TRANSPORTATION AND POPULATION GROWTH IN THE PHOENIX METROPOLITAN AREA: 1940 TO 1987

By

Steven Bass

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of History/Urban Studies

1987

ABSTRACT

TRANSPORTATION AND POPULATION GROWTH IN THE PHOENIX METROPOLITAN AREA: 1940 TO 1987

By

Steven Bass

As the population and physical size of the Phoenix metropolitan area has expanded, transportation planners have struggled to meet the demands of growth. For many years, traffic congestion has been the number one concern of Phoenix residents. More recently, air quality, an issue closely tied to transportation, has become a prime concern. Both of these issues threaten to disrupt the quality of life in the region.

This study analyzes the relationship between transportation and population growth between the years 1940 and 1987. Relying primarily on government documents, newspapers, and periodicals, it describes the reasons behind rapid growth in the Phoenix area, the history of transportation planning and problems, the debate over freeways, and the choices which transportation planners face in determining the future urban form of the Valley of the Sun.

ACKNOWLEDGMENTS

I wish to thank the members of my thesis committee, Dr. Richard Thomas, Dr. William Hixson, and Dr. Robert Wittick for their guidance and advice. Special thanks go to Richard for showing me that history can be both enjoyable and relevant. I also owe thanks to the office staff in the Department of History at Michigan State University for always being available to answer questions. I am grateful as well for the interest Dr. Bonnie Morrison, of Urban Affairs, showed in my work.

To Dr. Bradford Luckingham at Arizona State University, I owe thanks for suggesting the topic in the first place. To planners at the Maricopa Association of Governments and the Arizona Department of Transportation, I wish to express gratitude for answering so many questions and for allowing me to review their historical files.

Most of all, I would like to thank my parents for instilling in me the importance of education, and Kathy for making it all seem worthwhile.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

As one of the fastest growing areas in the United States since World War II, Phoenix has been continually challenged to provide an adequate transportation system for its residents. This study analyzes how the transportation system has grown to keep up with population gain and physical expansion in the region. It analyzes the area from a historical perspective, yet studies current problems associated with growth and makes recommendations for the future. The study is visionary in its outlook, but seeks to make practical recommendations which will allow physical expansion of the urban area to continue, while at the same time limiting the negative aspects of such growth.

Chapter one presents a historical overview of the Phoenix Urban Area since 1940. The reasons for rapid growth, including substantial Federal investment during the war, the development of a diversified economy, a pro-business attitude in City government, a favorable climate, and advances in the techniques of refrigeration are discussed. Phoenix became an economic, political, and transportation capital of the Southwest during the 1950's. Yet at the same time, questions regarding the quality of life in the "Valley of the Sun" began to be asked. Residents strove to achieve a balance between the "growth at any cost" mentality, and the quality of life which many had migrated

west to enjoy. Transportation is one of many areas in which this balance was sought.

Chapter two presents a history of transportation planning in Phoenix. Early improvements in city streets were completed under New Deal work programs. A downtown parking shortage and a decline in public transit ridership due to the large increase in motor vehicles following the war, led to further decentralization of the metropolitan area. It was the automobile, and City plans catering to this mode of transportation, which more than any other factors contributed to the low-density urban sprawl characteristic of Phoenix today.

Although freeway plans were developed as early as 1944, and outlined in a comprehensive report by Wilbur Smith and Associates in 1960, little was done to implement these plans. Instead, a high quality mile-square grid system of arterial streets was constructed. During the 1960's and seventies many of these streets fell into disrepair due to inadequate transportation funding from the State. Population and vehicle-miles travelled were expanding so quickly during these decades that planners had difficulty keeping up with growth.

In 1967 the Maricopa Association of Governments (MAG) was formed to solve problems of common interest to incorporated municipalities within the county. MAG has released numerous visionary transportation planning studies since its inception, but few have been implemented because the

organization lacks the legislative power to do so. Still, recent improvements to the area's roads have been impressive considering the tremendous growth taking place. Only in the fields of freeway and public transit design have planners failed to develop innovative techniques to keep pace with growth.

Chapter three looks at current transportation problems in the Phoenix metropolitan area. These problems include traffic congestion, air pollution, and inadequate public transit. All three have been at the top of residents' concerns for a number of years. Traffic congestion and air pollution threaten not only to disrupt the quality of life in the Valley, but to destroy the economy of the region as well. Both problems are approaching the stage at which they threaten to limit further growth in the Phoenix area. At the same time, inadequate public transportation prevents many residents from enjoying the lifestyle they desire due to a lack of mobility. Those without a private automobile in Phoenix are dependent on a bus system which is lacking in many respects. Recommendations to alleviate these negative symptoms of growth include an improved and expanded public transit system, greater efforts towards ridesharing programs, and the passage of a trip reduction ordinance for major employers. The political leadership of Phoenix must recognize public transit as a valuable public service, rather than viewing the Phoenix Transit bus system as a business enterprise.

Chapter four discusses the reasons behind the critical lack of freeways in Phoenix today. The history of the Papago "Inner Loop" Interstate 10 connection is analyzed with respect to changing attitudes of City residents regarding the project. The Papago Freeway, on the drawing board for the past forty-three years, but only now approaching completion, is symbolic of the uneasy relationship residents have had with freeway projects.

Current efforts to construct a comprehensive urban freeway system, modeled after that outlined by Wilbur Smith in 1960, are also analyzed. Controversies over proposed freeway alignments have caused some Valley residents to question where the limits to growth should be drawn. However a consensus seems to exist that any social disruptions caused by new freeway projects are warranted so that further growth can continue across the urban area.

Chapter five looks at the future direction of the Phoenix metropolitan area. A debate has been going on since the early seventies as to whether to pass legislation encouraging downtown development, or to allow low-density urban sprawl to continue. The physical expansion of Phoenix area boundaries is discussed, and compared to Los Angeles during the 1950's. Many Valley residents fear that they are living in "the next L.A." However, city planners have the capability of determining the future form of the urban area through the development and encouragement of particular modes of transportation.

Lastly, the Phoenix Urban Village Concept Plan 2000 is analyzed as a future urban form in the Valley. This plan is currently being implemented by the City of Phoenix and has been favorably received by other area municipalities. It is a concept which allows low-density urban sprawl to continue, but directs growth by zoning certain core areas for high-density development. Planners in Phoenix hope that the urban village concept will alleviate some of the transportation problems plaguing the metropolitan area, while at the same time allowing growth to continue in a productive manner.

CHAPTER I - GROWTH OF AN URBAN AREA

The Phoenix metropolitan area, located in the Salt River Valley of central Arizona, has experienced enormous growth over the past four and a half decades. It has blossomed from a small, primarily agricultural region, to one of the largest urban centers in the United States. The population of Maricopa County, which contains the City of Phoenix and its suburbs, is ten times as large today as it was in 1940. For the City of Phoenix itself that figure is even higher. Residents of the Valley of the Sun have developed a strong, diversified economy and a comfortable style of living in this desert oasis. While growth has brought prosperity, it has not occurred without problems. From its early days to the present, transportation has been in the forefront of these concerns.

The Phoenix area has grown for a number of reasons. In the years leading up to World War II, the Federal Government had the greatest effect on the region. Washington D.C. was the largest employer, with New Deal programs improving local streets, schools, hospitals, utilities, public buildings, and recreational facilities. This relationship with the federal government continued through the war period and was

actively pursued by local leaders. When military installations were decentralized to inland locations because they were potential bombing targets, three army camps and six air bases were located in the Valley. Two of these, Luke Air Force Base near Litchfield Park, and Williams Field near Chandler, are still in operation. Clear weather makes the area ideal for flight training.

Defense plant operators, seeking government contracts and responding to the call for decentralization of military production facilities, soon arrived in the area as well. These firms saw the potential for million dollar contracts from sources such as the Army electronics proving ground at Fort Huachuca near Sierra Vista, Arizona. The Aluminum Corporation of America, Goodyear Aircraft, and AiResearch, a division of the Garrett Corporation, all opened new operations in the Phoenix area. Motorola followed in 1948, with General Electric, Sperry Rand, and others establishing plants during the 1950's. Like other electronics manufacturers, a substantial portion of Motorola's production was for the military market. With these federal contracts, manufacturing became the City's number one source of income by 1955.[1]

The Federal spending policies which had stimulated economic growth in the Valley during World War II brought

---

[1]Bradford Luckingham, "Urban Development in Arizona: The Rise of Phoenix," Journal of Arizona History, 22, No. 2 (Summer 1981), pp. 216-219.

continued prosperity during the Cold War era. Defense related industries attracted further electronic and aerospace firms to the region, providing an abundance of non-polluting, white-collar manufacturing jobs. Land costs were relatively low, allowing electronics firms to build vast, single story production plants. Because these facilities required little water and they produced high-value, low-weight products, shipping costs from the desert center were not a problem.[2]

Bradford Luckingham, a historian of the desert Southwest, has pointed out that civic leaders in Phoenix did all in their power to attract new industry to the region. In doing so, they were able to draw prospective investors away from other urban centers. Boosters showcased the two transcontinental rail lines, the international airport, and the four federal highways which served the Valley. In addition, they promoted the skilled workforce and the potential for a high quality research institution with Arizona State College in Tempe. Employers were shown that the sunny climate brought low rates of worker absenteeism and turnover, and that Arizona offered numerous natural recreational areas to use as selling points in attracting executives to move with the company. Mountains, lakes, forests, and desert preserves surround the Valley so that

---

[2]Bradford Luckingham, "The American Southwest: An Urban View," Western Historical Quarterly, 15, No. 3, (1984), p. 272.

hiking, boating, and skiing are all within close proximity.[3]

More importantly, state and local leaders promoted the favorable business climate which existed. They passed legislation to encourage new smokeless industries to locate in and around Phoenix. Arizona's "right to work" law, passed in 1946, kept unions weak and wages ten to twenty-five percent lower than in many other urban areas. An "open-port" law allowed for tax-free warehouse storage of products being sold outside the state.[4] In 1955 the state sales tax on manufactured products sold to the federal government was repealed, and a tax on machinery and equipment was assessed at only half of book value. A manufacturer's inventory tax was also eliminated, and other inducements, including free land offers, were successful in attracting new jobs to the area.[5]

The economy of the region was not dependent solely on industry. Agriculture remained the area's second most important source of revenue, with alfalfa, cotton, wheat, beans, olives, lettuce, cantaluope, carrots, cauliflower, celery, broccoli, flax, grapefruit, and oranges all being produced and shipped from the Valley. Crop irrigation

---

[3]Plancor, Inc., Research Division, Economic Impact of the Proposed Interstate Program on the Phoenix, Arizona Area (Phoenix: n.p., June 1957), p. 33.

[4]Michael Konig, "Phoenix in the 1950's: Urban Growth in the 'Sunbelt'," Arizona and the West, 24, No. 1 (1982), p. 29.

[5]"City in the Sun in Quotes," Arizona Highways, 33, No. 4, (1957), p. 38.

and the lack of winter freezes made the region ideal for year-round growing. These factors combined to make Maricopa County the second richest agricultural county in the United States during the 1950's.[6] Cattle feeding, although already beginning to decline, also played a significant role in the economy of the area.

Trucking facilities grew to meet the needs of producers, who shipped large quantities of produce out of Phoenix. Cities developed the necessary roads to serve local growers, as well as to provide for those passing through. Federal routes 60, 70, 80, and 89 crossed the Valley of the Sun. Being located midway between Los Angeles and El Paso, many travellers chose Phoenix as a stopover point. For the same reason, the City became a hub of the trucking industry in the Southwest.[7]

A third major factor contributing to the Valley's growing economy in the postwar period was tourism. With the ban on travel to Europe during the war, Phoenix became an increasingly attractive vacation alternative. The Chamber of Commerce promised that the sun shone eighty-five percent of the time, and the U.S. Weather Bureau proclaimed Phoenix to be the "driest, sunniest, clearest resort area in the United States." As early as 1929 the Arizona Biltmore in

---

[6]"Portrait of Our Valley," Arizona Highways, 28, No. 8, Aug. 1952, p. 37.

[7]Carol Osman Brown, "Maricopa County's Century of Growth," Arizona Highways, 47, No. 2, Feb. 1971, p. 13.

Phoenix and the Wigwam Resort in Litchfield Park provided first-class lodging for Valley visitors. Camelback Inn, opened in Scottsdale in 1936, was the first of many fine resorts in that city to cater to tourists. Less expensive lodging existed along East Van Buren Street, where one of the nicest motel sections in the country developed. This motor court strip was popular not only with tourists, but also with those passing through Phoenix on western vacations or en route to new homes in Southern California. Tourism was one of the only outside sources of income for the area prior to the arrival of industry. During the winter of 1943, Phoenix entertained 125,000 visitors, nearly one for every full-time resident.[8]

Many who visited the Valley on business or vacation chose to move permanently to the area. Thousands of others came as part-year residents, spending the winter months in the sun before heading back north for the remainder of the year. Due to its low humidity, Phoenix was recommended by physicians as a health resort for those suffering from respiratory or arthritic conditions. After the war, these natural amenities convinced many servicemen and their families to remain in the area or to return after completing

---

[8]Al M. Zellmer, "Welcome Stranger!," Arizona Highways, 19, No. 8, Aug. 1943, p. 20.

their military duties.[9]

Advances in the techniques of residential building and cooling made the hot summers bearable for those who chose to relocate to the Valley of the Sun. Coolers progressed from crude evaporative units to efficient central air-conditioners. Refrigeration had such an enormous impact on growth that some have contended that without it the population of Maricopa County would be only slightly higher than it was at the end of World War II.[10] Cooling not only stimulated the tourist trade, but increased the productivity of employees as well. Phoenix became the "Air-Conditioned Capital of the World", with over ninety percent of homes having some type of cooling unit by 1951. The economy of the region also benefitted, as most of these units were locally manufactured.[11]

Phoenix was seen as a city of opportunity, where residents had the chance to make their own fortunes. Municipal politics were dominated by the Charter Government Committee (CGC), a group of reformers who favored growth and followed a conservative economic and political philosophy. The majority of newcomers to the region enthusiastically supported this leadership. As a whole, those who located in

---

[9]John D. Herbert, "Phoenix: Economic Capital of the Great Southwest Sun Country," Arizona Highways, 40, No. 3, March 1964, pp. 28-32.

[10]Joseph Stocker, "The Big One. Maricopa County Arizona, U.S.A.," Arizona Highways, 47, No. 2, Feb. 1971, p. 4.

[11]Konig, p. 22.

the Valley were educated, career-oriented, middle class individuals with families. The vast majority of both natives and migrants were, and still are, "Anglos." Under the leadership of the CGC, manufacturing employment tripled by 1960 in the metropolitan area. Annual income from this growing portion of the economy rose from less than five million dollars in 1940 to over four hundred and thirty-five million dollars in 1963. This income was to nearly double again between 1965 and 1969.[12]

As a result of economic diversification, abundant sunshine, and advances in refrigeration technology, newcomers flocked to the Phoenix area in the period following World War II.[13] The population of Maricopa County jumped from 186,193 to 331,770 in the decade between 1940 and 1950.(See Table 1) The City of Phoenix added over forty thousand residents during these years, and other Valley cities more than doubled their populations. Even greater growth occurred during the 1950's. During this decade the population of Maricopa County grew by one hundred percent. Area cities exploded, with Scottsdale multiplying nearly five times, Tempe tripling its residents, and Mesa more than doubling its population.

---

[12]Bradford Luckingham, "Phoenix: The Desert Metropolis," in Sunbelt Cities: Growth and Politics Since World War II, ed. Richard M. Bernard and Bradley R. Rice (Austin: Univ. of Texas Press, 1983), p. 311.

[13]"Phoenix: Growth City of the 1970s," Arizona Business, 25, No. 1 (1978), pp. 21-22.

Table 1
Population Growth in the Phoenix Area

City	1940	1950	1960	1970	1980
Avondale	--	2,505	6,151	6,626	8,134
Chandler	1,239	3,799	9,531	14,130	29,673
El Mirage	--	--	1,723	3,258	4,307
Gilbert	--	1,114	1,833	1,971	5,717
Glendale	4,855	8,179	15,696	36,228	96,988
Goodyear	--	1,254	1,654	2,140	2,747
Guadalupe	--	--	--	--	4,506
Mesa	7,224	16,790	33,772	62,853	152,453
Paradise Valley	--	--	--	7,155	10,832
Peoria	--	--	2,593	4,792	12,251
Phoenix	65,414	106,818	439,170	584,303	789,704
Scottsdale	--	2,032	10,026	67,823	88,364
Surprise	--	--	--	2,427	3,723
Tempe	2,906	7,684	24,897	63,550	106,743
Tolleson	1,731	3,042	3,886	3,881	4,433
Youngtown	--	--	--	1,886	2,254
Total Maricopa County	186,193	331,770	663,510	971,228	1,509,262

Sources: Maricopa Association of Governments, MAG Regional Development and Transportation Reevaluation Study, January 1977; U.S. Department of Commerce, Bureau of the Census, 1940-1980; Valley National Bank of Arizona, Arizona Statistical Review, various editions.

The City of Phoenix initiated an aggressive annexation policy during the decade of the fifties to more than quadruple its own population. This technique, not new to local politicians, was successful in placing Phoenix as the twenty-ninth largest city in America in 1960, up from ninety-eighth a decade earlier. The physical size of Phoenix grew from seventeen square miles to nearly one hundred and ninety square miles. This expansion enabled local government to greatly broaden its tax base without raising tax rates. Annexation of land on the fringes of the City was sometimes opposed by other Valley municipalities, but Phoenix usually managed to prevail. In fighting for an expanded area, officials hoped to prevent the City's satellite neighbors from closing in and strangling what they saw as the focal point of the Valley.

The boom decade of the 1950's saw industrial, commercial, and residential developments spread across the metropolitan area. Multi-story "skyscrapers" were built along Central Avenue, while tract housing communities such as Maryvale and Arcadia developed to the northeast and northwest of downtown. Planned retirement areas also were developed in Sun City and Youngtown. These communities offered an "active lifestyle" to those who sought, and could afford, the "good life" during their retirement years. Federal mortgage guarantees, combined with the constant influx of migrants, helped to nearly double the number of housing units in the Valley during the 1950's. The first

regional shopping centers were also built in the Valley during this decade. Uptown Plaza, opened in 1955, attracted shoppers from all over the Phoenix area. Park Central Mall and Tower Plaza followed within a couple of years, beginning a rush to develop regional shopping complexes throughout the region.

In response to this urban expansion, Phoenix concentrated its efforts on ensuring that the quality of life remained high. Far from its reputation as a "cultural wasteland", the area possessed a number of centers for the performing arts. The Phoenix Little Theatre, the Phoenix Symphony Orchestra, and the Phoenix Musical Theatre scheduled performances for Valley audiences. In addition, residents benefitted from a civic opera company, an art museum, and a Desert Botanical Garden. Turf Paradise and Greyhound Park provided sporting entertainment, with horse and dog racing respectively. During the springtime, three major league baseball teams practiced in the Valley of the Sun.

Despite these amenities, urban problems began to surface as growth outpaced city services. Road and utility construction barely kept up with expanding borders. Smog, traffic, and crime, three factors which encouraged so many people to head west in the first place, began to disrupt people's pursuit of "the good life." As tract housing projects formed new communities on the fringes of the metropolitan area, and as regional shopping centers followed

residents to these new locations, the downtown area began to deteriorate. Newsweek proclaimed that, "The City has all the problems of a full-fledged metropolis, including downtown parking problems and traffic jams and a smog threat serious enough to cause the formation of an anti-smog committee."[14] The automobile, the mechanism which had played perhaps the largest role in the growth of the Valley, suddenly represented a threat. Residents found it increasingly difficult to park conveniently, to breathe comfortably, or even to drive. New Frontiers, a magazine published by the Gannett Corporation, proclaimed that "you'll see so many cars out and about on any moon-soaked, star-soaked, orange-blossom-fragrant evening that you'll think we're about to catch up with (perish forbid) Los Angeles!"[15]

Many residents worried about the lack of a community spirit in Phoenix. They complained, quite accurately, that "everybody was from somewhere else." With people possessing few social ties to the City, welfare and charitable organizations suffered from a lack of contributions. Phoenix seemed to be a city for those who were Anglo and belonged to the middle or upper classes. Parts of town, particularly areas south of the Salt River, resembled the slums which people had worked so hard to avoid "back east." This lack of a civic cohesion allowed the "growth at any cost"

---

[14]"City in the Sun in Quotes," p. 9.

[15]Ibid., p. 9.

philosophy to prevail.

Zoning ordinances were practically non-existent in many parts of the Valley, causing ugly commercial strips to be placed adjacent to residential developments. The Scottsdale and Paradise Valley areas were notable exceptions. Both possessed strict zoning requirements. In other parts of the urban area, poor zoning resulted in serious negative effects. It disrupted the flow of traffic, leading to further travel congestion. Inadequate zoning also allowed prime agricultural and recreational land to be converted to urban uses. To many residents, it seemed as though the emphasis was on profit, rather than on quality of life.[16]

While concerns about the effects of growth were often voiced by those negatively affected, the philosophy of continued expansion was never seriously questioned. Public facilities and services were regularly improved in an attempt to keep up with population gain. A series of dams constructed by the Salt River Project, beginning with Roosevelt Dam in 1911, provided the necessary water and electricity for the urban area. Additional flood control and hydroelectric projects were constructed with the help of federal dollars in the following decades. Horse Mesa Dam, completed in 1927, Mormon Flat Dam in 1928, Stewart Mountain Dam in 1930, Bartlett Dam in 1939, and Horseshoe Dam in 1946 all contributed to fulfilling the needs of a growing

---

[16]Desmond Muirhead, "The Arizona Landscape -- A Critique," Arizona Architect, 2, No. 10 (1959), p. 13.

metropolitan area.[17] During the seventies, the Palo Verde Nuclear Generating Station, located forty miles west of Phoenix, was built to provide electricity for the region. Construction of the Central Arizona Project Canal was also initiated during this decade to pump Colorado River water into the Valley. Sky Harbor International Airport was steadily expanded to meet the needs of a blossoming urban area. New city, county, state, and federal buildings marked Phoenix's position as a governmental capital. The Maricopa Community College District was created in 1961 to offer a wide variety of higher education courses to residents. Arizona State University jumped from an enrollment of less than twelve thousand students following the war to over forty thousand in the 1980's. The institution began to enter into partnership roles with electronics and aerospace manufacturers in the Valley, and to fulfill the research role which business leaders during the 1950's had foreseen. The university also served as a focal point for entertainment, with facilities for concerts, athletic events, and artistic performances. The Valley of the Sun offers a diverse selection of entertainment facilities today, including Veteran's Memorial Coliseum, opened in 1965, the Sundome, the Celebrity Theatre, Mesa Amphitheatre, the Scottsdale Center for the Arts, and Symphony Hall.

---

[17]S. Lowe, "Just for the taste of water," Arizona Highways, 54, No. 8, Aug. 1978, pp. 31-41.

Expansion and diversification also sum up the Phoenix area economy in the period since 1960. Manufacturing has remained the fastest growing sector of the economy, contributing more than five times the income of the second leading source by 1970. Electronics firms have made up a large portion of this growth, with Motorola leading the way as the largest employer. Civic leaders boasted during the 1970's and eighties that the Valley ranked third in the nation behind the Boston and San Francisco Bay areas as a high technology center.[18] In addition to its role as a transportation and political capital, the Phoenix area grew into a financial capital of the Southwest. As evidence of this, Valley National Bank of Arizona constructed a forty story office complex in downtown Phoenix in 1972.[19]

The service sector of the economy followed a nationwide trend in creating a large number of new jobs as well. Many of these jobs relate to the tourism industry, which received a boost in 1967 when the Valley of the Sun Convention Bureau was established to attract convention business to the area. Two years later the City of Phoenix opened the Phoenix Civic Plaza, an entertainment and convention facility equipped to handle ten thousand visitors.[20] As a

---

[18]"Phoenix: The Desert Metropolis," p. 313.

[19]Telephone interview, Valley National Bank, 17 April 1987.

[20]Carol Osman Brown, "Phoenix 1975 -- a city of BUILDERS," Arizona Highways, 51, No. 5, May 1975, p. 5.

result of these inducements, tourism replaced agriculture as the second largest source of income for the Valley. Agriculture was on the decline, mainly as a result of increasing land values and a scarcity of water. Both industry and residential development use significantly less water than does land in cultivation. Nevertheless, Maricopa County remained the fifth largest agricultural county in the nation in 1980.

The most direct relationship between population growth and the economy has occurred in the construction industry. Development has been continuously taking place in locations previously considered to be outside the Phoenix metropolitan area. Expansion of the urban boundaries has continued virtually unconstrained by natural barriers. Only the White Tank Mountains to the west, the Salt River Pima-Maricopa and the Fort McDowell Indian Reservations to the east, and the South Mountains and Gila River Reservation to the south were expected to limit the extent of growth in the Valley of the Sun. However the metropolitan area in 1987 extends well east of the Salt River Reservation and well south of the South Mountains. Developments are also planned beyond the White Tank Mountains in the far west part of the Valley.[21]

Large planned residential communities have sprung up

---

[21]Arizona Department of Transportation, Transportation Planning Division, Arizona Transportation Energy: a case study for the Phoenix area in the year 2000 (Phoenix, n.p., Sept. 1977), p. 10.

Figure 1

Metropolitan Phoenix

all around the edges of the metropolitan area in recent years. Ahwatukee, Dobson Ranch, McCormick Ranch, Fountain Hills, Sun Lakes, Pinnacle Peak Village, Rio Verde, Villa de Paz, Arrowhead Ranch, Tatum Ranch, and Mountain Park Ranch are just a few examples of these developments. The building industry has benefitted from all of this growth. Residents in the Valley now expect construction jobs to play a large role in the economy of the region. Phoenix expects growth, both in the form of residential developments on the periphery of the urban area, and of shopping centers, community services, and manufacturers moving out to serve them. This trend has prompted Neal Peirce, syndicated columnist on urban issues, to label the Valley of the Sun, "Headquarters West of the American free-enterprise ethic."[22]

The City of Phoenix ranked as the ninth largest city in the country in 1980. The Phoenix Standard Metropolitan Statistical Area, which includes all of Maricopa County, ranked as the twenty-sixth largest consumer market. Phoenix's urban area now extends from the City of Buckeye on the west to Apache Junction, which is located in Pinal County, on the east. The northern boundary lies in Cave Creek and Carefree, with the southern extremity stopping just short of Pinal County in Chandler. The distances covered by these borders are approximately sixty-five miles east to west, and fifty miles north to south. The low-

---

[22]Neal Peirce, "The Peirce Report," Arizona Republic, 8 Feb. 1987, Special section, p. 3, col. 2.

density urban sprawl which has characterized this growth is expected to continue at a similar pace for the foreseeable future. This growth will continue to place increasing demands on governmental services, with one of the most critical being adequate transportation facilities for the movement of area residents, goods, and services.

CHAPTER II - TRANSPORTATION PLANNING

The rapid growth which the Phoenix urban area has experienced has brought with it enormous challenges in the way of transportation planning. Because the pace of daily life since World War II has been based on the motor vehicle, adequate roads are necessary for commuting to work and school, shopping, and recreational trips. Streets and highways today provide for the movement of over ninety-nine percent of the person trips in the Phoenix area. They also provide the means for the delivery of goods and services.[1] In Maricopa County these include not only emergency and routine city services, but the shipment of agricultural produce and the accommodation of large numbers of tourists as well. Perhaps as a secondary function, streets serve to define neighborhoods and to determine the shape of the metropolitan area. Planners have sought over the years to maintain a safe and effective network of roads to adequately serve the region's growing needs.

---

[1]City of Phoenix, Engineering Department, Street Improvements Capital Needs Study, 1975-85 (Phoenix: n.p., Jan. 1975), p. 2.

EARLY IMPROVEMENTS

In 1940 and the years immediately preceding, Works Project Administration workers graded and oiled many miles of roads in the Phoenix area. In addition, many of these facilities were paved during the late 1930's and early 1940's. U.S. Highway 60, which runs directly through the City, is one example of their work. As traffic increased, there was a need to designate specific truck routes. Madison Avenue, Henshaw Street, Nineteenth Avenue, Seventh and Sixteenth Streets, and Broadway Road became thoroughfares for trucks moving goods into and out of the City. Although not entirely effective in relieving congestion, these routes did assist in maintaining traffic flow in the downtown area.[2]

PARKING PROBLEMS

Meanwhile, a larger problem downtown was a growing parking shortage. Shoppers found it increasingly difficult to find parking near the central business district. Despite being urged by local newspapers to take action, neither the City nor private businessmen responded with any sense of urgency to this problem. City Council did pass a zoning ordinance requiring limited off-street parking in 1947, but

---

[2]"Truck Routes Designated," Arizona Republic, 4 Jan. 1940, Sec. A, p. 5, col. 6.

this step was inadequate to meet the growing need.[3] Rather than constructing parking facilities for shoppers within the central business district, meters were installed and downtown business gradually deteriorated. Customers chose to shop at stores located outside the central city where parking was plentiful. Eventually, retailers followed shoppers to these locations as well. When Uptown Plaza opened outside the downtown area in 1955, and other malls followed suit over the following two decades, the fate of the downtown shopping area was sealed.[4]

DECLINE OF PUBLIC TRANSIT

The Phoenix electric streetcar system suffered a similar fate during the 1940's. Operated by the City since 1925, equipment had deteriorated and maintenance costs had risen so that they became unprofitable to operate. As a result, Phoenix organized a replacement bus line in 1937. Streetcar service was cut back through the next decade, being maintained primarily as a conservation measure during the war, when shortages of petroleum and rubber kept new buses from entering service. Public transit was operated

---

[3]"Parking District Legislation Urged," Arizona Republic, 2 Jan. 1947, Sec. A, p. 1, col. 3; Charles E. Haley, "Phoenix Plans For Future Growth By Anticipating Traffic Needs," Western City, Feb. 1954, p. 34.

[4]G. Wesley Johnson Jr., Phoenix: Valley of the Sun (Tulsa: Continental Heritage Press, Inc., 1982), p. 130.

over expanded hours during this period to carry defense plant workers to their shifts.[5] In 1947 fire destroyed the streetcar barns and much of the remaining equipment, forcing the City to cease operations four months later. The last streetcars to operate in Phoenix ran along Washington Street between 16th Street and the State Capitol. Bus service took over abandoned routes, but it too suffered from escalating costs and a decrease in ridership for the following two decades.[6]

As public transit declined, automobile traffic on area streets greatly increased. The issue of traffic congestion was addressed in the "Street Arterial Plan for Phoenix, Arizona", authored jointly by the City of Phoenix, Maricopa County, the Arizona Highway Department, and the Bureau of Public Roads in 1950. This plan identified Phoenix as rapidly developing a serious traffic problem. It called for the expansion and improvement of the existing grid street system to serve not only the City, but also its suburban neighbors. Over the next several years an extensive road improvement program was initiated. Many miles of streets were either graded and resurfaced or paved for the first time. In addition, left turn lanes were added to many Valley intersections. Roads were widened and eighteen miles

---

[5]"Owl Bus, Trolley Schedules Given," Arizona Republic, 5 Jan. 1943, Sec. 1, p. 5, col. 6.

[6]"Phoenix Street Railway 1887-1948," Western Railroader, 24, No. 2, Issue 254 (Feb. 1961), pp. 19-20.

of one-way streets were created, allowing for significantly higher volumes of traffic. Two of these one-way streets, Washington and Jefferson, continue to serve as major thoroughfares in the downtown area today.[7]

SAFETY

To improve the safety of the City's streets, over thirty-six miles of roadways had lighting installed over a four year period beginning in 1951. In addition, the number of pedestrian "walk-wait" signals was doubled.[8] Because the automobile accident and death rates in Phoenix were among the highest in the nation, the Arizona Republic began a "Crusade for Safety" in 1953. They ran a daily column comparing the number of fatalities to date that year with those of the previous year, and encouraged motorists to take care on the roads. The campaign was a success, cutting the number of lives lost on City streets from twenty-one in 1952 to eleven a year later. Phoenix was recognized for this achievement, receiving the first

---

[7]Arthur G. Horton, An Economic, Political and Social Survey of Phoenix and the Valley of the Sun, (Tempe: n.p., 1941), pp. 272-273.

[8]Phoenix City Council, 75th Anniversary: City of Phoenix, Arizona, (Phoenix: n.p., Dec. 1956), n. pag.; Phoenix City Council, Your City in Action: Two Years of Progress, (Phoenix: n.p., June 30, 1954), p. 12.

place award in the National Traffic Safety Contest.[9]

EARLY FREEWAY PLANS

The "1950 Street Arterial Plan" also cited the need for a freeway system in the Phoenix area. Passage of the Interstate Highway Act in 1956 stimulated work on the Phoenix Freeway, a limited access roadway which later was designated Interstate 10 and 17. The highway was pushed by the Phoenix City Council, the Chamber of Commerce, and local automobile associations, but met with strong opposition from the Arizona Motor Hotel Association, which feared a loss of revenue if motorists were diverted from current routes past their business establishments. The Phoenix-Tucson Highway, also a part of Interstate 10, was opposed by the Chandler and Coolidge Chambers of Commerce for the same reason.[10] Nevertheless these routes were constructed during the decades of the 1950's and 1960's. While proprietors along "motel row" on east Van Buren Street saw a decline in business, the metropolitan area as a whole benefitted from increased tourist revenues due to superior transportation

---

[9]"Phoenix Traffic Accident Toll Cut Half in '53," Arizona Republic, 1 Jan. 1954, Sec. A, p. 1, col. 1; Your City in Action: Two Years of Progress, p. 13.

[10]Arizona Highway Department, "Phoenix - Tucson Express Highway Opposed," Highway Spotlight (Phoenix: n.p., 7 June 1955), Vol. 1, No. 11 and 26 May 1959, Vol. 5, No. 21.

facilities.[11]

WILBUR SMITH PLAN

In 1960 Wilbur Smith and Associates of San Francisco issued a report entitled "A Major Street and Highway Plan for the Phoenix Urban Area and Maricopa County".[12] This plan, sponsored jointly by the Arizona State Highway Commission, the Phoenix City Council, the Maricopa County Board of Supervisors, and the U.S. Bureau of Public Roads, projected future trip generation for the year 1980. It prepared a model urban freeway system along with an enhanced arterial grid system to meet projected twenty year needs. Interstate projects under construction were a part of this master plan. The Smith Report, calling for over one hundred and forty miles of freeways to be built within a ten year period, was endorsed by the Cities of Phoenix, Glendale, Avondale, Mesa, Buckeye, and Tempe.

While the Wilbur Smith Plan proved to be remarkably accurate in its twenty year population projection, other forecasts were not as precise. The 1980 Phoenix Urban Area proved to be more dispersed than anticipated, with large population centers lying outside forecasted urban bound-

---

[11]Plancor, Inc., p. 18.

[12]Wilbur Smith and Associates, A Major Street and Highway Plan, Phoenix Urban Area Maricopa County Arizona, (San Francisco: n.p., 1960), p. 67.

aries. The primary areas of growth not foreseen by Smith were located in the northwest and southeast portions of the Valley. Plans for Sun City, an unincorporated retirement community developed by Del Webb in the area of Bell Road and 107th Avenue, were not taken into account when the Smith Report was completed. By 1980 Sun City had grown to over 50,000 residents. The boom in the Southeast Valley areas of Tempe, Chandler, Mesa, and Gilbert was also unanticipated. By 1980 these cities had nearly tripled their combined populations. The Southeast Valley grew partially as a result of construction of the Superstition Freeway, which was opened in stages during the 1970's. Despite these shortcomings, the Smith report has been the blueprint for Valley freeway planning since its release in 1960.

Twenty years after the Wilbur Smith Plan was written, the City of Phoenix authored a study entitled "Then and Now -- Transportation 1960-1980". This report compared projections contained in the Plan with actual figures. County population, projected at 1,440,000 came very close to the actual figure of just under 1.5 million. However traffic volumes and resulting congestion were found to be significantly higher than forecasted by Smith. For example, the actual number of daily miles driven per person was thirty-five percent higher than anticipated. In fact, Smith's projections had nearly been met by the year 1970. Rather than eleven million vehicle-miles of travel per day, the area was experiencing over seventeen million miles.

Only in the area of daily public transit trips, where bus ridership had been on the decline, did the report overestimate.

As a result of this unforeseen traffic, streets became congested and accidents rose thirty-nine percent over the twenty year period. The street network was extensively expanded over these two decades, but a dispersed style of growth kept new developments ahead of road rebuilding programs. More miles of major arterial roads criss-crossed the urban area in 1980 than were called for in the Smith Plan. However, because the system of freeways envisioned by Smith and Associates was not constructed, only eleven percent of daily vehicle-miles travelled were carried by highways.[13] This compared with a projection of fifty percent, a figure which most major cities enjoyed. The low percentage of total miles travelled on limited access roadways as compared to surface streets has been partly responsible for the high vehicle accident and death rates in the Phoenix area. Freeway facilities in 1980 included Interstates 10 and 17, and State Route 360, known as the Superstition Freeway. All other traffic was carried either by major arterial streets, or by smaller surface streets which cut through residential neighborhoods.[14]

---

[13]City of Phoenix, Transportation Report 1983, (Phoenix: n.p., 21 Nov. 1983), n. pag.

[14]City of Phoenix, Advanced Transportation Planning Team, Then and Now: Transportation 1960-1980, (Phoenix: n.p., April 1980), findings.

Only through vast improvements in the grid network during the 1950's and 1960's could the increased traffic loads be handled. A combination of municipal bonds and tax revenues was used to install new computerized traffic signals, restripe streets, and upgrade lighting systems along major roads. In addition, turning lanes were added to busy intersections, bus turnouts were constructed, parking restrictions were enforced, and new traffic signs were purchased. In some areas of the city reversible lanes were installed and grade separations were implemented.[15]

TRANSPORTATION FUNDING

A portion of these improvements was financed through federal programs. However the state gasoline tax was also utilized to pay for a substantial part of new construction costs. When five cents per gallon proved to be inadequate to meet the City's growing transportation needs as projected by the Smith Plan, Phoenix enacted an additional two cents per gallon city gasoline tax in October of 1962. This action was immediately declared unconstitutional, but the State realized the need for additional revenues and added a penny to state taxes. Eighty percent of the new money was distributed to cities and towns, with twenty percent going

---

[15]Arizona Highway Department, "$6.9 Million in Urban Aid," Highway Spotlight (Phoenix: n.p., 1 Sept. 1972), Vol. 18, No. 35, n. pag.

to counties. The state tax was raised to seven cents per gallon in 1965 and to eight cents in 1974.[16] At that time only seventeen percent of these revenues were allocated to cities and towns and only fifteen percent to counties. In 1981 the State Legislature recognized the special needs of urban areas due to tremendous in-migration. It raised gasoline taxes five cents per gallon over a two year period, and redistributed revenues so that thirty percent went to cities and towns, and twenty percent to counties.[17] Since this time a portion of state lottery funds, varying between fourteen and twenty-three million dollars yearly, has also been funneled into an urban transportation fund.[18] The unwillingness of the State to provide adequate funding to urban areas until recently, severely retarded the development of a comprehensive transportation system in the Phoenix metropolitan area.

Before new funding measures were adopted in 1981, revenues were not enough for local governments to keep pace with the expanding population, the continued dispersion of growth throughout the urban area, and the increasing mileage of daily travel. Many city streets fell into disrepair

---

[16]Street Improvements. Capital Improvement Needs Study, 1975-85, pp. 5-6.

[17]Arizona Department of Transportation, Public Information Office, "State Gas Tax Up 1 Cent on September 1," News Release (Phoenix: n.p., 23 Aug. 1974), p. 30.

[18]State Lottery Commission, telephone interview, 19 March 1987.

through the decades of the 1960's and 1970's. The "Six Year Major Street Improvement Program for Phoenix" identified numerous shortcomings within the transportation system as well as difficulties obtaining sufficient funds to improve the situation. Ed Hall, Deputy City Manager in charge of transportation, cited the City as having one hundred and fifty-five miles of major substandard streets in 1973. An earlier study conducted by the City of Phoenix concluded that while major arterial streets were becoming overburdened, desperately needed highways were not being built to relieve them.[19]

REGIONAL PLANNING

In 1965, once again in response to a recommendation of the Wilbur Smith Report, a regional transportation coordinating committee was formed. This organization, known as the Valley Area Traffic and Transportation Study (VATTS) represented the fifteen incorporated cities and towns in the Phoenix area. It sought to develop a safe and efficient transportation system through a comprehensive planning process. Two years later the Maricopa Association of Governments (MAG) was created, with VATTS remaining as a

---

[19]City of Phoenix, The Missing Link (Phoenix, n.p., June 1966), n. pag.

standing committee on transportation.[20] The role of MAG remains to solve problems which are of common interest to the incorporated municipalities within the urban area. The organization is staffed through contracts with other government agencies and is funded by federal, state, and member contributions. Because MAG retains no legislative powers of its own, participating municipalities are able to remain independent while working together to solve common problems.[21] Unfortunately, this lack of enforcement capability has kept the organization from creating the type of transportation system the Valley needs.

The Maricopa Association of Governments has released numerous farsighted planning studies since its inception. For example, they have regularly updated a "Five Year Freeway and Major Street Improvement Program". These reports have offered insightful guidelines for improving the Valley's road system, but have often failed because local governments have not taken the initiative to implement them. Chief examples are the urban freeway network which has been proposed for years but is only now being built, and recommendations to check the air pollution problem, a growing concern of Valley residents. Perhaps a better example comes from the "Long-Range Transportation System

---

[20]Valley Area Traffic and Transportation Study, Phoenix Urban Area of Maricopa County, Arizona, Annual Report (Phoenix: n.p., 1979), p. 1.

[21]"The romance of MAG," Editorial, Scottsdale Daily Progress, 27 April 1967.

Plan for the MAG Region", a report issued by the MAG regional advisory committee in 1977. Among the long-range plans contained in this report was the extensive expansion of the transit system from two hundred buses to one thousand by the year 2000.[22] Today, ten years later, the bus system has been expanded, but not nearly to the extent proposed. Without a united commitment on the part of metropolitan area cities and towns, there appears to be no practical way that this long-range transit plan can be met.

RECENT IMPROVEMENTS

Even with the reluctance of local governments to implement MAG recommendations, the road system throughout the Valley has undergone a number of improvements in recent years. For example, the Hohokam Expressway has been improved to serve as a thoroughfare between the Maricopa Freeway and Washington Street.[23] A new overpass at University Drive and a bridge over the Salt River, scheduled to begin construction shortly, will help to accommodate Sky Harbor Airport traffic. New grade separations along the Grand Avenue corridor have eliminated some six-legged

---

[22]Maricopa Association of Governments, Transportation and Planning Office, Long-Range Transportation System Plan For the MAG Region (Phoenix: n.p., Sept. 1977), p. 5.

[23]Arizona Department of Transportation, Public Information Office, "Hohokam Construction Anticipated This Year", News Release (Phoenix: n.p., 8 Oct. 1976), n. pag.

intersections, and carry traffic over the Santa Fe Railroad line. An example of such an overpass is the one at the intersection of Indian School Road, 35th Avenue, and Grand Avenue.[24] Among the benefits of this new facility are the reduction of highway delays, the elimination of vehicle-train collisions, and the lessening of wear and tear on vehicles crossing the rail line. By increasing the traffic volume on Grand Avenue, the Black Canyon Freeway is relieved of vehicles using it as an alternative route.[25] Such a goal is desirable because the Black Canyon, like most freeways in the Phoenix area, is already operating in excess of designed capacity.

The Black Canyon Freeway has been the focus of several improvements in the past decade to handle increasing traffic loads. Ramp meters have been installed in order to improve traffic flow onto the facility. Glare screens have been placed along median walls in an effort to cut down on driver distraction from oncoming headlights. These screens reduce tie-ups that occur due to gawking at accident scenes by motorists travelling in the opposite direction. The placement of sand barrels to act as collision barriers at selected exit ramps has improved the safety of area highways

---

[24]J.K. Kipp, Consulting Economist, An Alternative Approach to Transportation Planning in the Phoenix Metropolitan Area (n.p.: n.p., June 1976), n. pag.

[25]Arizona Department of Transportation, Transportation Planning division, Phoenix Urban Rail Study (Phoenix: n.p., July 1979), pp. 1-3.

as well.[26]

Phoenix's "1985 Six Year Major Streets Plan" calls for acquiring over one hundred miles of right-of-way, designing sixty-six miles of new roadways, and constructing eighty-one miles of major streets.[27] Unfortunately, construction of a major overpass or of safety improvements on existing routes diverts funds from other projects. New bridges over the Salt River, to replace those washed away by floods in 1979, are one type of such improvement projects. New urban freeway routes are another example. Due to limited revenue, local governments have been forced to balance the need for one type of transportation improvement over another.[28]

Parts of the Valley which are experiencing rapid growth must both expand and improve their transportation systems at the same time. Population dispersion has caused outlying regions to experience many of the same problems which Phoenix has been dealing with for years. As a result, similar traffic engineering techniques are being utilized by suburban planners. Outlying cities are now working with computerized traffic signal systems, additional turn lanes

---

[26]Arizona Department of Transportation, Public Information Office, "Safety Features Reduce I-17 Accidents in Phoenix," News Release (Phoenix: n.p., 9 July 1976), sheets 10-11.

[27]City of Phoenix, General Plan For Phoenix 1985-2000, (Phoenix: n.p., Oct. 1985), p. 14.

[28]Pam Hait, "Transportation: One of the Most Complex Issues Facing the Valley Today," Phoenix Magazine, Aug. 1973, pp. 96-97.

at busy intersections, and parking restrictions along major arteries. The median of the Superstition Freeway has been eliminated in some areas and replaced by a cement wall so that extra lanes could be added to upgrade the capacity of the route. New interchanges have also been added to areas where a growing traffic demand necessitates this action. Warner and Ray Roads, at Interstate 10, are examples of such areas. Population growth in this portion of south Tempe, Chandler, and Ahwatukee has been tremendous in the past five years, making adjustments essential to transportation plans.[29]

Some of the street improvements which have been undertaken have proven to be detrimental to neighborhoods. Interstate 17, like most freeways, acts as a barrier to traffic attempting to cross it in an east-west direction. As a result, bridges placed at mile intervals are congested with vehicles. Additional bridges are being constructed to cross the freeway, and half mile streets are being upgraded to carry this traffic, but only at the expense of disrupting residential neighborhoods. People who moved into homes located away from major streets only a few years ago are now finding large volumes of traffic passing within close proximity. Local schools and parks are also being adversely

---

[29]Arizona Department of Transportation, "New Warner Road structure replaces two-lane overpass," Urban Freeways and Expressways, (Phoenix: n.p., July 1986), n. pag.

affected by these street "improvements."[30]

Transportation planners have been forced to adopt measures such as these in order to maintain an orderly flow of traffic. The mile-square grid system has become clogged, forcing alternate routes to be utilized by a growing number of vehicles. Because few of the planned freeways have materialized, arterial streets have acted as a crutch, carrying a majority of the area's traffic. Streets which compose the grid have been improved, providing a first-class road network for the metropolitan area. Without this efficient system of transportation the Valley of the Sun could not have become one of the fastest growing urban areas in the country since 1940.

Effective transportation planning has allowed Phoenix and its satellite cities to experience substantial population and economic expansion.[31] If planners can be faulted for what appears to be a deterioration of the road system today, it is for failing to develop bold and innovative ideas in the fields of public transit and freeway design. The arterial system of streets in metropolitan Phoenix is first-class. What are lacking are public transit and freeway alternatives to provide a truly comprehensive

---

[30]Phoenix Metropolitan Chamber of Commerce, Strategic Plan for Phoenix - Community Assessment Phase I (Phoenix: n.p., n.d.), p. x-2.

[31]Arizona Department of Transportation, 1978 Biennial Statewide Transportation Needs Report to the Arizona Legislature (Phoenix: n.p., Jan. 1978), p. 10.

transportation system.

CHAPTER III - TRANSPORTATION PROBLEMS

Phoenix Mayor Samuel Mardian challenged planners in 1960 when he identified streets and transportation as the number one problem his city faced. Residents of the metropolitan area surveyed twenty-four years later agreed with his assessment, labelling transportation once again as the most serious threat facing their city. In this 1984 survey, traffic related issues were mentioned more than five times as often as were concerns about rapid growth or crime.[1] As the population of the region has increased, so too have the number of vehicles on area roads. All of these additional vehicles have contributed to a serious air pollution problem. Public transit, often mentioned as a solution to these problems, has been plagued with difficulties of its own.

TRAFFIC

As early as 1950, the "Street Arterial Plan for

---

[1]United Management Systems, Inc., 1984 Transportation Attitudes Survey (n.p.: n.p., May 1984), p. 2.

Phoenix, Arizona" described a "serious traffic problem."[2] City planners are now expressing the fear that unless major travel improvements are provided very quickly, the result could be gridlock on area streets. Such a scenario could threaten the economy of the entire region, for Phoenix acts as a major distribution center in the Southwest. Businesses which operate warehouses in the area, as well as other local employers, would likely relocate were the traffic problem to reach the crisis stage.[3] The tourism industry would also be threatened. Fortunately, this has not as yet occurred.

The number of motor vehicles registered in Maricopa County has risen quickly and steadily since 1940. Table 2 shows that registered vehicles nearly doubled between 1970 and 1985. During these years the total population of the county grew by almost the same amount. Therefore, the percent of individuals who own vehicles remained constant at approximately 1.3 persons per registered motor vehicle. Prior to 1970, the rate of vehicle ownership was expanding much more rapidly than was the population.(Table 3)

---

[2]The Arizona Highway Department, A Street Arterial Plan for Phoenix, Arizona 1950 (Phoenix: n.p., 1950), p. 63.

[3]Rolf Olaf Osland, "The Transport System in the Valley of the Sun," Thesis Arizona State Univ. 1968, n. pag.

Table 2
Registered Vehicles in Maricopa County

Year	Number
1940	58,000
1945	74,160
1950	141,218
1955	223,439
1960	379,418
1965	511,490
1970	726,777
1975	932,003
1980	1,141,572
1985	1,437,129

Sources: The Maricopa County Board of Supervisors, Facts and Figures, Maricopa County, Arizona, various editions; Arizona Republic, January 1, 1941, p. 3.

Table 3
Vehicle Ownership in Maricopa County

Year	Persons Per Vehicle
1940	3.2
1950	2.3
1960	1.7
1970	1.3
1980	1.3
1985	1.3

Sources: The Maricopa County Board of Supervisors, Facts and Figures, Maricopa County, Arizona, various editions; Valley National Bank of Arizona, Arizona Statistical Review, September 1986.

All of these additional vehicles have created a traffic problem which has been regarded by Valley residents as an increasing source of irritation and inefficiency. A June 1952 editorial cartoon in the Arizona Republic showed "the

growing traffic load" being too big for Arizona's urban highway system.[4] A more recent poll conducted by the same newspaper showed that sixty-three percent of Valley residents feel that traffic congestion is worse than anywhere else in the country.[5] While this evaluation may reflect subjective feelings on the part of respondents, it does express the growing concern over traffic-related problems. The Arizona Highway Department, in an early report on the subject, found that traffic volumes increased forty percent in the six years between 1941 and 1947. It identified U.S. routes 60, 70, 80, and 89, which followed Van Buren Street between Phoenix and Tempe as being "extremely objectionable to many motorists" due to heavy traffic congestion and a high accident rate.[6] This report estimated that by 1970, two hundred and fourteen thousand vehicles would be registered in Maricopa County. That figure was reached by 1955. The ownership ratio of 2.8 persons per vehicle which they estimated for 1970 was also reached within only a couple of years after the report was written.

Travel on the Black Canyon Freeway, a route which cuts through Phoenix as it heads north to Flagstaff, is representative of the growing traffic volumes in the Phoenix area. In 1947, when the facility was State Route 69, less

---

[4]"The Growing Traffic Load," Editorial cartoon, Arizona Republic, 1 June 1952, Sec. A, p. 6, col. 5.

[5]"The Peirce Report," p. 16.

[6]A Street Arterial Plan for Phoenix, Arizona, pp. 66-67.

than three thousand vehicles per day passed through the section of roadway between Grand Avenue and Indian School Road. Ten years later, over seventeen thousand vehicles were travelling that stretch daily. By 1967, after the Black Canyon had been upgraded to a controlled access interstate route, traffic had reached over fifty-two thousand vehicles per day. Today the volume on Interstate 17 is nearly triple what it was in 1967.(Table 4)

Table 4
Black Canyon Freeway Traffic

Year	Average Vehicles Per Weekday
1947	2,991
1957	17,100
1967	52,287
1977	90,000
1987(est.)	150,000

Sources: Arizona Highway Department; City of Phoenix, Division of Traffic Engineering.

Highway officials were not prepared for such a rapid increase in traffic. When the Black Canyon Freeway was built in the early 1960's, it was designed to carry a maximum average daily load of sixty-three thousand vehicles per day. That figure was not projected to be reached until 1975. Yet by 1971 it had already been surpassed. Exceeding the maximum service load of a roadway can lead to more rapid deterioration of the road surface, further compounding traffic flow

problems.[7] Increased traffic is a result of population gain, greater vehicle ownership, the decline of public transit, urban sprawl, and the influx of winter visitors to the Phoenix area. Traffic volumes during the winter months are thirty percent higher than during the summer, mainly due to the thousands of tourists and part-year residents who come to visit the Valley. These "snowbirds" are considered by most year-round residents to be a nuisance, but they serve a valuable role in the economy of the region.[8]

Another way in which congestion can be measured is by comparing travel speeds on major arterial streets. The Maricopa Association of Governments conducted a study comparing travel speeds in 1979 with those in 1966. They concluded that speeds increased slightly in central Phoenix and decreased significantly in the surrounding suburban areas during these years. The slight increase in speeds in Phoenix was attributed to the large street building program, the installation of a computerized traffic signal control system, and the encouragement of staggered work hours. Suburban areas meanwhile experienced decreases in travel speeds due to a rate of development which outpaced traffic engineering programs. The study cautioned that further increases in traffic would cause congestion and a decrease

---

[7]Arizona Highway Department, "Freeway Volumes Rise," Highway Spotlight (Phoenix: n.p., 26 Nov. 1971), Vol. 17, No. 47, n. pag.

[8]A Street Arterial Plan for Phoenix, Arizona, p. 27.

in travel speeds as few opportunities for street improvements remained, particularly in the central city.[9]

AIR POLLUTION

Like traffic congestion, air quality is an issue which has recently gained great attention in the Phoenix area. Yet air pollution is a problem which has existed for some time. The huge increase in motor vehicles which Maricopa County has experienced in the past four decades has only served to worsen the situation. There has been an awareness of the problem over the years, but little action has been taken to alleviate it. Local residents have grown familiar with the brown haze which hangs over the Valley. As evidence of this awareness, a 1972 survey conducted by Consumer Mail Panels of Chicago showed that nearly ninety-seven percent of respondents felt that air pollution was a problem in the Phoenix area. Nearly sixty percent of those who responded labeled it a serious or very serious problem. Today it is being mentioned with traffic congestion as a threat to the economic prosperity and comfortable lifestyle which many residents enjoy. Those who were urged by physicians during the 1950's and 1960's to move to Central Arizona in order to minimize respiratory problems are now being

---

[9]Maricopa Association of Governments, Transportation Planning Office, Travel Speed Study for the Phoenix Metropolitan Area (1957 to 1979) (Phoenix: n.p., Dec. 1980), p. 2.

advised to leave.

Despite periodic urging by MAG planners, local governments have been slow to respond to this threat. They are now being pushed by the Environmental Protection Agency, which has declared Phoenix a nonattainment area for carbon monoxide, ozone, and total suspended particles (dust). Carbon monoxide violations generally occur during temperature inversions in winter. Over ninety percent of this pollutant is generated by automobile exhausts. Ozone is also a result primarily of automobile traffic, with violations occurring most often during summer months. Particulates result mainly from vehicular travel on unpaved roadways and from wind blown dust.[10] While the number of days in which federal standards are being violated has been steadily decreasing since the late 1960's, the problem is by no means disappearing on its own.[11]

Maricopa County has had a mandatory vehicle emission inspection program, recognized as one of the strictest in the nation, in operation since 1976. Vehicles which fail to pass the emission test are required to undergo repairs before being registered.[12] Approximately twenty-five percent of vehicles tested in the county fall into this catagory. In

---

[10]Maricopa Association of Governments, Transportation and Planning Office, Phoenix Air (Phoenix: n.p., Sept. 1981), p. 2.

[11]Ibid., pp. 1-2.

[12]Ibid., p. 5.

January of 1987, in light of a continuing pollution problem, the program was expanded to check vehicles for tampering with pollution control devices.[13]

A variety of other strategies have been implemented to improve air quality in the Phoenix area. They include:

- a federally funded computerized carpool matching program
- freeway ramp metering to improve traffic flow
- high occupancy vehicle lanes for buses, carpools, and vanpools
- a vapor recovery system for bulk transfers of gasoline
- modified work schedules to relieve traffic congestion during rush hours
- expanded public transit
- traffic flow modifications, including computerized signal systems, the establishment of reversible lanes, and one-way streets
- the removal of on-street parking

It is the threat of losing up to five hundred million dollars in federal highway funds which is forcing action. An organization called the Arizona Center for Law in the Public Interest filed a lawsuit in April of 1985, seeking the cutoff of highway funds until federal standards are met. Along with the loss of highway dollars, the suit calls for the Environmental Protection Agency to impose a program

---

[13]Mike McCloy, "Tempers grow short in long line," Phoenix Gazette, 28 Jan. 1987, Sec. B, p. 1, col. 2.

to reduce carbon monoxide violations in the Valley.[14] This program was suggested because Phoenix is regarded as having one of the most severe carbon monoxide problems in the country. A proposal has been developed by the Maricopa Association of Governments, the group which has been charged with the responsibility of planning a pollution control program, to bring air quality in line with federal standards before penalties are assessed.

The proposal devised by MAG includes both voluntary and mandatory alternatives to clean up the air. These suggestions range from incentives for the use of clean burning fuels such as alcohol blends, to the development of exclusive right-of-ways for bicycles. The Phoenix Metropolitan Chamber of Commerce has also created an organization called the Clean Air Force to promote awareness of the problem and to educate the public in ways to help out. They have utilized billboards and public service announcements on radio and television to promote public transit, carpools, and automobile tune-ups as ways in which individual citizens can assist in cleaning up the air.

One legislative proposal calls for statewide winter daylight-saving time. Advancing the clock one hour from the last week of October to the first week of April would allow the sun to burn off carbon monoxide emissions before the inversion trap set in after sundown. This strategy would

---

[14]Mike McCloy, "Use all ideas on list to clean up county's air, attorney tells panel," Phoenix Gaxette, 4 March 1987, Sec. B, p. 8, col. 1.

likely reduce carbon monoxide readings by approximately fifteen percent. The proposal is currently receiving consideration by the Arizona State Legislature. Colorado is considering a similar plan to reduce carbon monoxide levels in the Denver area by adopting year-round daylight-saving time.[15] However both bills face uphill battles due to opposition from parents who do not want their children to commute to school in the dark.[16]

Still more controversial suggestions to clean up the air include designating certain parts of the city as vehicle free zones, limiting downtown parking, raising state gasoline taxes, instituting driving restrictions on the worst pollution days, charging daily fees for high school students who drive to campus, prohibiting large truck travel on arterial streets during rush hours, restricting the use of drive-thru businesses, and charging on a per-mile basis for use of certain roads. However these measures are unlikely to be adopted due to their controversial nature. Surveys have shown all types of restrictions on travel to be very unpopular with the public.[17]

These steps, along with improved new car emissions

---

[15]Betty Beard, "Colorado may save daylight year-round," Arizona Republic, 5 April 1987, Sec. A, p. 13, col. 3.

[16]Mike McCloy, "Pollution deadline: 'Forget it'," Phoenix Gazette, 20 March 1987, Sec. B, p. 10, col. 1.

[17]TRW Transportation and Environmental Operations, A Transportation Control Strategy for the Phoenix - Tucson Air Quality Area, Preliminary (Redondo Beach: n.p., Dec. 1972), p. 223.

equipment, would likely bring carbon monoxide and ozone levels in line with federal standards within a couple of years. Unfortunately, there appears to be little chance of this occurring. Despite the seriousness of the air quality problem in the Phoenix area, neither government officials nor Valley residents seem willing to compromise their driving freedom. It is unlikely that carbon monoxide levels will be reduced to meet federal standards without action by the EPA. The standard for particulates will be even more difficult to meet. Because Phoenix is located in a desert region, dust in the air has long been a problem. During the 1940's, the City adopted a street oiling program to limit the amount of dust kicked up by moving vehicles.[18] Today, measures to control the level of particulates in the air include paving and placing speed limits on unimproved roads, "infilling" vacant land, enforcing strict dust-control rules at construction sites, and prohibiting industries from emitting particulates into the air. In addition, the reduction in agricultural land due to urbanization has helped to alleviate the dust problem. In the 1970's an average of over four thousand acres a year were taken out of cultivation in the Phoenix area.[19] Nevertheless, officials do not expect to meet federal standards for

---

[18]"Phoenix Adopts Street Oiling Program," Arizona Republic, 3 June 1948, Sec. A, p. 4, col. 2.

[19]Jay J. Wagoner, Arizona's Heritage (Salt Lake City: Peregrine Smith Books, 1983), p. 483.

total suspended particles in the near future.

PUBLIC TRANSIT

Public transit has often been mentioned as a partial solution to the area's traffic and air pollution problems. However, this form of travel has had difficulties of its own. In fact, one of the major reasons why transportation is considered to be a problem in Phoenix is that public mass transit has not been able to keep pace with population growth. Daily transit ridership declined steadily between 1945 and 1972, reflecting a national trend towards the automobile.[20] In 1957, when a study of transit usage within the Phoenix urban area was conducted, ridership amounted to 57,577 trips per day by bus, which equaled nearly seven percent of the total person trips by all modes of travel. By 1968, increased automobile use had caused a decline in bus ridership to about eighteen thousand trips per day, less than one percent of all travel. In studies completed during the late 1950's, cities smaller than Phoenix , such as Nashville, Chattanooga, and Charlotte were shown to have greater transit usage than the Valley of the Sun.[21] Overall, despite enormous gains in population,

---

[20]Arizona Department of Transportation, Transportation Planning Division, Transit Economics (Phoenix: n.p., Oct. 1980), p. 3.

[21]City of Phoenix, Personalized Transit Study (Phoenix: n.p., Jan. 1970), p. 24.

fewer people ride public transportation today than did in 1940 when the system operated with one-fourth the number of vehicles.

Although ridership has been on the increase since the mid-1970's, it remains well below that of other cities. A 1986 study showed Dallas, San Antonio, Salt Lake City, and San Diego all have more riders per capita than Phoenix. It identified residents of Kansas City and Portland to be two and a half times as likely to take the bus as were Valley residents, while those living in Long Beach and Seattle were three times as likely to ride.[22] Many area commuters moved to Phoenix to escape the shared ride to work. They migrated from "back east" to enjoy the wide open spaces and personal freedoms which Phoenix has to offer. Riding the bus conjures up images of all of the urban problems which they left behind.

Another reason for the low patronage of public transit is the decentralized nature of both population and employment. While the Phoenix Urban Area occupied only thirty square miles following World War II, it now covers an area of approximately four hundred and ninety square miles. The population density is below 2,200 persons per square mile, compared with 6,645 in Los Angeles, 2,940 in Dallas,

---

[22]Jeff South, "The bus stops here -- but few bother to climb on," Phoenix Gazette, 18 Feb. 1987, Sec. A, p. 1, col 1.

and 3,018 in Houston.[23] However large parcels of agricultural land with virtually no population are interspersed with residential, commercial, and industrial uses, so that some developed parts of the city reach densities of over nine thousand persons per square mile.[24] This makes transit planning extremely difficult. Bus or other transit service is most effective when a large number of passengers can be transported along one route. Such is not the case in Phoenix, where a 1979 survey conducted for the Arizona Republic and Phoenix Gazette newspapers showed that eleven different shopping centers each attracted more customers than did the downtown shopping district.[25] Because Phoenix lacks a strong central core, few major transportation corridors exist. Transit service is thereby forced to serve a large number of origins and destinations, providing for a less efficient operation.[26]

While ridership has increased from less than four million passengers in 1970 to more than seventeen million in 1985, deficits have grown as well. The City has been subsidizing Phoenix Transit since 1971 when the St. Louis-based American Transit Corporation took over management of

---

[23]Ibid., p. 1.

[24]Maricopa Association of Governments, Five Year Transit Plan FY 1980-85 (Phoenix: n.p., June 1980), p. In-1.

[25]Five Year Transit Plan FY 1980-85, p. In-2.

[26]DeLeuw, Cather and Company, Phoenix Urban Area Public Transportation Study 1971 (n.p., n.p., July 1971), p. 5.

the system. The City owns the buses but pays Phoenix Transit to operate them. In 1986 fares covered twenty-nine percent of the system's twenty-eight million dollar operating expenses. A seasonal pattern of ridership, with a summer low and a winter high, similar to the overall traffic pattern in Phoenix, deepens operating deficits. Overcapacity of equipment and operators during the summer months is a problem which needs to be addressed by transit officials.[27]

Because of low bus ridership, suggestions for alternative forms of public mass transit have come from a variety of sources over the years. However, none has yet been suggested which would relieve Phoenix of its transportation problems while at the same time being economically feasible. Fixed-rail service has been mentioned on many occasions. For instance, in 1970 a group of students at Arizona State University designed a system of elevated train cars which attracted attention. The system was designed to serve the central business district from Park and Ride lots located adjacent to area freeways.[28] Gerard F. Judd, a member of the Citizens For Mass Transit Against Freeways, suggested in 1969 that a four hundred and twenty-five mile,

---

[27]Marin Farris, "The Transit Alternative in Phoenix," Arizona Business, Vol. 25, No. 7, (Sept. 1978), p. 8.

[28]Edward Taylor, "ASU Students offer a mass transit plan for Phoenix to bring the future into the now," Arizona Magazine, 10 May 1970, p. 7.

1.8 billion dollar subway system be built in the Valley.[29] Others have suggested fixed-rail systems such as a monorail running above Central Avenue, or a commuter train operating along the Southern Pacific Railroad line. The latter suggestion was implemented successfully in 1980 when floods cut off all but two bridges serving the East Valley. For a span of ten days, over five thousand passengers were transported daily between downtown Phoenix and the Mesa/ Tempe area. However, Martin Farris, Professor of Transportation at Arizona State University, has pointed out that aside from such an extreme emergency, a fixed-rail system is impractical in Phoenix because of the low population density of the city.[30] Other transportation experts, in responding to proposed transit alternatives, have agreed with Farris that the transit requirements of the Phoenix urban area can best be satisfied by a rubber tire-oriented system.[31]

Following this view, transit authorities have attempted to overcome the shortcomings of public transit in Phoenix, and have concentrated on encouraging bus ridership. They realize that this mode of travel represents the most viable means of checking the area's growing traffic and air

---

[29]Gerard F. Judd, A Mass Transit System for Maricopa Valley: Feasibility Study Prepared for the Land Transportation Division of Phoenix Forward Task Force, (Phoenix: n.p., Sept. 16, 1969), p. D-151.

[30]Martin Farris, p. 3.

[31]Arizona Highway Department, Environmental Statement: Administrative Action for Interstate and Defense Highway 10, Vol. I (n.p., n.p., June 1972), p. 4-31.

pollution problems. After taking over financial responsibility for the transit system in March of 1971, the City obtained a technical studies grant from the Urban Mass Transit Administration. This study, conducted by DeLeuw, Cather and Company, recommended a program of improvements to be implemented immediately. Among the changes were the elimination of transfer charges and fare zones, the introduction of reduced fares for senior citizens, and the expansion of reduced student fares. In addition, the City implemented an exact fare collection system to speed up the boarding process. In November of 1972, Phoenix hired a Public Transit Administrator to oversee the bus operation. Early morning and evening service hours were expanded. New routes were scheduled to serve the rapidly growing Deer Valley, Paradise Valley, and Cave Creek areas. Crosstown bus service began along Thomas and Camelback Roads, while ten minute service was added along portions of Central Avenue. By March of 1975, fifty-five new air conditioned buses had entered service, ten new bus shelters had been constructed, and express service was initiated to Metro-Center, the Valley's largest shopping mall, via the Black Canyon Freeway. These improvements, designed to make the Phoenix Transit System into a viable transportation alternative, did bring increased ridership beginning in 1972.[32]

---

[32]City of Phoenix, Transit Administration, Transit: Capital Improvement Needs Study (Phoenix, n.p., Jan. 1975), pp. 3-6.

Since that time additional improvements have been made to the bus system. For instance, in 1980 Phoenix Transit began operating service between the downtown area and the cities of Mesa and Tempe.[33] Two years later, the first exclusive bus lanes were added to the central corridor along Central and First Avenues. Ten minute service is now provided between downtown and the State Capitol on Washington and Jefferson Streets.[34]

The most significant change has been the gradual replacement of the radial system with a grid system. Instead of being oriented towards the central business district, most bus routes now follow major north-south and east-west streets, allowing for easy transfer without bringing riders to a central location. This new pattern suits the dispersed layout of Phoenix. In instituting this system, routes have been extended as growth has taken place along the fringes of the urban area.

Currently, Phoenix Transit operates thirty-five local routes and nineteen express routes, with a fleet of over three hundred buses. It utilizes thirty-nine Park and Ride lots, providing a total of over eight hundred parking spaces.[35] Scottsdale operates its own bus system, offering

---

[33]Five Year Transit Plan FY 1980-85, p. In.-5.

[34]Maricopa Association of Governments, Transportation and Planning Office, Five Year Transit Improvement Program FY 1976-1980 (Phoenix: n.p., May 1975), p. 46.

[35]Phoenix Transit System, Bus Book (Phoenix: n.p., Winter/Spring 1987), pp. 4-8.

free transfers to Phoenix Transit. The cities of Mesa and Tempe run three trolley routes to local shopping centers, hotels, colleges, and community buildings. Dial-A-Ride programs offer additional services to Paradise Valley, Mesa, and Glendale. The Human Resources Department of Phoenix supplements these services by operating a demand-response system, utilizing thirty-seven radio dispatched vans and two buses to provide special needs transportation for elderly, handicapped, and low-income individuals. This program provides access for those with no other means of transportation to day care centers, medical facilities, social service agencies, and shopping areas.[36] However, there still is no regularly scheduled nightime or Sunday transit service anywhere in the Phoenix area.

TRANSPORTATION EQUITY

With continued improvements to the Phoenix Transit system, transit officials hope to serve approximately two hundred thousand person-trips per day by the year 2000. This would amount to two and a half percent of the total daily trips made. While such improvements would help to reduce traffic congestion and air pollution, additional

---

[36]City of Phoenix, General Plan for Phoenix 1985-2000 (Phoenix: n.p., Oct. 1985), p. 17.

subsidies would be necessary to keep the system operating.[37]

Farebox revenues pay for only about thirty percent of Phoenix Transit's operating costs. Federal subsidies cover half of the remainder, but local governments are hard pressed to come up with the difference. This difficulty exists because of the prevailing attitude that public transit should be self-supporting. The bus system is often viewed more as a business than as a public service.[38] Critics point to the fact that many buses operate nearly empty during the day, filling up only during the morning and evening rush hours. However, Jim Walsh, former assistant to Phoenix Mayor Terry Goddard, points out that city streets, also financed with public funds, are nearly empty in the middle of the night. Yet the roads are not rolled up until morning. In fact, the automobile rider in Phoenix is subsidized to a much greater degree than is the transit rider.[39] Not only does the City provide the roads, traffic signals, and public safety personnel, but parking is also free in many areas. The State of Arizona, and most city governments in Maricopa County, charge nothing for their employees to park. Dave Baron, assistant director of the

---

[37]Maricopa Association of Governments, Transportation and Planning Office, Guide For Regional Development and Transportation (Phoenix: n.p., July 23, 1980), p. IV-11.

[38]Jeff South, "Public transportation is a money loser; subsidies climb," Phoenix Gazette, 19 Feb. 1987, Sec. A, p. 12, col. 1.

[39]Pam Hait, "Transportation," Phoenix Magazine, Aug. 1974, p. 51.

Arizona Center for Law in the Public Interest, maintains that the taxpayer is therefore subsidizing public employees in polluting the air. He suggests distributing free bus passes as a more reasonable alternative.

Phoenix Transit provides a valuable public service. It is a primary means of transportation for those individuals who either cannot afford to drive or who are physically unable to do so. In addition, large numbers of students rely on the bus because the Phoenix Union High School District does not operate its own system, yet allows students to attend any of the district schools they desire.[40] Currently thirty percent of the ridership on buses is composed of students.

The lack of an adequate public transit system is especially hard on the poor. Not only are they restricted in their travel if they do not own a motor vehicle, but they are also much more likely to remain in poverty due to lack of mobility. Without an automobile, one is limited as to where he can work and what hours he is available.[41] Those who rely on public transportation in Phoenix to commute to their jobs are unable to work at night or on Sundays. This means that they must sometimes forgo overtime hours to catch the last bus home.

---

[40]Martin Farris, p. 8.

[41]Jana Bommersbach, "Many in auto-oriented Phoenix termed 'transportation poor'," Phoenix Gazette, 20 April 1973, Sec. A, p. 14, col. 1.

Worse yet, many employers refuse to hire anyone who lacks a reliable means of transportation to work. The Phoenix Transit bus system is not considered by a large number of employers to meet this requirement. An increasing number of companies are either making private automobile ownership a prerequisite to employment, or giving preference to applicants with their own vehicles.[42]

Perhaps the worst problem exists in the inner city. The 1970 "Personalized Transit Study" conducted by the City of Phoenix stated that adequate transportation was widely held to be a significant requirement in achieving full employment in the inner city. The study also projected that the problem of high unemployment due to inadequate public transportation facilities would worsen as employment opportunities moved away from the inner city to suburban locations.

In a 1974 study of the relationship between transportation availability and employability of the urban poor in Phoenix, Ronald Brooks found that those in poverty had become separated from the suburban job market. He discovered that distances as large as fifteen to thirty miles often separated inner city residents from entry-level employment opportunities. Brooks stressed that the decentralization of employment was continuing, and that "without a

---

[42]Edward D. Kalachek and John M. Goering, Transportation and Central City Unemployment (St. Louis: Washington Univ., 1970), pp. E2-E14.

private automobile the Phoenix poor find it almost impossible to maintain jobs located any distance from their residence." He concluded that the "past development of Phoenix's road system has greatly aided the suburban dwellers and employers, while creating a hardship upon the inner city poor."[43]

In census tracts averaging less than two-thirds the average income for the metropolitan area as a whole, Brooks found private vehicle ownership to be the most significant determinant of employability.[44] In 1980, 5.4 percent of households in the Phoenix SMSA lacked at least one vehicle.[45] Yet in south Phoenix, an area with a high percentage of Hispanic and Black residents, and a large number of families living in poverty, this rate ranged from ten to over forty percent.[46] South Phoenix residents are hurt by this lack of vehicle ownership because the area in which they live offers relatively few employment opportunities. While Phoenix Transit serves this area of the city, no express bus service is available to jobs located in outlying

---

[43]Ronald William Brooks, "Transportation (Availability) and Employability of the Urban Poor," Thesis Arizona State University 1974, pp. 7-8.

[44]Ibid., p. iii.

[45]U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population and Housing, Census Tracts, Phoenix SMSA (Washington: GPO, 1980).

[46]South Phoenix refers to the area bordered by McDowell Road on the north, Southern Avenue on the South, 43rd Avenue on the west, and 32nd Street on the east.

areas. Express buses run only from suburban locations to the downtown region bypassing south Phoenix. Neighborhood residents who are employed elsewhere are forced to commute to work on local routes, often changing buses a couple of times along the way. The poor are thereby placed at a disadvantage to the suburban dweller, who either owns his own vehicle or rides an express bus to work.[47]

Even for households which do own an automobile, lack of mobility often presents a problem. The decentralized nature of employment in the Phoenix area makes the ownership of more than one vehicle a necessity for many families. Those who cannot afford this luxury are forced to make the best of an inadequate public transit system.

An improved and expanded transit service in the Phoenix area would not only relieve the financial burden of automobile ownership from the poor, but would also aid senior citizens, the disabled, and those not yet old enough to drive. Public transit also represents the most practical means of controlling the area's traffic congestion and air pollution problems. These goals can only be achieved through increased public subsidies of the transit system. Fare increases are not an alternative to public financing, for they have consistently resulted in decreased ridership

---

[47]Brooks, p. 10.

and higher long-term costs to Valley residents.[48]

RIDESHARING

Neither public transit nor the private automobile can operate as an exclusive transportation system. Rather, they complement each other to provide a total transportation network. An additional part of this network is carpooling and vanpooling. The Valley Forward Association developed and coordinated a computerized carpool program for the Phoenix area in 1974 which has since been taken over by MAG. This program, known as "Project Pool It", has met with some success in its thirteen years of operation. The program seemed to enjoy its greatest popularity in its early years when high prices and limited availability of gasoline convinced over thirty percent of workers to "share the ride".[49] Governor Jack Williams helped to kick off the program by proclaiming the week of November 22, 1974 "Arizona Carpool Week." Today between ten and fifteen percent of workers belong to a carpool.[50]

---

[48]Jeff South, "Fare increase is likely for Phoenix bus riders," Phoenix Gazette, 20 Feb. 1987, Sec. A, p. 12, col. 1.

[49]Arizona Department of Transportation, "Carpooling Surveyed," Transportation Spotlight (Phoenix: n.p., Jan. 31, 1975), Vol. II, No. 5, n. pag.

[50]Bruce D. Merrill, Data-Line, Inc., Public Attitudes Toward Car Pooling in Maricopa County, Arizona (Phoenix: n.p., Sept. 1981), p. 4.

In light of the threat of losing federal highway funds due to unacceptable levels of carbon monoxide in the air, carpooling is once again being promoted as a convenient alternative to the solo drive to work. If Project Pool It is to make an impact on air quality in Phoenix however, employers need to be encouraged to develop their own carpooling programs. Employees must be provided incentives such as priority parking spaces or modified work schedules to join the program. New businesses must be limited in the number of parking spaces they are allowed to build.

Finally, cities must stop providing free or inexpensive parking for individuals not involved in a car or vanpool. Such free parking is a luxury not available in older, more concentrated urban areas. It is time that Valley residents recognize the negative aspects of such a convenience to the quality of air and level of traffic congestion they face daily. While other cities are concentrating on removing downtown parking structures, Phoenix continues to build multi-level garages within the central business district. Passage of a trip reduction ordinance requiring major employers to reduce worker travel through ridesharing programs or subsidized bus tickets, would go a long way towards solving Valley area traffic and air pollution problems.[51] At the same time, it would help to remove the social stigma associated with public transit, and to create

---

[51]"Pollution deadline: 'Forget it'," p. B-10.

a more equitable system of transportation in the Valley of the Sun.

CHAPTER IV - FREEWAYS

Expanding public transit and increasing the number of carpools are effective ways of reducing transportation related problems in the Phoenix area. However, it is important to realize that buses and carpools require the same maintenance and new construction of roads as do all other vehicles. Part of the reason why traffic volumes have doubled and tripled on existing streets in the past twenty years is because new freeway construction has been practically nonexistent. Currently only seventy miles of freeways exist in the Valley, the fewest of eighteen comparable metropolitan areas.[1]

PAPAGO INNER LOOP

The reasons behind the critical lack of highways in Phoenix date back many years. They can best be understood by analyzing the history of the Papago Freeway, a controversial five and a half mile cross-town segment of Inter-

---

[1]Arizona Department of Transportation, Public Assistance Office, "Maricopa County votes October 8 on freeway plan," Newsletter (Phoenix: n.p., Oct. 1985), p. 1.

stat

know

Met

Hig

"St

rou

bet

off

con

Th

St

se

er

sa

of

state 10 currently under construction. The Papago, also known as the Inner Loop, was first planned in the "Phoenix Metropolitan Survey", a report prepared by the Arizona Highway Department in July of 1944. Six years later the "Street Arterial Plan for Phoenix, Arizona" included the route as a six lane roadway lying along Roosevelt Street between Van Buren and McDowell. Wilbur Smith and Associates officially recommended the Papago Inner Loop as part of a comprehensive twenty year freeway plan released in 1960. The location of the proposed route was finalized by the State Highway Commission in early 1964. Over the next several years studies were conducted to evaluate economic, environmental, and social effects of the freeway. At the same time, design teams prepared alternatives for a variety of elevated, depressed, and variable grade options.[2]

A public hearing in January of 1969 showed overwhelming support for an elevated design of the project. Supporters spoke of a "living parkway" through the heart of Phoenix which would allow future city development to occur. An elevated concept would not act as a barrier to movement as did other area freeways. The design was endorsed by the

---

[2]Environmental Statement, Administrative Action for Interstate and Defense Highway 10, Volume I, pp. 117-120.

Arizona Highway Commissioners in April of 1970.[3] This design, as proposed, called for the freeway to be elevated one hundred feet above Central Avenue, with helicoil access ramps serving cross streets.

Almost immediately, critics attacked the project on a number of fronts. They complained of potential high noise levels from vehicles, the displacement of families in the construction corridor, the division of neighborhoods on opposite sides of the freeway, and the physical appearance of a roadway towering one hundred feet above the city.[4] In November of 1971 the Citizens for Mass Transit Against Freeways, led by Dr. Gerard F. Judd, brought suit in U.S. District Court against the Secretary of the Department of Transportation to stop construction of the Papago Freeway.[5] This group was a vocal, but small number of protesters with little chance of preventing completion of the project until Gene Pulliam, publisher of the Arizona Republic and Phoenix Gazette newspapers, lent his support to their cause. Pulliam, a longtime conservative, turned against his friends in the Phoenix Chamber of Commerce, the

---

[3]Arizona Highway Department, "Majority Favor Elevated Freeway at Papago Public Hearing," Highway Spotlight (Phoenix: n.p., 28 Jan. 1969), Vol. 15, No. 4, n. pag.; "Commissioners Approve Elevated Papago Freeway in Phoenix," Highway Spotlight (Phoenix: n.p., 22 April 1969), Vol. 15, No. 16, n. pag.

[4]Johannessen and Girand, The Papago Freeway Supplement, Volume 2 (Phoenix: n.p., 1970), p. 6.

[5]Environmental Statement: Administrative Action for Interstate and Defense Highway 10, Volume 1, p. 8-29.

Arizona Association of Realtors, and members of the banking establishment with his opposition to the project. He was able, along with anti-freeway groups, to persuade the Phoenix City Council to put a non-binding advisory referendum for the project on the bond issue ballot in May of 1973.[6]

Proponents on both sides of the issue launched publicity campaigns to voice their opinions. Critics of the proposed project charged that the new freeway was being pushed by the City's powerful elite, mainly land developers and big businessmen, who stood for uncontrolled growth in the Valley. They labelled the roadway a "Berlin Wall in the Sky" saying that it would divide the prosperous north side of town from the older downtown section, causing a loss of patronage within the central business district.[7] Mexican-American groups made a similar argument in contending that the Papago Inner Loop would become "another physical and psychological barrier between the south Phoenix area and the rest of the city."[8] They expressed a fear that the planned park, to be located beneath the elevated freeway, would suffer the same dilapidation which similar parks in Chicago

---

[6]"'No' on Papago freeway," Editorial, Arizona Republic, 10 May 1973, Sec. A, p. 5, col. 1.

[7]Plan Loop Alternative Committee, Advertisement, "Vote 'No' on the Papago Inner Loop Freeway," Arizona Republic, 8 May 1973, Sec. A, p. 15, col. 1.

[8]Jana Bommersbach, "Mexican-American group opposes freeway," Arizona Republic, 1 May 1973, Sec. A, p. 25.

and New York under elevated trains had suffered.

Anti-freeway groups pointed out that the Papago was being built in the wrong location and was vastly over-priced. They protested locating a new facility just two miles north of the Maricopa Freeway when the heaviest cross-town traffic was four to five miles north of the proposed project.[9] In addition, critics argued that for the same amount of money being spent on the Inner Loop, over four hundred miles of roads and badly needed bridges over the Salt River could be built.[10] Others felt that the money could be better spent on public transit. They saw the referendum as a unique opportunity for the City to realize its past errors and to begin to face its transportation related problems with a comprehensive long-range plan. Highway critics cautioned that gasoline costs were rapidly rising and that driving restrictions due to an oil shortage had already been mentioned as a possibility.[11] Unfortunately, while federal money would pay for the majority of costs associated with the Papago Inner Loop, that money could not be transferred to pay for the upgrading of City streets, bridges, or public transit facilities.

---

[9]Citizens for Mass Transit Against Freeways, Position Paper on I-10 and Transportation in the Phoenix Metropolitan Area and Final Challenge to EIS-76-1 (Phoenix: n.p., 29 July 1977), p. 55.

[10]Vote "No" on the Papago Inner Loop Freeway, p. 15.

[11]Jana Bommersbach, "Critic warns of freeway's effect on city," Arizona Republic., 2 May 1973, Sec. B, p. 1.

Despite this restriction, an anti-freeway philosophy seemed to be gaining hold across the country as the fate of the Interstate 10 connection was being decided in Phoenix. The Embarcadero Freeway in San Francisco was the most visible example of this movement. Begun during the late 1950's, this double-deck, eight lane elevated expressway was halted by voters before construction was completed because it was felt that the project was destroying the city's scenic waterfront.[12] Several million dollars were eventually spent to dismantle the abandoned route. In other cities, freeway battles raged as well. Los Angeles completed less than half of the highways originally designed on their 1950 master plan when it was realized that additional roadways stimulated increased travel and led to even greater traffic congestion. Boston residents also chose to abandon their freeway plan, developing instead a model mass transit system. New Orleans, Washington D.C., Memphis, Baltimore, Seattle, Portland, and St. Paul all experienced freeway battles during the 1960's and early 1970's. Opponents of the Papago, most notably the newspapers under the directorship of Pulliam, reminded voters of these negative experiences in other cities.[13]

Supporters of the Papago Inner Loop organized their own

---

[12]William Overend, "Public opinion a major factor in whether freeways are built," Arizona Republic, 7 May 1973, Sec. A, p. 22, col. 4.

[13]"Public opinion a major factor in whether freeways are built," p. 22.

publicity campaign utilizing billboards, newspaper advertisements, and radio and television commercials. City leaders maintained that the freeway was essential for the future growth of Phoenix. Labelling the project the "Missing Link", they saw it as an opportunity to relieve congestion in the downtown area. In addition, the project would reduce the number of accidents on city streets and would cut travel time significantly.[14] Studies showed that the accident rate for freeway travel in the Phoenix area, like in other urban areas, was about half that of non-freeway travel.[15] In arguing for construction of the Inner Loop, the City of Phoenix published a list of metropolitan areas that had smaller populations, yet had more freeway mileage than did the Valley of the Sun. They maintained that Phoenix had fallen "seriously behind" other cities in transportation planning.[16]

Proponents of the project were right in arguing that traffic congestion would be relieved with construction of the Papago route. Volumes on major east-west streets near the proposed freeway in 1973 were approaching or had already exceeded projections for the year 1980 as outlined in the

---

[14]The Missing Link, n. pag.

[15]Maricopa Association of Governments, Transportation and Planning Office, Accident Study for the Maricopa County Area (1960-1979) (Phoenix: n.p., April 1981), n. pag.

[16]William Overend, "Freeway debaters point to other cities," Arizona Republic, 5 May 1973, Sec. A, p. 1, col. 2.

Wilbur Smith Plan. Most of these thoroughfares were operating above their designed capacities. Smith had planned for the Papago Inner Loop between the Black Canyon Freeway on the west side, and 16th Street on the east side, to be the second busiest route in the city. Instead, major surface streets in the area were being forced to handle the traffic.[17] What Smith did not foresee and freeway supporters did not acknowledge was that the population center of Phoenix was gradually shifting to the north. The heaviest traffic in the City in 1973 was no longer between Van Buren Street and McDowell Road, but between Thomas and Bethany Home Roads. While the new route might indeed help to relieve traffic congestion, it was being planned several miles too far south. In fact, some freeway opponents worried that the highway would worsen the situation by funneling motorists south towards the city center in order to meet up with the eastbound Papago link.

Phoenix voters acted as the jury in deciding the fate of the Papago project. They were influenced by newspapers which printed pictures of Los Angeles smog and cartoons portraying freeway supporters as greedy power brokers in the week preceding the election.[18] In addition, Senator Barry Goldwater openly criticized the freeway proposal just a day

---

[17]The Missing Link, n. pag.

[18]Russell Pulliam, Publisher: Gene Pulliam, Last of the Newspaper Titans (Ottowa, Illinois: Jameson Books, 1984), p. 285.

before the advisory vote.[19] On May 8, 1973, fifty-eight percent of voters rejected the Papago proposal, with residents from neighborhoods nearest the route voicing the strongest opposition.[20] Despite the fact that the suit filed by Citizens for Mass Transit Against Freeways was dismissed in federal court, the Phoenix City Council took the advice of voters and asked the State Highway Commission to abandon the Papago Inner Loop. That decision meant the cancellation of two hundred and fifty million dollars in right-of-way acquisition, engineering, and construction costs.[21]

Residents living along the Papago route, a strip which became known as the Moreland Corridor for the street it was to replace, found their neighborhoods destroyed by the proposed project and controversy. Many families had already relocated, believing that the freeway was going to be built. Homes in the area steadily deteriorated, causing a loss in market value due to the uncertainty of construction after 1973. Phoenix was left with a quarter mile wide scar running through the center of the city.

By May of 1975 a citizen's group called Use Now I-Ten

---

[19]William Overend, "Papago Freeway denounced by Goldwater," Arizona Republic, 8 May 1973, Sec. A, p. 1, col. 4.

[20]William Overend and Jana Bommersbach, "Returns run 58% against Papago loop," Arizona Republic, 9 May 1973, Sec. A, p. 1, col. 5.

[21]The Arizona State Highway Commission, 1973 Annual Report (Phoenix: n.p., Jan. 1974), p. 10.

Effectively (UNITE), had organized an initiative petition to resurrect the Papago project. They maintained that the freeway was urgently needed to relieve Phoenix of its growing traffic problem, and argued that voters rejected the proposal in 1973 because of the elevated design. Despite opposition from Mayor Tim Barrow, the Phoenix City Council, the metropolitan area Chamber of Commerce, and the newspapers, voters reversed their earlier decision, backing a referendum on the proposed Papago Freeway in November of 1975. All but central city residents voted in favor of the project, passing it with fifty-four percent approval.[22]

Seven alternatives for the route were presented at a public hearing in August of 1976. These alternatives ranged from a "no build" option to proposals for the Interstate 10 connection to head south around South Mountain or north to an interchange near Bell Road and the Black Canyon Freeway.[23] In late 1976 the State Transportation Board, no doubt influenced by the fact that much property had already been acquired, approved a Papago alignment along the same Moreland Corridor that voters had turned down three years

---

[22]Jana Bommersbach, "Freeway-parkway plan started before initiative," Arizona Republic, 9 Oct. 1975, Sec. B, p. 1, col. 2.; "Freeway initiative is approved by 54%," 5 Nov. 1975, Sec. A, p. 1, col. 1.; "Only central areas opposed freeway," 6 Nov. 1975, Sec. B, p. 1, col. 3.

[23]Arizona Department of Transportation, Public Information Office, "I-10 Connection Hearing Set in Phoenix Aug. 18," News Release (Phoenix: n.p., 30 July 1976), pp. 8-9.

earlier. Since that time, Citizens for Mass Transit Against Freeways have unsuccessfully continued to fight the project, including losing another vote on the issue in 1979 by a three to one margin.

As the Papago Inner Loop nears completion, Phoenix residents are convinced of its necessity if not of its proper location. They have chosen a depressed profile for the route, rather than the ten story tall overpass which they previously rejected. The new plan calls for a park to be constructed on a deck over the highway between Fifth Avenue and Third Street. This is part of a rebuilding process due to the destruction of neighborhoods along the Moreland Corridor. Most city residents agree that a mistake was made in turning down federal money for the project in the early 1970's, and they do not want to repeat that mistake. The Federal Department of Transportation is currently paying over ninety percent of the cost to complete the Interstate 10 connection in the Phoenix area.[24] The highway is open as far east as 27th Avenue and is expected to be joined with the Black Canyon Freeway in late 1988 or early 1989. This intersection, known as "the Stack", is the first of its kind in the Valley and represents a new chapter in Phoenix transportation history.

---

[24]Arizona Department of Transportation, Public Information Office, "Inner-Loop Design Concept to be Prepared," News Release (Phoenix: n.p., 3 Dec. 1976), sheets 1-2.

FREEWAY REFERENDUM

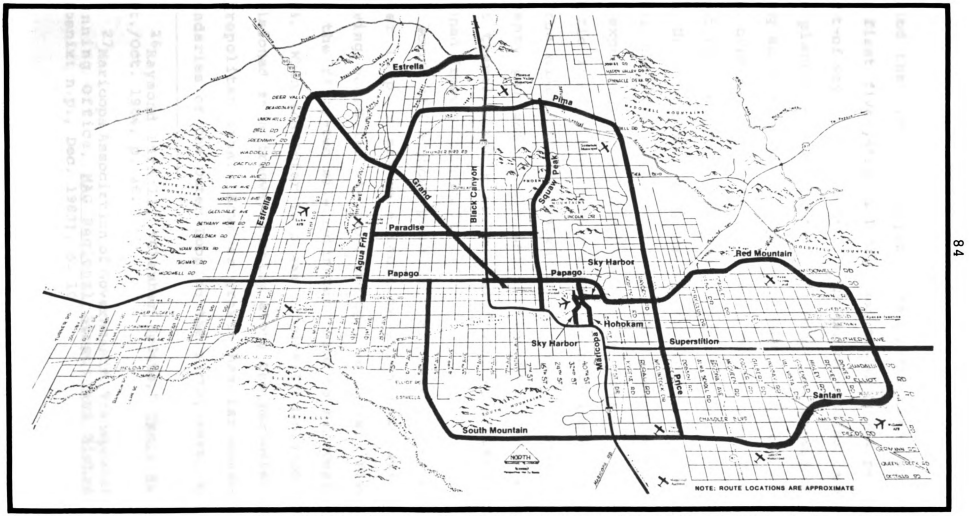
Completion of the Papago connection coincides with plans to build a comprehensive urban freeway system, a modification of the Wilbur Smith Plan. With the lesson of the Inner Loop experience behind them, voters in October of 1985 overwhelmingly approved Proposition 300, a referendum establishing a one-half percent sales tax to finance this plan. The new tax will raise 5.8 billion dollars over twenty years and will be used to conduct engineering studies, purchase right-of-ways, and to complete construction on the new freeways. In addition, three percent of the revenue is going towards the creation of a Regional Public Transportation Authority to develop long-range transit plans and to help finance publicly funded transportation services.[25] Proposition 300 will more than triple the current freeway mileage in the Phoenix area, adding 233 miles to the existing network.(See Figure 2)

In order to alleviate traffic problems as quickly as possible, construction of the new freeways is being accelerated through the use of revenue bonds. Despite the necessary interest payments to investors under this method, lower acquisition and construction costs, as well as the urgent need for new highways, make this a wise strategy. Sales tax revenues will be used to retire the bonds over a longer

---

[25]BRW, Inc., East Valley Transit Study, Final Report (Phoenix: n.p., Jan. 1986), p. 25.

Figure 2
The Planned Freeway System



Reprinted with permission from the Arizona Department of Transportation

per

the

rig

the

bei

tha

fir

aft

are

tra

to

se

tha

pla

Ou

dr

fo

19

en

Me

bo

Se

Pl
(P

period than the twenty-year life of the tax. Bonding in the first five years is being used to buy large parcels of right-of-way, and to conduct engineering studies on most of the planned freeway routes. In addition, construction is being accelerated on high priority sections of the system so that over half of the projects will be completed during the first ten years of the new tax.[26]

Upon completion of the urban freeway system sometime after the turn of the century, controlled access roadways are expected to carry a substantial percentage of the total traffic load in the Phoenix area. This will provide relief to the major street system which currently carries over seventy percent of all daily trips.[27] It is expected that travel times will be significantly reduced once the planned freeways are built.

Among the highest priorities of these projects is the Outer Loop, a six-lane facility which has been on the drawing board for the past twenty-five years. Plans call for the fifty-two mile perimeter route to be completed by 1995. When the Outer Loop was originally designed, it was envisioned as a freeway running along the perimeter of the metropolitan area. However growth has far exceeded the boundaries of the Outer Loop on the north, east, and west

---

[26]Raymond Burnell, "Chamber Update," Tempe Magazine, Sept./Oct. 1984, p. 26.

[27]Maricopa Association of Governments, Transportation and Planning Office, MAG Regional Street and Highway Plan (Phoenix: n.p., Dec. 1983), p. 10.

sides. Because of this growth, plans were redrawn in 1983 to relocate the facility from east of 75th Avenue to east of 99th Avenue.[28] Despite the fact that it no longer circles the urban area, this route will still provide greater access to points north of Phoenix, particularly the cities of Scottsdale, Paradise Valley, and Glendale.

A stumbling block in the construction of the Outer Loop has been reached due to failure of the City of Scottsdale and the Salt River Pima-Maricopa Indian Tribe to agree on a suitable alignment. Because Pima Road divides the reservation from the City of Scottsdale, both sides must agree in order for the new freeway to be built along it. This problem was anticipated in 1966 when the "Pima Road Study" identified the need for a "major north-south thoroughfare on or near the boundary line between the City of Scottsdale and the Salt River Indian Reservation", and called for the two parties to work together in formulating long-range plans.[29]

However negotiations on a new lease for use of Pima Road broke down in December of 1986 with the Indians closing the northbound lane to traffic. Several proposals have since been made by state officials, one of which calls for the new roadway to be placed completely on the reservation. Unless an agreement can be worked out to either lease or purchase

---

[28]Bill Smith, BRW, Inc., Paradise Corridor - SR 317 (Phoenix: n.p., July 1986), Vol. 1, No. 1, p. 2.

[29]Earle V. Miller, Engineers, Pima Road Study (Phoenix: n.p., Oct. 1966), pp. 1-2.

the land from the Salt River Tribe, the State Transportation Board has threatened to drop plans for the Outer Loop through Scottsdale.[30]

Such a decision would leave the city without a high-capacity link to other portions of the Urban Area. Scottsdale residents, whose economy benefits from many high priced resorts in their area, are concerned that the heavy tourist trade may fall off unless the route is built. They view the Outer Loop as a vital link to Sky Harbor Airport and downtown convention facilities, as well as a boost to northward development in their city. The Salt River Indians on the other hand, have little incentive to support construction of a freeway on their land. They find themselves surrounded by urban development and being pressured into giving up the right to their property.[31]

Another proposed project which has generated considerable controversy is the Squaw Peak Parkway, a north-south route being built by the City of Phoenix. The Parkway is planned to run from the Maricopa Freeway to Glendale Avenue, with an extension continuing ten miles north to connect with the Outer Loop near Beardsley Road. The Squaw Peak extension is planned as a State facility to be funded from Proposition 300 funds. Like the Outer Loop, a traffic

---

[30]Carl Young, "State considers 'all Indian' loop," Phoenix Gazette, 7 March 1987, Sec. B, p. 4, col. 1.

[31]Stephanie Sommers, "Editorial prompts Indian outcry," Campus News (Scottsdale Community College), 23 Feb. 1987, p. 1, col. 3.

corridor for this roadway has been on the drawing board since 1950. In the meantime much of the land has been developed for commercial and residential uses. In addition, the proposed Squaw Peak extension will cut through the Phoenix Mountains Preserve, a large city owned recreational area. A controversy has developed between the Phoenix City Council, which is arguing for a Thirty-fourth Street alignment for the Squaw Peak extension, and Paradise Valley residents who want the road to tunnel through the mountain preserve and to lie along Fortieth Street.[32] As with the Pima Road controversy, citizen's action groups have formed on both sides of the argument to promote their views. However all seem to agree that the roadway is necessary and should be built as rapidly as possible. A final alignment is expected from the Arizona Department of Transportation in April of 1987. Barring any unforeseen delays, the City of Phoenix will have completed the Squaw Peak Parkway by 1995, with the state portion opening by the year 2000.

Connecting the Squaw Peak Parkway to the Outer Loop on the west side will be a thirteen mile route known as the Paradise Parkway. Like other planned transportation corridors in Phoenix, this facility has been on the map for the past three decades. It was removed from state highway system plans in 1981, but was resubmitted in 1985 to become part of the referendum vote on freeway funding. The

---

[32]"Squaw Peak Extension Public Hearing," Phoenix Shadow Mountain High School, 26 Feb. 1987.

Paradise Parkway will relieve heavy traffic on cross-town streets in central Phoenix, a role which Papago Freeway critics maintain that facility will not do. Currently half of the intersections in the Paradise Corridor are operating with long delays.[33] However, the Paradise Parkway is expected to have its own difficulties, with eastbound traffic headed for Scottsdale exiting onto the Squaw Peak Parkway. Surface streets in the area of Camelback Road would then be forced to handle large volumes of east-west traffic serving the new facility. As a result of this projected problem, Department of Transportation officials are studying possible access road extensions to the highway.[34] The Paradise Parkway also faces strong opposition from owners of high priced residential property which lies in the path of the proposed freeway. Unlike the Papago route, which bisects central Phoenix, this facility cuts across the prosperous north side of town.

Some of the most serious traffic problems expected to be solved by the new freeway system exist at the six-legged intersections along Grand Avenue. This roadway runs diagonally to the northwest between downtown Phoenix and the Sun City area. Grand Avenue, also known as U.S. 60, U.S. 89, and State Route 93, carries a heavy volume of traffic between the Northwest Valley and the Black Canyon

---

[33]Bill Smith, p. 2.

[34]Susan Herold, "Paradise Parkway's route extended east," Phoenix Gazette, 6 Feb. 1987, Sec. E, p. 4, col. 1.

Freeway. Motorists crossing this route must not only contend with six-legged intersections, but also must deal with delays from the Santa Fe Railroad line which runs parallel to the roadway. The rail line, like Grand Avenue, intersects with most of the major arteries on Phoenix's gridded street system. Under the new freeway plan, Grand Avenue will be upgraded to an expressway, with grade separations and widening along most of its route. Upon completion in 1995 the proposed twenty-six mile expressway will be able to handle at least seventy thousand, and possibly as many as one hundred thousand vehicles daily, more than three times its current capacity.[35] This will provide for the tremendous growth which is anticipated in the northwestern portion of the Valley within the next two decades.

Proposition 300 called for freeway loops to be constructed southwest, southeast, and northwest of the city. These facilities, known respectively as the South Mountain Parkway, the Santan, and the Estrella Freeways, are still in the planning stages. They are expected to be aligned along what is now the perimeter of the metropolitan area. Upon their completion around the year 2000, the urban area will likely have expanded well beyond their boundaries.

Because these roadways lie so far from the population base of Phoenix they have attracted the least controversy. However the Southwest Loop, a proposed twenty-three mile

---

[35]Arizona Department of Transportation, Urban Freeways and Expressways, (Phoenix: n.p., July 1986), p. 8.

highway connecting the Papago Freeway in West Phoenix with the Maricopa Freeway in Chandler has met with some criticism. The loop is intended to serve residential developments on the south side of South Mountain and to act as a bypass route for motorists headed east towards Tucson on Interstate 10.[36] A controversy has developed because the freeway is planned to cut through an estimated thirty-five acres of South Mountain Park which is designated as a mountain preserve. As an alternative, the Gila River Indian Community, located just to the south of the proposed route, has offered to allow construction of the Southwest Loop on their land. Their hope is that the freeway will stimulate commerce and provide jobs for Indians living on the reservation. They have pointed out the benefits of an alignment on their land, citing lower construction costs and fewer social disruptions to the area. In addition, because the freeway would be located farther south, there would be less congestion for through traffic once the facility is completed. Like the Pima Road portion of the Outer Loop and the Squaw Peak extension, the fate of the Southwest Loop remains undecided until this issue is resolved.[37]

Controversies over proposed alignments have developed because the Maricopa Association of Governments identified

---

[36]Maricopa Association of Governments, Transportation Planning Update Report (Phoenix, n.p., June 1986), p. 8.

[37]Jason C. Yu, Ph.D., Critical Analysis of Roadway Alignments: South Loop Freeway (Phoenix: n.p., March 1985), pp. 2-3, 24.

only approximate freeway locations in its Proposition 300 proposal. Routes were identified on maps as transportation corridors up to one mile wide. This was necessary so that public hearings could be conducted, environmental impact statements could be written, and further engineering studies could be completed on the proposed alignments. Freeway locations are therefore only approximate, for final alignments may be up to half a mile from where originally planned.[38] A large number of people are left uncertain as to whether their homes or neighborhoods will be affected by highway projects. Often those whose residences fall within the freeway boundaries are considered lucky. They receive fair market value for their property and assistance from the State in relocating, while those outside the project boundaries are left living next to a noisy, high volume thoroughfare. Their homes may be separated from neighborhood schools, recreational facilities, and neighbors.[39]

Valley residents recognize these disruptions as the costs of rapid growth, and support necessary changes now rather than later. For example, improvements are being undertaken in preparation for anticipated expansion of Sky Harbor Airport to meet future population growth, an expanded tourist industry, and an increasing number of transfer

---

[38]Rolf Olaf Osland, n. pag.

[39]Inner City Planning Committee, Inner City Area Plan, Draft (Phoenix: n.p., 7 June 1978), p. 67.

passengers. The Federal Aviation Administration projects Sky Harbor to be the fastest growing major airport in the country between now and the year 2000.[40] As a result, access is being upgraded as an additional part of the urban freeway network approved by voters in 1985. Improvements include an extension of the Hohokam Expressway to meet up with the Papago Freeway, and a direct access route off the Maricopa Freeway to the airport along Fortieth Street. In addition, the Papago Freeway will be extended to the Outer Loop. These changes will improve access not only to Sky Harbor, but also to Arizona State University and the East Valley via the Red Mountain Parkway in Mesa.

FREEWAY IMPROVEMENTS

In order to handle larger traffic volumes from these new facilities, existing freeways are being upgraded as well. The Superstition Freeway will be extended six miles east to the Maricopa County line, where state highway plans call for it to be continued to U.S. 60 near Apache Junction.[41] Plans also call for the Black Canyon and Maricopa Freeways to be widened along the majority of their lengths. A current proposal prepared by JHK and Associates for the

---

[40]Peter Reich, "Sky Harbor called fastest growing airport in nation," Phoenix Gazette, 23 April 1987, Sec. A, p. 1, col. 3.

[41]Transportation Planning Update Report, p. 8.

Arizona Department of Transportation recommends that these improvements be phased over a twenty year period. Included in their proposal are plans for electronic monitoring of traffic, special bus and car pool lanes, additional Park and Ride lots, and new access ramps to allow high occupancy vehicles priority access to the freeways.[42] These recommendations are exactly the kind of long-range improvements that are necessary to complete a comprehensive transportation system as visualized in the Wilbur Smith Plan. However new freeway facilities still must be made compatible with public transit if this is to occur in the Phoenix area.

The freeways proposed under Proposition 300 were approved with the hope of relieving present traffic congestion and preparing for future population growth. They are likely also to fulfill the role of stimulating further population growth and increasing vehicle-miles travelled. These new facilities will enhance perceptions of the quality of life in the Valley of the Sun, attracting additional newcomers to the area. They will also have an influence on the shape of the metropolitan area. Already, developers are scrambling to obtain parcels of land along these new routes. Commercial real estate along Interstate 10 as far west as Goodyear and Avondale is changing hands in anticipation of the Papago link connection. A proposed shopping

---

[42]Leslie Polk, "City backs $755 million plan to widen freeways," Phoenix Gazette, 11 March 1987, Sec. A, p. 1, col. 2.

mall in Chandler is awaiting final alignment approval of the Southeast Loop so that it can be located adjacent to a freeway interchange.[43] And the cities of Peoria, El Mirage, Glendale, and Surprise are preparing for a "development explosion" of hotels, shopping centers, and residential neighborhoods along the northwestern portion of the Outer Loop.[44] This same pattern of development was seen when the Black Canyon and Superstition Freeways were first completed. They too accelerated the process and increased the intensity of development along their routes.[45]

An extreme example of how transportation facilities can influence the growth pattern of an area can be seen by analyzing the Sun Valley parkway. This eighty-two million dollar, six lane roadway is proposed to run thirty miles around the White Tank Mountains, linking Bell Road in Surprise with Interstate 10 at 291st Avenue. It will be financed privately through tax-exempt bonds and ceded to Maricopa County upon completion. The parkway is being proposed solely for the purpose of spurring development of a community of up to three hundred thousand people in the far

---

[43]Mark Fleming, Jr., "Commercial projects likely to sprout along freeways," Phoenix Gazette, 21 Jan. 1987, Sec. H, p. 3, col. 2.

[44]Karen Kirk, "Northwest Valley needs growth plan, area developer says," Phoenix Gazette, 13 March 1987, Sec. E, p. 11, col. 1.

[45]Stanley Womer Associates, Economic Study of Alternative Proposals for the Construction of Route I-10 Between Phoenix and Brenda, Arizona (Phoenix: n.p., Dec. 1958), p. 67.

West Valley.[46]

The Sun Valley parkway goes well beyond other transportation arteries in speeding up the process of urban sprawl. The facilities approved by a vote of the people under Proposition 300 are being designed to relieve present traffic congestion and to provide service to areas expecting rapid growth. Only as a secondary function will freeways act to speed up the process of this growth.

---

[46]Pat Flannery and John Dougherty, "Financiers finally secure backing for Sun Valley parkway project," Phoenix Gazette, 20 Feb. 1987, Sec. B, p. 8, col. 1.

CHAPTER V - FUTURE DIRECTIONS

The Phoenix metropolitan area has been shaped in the postwar period by the commercial trucking industry and the private automobile. The motor vehicle has allowed physical expansion to occur at a very quick pace. For example, the mile-square grid network, because of its easy expansion, has strongly contributed to the low-density urban sprawl which has taken place. It has promoted a dispersed land use pattern by providing almost equal access in every direction.[1] The planned freeway system will direct further growth towards the fringes of the urban area, but may also channel development into the central city with the completion of Interstate 10.

DOWNTOWN DEVELOPMENT

In an effort to encourage such inner city development, Phoenix planners are taking steps to make the downtown area more attractive. Construction of the Civic Plaza in 1972

---

[1]Maricopa Association of Governments, Transportation and Planning Office, Guide For Regional Development and Transportation (Phoenix: n.p., 23 July 1980), p. IV-1.

and continued work on a Capitol Mall project have already aided investment within or near the central business district. A domed stadium, a pedestrian mall along Central Avenue, additional underground parking garages, an expanded Civic Center, and revitalization of the Union Railway Station are also planned.[2]

Margaret Hance, Mayor of Phoenix from 1976 to 1983, supported the process of "infilling" vacant land downtown, though with little success. Hance stressed that with forty percent of the land in the City of Phoenix, and twenty-five percent of the land in the inner city lying vacant, a major source of revenue was being neglected. Numerous city services, including utilities, roads and sidewalks, fire and police stations, schools, libraries, and parks were already in place. By encouraging development in areas already being served, the City would realize a substantial savings.[3]

However legislation was never passed to encourage "infilling" of vacant land. Only recently has there been a call to limit leapfrog development by assessing additional fees on new homes built along the periphery. Similar legislation is being enacted in urban areas across the country. Presently, a fee of twelve hundred dollars per unit is charged regardless of where the development is

---

[2]"City core taking shape," Phoenix Gazette, 6 Feb. 1987, Peirce Report, p. 14, col. 2.

[3]Inner City Planning Committee, p. 50.

located.[4] Because land is less expensive farther out, most new residential communities are being built along the fringe of the urban area, with the public subsidizing construction of these projects. An example of such a development is Tatum Ranch, a planned residential community of ten thousand people under construction in far north Phoenix. This new project is over twenty-two miles from downtown and six miles from any other development.[5]

Another proposal being considered by City officials calls for vacant land within the downtown area to be taxed at its potential value. By taxing land, rather than buildings, speculators would be forced to develop vacant downtown properties. At the same time, owners would not be penalized for upgrading their property. The City would benefit because there would be no need to extend services to these downtown areas, and overall revenues from property taxes would be increased. Developers contend that these proposals are unnecessary, for new construction pays for itself in increased employment and tax revenues. They complain that not all vacant land is being held for speculative purposes. Natural market forces sometimes keep a property from being developed. Nevertheless, proposals such as these would stimulate downtown construction and slow

---

[4]"Adjust fees to encourage infill," Editorial, Phoenix Gazette, 16 March 1987, Sec. A, p. 14, col. 1.

[5]Tom Spratt, "Leapfrog developments stir criticism," Phoenix Gazette, 6 Feb. 1987, Sec. A, p. 6, col. 2.

the process of urban sprawl across the Valley.[6]

Many politicians and planners are calling for legislation to promote "infilling" and to discourage leapfrog development because they see a strong downtown as being vital to the metropolitan area. Central Phoenix acts as both the political and economic center of the Valley, as well as the cultural and transportation center. Despite the decentralized nature of the urban area, residents rely on Phoenix for numerous services which are not available anywhere else. Sky Harbor Airport, and a majority of the cultural institutions, for instance, are located in the downtown region.

On the other hand, a strong downtown core, in which a large number of suburban residents work within the inner city, may not be the answer for Phoenix. Part of the reason why the Valley of the Sun has prospered is because it is so dispersed. Many residents migrated from other parts of the country to escape the congestion and deterioration of Eastern cities. Others migrated from Southern California for the same reasons. Problems such as traffic congestion and air pollution would be intensified by infilling vacant land in Phoenix.

---

[6]Jeff South, "Tax shift proposed to fill gaps," Phoenix Gazette, 6 Feb. 1987, Sec. A, p. 14, col. 1; Ray Schultze, "Fringe building debated," Phoenix Gazette, 2 March 1987, Sec. B, p. 1, col. 3.

Planners have attempted to avoid such congestion by expanding development outward at a phenomenal rate. Over nine hundred square miles lie within the Valley's settled communities today. The City of Phoenix, covering under ten square miles in 1940, now possesses over four hundred square miles, making it nearly the size of Los Angeles. Phoenix is in the process of annexing fifty-seven square miles in an area bordered on the northeast by the City of Peoria. This land houses four people today, but is expected to support sixty thousand residents when a planned development called "New Town" is completed after the turn of the century.[7]

Not only has the metropolitan area gained in physical size, but it now encompasses a greater portion of the state's total population as well. Maricopa County possesses over fifty-five percent of the total population of the State of Arizona, compared to just over thirty-seven percent in 1940.[8] Unless local leaders wish to limit growth overall, it would be foolish for them to attempt to confine that growth to a small area.

---

[7]Michael J. Kotlanger, "Phoenix, Arizona: 1920-1940," Diss. Arizona State University, p. 542; Leslie Polk and Susan Felt, "'New Town' move revives Phoenix-Peoria annex war," Phoenix Gazette, 25 March 1987, Sec. B, p.1, col. 1.

[8]Valley National Bank of Arizona, Arizona Statistical Review (31st Annual Edition), (Phoenix: n.p, Sept. 1975), p. 11.

THE NEXT LOS ANGELES?

The Phoenix metropolitan area is often compared with Los Angeles. In fact, residents speak of the Valley of the Sun becoming "another L.A." [9] They point to the uncontrolled growth, traffic congestion, air pollution, high crime rate, weak downtown shopping district, and low-density urban sprawl which characterizes the Southern California city. Los Angeles and Phoenix are similar in that they face few natural barriers to growth. They both possess diversified economies and a pleasant climate.

Phoenicians do not like what they see in Los Angeles. They have long spoken of the decaying inner city, the smog alerts, and the tangled web of pavement stretching across Los Angeles County. They point to Automobile Club reports which show rush hour freeway speeds averaging thirty-seven miles per hour, and predicted to drop to seventeen miles per hour by the year 2000. Despite its reputation as a city designed around the automobile, Los Angeles ranks seventeenth among the country's top twenty urban areas in freeway miles per capita.[10]

Comparisons of the two urban areas are of particular concern to Phoenix residents because Maricopa County

---

[9]Joel J. Dauten and Dale A. Dauten. "Growth: The tale of Two Cities," Phoenix Magazine, Jan. 1973, p. 31.

[10]"LA traffic to worsen, club warns," USA Today, 14 Oct. 1986, Sec. A, p. 3, col. 6.

population is expected to top three million by the turn of the century. By 2005, when most of the planned freeway network will be completed, Maricopa County population is projected to be in the neighborhood of 3.5 million.[11] While nowhere near the size of the Los Angeles-Long Beach SMSA at sixteen million, Phoenix will be faced with some of the same decisions which its larger neighbor has already experienced.

For instance, Los Angeles once possessed one of the best trolley systems in the country. During the 1920's, the Pacific Electric Railway system encouraged decentralization, as residents moved outward from the central city along trolley lines. However, by 1930 the population was growing so quickly, and in such a dispersed manner, that the trolley system experienced enormous losses and eventually ceased operations. Los Angeles residents preferred the low-density urban lifestyle which the automobile offered, to the concentrated, centralized city necessary to support a mass transit system.[12]

Having adopted the automobile as the primary form of transportation, Los Angeles began a massive freeway building campaign. The Pasadena Freeway opened in 1940 and was

---

[11]Maricopa Association of Governments, "1985 Special Census Conducted," Transportation Planning Update Report, (Phoenix: n.p., June 1986), p. 10.

[12]David L. Clark, "Improbable Los Angeles," in Sunbelt Cities: Politics and Growth Since World War II, ed. Richard M. Bernard and Bradley R. Rice (Austin: Univ. of Texas Press, 1983), pp. 271-272.

followed with the construction of many miles of similar limited access roadways. By 1960, more than two hundred and fifty miles of freeways crossed Los Angeles County. That figure nearly doubled in the next decade, but new construction was virtually halted by 1979. Planners came to the realization that each new mile of freeway extended the spread of the urban area. Congestion was temporarily relieved in one location, but was soon a problem at several others.[13]

Like Los Angeles, Phoenix once had a fixed-rail mass transit system. It too, failed when trolleys could no longer compete with the motor vehicle. Today the Valley of the Sun is constructing a freeway system similar to that designed by Los Angeles in the 1950's. One can only wonder whether population growth and the resulting traffic congestion in Phoenix will necessitate a new Outer Loop by the time the one currently under construction is completed in 1995. Or will transportation planners in Phoenix come to the same conclusion as did those in Los Angeles during the 1970's, and stop building?

A NEW URBAN FORM

If the latter is inevitable, plans for future mass transit should be developed today. That means either making

---

[13]David L. Clark, p. 273.

a strong commitment to expansion of the bus system through the purchase of additional buses and shelters, or acquisition of right-of-way for a light-rail system. A recent Arizona Republic poll found sixty-eight percent of Valley residents supporting an increase in sales tax to pay for a rapid transit system.[14] Such a proposal will likely be presented to voters by 1989.

Buffalo, Los Angeles, Portland, Sacramento, San Diego, and San Jose have all developed, or are in the process of developing, light-rail mass transit systems. Planners in these cities have found that trolley lines encourage development between outlying areas and the inner city, and are less costly to construct than are other forms of fixed-rail mass transit, such as subways or monorails.[15]

The success of these light-rail systems has gained the attention of planners in Phoenix. They foresee the revitalization of the downtown shopping district as has been accomplished in Portland and Sacramento. Streets in those cities have been converted to pedestrian malls lined with small shops and benches. Such changes could be achieved in the Valley. Planners have the opportunity to determine the future form of the metropolitan area. Light-rail may not

---

[14]Susan Leonard, "68% back 0.5% sales tax for rapid transit in Valley," Arizona Republic, 12 April 1987, Sec. B, p. 1, col. 5.

[15]Cindy Skrzycki and Peter Dworkin, "Trolleys - by any other name," U.S. News and World Report, 6 April 1987, p. 46.

presently be feasible in Phoenix because of low population density, but such a system would stimulate high-density development along its route.

By developing plans for a light-rail mass transit system today, the Valley of the Sun would be in the process of creating a comprehensive transportation system. Light-rail alone is not the answer to Phoenix's transportation problems. It would not significantly relieve traffic congestion or improve air quality in Phoenix. However, a rail line serving key destinations, such as Arizona State University, Sky Harbor Airport, and the central business district, would supplement a two hundred mile freeway system, a grid-oriented bus system, additional Park and Ride lots, and an expanded ridesharing program.

Nevertheless, such a system should not be adopted unless planners favor the creation of high-density corridors in the Valley. They must be willing to abandon the type of low-density, omni-directional, urban sprawl which has characterized growth in the area. If planners wish to implement light-rail mass transit, they must drop Orange County, California as a model of urban form and adopt a more "centralized city" concept. In addition, they must stop putting money into new downtown parking facilities and concentrate on building Park and Ride lots outside of the central city. Unless residents are willing to pursue higher density living, or worsening air and traffic problems, buses remain the most appropriate means of public transportation

in the Valley.

URBAN VILLAGES

In 1979, the Phoenix City Council chose a combination of low-density living and concentrated development, by adopting "The Urban Village Concept Plan 2000" as a model of future urban form in the metropolitan area.[16] The Plan, which has been included in the "General Plan for Phoenix 1985-2000", calls for the City to develop eleven urban villages by the year 2000, each with a balance of jobs, residences, and recreational facilities. Currently nine villages have been designated within the City of Phoenix. (See Figure 3) These villages will ideally support between one hundred and one hundred and fifty thousand people, with suburban municipalities each constituting their own planning area.[17] Ideally, residents will work and live within a single village, significantly reducing the amount of cross-town daily travel. Today, in the City of Phoenix, well under half of all residents work and live within the same urban village.[18]

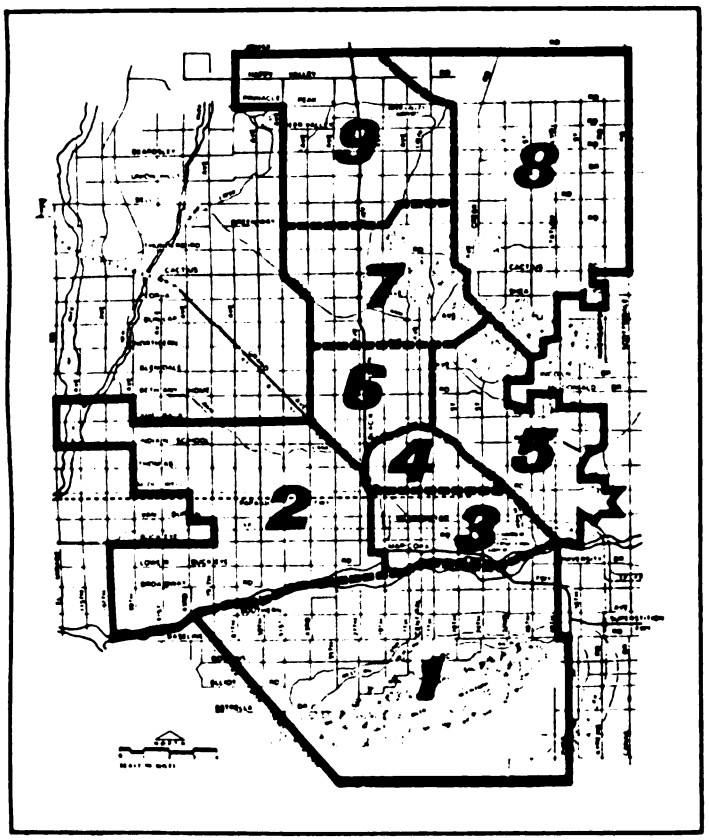
---

[16]Transportation Report 1983, n. pag.

[17]Richard Louv, America II (Los Angeles: Jeremy P. Tarcher, Inc., 1983), p. 46.

[18]William R. Mee, Jr., General Plan Section, Planning Dept., City of Phoenix, Phoenix Planning Issues - Planning Commission Symposium on Phoenix Concept Plan 2000: Questions and Answers (Phoenix: n.p., May 1981), p. 2.

Figure 3
Urban Villages



Reprinted with permission from Phoenix Transit

1 = South Mountain Village
2 = Maryvale Village
3 = Central City Village
4 = Encanto Village
5 = Camelback East Village
6 = Alhambra Village
7 = North Mountain Village
8 = Paradise Valley Village
9 = Deer Valley Village

The "Concept Plan 2000" calls for each village to be unique in the way that it achieves a balance of jobs and population. Some areas, such as the downtown region, will have high residential and employment densities, while outlying areas will maintain a much more dispersed style of living. Each urban village will develop its own core, with

some of the areas developing secondary cores. The core area may include a shopping mall, high-rise office buildings, a community center, educational institutions, or tourist facilities, depending on the nature of the village.[19] As much as fifty percent of the total employment within a particular village may be located within the core region. From the core area there will be a gradient of lower density development, with the periphery of each village utilizing the least intense use of land.[20] Some of the suburban communities, notably Scottsdale, Mesa, and Tempe, have already created such urban cores within their cities, and are closer to implementing the urban village concept than is the City of Phoenix itself.

The urban village concept allows low-density urban sprawl to continue in the Valley, but alleviates some of the problems associated with such growth. Vacant land, now considered a problem, can be either developed in such a way as to even the balance of employment and residences within a particular village, or preserved as a recreational area for the community.

The village concept helps to create a feeling of urban

---

[19]William R. Mee, Jr., p. 1.

[20]General Plan for Phoenix 1985-2000, p. 5; Peirce Report, n. pag.

community and identity which the Phoenix area lacks.[21] Stable existing neighborhoods are being enhanced and preserved through adoption of the village plan. Homeowners associations and neighborhood improvement organizations are gaining strength in the Phoenix area. Each of the nine urban villages thus far designated in Phoenix has its own citizen planning committee which is responsible for formulating goals and policies to be presented to the Phoenix Planning Commission.[22]

Transportation problems can also be alleviated through the formation of urban villages in the Valley. Because residential and employment locations will be closer together, average trip length will be reduced. Most industry in the Phoenix area is light and clean, making it compatible with residential neighborhoods.[23] The opportunity for transit services will also be enhanced. Sunday Dial-A-Ride programs already operate using village boundaries as fare zones. Unique forms of public transit, built to suit the needs of the local community, can also be created. For example, the cities of Scottsdale, Mesa, and Tempe already operate their own trolley lines to serve shopping districts

---

[21]Dr. Matthew Betz, "Summary of the Session on Urban Village Concept Workshop," First Transportation Research Workshop (TRW-1) Session Summaries (Tempe: n.p., Nov. 1981), p. 53; General Plan for Phoenix 1985-2000, p. 2.

[22]General Plan for Phoenix 1985-2000, p. 2.

[23]Richard Louv, p. 47.

within their core areas.[24] Bicycle paths and pedestrian walkways, not feasible on a metropolitan area scale, are quite practical on the village scale. They can serve as a link between the village periphery and the core area.[25]

However it is the mile-square grid system of arterial streets which will function as the backbone for transportation within each village. If the "Urban Village Plan Concept 2000" is to succeed, it is essential that these streets not be neglected in favor of the new freeway system. Surface streets will carry the majority of traffic within each planning area, allowing the freeways to function as high-speed links between villages. Traffic congestion should be decreased, as only about sixty-five percent of all vehicle miles travelled will be on surface streets, compared to over eighty percent today.[26] By the same token, the Phoenix Transit bus system must continue to be expanded, as it also will fulfill the role of cross-town transportation provider. If local planning areas are successful in creating their own public transit facilities, Phoenix Transit will be relieved of the burden of operating an increasing number of local routes. Instead, the system can be designed around express routes, with buses stopping at Park and Ride lots spaced four to five miles apart.

---

[24]Transportation Report 1983, n. pag.

[25]General Plan for Phoenix 1985-2000, p. 9.

[26]Ibid., p. 19.

One problem planners are facing in implementing the village concept, is that freeway corridors often do not correspond to village boundaries. The Black Canyon Freeway bisects the Alhambra, North Mountain, and Deer Valley Villages. The planned Paradise Parkway will also cut through the Alhambra Village. The Squaw Peak Parkway will divide neighborhoods in the Central City, Encanto, Camelback East, and Paradise Valley Villages. The Madison School District, recognized as one of the finest in the City, will also be cut in half by the Squaw Peak project.[27] Even the Outer Loop will disrupt urban village plans in the City of Phoenix. In suburban areas, where villages are not officially designated, similar conflicts with the planned freeway system exist. The problem is not one which is easily solved, for the Arizona Department of Transportation is working with a freeway plan developed in 1960. Had the Wilbur Smith Plan been adopted at that time, the City would have been able to utilize freeways as boundaries between villages. Today that is an impossibility in many parts of the Valley. Traffic patterns and neighborhoods are established and cannot easily be altered. Only the Grand Avenue Expressway and Papago Freeway will serve as dividing lines between urban villages.

Freeways are having other impacts on the urban village concept. High-density development is being attracted away

---

[27]Jana Bommersbach, "Neighborhoods Fight Back," New Times, 22 April 1987, p. 22.

from village cores to freeway interchanges. This is causing some residents to question the location of core areas. For instance, homeowners along Eighteenth Street, the route of the Squaw Peak Parkway, are petitioning for the right to sell out to commercial developers.[28]

Planners must decide whether to allow such changes to occur, or to rigidly follow the Village Concept Plan. Strict zoning ordinances, including height restrictions for structures outside of the core areas, are needed if the urban village concept is to succeed. The present policy of granting exemptions for any development project which will benefit the City in the short run must be curtailed.[29] The Phoenix General Plan, visionary in its outlook, but weak in its implementation, must be followed so that residential, commercial, and industrial land is zoned in a way which will encourage the formation and preservation of neighborhoods. If secondary core areas are to be allowed, they must be a part of the overall planning concept, rather than an exception granted to individuals seeking personal profit. Lastly, the urban village concept must be expanded to encompass the entire Valley. Suburban areas must develop their own village boundaries and core areas to keep up with growth.

Planners have the opportunity to create a unique living

---

[28]Dee Michaelis, "Rough chart," Arizona Republic, 1 March 1987, Sec. B, p. 1, col. 3.

[29]Peirce Report, n. pag.

environment in the Valley of the Sun. As the region continues to experience both population growth and physical expansion, residents face a wide range of choices in dealing with transportation related problems. It is important that these choices be approached from a visionary perspective, with the realization that decisions made today will determine the future form and quality of life in the urban area.

BIBLIOGRAPHY

BIBLIOGRAPHY

DOCUMENTS

Arizona Department of Transportation. Planning Division. Arizona Transportation Energy: a case study for the Phoenix area in the year 2000. Phoenix: n.p., Sept. 1977.

----------. 1978 Biennial Statewide Transportation Needs Report to the Arizona Legislature. Phoenix: n.p., Jan. 1978.

----------. "Car Pooling Surveyed." Transportation Spotlight. Phoenix: n.p., 31 Jan. 1975.

----------. Public Information Office. "I-10 Connection Hearing Set in Phoenix Aug. 18." News Release. Phoenix: n.p., 30 July 1976.

----------. Public Information Office. "Hohokam Construction Anticipated This Year." News Release. Phoenix: n.p., 8 Oct. 1976.

----------. "Consultant wants Grand Avenue converted to a high capacity route." Urban Freeways and Expressways. Phoenix: n.p., July 1986.

----------. Public Information Office. "Inner Loop Design Concept to be Prepared." News Release. Phoenix: n.p., 3 Dec. 1976.

----------. Public Assistance Office. Newsletter. Phoenix: n.p., Oct 1985.

----------. "New Warner Road structure replaces two-lane overpass." Urban Freeways and Expressways. Phoenix: n.p., July 1986.

----------. Transportation Planning Division. Phoenix Urban Rail Study. Phoenix: n.p., July 1979.

----------. Public Information Office. "Safety Features Reduce I-17 Accidents in Phoenix." News Release. Phoenix: n.p., 9 July 1976.

----------. Public Information Office. "State Gas Tax Up 1 Cent on September 1." News Release. Phoenix: n.p., 23 Aug. 1974.

----------. Transportation Planning Division. Transit Economics. Phoenix: n.p., Oct. 1980.

Arizona Highway Department. "Commissioners Approve elevated Papago Freeway in Phoenix." Highway Spotlight. Phoenix: n.p., 22 April 1969.

----------. Environmental Statement Administrative Action for Interstate and Defense Highway 10, Volume I. [U.S.]: n.p., June 1972.

----------. "Freeway Volumes Rise." Highway Spotlight. Phoenix: n.p., 26 Nov. 1971.

----------. "Majority Favor elevated Freeway at Papago Public Hearing." Highway Spotlight. Phoenix: n.p., 28 Jan. 1969.

----------. "$6.9 Million in Urban Aid." Highway Spotlight. Phoenix: n.p. 1 Sept. 1972.

----------. "Phoenix-Tucson Express Highway Opposed." Highway Spotlight. Phoenix: n.p., 7 June 1955.

----------. A Street Arterial Plan for Phoenix, Arizona 1950. Phoenix: n.p., 1950.

Arizona State Department of Health Services. Arizona's Air Pollution Program: Past - Present - Future. Phoenix: n.p., Oct. 1974.

Arizona State Highway Commission. 1973 Annual Report. Phoenix: n.p., Jan. 1974.

Betz, Matthew. Arizona Transportation Research Center. "Summary of the Session on Urban Village Concept Workshop." First Transportation Research Workshop (TRW-1). Session Summaries. Tempe: n.p., Nov. 1981.

Betz, Matthew J., Ph.D. and Wilson, Eugene M. Transit and the Phoenix Metropolitan Area. VATTS Report No. 10. Phoenix: n.p., Dec. 1970.

BRW, Inc. East Valley Transit Study. Final Report. Phoenix: n.p., Jan. 1986.

Citizens for Mass Transit and Against Freeways. Position Paper on I-10 and Transportation in the Phoenix Metropolitan Area and final Challenge to EIS-76-1. Phoenix: n.p., 29 July 1977.

City of Phoenix. General Plan for Phoenix 1985-2000. Phoenx: n.p., Oct. 1985.

----------. The Missing Link. Phoenix: n.p., June 1966.

----------. Personalized Transit Study. The Design and Evaluation of a Personalized Transit System. [U.S.]: n.p., Jan. 1970.

----------. Engineering Dept. Street Improvements. Capital Improvement Needs Study, 1975-85. Phoenix: n.p., Jan. 1975.

----------. Phoenix City Council. "Street Lighting and Traffic Engineering Make Driving Safer!" 75th Anniversary: City of Phoenix Arizona. Phoenix: n.p., Dec. 1956.

----------. Advanced Transportation Planning Team. Then and Now: Transportation 1960-1980. Phoenix: n.p., April 1980.

----------. Division of Traffic Engineering. Traffic Flows (Volumes). Phoenix: n.p., various years.

----------. Transit Administration. Transit: Capital Improvement Needs Study. Phoenix: n.p., Jan. 1975.

----------. Transportation Report 1983. Phoenix: n.p., 21 Nov. 1983.

----------. Phoenix City Council. Your City in Action. Two Years of Progress. Phoenix: n.p., June 30, 1954.

De Leuw, Cather and Company. Phoenix Urban Area Public Transportation Study 1971. [U.S.]: n.p., July 1971.

Gruen Associates. Growth Management: Urban Form Options for the Phoenix Region. Second edition. Phoenix: n.p., Nov. 1975.

Horton, Arthur G. An Economic, Political and Social Survey of Phoenix and the Valley of the Sun. Tempe: Southside Progress, 1941.

Inner City Planning Committee. Inner City Area Plan. Draft. Phoenix: n.p., 7 June 1978.

Johannessen and Girand. The Papago Supplement, Volume 2. Phoenix: n.p., 1970.

Judd, Gerard F. Maricopa Valley Transit Corporation under Maricopa Valley Transit Authority. A Mass Transit System for Maricopa Valley. Feasibility Study Prepared for the Land Transportation Division of Phoenix Forward Task Force. Phoenix: n.p., 16 Sept. 1969.

Kalachek, Edward D., and John M. Goering. Transportation and Central City Unemployment. St. Louis: Washington University, 1970.

Kipp, J. K. Consulting Economist. An Alternative Approach to Transportation Planning in the Phoenix Metropolitan Area. [U.S.]: n.p., June 1976.

Maricopa Association of Governments. Transportation and Planning Office. Accident study for the Maricopa County Area (1960-1979). Phoenix: n.p., April 1981.

----------. Five Year Transit Improvement Program FY 1976-1980. Phoenix: n.p., May 1975.

----------. Five Year Transit Plan FY 1980-85. Phoenix: n.p., June 1980.

----------. Guide for Regional Development and Transportation. Phoenix: n.p., 23 July 1980.

----------. Regional Advisory Committee. Long-Range Transportation System Plan for the MAG Region. Phoenix: n.p., Sept. 1977.

----------. MAG Regional Development and Transportation Reevaluation Study. Phoenix: n.p., Jan. 1977.

----------. MAG Regional Street and Highway Plan. Phoenix: n.p., Dec. 1983.

----------. Phoenix Air. A Report on Air Quality in the Phoenix Urban Area. Phoenix: n.p., Sept. 1981.

----------. Planning For Growth. Region I - Cooperation in Action. Phoenix: n.p., Sept. 1980.

----------. Transportation Planning Update Report. Phoenix: n.p., June 1986.

----------. Travel Speed Study for the Phoenix Metropolitan Area (1957 to 1979). Phoenix: n.p., Dec. 1980.

The Maricopa County Board of Supervisors. Facts and Figures, Maricopa County, Arizona. Phoenix: n.p., various editions.

The Maricopa County Department of Planning and Development. The Maricopa County Comprehensive Plan, Volume I, Background. Phoenix: n.p., Jan. 1983.

Maricopa County Highway Department. Highway Map 1987. Phoenix: n.p., 1987.

Mee, William R. Jr. General Plan Section. Planning Department. City of Phoenix. Phoenix Planning Issues. Planning Commission Symposium on Phoenix Concept Plan 2000: Questions and Answers. Phoenix: n.p., May 1981.

Merrill, Bruce D., Ph.D. Data-Line, Inc. Public Attitudes Toward Car Pooling in Maricopa County, Arizona. Phoenix: n.p., Sept. 1981.

Miller, Earle V., Engineers. City Of Scottsdale. Pima Road Study. Phoenix: n.p., Oct. 1966.

Phoenix Metropolitan Chamber of Commerce. Strategic Plan for Phoenix. Community Assesssment Phase I. Phoenix: n.p., n. d.

Phoenix Transit System. Bus Book. Phoenix: n.p., Winter/ Spring 1987.

Plancor, Inc. Research Division. Economic Impact of the Proposed Interstate Program on the Phoenix, Arizona Area. Phoenix: n.p., June 1957.

Smith, Bill. Editor. BRW, Inc. Paradise Corridor - SR 317. Phoenix: n.p., July 1986.

Stanley Womer Associates. Economic Study of Alternative Proposals for the Construction of Route I-10 Between Phoenix and Brenda, Arizona. Phoenix: n.p., Dec. 1958.

TRW Transportation and Environmental Operations. A Transportation Control Strategy for the Phoenix - Tucson Air Quality Area, Preliminary. Redondo Beach: n.p., Dec. 1972.

United Management Systems, Inc. 1984 Transportation Attitudes Survey. Phoenix: n.p., May 1984.

U.S. Department of Commerce, Bureau of the Census, Census of Population and Housing. Washington D.C.: GPO, 1940-1980.

U.S. Department of Commerce, Bureau of the Census. 1980 Census of Population and Housing, Census Tracts, Phoenix SMSA. Washington D.C.: GPO, 1980.

Valley Area Traffic and Transportation Study (VATTS). Phoenix Urban Area of Maricopa County, Arizona. Annual Report 1969. Phoenix: n.p., 1969.

Valley National Bank of Arizona. Arizona Statistical Review. Phoenix: n.p., various editions.

Wilbur Smith and Associates. A Major Street and Highway Plan. Phoenix Urban Area Maricopa County, Arizona. San Francisco: n.p., 1960.

Yu, Jason C., Ph.D. Critical Analysis of Roadway Alignment: South Loop Freeway. Phoenix: n.p., March 1985.

NEWSPAPERS

"Adjust fees to encourage infill." Editorial. Phoenix Gazette, 16 March 1987, Sec. A, p. 14, col. 1.

Beard, Betty. "Colorado may save daylight year-round." Arizona Republic, 5 April 1987, Sec. A, p. 13, col. 4.

----------. "Winding the clock to fight pollution. Daylight saving urged for winter." Arizona Republic, 5 April 1987, Sec. A, p. 1, col. 6.

Bommersbach, Jana. "Critic warns of freeway's effect on city." Arizona Republic, 2 May 1973, Sec. B, p. 1, col. 5.

----------. "Freeway initiative is approved by 54%." Arizona Republic, 5 Nov. 1975, Sec. A, p. 1, col. 1

----------. "Freeway-parkway plan started before initiative." Arizona Republic, 9 Oct. 1975, Sec. B, p. 1, col. 2.

----------. "Many in auto-oriented Phoenix termed 'transportation poor'." Arizona Republic, 20 April 1973, Sec. A, p. 14, col. 1.

----------. "Mexican-American group opposes freeway." Arizona Republic, 1 May 1973, Sec. A, p. 25, col.2.

----------. "Neighborhoods Fight Back. When local citizens take on City Hall they're as determined, and sometimes as obnoxious, as the greediest developer." New Times, 22 April 1987, p. 22.

----------. "Only central areas opposed freeway." Arizona Republic, 6 Nov. 1975, Sec. B, p, 1, col. 3.

"City core taking shape." Phoenix Gazette, 6 Feb. 1987, The Peirce Report, p. 14, col. 2.

Flannery, Pat, and John Dougherty. "Financiers finally secure backing for Sun Valley parkway project." Phoenix Gazette, 20 Feb. 1987, Sec. B, p. 8, col. 1.

Fleming, Mark. "Commercial projects likely to sprout along freeways." Phoenix Gazette, 21 Jan. 1987, Sec. H, p. 3, col. 3.

Greenbank, John. "Alcohol is fuel of the future." Phoenix Gazette, 5 March 1987, Sec. A, p. 11, col. 3.

"The growing traffic load." Editorial cartoon. Arizona Republic, 1 June 1952, Sec. A, p. 6, col. 5.

Herold, Susan. "Paradise Parkway's route extended east." Phoenix Gazette, 6 Feb. 1987, Sec. E, p. 4, col. 1.

Kirk, Karen. "Northwest Valley needs growth plan, area developer says." Phoenix Gazette, 13 March 1987, Sec. E, p. 11, col. 1.

"L.A. traffic to worsen, club warns." USA Today, 14 Oct. 1986, Sec. A, p. 3, col. 6.

Leonard, Susan. "68% back 0.5% sales tax for rapid transit in Valley." Arizona Republic, 12 April 1987, Sec. B, p. 1, col. 5.

McCloy, Mike. "Pollution deadline: 'Forget it'." Phoenix Gazette, 20 March 1987, Sec. B, p. 10, col. 1.

----------. "Tempers grow short in long line." Phoenix Gazette, 28 Jan. 1987, Sec. B, p. 1, col. 2.

----------. "Use all ideas on list to clean up county's air, attorney tells panel." Phoenix Gazette, 4 March 1987, Sec. B, p. 8, col. 1.

Michaelis, Dee. "Rough chart. Phoenix's General Plan called flawed but promising." Arizona Republic, 1 March 1987, Sec. B, p. 1, col. 3.

"'No' on Papago Freeway." Editorial. Arizona Republic, 10 May 1973, Sec. A, p. 5, col. 1.

Overend, William. "Freeway debaters point to other cities." Arizona Republic, 5 May 1973, Sec. A, p. 1, col. 2.

----------. "Papago Freeway proposal denounced by Goldwater." Arizona Republic, 8 May 1973, Sec. A, p. 1, col. 3.

----------. "Public opinion a major factor in whether freeways are built." Arizona Republic, 7 May 1973, Sec. A, p. 22, col. 4.

----------, and Bommersbach, Jana. "Returns run 58% against Papago loop." Arizona Republic, 9 May 1973, Sec. A, p. 1, col. 6.

"Owl Bus, Trolley Schedules Given." Arizona Republic, 5 Jan. 1943, Sec. 1, p. 5, col. 6.

"Parking District Legislation Urged." Arizona Republic, 2 Jan. 1947, Sec. A, p. 1, col. 4.

Peirce, Neal. "The Peirce Report." Arizona Republic, 8 Feb. 1987, Special Section.

"Phoenix Adopts Street Oiling Program." Arizona Republic, 3 June 1948, Sec. A, p. 4, col. 2.

"Phoenix Traffic Accident Toll Cut Half in '53." Arizona Republic, 1 Jan. 1954, Sec. A, p. 1, col. 1.

Plan Loop Alternative Committee. "Vote 'No' on the Papago Inner Loop Freeway." Advertisement. Arizona Republic, 8 May 1973, Sec. A, p. 15, col. 1.

Polk, Leslie. "City backs $755 million plan to widen freeways." Phoenix Gazette, 11 March 1987, Sec. A, p. 1, col. 2.

----------, and Susan Felt. "'New Town' move revives Phoenix Peoria annex war." Phoenix Gazette, 25 March 1987, Sec. B, p. 1, col. 1.

"Property Owners Hit in Parking Problem." Arizona Republic, 1 Jan. 1947, Sec. A, p. 1, col. 3.

Reich, Peter. "Sky Harbor called fastest growing airport in nation." Phoenix Gazette, 23 April 1987, Sec. A, p. 1, col. 3.

"The romance of MAG." Editorial. Scottsdale Daily Progress, 27 April 1967.

Schultze, Ray. "Fringe building debated." Phoenix Gazette, 2 March 1987, Sec. B, p. 1, col. 4.

Shanahan, Deborah. "Clean-air drive sputtering in Legislature." Arizona Republic, 22 Feb. 1987, Sec. B, p. 1, col. 3.

Sommers, Stephanie. "Editorial prompts Indian outcry." Campus News (Scottsdale Community College), 23 Feb. 1987, Sec. A, p. 1, col. 3.

South, Jeff. "The bus stops here -- but few bother to climb on." Phoenix Gazette, 18 Feb. 1987, Sec. A, p. 1, col. 1.

----------. "Carrot, stick necessary to 'leave riding to bus'." Phoenix Gazette, 19 Feb. 1987, Sec. A, p. 1, col. 5.

----------. "Fare increase is likely for Phoenix bus riders." Phoenix Gazette, 20 Feb. 1987, Sec. A, p. 12, col. 1.

----------. "Public transportation is a money loser; subsidies climb." Phoenix Gazette, 19 Feb. 1987, Sec. A, p. 12, col. 1.

----------. "Strong downtown vital, officials say." Phoenix Gazette, 6 Feb. 1987, The Peirce Report, p. 15, col. 1.

----------. "Tax shift proposed to fill gaps." Phoenix Gazette, 6 Feb. 1987, The Peirce Report, p. 14, col. 1.

Spratt, Tom. "Leapfrog developments stir criticism." Phoenix Gazette, 6 Feb. 1987, The Peirce Report, p. 6, col. 2.

"Truck Routes Designated." Arizona Republic, 4 Jan. 1940, Sec. A, p. 5, col. 6.

Young, Carl. "State considers 'all Indian' loop." Phoenix Gazette, 7 March 1987, Sec. B, p. 4, col. 1.

PERIODICALS

"The Arizona Business Scene. Phoenix: Growth City of the 1970's." Arizona Business, 25, No. 1 (Dec. 1978), pp. 21-22.

Brown, Carol Osman. "Maricopa County's Century of Growth." Arizona Highways, 47, No. 2, Feb. 1971, pp. 8-35.

----------. "Phoenix 1975 -- a city of BUILDERS." Arizona Highways, 51, No. 5, May 1975, pp. 4-13.

Burnell, Raymond. "Chamber Up-date." Tempe Magazine, Sept./Oct. 1984, p. 26.

"City in the Sun in Quotes." Arizona Highways, April 1957, pp. 9-39.

Dauten, Joel J., and Dale A. Dauton. "Growth: The Tale of Two Cities. Is Phoenix Becoming Another Los Angeles?" Phoenix Magazine, Jan. 1973, pp. 30-31.

Dodge, J. W. "Phoenix Street Railway 1887-1948." Western Railroader, 24, No. 2, Issue 254, (Feb. 1961), pp. 18-20.

Farris, Martin. "The Transit alternative in Phoenix." Arizona Business, 25, No. 7, (Aug./Sept. 1978), pp. 3-9.

Hait, Pam. "Transportation." Phoenix Magazine, Aug. 1974, pp. 50-51.

----------. "Transportation: One of the Most Complex Issues Facing the Valley Today." Phoenix Magazine, Aug. 1973, pp. 96-97.

Haley, Charles E. "Phoenix Plans For Future Growth By Anticipating Traffic Needs." Western City, Feb. 1954, pp. 34-35.

Herbert, John D. "Phoenix: Economic Capital of the Great Southwest Sun Country." Arizona Highways, 40, No. 3, March 1964, pp. 28-47.

Konig, Michael. "Phoenix in the 1950's: Urban Growth in the 'Sunbelt'." Arizona and the West, 24, No. 1, Spring 1982, pp. 19-38.

Lowe, S. "Just for the taste of water." Arizona Highways, 54, No. 8, Aug. 1978, pp. 31-41.

Luckingham, Bradford. "The American Southwest: An Urban View." Western Historical Quarterly, 15, No. 3 (July 1984), pp. 261-280.

----------. "Urban Development in Arizona: The Rise of Phoenix." Journal of Arizona History, 22, No. 2 (Summer 1981), 197-234.

Moore, Leo. "The People-Moving Problem." Phoenix Magazine, May 1971, pp. 18-21.

Muirhead, Desmond. "The Arizona Landscape - A Critique." Arizona Architect, 2, No. 10 (June 1959), p. 13.

Pettycrew, J.L. "An Inside Look at the Future." Arizona Highways, 47, No. 2, Feb. 1971, pp. 44-47.

"Portrait of Our Valley." Arizona Highways, 28, No. 8, Aug. 1952, p. 37.

Skrzycki, Cindy, and Peter Dworkin. "Trolleys -- by any other name." U.S. News and World Report, 6 April 1987, p. 46.

Stocker, Joseph. "The Big One. Maricopa County Arizona, U.S.A." Arizona Highways, 47, No. 2, Feb. 1971, pp. 2-7.

Taylor, Edward. "ASU students offer a mass transit plan for Phoenix to bring the future into the now." Arizona Magazine, 10 May 1970, p. 7.

"You Can't Get Here From Here." Arizona Magazine, 22 May 1977, pp. 38-41.

Zellner, Al M. "Welcome Stranger!" Arizona Highways, 19, No. 8, Aug. 1943, pp. 20-27.

BOOKS

Clark, David L. "Improbable Los Angeles." In Sunbelt Cities: Politics and Growth Since World War II. Ed. Richard M. Bernard and Bradley R. Rice. Austin: Univ. of Texas Press, 1983, pp. 268-308.

Johnson, G. Wesley Jr. Phoenix: Valley of the Sun. Tulsa: Continental Heritage Press, Inc., 1982.

Louv, Richard. America II. Los Angeles: Jeremy P. Tarcher, Inc. 1983.

Luckingham, Bradford. "Phoenix: The Desert Metropolis." In Sunbelt Cities: Politics and Growth Since World War II. Ed. Richard M. Bernard and Bradley R. Rice. Austin: Univ. of Texas Press, 1983, pp. 309-327.

----------. The Urban Southwest. A Profile History of Albuquerque - El Paso - Phoenix - Tucson. El Paso: Texas Western Press, 1982.

Pulliam, Gene. Publisher: Gene Pulliam, Last of the Newspaper Titans. Ottawa, Illinois: Jameson Books, 1984.

Wagoner, Jay J. Arizona's Heritage. Salt Lake City: Peregrine Smith Books, 1983.

OTHER

Brooks, Ronald William. "Transportation (Availability) and Employability of the Urban Poor." Thesis. Arizona State University 1974.

Kotlanger, Michael J. "Phoenix, Arizona: 1920-1940." Diss. Arizona State University 1983.

Osland, Rolf Olaf. "The Transport System in the Valley of the Sun." Thesis. Arizona State University 1968.

Squaw Peak Extension Public Hearing. Phoenix Shadow Mountain High School. 26 Feb. 1987.

State Lottery Commission. Telephone interview. 19 March 1987.

Valley National Bank. Telephone interview. 17 April 1987.