higher education will be significant over the next 25 years.

The quality of a community’s infrastructure directly impacts its quality of life and economic productivity. High-quality infrastructure is vital if Arizona is to be economically competitive with other parts of the U.S. and around the world. Arizona has the opportunity to strengthen its position as a regional economic center and to promote economic growth and prosperity by planning for tomorrow and improving its infrastructure.

But the state must be willing to renovate existing infrastructure and to build new infrastructure. Infrastructure expenses account for about 25 percent of the state’s gross domestic product. That may need to rise to around 30 percent a year over the next 25 years to meet demands. Failure to confront these challenges will result in a lower quality of life, limit the state’s opportunity to become a leading economic center and eventually stifle growth itself.

Infrastructure development
A cutting-edge economy requires leading-edge infrastructure, especially in education and telecommunications. State and local governments increasingly are responsible for infrastructure as federal expenditures have declined. Infrastructure services typically are not the responsibility of only the public or private sectors. Overall, the public sector accounts for about 55 percent of capital spending for infrastructure.

In Arizona, capital outlays and operations spending have fallen significantly relative to the state’s size and national average over the past 15 years. Between 1992 and 2006, for example, capital outlay for highways fell on a per capita basis, compared to a moderately large increase nationally. Arizona highway capital spending ranked 34th in the nation on a per capita basis. Among the 10 fastest-growing states (Florida, Georgia, Idaho, Nevada, North Carolina, Oregon, Texas, Utah and Washington), Arizona ranked eighth.
Between 1992 and 2006, capital outlays for elementary and secondary education fell in Arizona on a per capita basis. The state ranked seventh among the 10 fastest-growing states in this area. Capital outlays for higher education rose between 1992 and 2006, by a little less than the average U.S. per capita, ranking 26th nationally and fifth among the 10 fastest-growing states.

Until recently, much of the infrastructure in Arizona was relatively new, reflecting the state’s youth. Thus the need for physical facilities was offset by the limited need to maintain, repair and replace older facilities. Now that facilities are aging, the state continues to grow, creating new needs. Among the places where growth is expected to shift from the traditional Phoenix/Tucson metropolitan areas is Pinal County, which will require extensive infrastructure over the next 25 years if planned development occurs.

**Key areas of growth**

*Public schools:* K-12 and higher education are expected to undergo substantial expansion over the next 25 years as Arizona’s population adds another 4 million people. The acquisition of knowledge and skills is a key factor in achieving economic prosperity in a knowledge-based economy. With the K-12 student population expected to grow a bit more quickly than the rate of overall population growth, capital costs are projected to be $85 billion over the next 25 years. University enrollment is projected to grow one percentage point faster than the rate of population, requiring nearly $37 billion in capital outlays.

*Transportation:* The growth in population and businesses will put a heavy strain on Arizona’s system of roads and highways, mass transit, railways and airports. Without significant investment, declines will be seen in the state’s quality of life, economic efficiency and population and business growth rates. It’s projected that the transportation sector will require capital outlays of $253 billion to $311 billion over the next 25 years. The state and local government share of the cost is projected at between $122 billion and $155 billion, most of this expense in the roads and highways sector. Over the next 25 years, the projected costs per sector are:
  - Roads and highways - $198.8 billion to $257 billion.
  - Mass transit - $35.8 billion
  - Rail - $5.9 billion
  - Aviation - $12.1 billion

*Water:* Arizona’s water infrastructure includes systems for water supply (dams, reservoirs, canals, and wells), drinking water treatment and distribution (water treatment plants and pipelines) and wastewater treatment and sewer lines. Providing water and wastewater services to new and current residents will require an estimated $44.9 billion in capital outlays ($30.7 billion for water, and $14.2 billion for wastewater) over the next 25 years. Augmentation costs statewide are not expected to be a large percentage of total costs since the existing water supply in
Maricopa, Pinal and Pima counties (where 82 percent of residents are expected to live in 2032) is expected to be adequate for 25 years. However, in Cochise, Coconino, Gila and Yavapai counties, because of their impending supply needs, the funding gap is expected to be large relative to the number of residents.

**Energy:** Investments in electricity, including generation, transmission, and distribution, and natural gas, petroleum, and other fuels, including refineries, transmission, distribution, storage and pipelines, will be necessary over the next 25 years to keep pace with Arizona’s population. The costs will largely be borne by the private sector, which will have to recover costs from customers. The total capital investment in electricity infrastructure is projected to be between $65 billion and $177 billion depending on the mix of generation technologies (coal, natural gas and nuclear, with solar accounting for 15 percent of the total). Some $9 billion in capital costs is projected in the natural gas, petroleum and other fuels component.

**Health care:** Health care is one of the fastest-growing segments of the U.S. economy, driven largely by an aging population and higher incomes. In Arizona, health care includes private and public sector hospitals. Health care is primarily provided by the private sector in Arizona, which has relatively few public hospitals. Private sector hospitals in Arizona are expected to spend between $42.3 billion and $55.9 billion on infrastructure over the next 25 years. Capital costs of public hospitals are projected to range from $6 billion to $7.8 billion over that period.

**Telecommunications:** A high-quality telecommunications infrastructure is vital to the Arizona economy, serving businesses and residents. The private sector is the predominant provider of telecommunications services. Demand is expected to grow due to population and business growth, and a rising share of the public using high-speed services.

Access to broadband connections is widespread in Arizona, though about 200,000 Arizonans (3 percent of the population) lack access to “middle-mile” broadband connectivity. Providing universal access may require the public sector covering much of the cost.

Projected telecommunication costs in Arizona for the next 25 years range from $700 million to $1.6 billion for “middle mile” connectivity, and $9.1 billion for fiber-to-the-home networks for faster service.