Section 2

Economic Impact of Growth

6.0 The Benefits of Growth to the Bernalillo County Economy, 2000-2020

6.1 Executive Summary

This report is a companion to the study of infrastructure needs conducted by the Parsons Brinckerhoff team. Section 1 of this Planned Growth Strategy, Part 1 – Findings Report focused on the infrastructure additions and refurbishing needed to support a general growth scenario for Bernalillo County. Parsons Brinckerhoff assessed the current conditions and needed expansion of five classes of infrastructure: water delivery system, sewage treatment, transportation, public transit, and drainage (hydrology).

The present study reports estimates of the net pecuniary benefits associated with economic growth in the region. The benefits that will be measured are the growth in output, employment, incomes, and local tax revenues associated with the growth projected for the regional economy. To calculate the net effects of growth, a multisector model of the economy of Bernalillo County was constructed. The basis of this model is an input-output (I-O) model in which the growth scenarios presented in Section 1 are projected as impacts to the local economy. The present study begins with the following premise:

> *Growth of the regional economy requires the existence of a viable houing market. Such housing growth depends on the presence of sound infrastructure in areas such as water delivery, sewage, and transportation. That is, infrastructure development is properly viewed as an investment in the local economy.*

The results are as follows.

- A Slow Growth Scenario represents a baseline or counterfactual projection for the region absent the investment in infrastructure.
- Four growth scenarios are analyzed. These are Balanced A, Balanced B, Balanced C, and Trend
- Balanced A, B, and C use the same spatial development and infrastructure investment projections but differ according to the assumptions concerning how the investment is to be funded. Trend is the spatially diffuse scenario with considerable residential development in the outlying areas.
- For the Balanced A Scenario the infrastructure investment is financed through increased gross receipts tax. The result is that gross output for the local economy is $6.04 billion higher annually than under the Slow Growth Scenario by 2020. Earnings are $2.48 billion higher.
- For Balanced B Scenario the road construction on federal and state roads is financed through transfers from these senior governments, and it is assumed that none of the taxes are raised locally. The result is that gross output is $6.09 billion higher annually by 2020. Total employment is 100,680 jobs higher than the Slow Growth Scenario by 2020.

- For the Balanced C Scenario the infrastructure investment is all financed from local residents. Part of the investment is financed through increased impact fees and the rest is obtained through gross receipts tax increases. The result is that gross output is $6.15 billion higher annually by 2020. Earnings are higher by $2.52 billion in 2020.
- For the Trend Scenario the same structure as Balanced A is adopted, but the spatial distribution is more dispersed . The result is that gross output is $6.00 billion higher by 2020. Employment is 99,214 higher.

It is important to recognize that the differences in the value of output or earnings or employment between the Slow Growth and the growth related scenarios constitute the opportunity cost of foregoing the investment in infrastructure. The proposed investments in infrastructure rehabilitation and extension will yield output increases and subsequent tax revenues that will exceed the costs of the infrastructure itself. That is, the infrastructure is both a necessary and justifiable investment.

6.2 Introduction

This report is a companion to the study of infrastructure needs analysis conducted by the Parsons Brinckerhoff team. Section 1 of the Planned Growth Strategy, Part 1 – Findings Report focused on the identification and costs of infrastructure additions and refurbishing needed to support a general growth scenario for Bernalillo County. Parsons Brinckerhoff assessed the current conditions and needed expansion of five classes of infrastructure: water delivery system, sewage treatment, transportation, public transit, and drainage. Three spatially differentiated growth scenarios were addressed in Section 1. These were labeled the Downtown Scenario, Trend Scenario, and Balanced Scenario. The scenarios will be defined later in this report. Because the required infrastructure additions depend on the spatial distribution of the population, the costs associated with each growth scenario differ.[1] The analysis in this report focuses on the Balanced Scenario under different assumptions regarding the incidence of the taxation to finance the costs of the growth and different methods of financing the growth related infrastructure, correcting deficiencies, and rehabilitating existing infrastructure. For comparison, the present study compares the Trend Scenario and the Balanced Scenario to demonstrate the effect of the spatial distribution of growth.

The present study reports projections of the net pecuniary benefits associated with economic growth in the region. The benefits that will be measured are the growth in output, employment, incomes, and local tax revenues associated with the growth projected for the regional economy. There are other benefits (and costs) associated with economic growth that are not addressed quantitatively here. These include social costs such as congestion and pollution as well as social benefits such as those associated with a local labor market that offers a sufficient range of jobs to retain highly qualified workers in the region. A brief discussion will be presented in the concluding section of this report.

The present study begins with the following premise. Growth of the regional economy requires the existence of a viable housing market. Such housing growth depends on the presence of sound infrastructure in areas such as water delivery, sewage, and transportation. Of course, other components of infrastructure, such as police and fire services, and education, are required to support population growth, but these are not addressed in Section 1 by the terms of the contract.

A primary role of the housing market in the growth of a region is the support of the growth of the labor force. Many major urban areas have seen their growth limited by slowly responding housing markets that have the effect of causing housing prices to rise in response to population growth.[2] Current estimates (first two quarters of 2000) show the housing cost index in the Albuquerque Metropolitan Statistical Area at 100.3. At the same time, however, the earnings index is approximately 91 making the earnings approximately 9% below the average. Clearly, there is a housing affordability issue for the Metropolitan Statistical Area (and for Bernalillo County). Any delays in constructing infrastructure will impose delays on housing construction and will exacerbate this situation. The analysis conducted for this report rests on an assumption that housing construction will keep pace with the projected labor force growth, but this will require that most of the infrastructure issues raised in Section 1 be addressed. Other assumptions will be described later in this report.

6.3 Section 1 of the Planned Growth Strategy, Part 1 – Findings Report

Since it forms the background for the present study, Section 1 of the Planned Growth Strategy, Part 1 – Findings Report will be briefly summarized here.[3] The report describes three categories of infrastructure development for the Albuquerque/Bernalillo County economy. These are rehabilitation (i.e., improving condition without expanding capacity), correcting deficiencies (i.e., adding to infrastructure capacity consistent with engineering standards), and growth. Parsons Brinckerhoff provides an analysis of five components of the physical infrastructure within Bernalillo County: the water delivery system, the sewage system, the transportation infrastructure (primarily roads), public transit, and the drainage (hydrology) system. The study was largely an engineering analysis, and the focus was on the cost of correcting existing deficiencies and rehabilitation, and on the costs associated with the extension of the infrastructure to accommodate future growth. Three spatially differentiated growth scenarios were analyzed, and the difference in the costs of expanding the infrastructure to accommodate each is estimated.

6.3.1 Trend Scenario

A growth scenario based on the current pattern of land use is termed the Trend Scenario. Growth is projected to continue in a spatially diffuse manner. Much of the future development is projected to occur outside of the historic boundaries of Albuquerque. Residential development is projected to occur mainly in the following areas: West Mesa, Southwest Mesa, Quail Ranch, Mesa del Sol, and the East Mountain Area. Employment growth is similarly projected to be widespread. Major concentrations of new employment are projected to be in the Westland Area, Seven Bar Area, Mesa del Sol, Quail Ranch, and areas along the North I–25 corridor.

6.3.2 Downtown Scenario

This scenario is characterized by a greater concentration of population and employment in the Downtown, University of New Mexico, and Uptown areas. Unlike the Trend Scenario, the employment growth under this scenario is projected to occur largely within the existing built-up areas. Population growth is also less dispersed under this scenario. In addition to the above, major concentrations occur along I–25 north of San Antonio, and along Coors Road to the Northwest.

6.3.3 Balanced Scenario

This scenario is a blend of the two previous scenarios. Employment growth is projected to occur in the nearer West Side sections including the Atrisco Business Park, the East Central area, and Mesa del Sol. Population growth is projected to occur in Mesa del Sol, and along the Central and North Fourth Street Corridors. This Scenario was designed, in part, to achieve greater jobs-housing balance.

Within each of these scenarios, a set of cost estimates is developed for the expansion of the infrastructure components, rehabilitation, and addressing existing deficiencies. The aggregate growth in employment and population is projected to be similar across the three scenarios, and this growth is projected to occur in a linear pattern over time.

The Section 1 reports the costs associated with infrastructure development through 2020 for each scenario. These costs are estimated at $3.63 billion for the Trend Scenario, $3.38 for the Downtown Scenario, and $3.44 for the Balanced Scenario. The differences are largely due to growth related considerations concerning extension of services to far-flung areas in the less dense scenarios. Thus, the Downtown Scenario has the lowest costs while the Trend Scenario is the most expensive. While the cost differences may appear to be small ($0.19 billion for the difference between the Trend and Balanced Scenarios) relative to the total costs, they are significant and demonstrate the payoffs to planning for growth.

Parsons Brinckerhoff does supply a timeline for *some* of the infrastructure expenditures. For example, the road construction projects are meticulously described in Section 1. However, in aggregate terms, it is implicitly assumed that the employment and population growth is linear and thus, the infrastructure expenditures will follow that path also. However, this will have implications for financing the infrastructure and for the capacity to pre-build some of it to reduce disruptions to existing areas of development as future expansions are undertaken. I would argue that the timing of the growth as well as the spatial order is something that should be addressed in subsequent analyses.

Since it is primarily an engineering analysis, Section 1 addresses only the costs (actually a subset of these costs) associated with growth, and it does not *quantify* the benefits that may be associated with the growth. Consequently, the present study will address this by reporting on projections of the pecuniary benefits of growth. As stated earlier, the infrastructure is an essential input to the housing sector, and it is in this context that the benefits from growth will be assessed.

Parsons Brinckerhoff did address some additional consequences of the different spatial distributions of the population. For example, the costs of private transportation will vary by the spatial distribution of growth. The key variable that determines these costs is vehicle miles traveled. Based on the MRGCOG metropolitan transportation study, Parsons Brinckerhoff reported the vehicle miles traveled and associated annual costs for the three scenarios. The differences are as high as $130 million per year in 2020 between the Balanced and Trend scenarios when all costs (including travel time) are incorporated. An additional factor that will likely vary by scenario is the mix of employment opportunities. If a growth strategy is

successful in directing non-residential development toward the Downtown or Balanced Scenarios, the types of occupations will be more concentrated in the areas of Business Services than under the Trend Scenario. The relatively constant populations and employment projections provided by MRGCOG do not take account of the effect of the spatial distribution on the mix of employment and the impact on which sectors would be encouraged to grow under each spatial scenario.[4] This was done in the Planned Growth Strategy study to isolate the infrastructure related costs associated with the different urban growth Scenarios.

The cost data used for this present study are those provided in Section 1 of the Planned Growth Strategy, Part 1 – Findings Report. The Balanced Scenario is analyzed in some detail because it constitutes a middle ground between the Trend and the Downtown Scenarios. In particular, the Balanced Scenario is investigated under different fiscal assumptions concerning the structure of the revenue sources to finance the infrastructure. The public sector data were provided by the City and are derived from analysis using the FISCALS model.[5]

6.4 Methodology of the Projection of Economic Growth

To calculate the net effects of growth, a multisector model of the economy of Bernalillo County was constructed. The basis of this model is an input-output (I-O) model that relates the linkages in the local economy. A brief overview of the I-O methodology is provided in Appendix B, and the economic aggregation sectors are set forth in Appendix C. The growth scenarios presented in Section 1 are projected via impacts to the local economy. The results of the present study quantify the economic benefits of growth as measured by the increase in the level of economic activity in the regional economy. Much of Section 1 focuses on the provision of infrastructure required to support the housing market. It is clear that a healthy housing market is an important input to the economic growth of the area. The local economic benefits of this infrastructure rehabilitation and expansion are measured as the increased economic activity made possible by the growth in the labor force served by the housing market.[6]

The data set to construct the I-O model of Bernalillo County was derived from the IMPLAN database. This database provides information on interindustry transactions, employment, output, employee earnings, indirect taxes, and payments to capital for

Table 90 Economic Sectors Represented in I-O Model

Sector No.	Sector Name
1	Agriculture
2	Mining
3	Construction
4	Food Processing
5	Textiles
6	Wood Processing
7	Print and Publishing
8	Chemical and Drugs
9	Miscellaneous Manufacturing
10	Building Materials
11	Heavy Manufacturing
12	Technical Manufacturing
13	Light Manufacturing
14	Transportation, Communications, and Utilities
15	Personal Services
16	Wholesale and Retail Trade
17	Recreation Services
18	Finance, Insurance, and Real Estate
19	Business Services
20	Medical, Legal, and Educational Services
21	State and Local Government
22	Federal Government

all of the firms in the County. In the full database, the economic activities are grouped together (aggregated) into approximately 300 industrial categories.[7] For the purposes of analysis, these are further aggregated into 22 economic activities. The 22 sectors are reported in Table 90 (pg. 323). In economic analysis, aggregation is done for several reasons. First, many of the sectors in the regional economy are small and models are poorly behaved when small sectors are included. Second, it is extremely difficult to analyze the sector level changes associated with an impact, such as growth in the economy, with many economic sectors depicted. For this reason, most regional analysis is conducted with aggregated models. A third reason for aggregation is that it allows the analysis to focus on key sectors of concern to the question at hand. Appendix C presents a brief discussion of the aggregation scheme.

Once the aggregation was completed some further adjustments to the database were made to reflect local information. The IMPLAN database is constructed by applying some local data (primarily employment levels available from the Bureau of Labor Statistics) to national data to derive local I-O coefficients and also earnings data, and so on. For areas in which New Mexico is unique, the database needs to be modified based on local data. There are two differences between the local Bernalillo County data and what IMPLAN reports. The first concerns the measurement of employment. IMPLAN records all jobs rather than reporting full-time equivalent positions as are reported in Section 1. This will lead to higher employment levels being reported in the current study, and the differences will be greatest in those sectors characterized by a greater incidence of part-time employment (such as Retail Trade, Agriculture, and Recreation Services). The average earnings per job are, consequently slightly reduced by the inclusion of part-time workers in the analysis, but the total earnings are consistent with the Bureau of Labor Statistics data in use by others doing analysis of the labor market in New Mexico. Since reliable data on part-time jobs are not readily available, the IMPLAN employment levels were utilized for the analysis reported here, and the interpretation of the results incorporates the differences.

The second major adjustment concerns the computation of indirect business taxes. New Mexico is unique among the states in its reliance on the gross receipts tax, which has a much broader coverage than the retails sales tax that is more typical of state revenue structures. The gross receipts tax is imposed “for the privilege of doing business in New Mexico,” and its coverage includes services, construction, and many other activities not typically covered by sales tax. Further, New Mexico relies very little on property taxation and somewhat less than other states on the corporate income tax. The net effect is that the IMPLAN database (which employs national averages) reports low indirect tax levels for sectors such as Business Services and Medical, Legal, and Educational Services while reporting very high property tax levels for Finance, Insurance, and Real Estate. In some earlier work done with the state Government (Clifford and McKee 1996; McKee et al. 1995) we developed effective indirect tax rates for many sectors of the economy. These rates are used for the present study.

6.5 Growth Analyses

Once the aggregated and updated I-O model is constructed, it is ready for use in analysis.[8] The first step in the analysis was to construct a Slow Growth Scenario. This represents a growth pattern that would result if no infrastructure deficiencies were corrected and no expansions of the infrastructure were undertaken. Under this scenario, the housing market would constrain future growth in the region. The next step was to construct growth scenarios assuming that the infrastructure developed to support such growth.

The employment and population growth figures are assumed (under the MRGCOG projection) to be linear, and Section 1 reports the level for the current year and for 2020. However, it may be useful to have the capability of investigating alternative timelines for the projected growth. Accordingly, the I-O model results are projected through 2020 in five-year intervals. This would permit investigation of the financial implications of alternative programs of infrastructure development. The costs of the infrastructure development and rehabilitation may vary depending on the timing of the projects. Certainly, the City and County financing capacity is limited at a given time, and this may necessitate scheduling the projects. Thus, while the current analysis assumes a linear time path, the model and method are capable of analyzing different programs of development and growth.

The underlying mechanism of growth is the projected increase in population and labor supply that is supported by the infrastructure development and housing expansion. In I-O models one can introduce an exogenous shock as a change in final demand or as a change in the supply of a productive input. Exogenous shocks are impacts generated by forces outside the local economy. The exogenous shock is the population growth projected for the local economy. In this case, the labor growth is generated by the policy decision to invest in the local infrastructure. Thus, for the purposes of this study, I treat the labor growth as an exogenous supply-side effect. I assume the demand side of the local economy will accommodate this supply effect subject to the caveat that the tax structure is altered to meet the fiscal requirements of the infrastructure development in Section 1.

The three spatial development scenarios evaluated by Parsons Brinckerhoff generate similar aggregate growth levels in the labor market since they are based on the growth projections conducted by MRGCOG. The spatial patterns of growth suggest that the sector distribution of the growth in jobs will be different for the scenarios. At this time, the employment projections do not permit such differentiation, and this could be a useful avenue for further evaluation of the growth strategies. To evaluate the economic benefits from the planned growth, the Balanced Scenario is analyzed in depth since it represents a middle ground. Within this Balanced Scenario there are some policy options on the government revenue side that can be evaluated. As well, the model can be used to compare the effects of intergovernmental fiscal relations in the funding of some of the public sector infrastructure projects.

Demand side impacts arise through the effects of the taxation required to cover the cost of the infrastructure rehabilitation and expansion. The mechanism for introducing the tax effects is described below. The key point here is that increased tax levels are applied to finance the infrastructure needs identified in Section 1. The existence of substantial deficiencies and rehabilitation back-logs is prima facie evidence that historic tax levels have been inadequate to fund the infrastructure needs of the City and County. The growth projections reported here do account for the public and private sector financial costs necessary to fund the growth, including the infrastructure requirements identified by Parsons Brinckerhoff. The scenarios differ by the revenue mix applied and by assumptions concerning the level of state and federal government participation in the funding of rehabilitation for roadways under their jurisdiction.

The scenarios investigated are presented in Table 91. The Slow Growth Scenario provides a baseline or counterfactual for comparison. Absent the infrastructure development presented in Section 1, the housing market in the Bernalillo County may be expected to stagnate and to constrain the overall growth of the economy. That is, infrastructure such as roads, water delivery systems, and sewage systems are seen as essential inputs into the housing market development. Although developers will be providing the local infrastructure (local streets, curbs, etc) within new developments, they cannot be expected to undertake the provision at the regional level, such as major arterial roads, major water facilities, and large scale hydrology projects. Failure to construct such infrastructure, to remedy deficiencies, and to perform needed rehabilitation will curtail future growth in employment and result in the output projections derived for the Slow Growth Scenario. Section 1 provides estimates of some of the financial costs of growth. The financial benefits of the growth are provided in this study by comparing the various measures of economic activity (output, earnings, and tax revenues) between the Slow Growth Scenario and the growth scenarios.

Table 91 Growth Scenarios Analyzed

	Scenario			
Attributes	**Balanced A**	**Balanced B**	**Balanced C**	**Trend**
Spatial Configuration	Balanced	Balanced	Balanced	Trend
Infrastructure Finance	Increase in gross receipts tax	Increase in gross receipts tax	Increase in gross receipts tax plus impact fee increase by 50%	Increase in gross receipts tax
City/County Funding Responsibility	City and County responsible for all local expenditures	State and federal governments pay for roads under their jurisdiction	City and County responsible for all local expenditures	City and County responsible for all local expenditures
Private Transportation Costs				Higher vehicle miles traveled result in households shifting expenditures to transportation

Balanced A Scenario has all of the infrastructure construction financed through higher gross receipts tax. The incidence of the tax (who pays it) is on the households and the result is a crowding out of local consumption. This reduces final demand in the local economy. Under Balanced A, the City and County residents pay for road rehabilitation, deficiencies, and expansion including roads under federal and state jurisdiction. Although the senior government levels "write the checks," this scenario assumes that the taxes to pay for these infrastructure investments are collected locally (income and excise taxes). The household consumption impacts due to the taxation are assigned to those sectors whose output is most directly affected by the level of household demand. These sectors are: Wholesale and Retail Trade; Personal Services; Business Services; Transportation, Communications, and Utilities; and Recreation Services.

Under Balanced B Scenario, the infrastructure is financed through the gross receipts tax but the financing for the state and federal road construction is assumed to be outside the region. In effect, this funding is treated as a transfer to the region. I do not think this is a totally realistic scenario. New Mexico residents pay a relatively larger share of the federal excise taxes on gasoline (due to distances and a relatively high proportion of larger vehicles). Bernalillo County has higher per capita incomes than all but Santa Fe and Los Alamos Counties so our share of state income tax payments is above the state average. Thus, it is unlikely that the region will be able to transfer the costs of infrastructure investments to senior governments.

Balanced C Scenario funds the infrastructure investment through a 50% increase in the current impact fees on new residential construction with the remainder being made up through higher gross receipts tax revenues. This raises the question of the incidence of impact fees. The literature supports the position that property taxes are capitalized into the price of the property. That is, purchasers reduce or discount their bid price for property because they recognize the tax liability that accompanies the property. Thus, the incidence of such taxes is on the owners of the property at the time the tax is imposed or increased. Impact fees work much the same way with an important extension. Since they apply only to new properties and there are substitutes (existing properties), the incidence of impact fees will be on the property developers. That is, the developers will not be able to easily pass these fees on to purchasers. Thus, the effect of the fees is to lower the return on property development, and this would dampen the growth in the supply of housing. It is an empirical issue as to how large this effect may be. For this analysis, I have assumed the effect on the stock of housing is negligible. Under the Balanced C Scenario, the increases in the gross receipts tax are lower than under the Balanced A Scenario. The total Scenario revenues generated through increased impact fees are based on the projected additions to dwelling units only, based on the population growth assumptions.

Trend copies the fiscal elements of the Balanced A Scenario but imposes the diffuse spatial distribution with the resulting higher vehicle miles traveled and transportation expenses for households. Based on the MRGCOG transportation analysis, the additional vehicle miles traveled required by the Trend Scenario impose additional *direct* costs of $124,830–$241,190 per day depending on the vehicle operating costs estimate.[9] Based on the Parsons Brinckerhoff assumptions of travel days per year, this translates into a saving of approximately $37.5–$66.3 million

per year if the Balanced Scenario plan is adopted versus the Trend Scenario. Since households will be spending these additional amounts on transportation, the moneys will not be available for other purchases. While some of these expenditures will flow onto the local economy (e.g., gasoline, repairs, and commission on insurance premiums) much of it will not (e.g., tires, insurance premiums, and automobile production). For the present analysis, it is assumed that one-half of the costs are leakage from the local economy. Taking the midpoint between the high and low vehicle cost numbers and then taking one half of this yields a cost saving of $25.45 million per year under the Balanced Scenario. This estimate omits many public and private costs that may be attributed to commuting travel. Additional garage space at home, parking spaces at place of work, and so on may be attributable to a more spatially diffuse development pattern. However, these expenditures would represent considerable changes in behavior and may not be attributable solely to changes in travel patterns. For example, a two-car garage is typically bundled with houses of a certain square footage. For builders to change this formula would take considerable time and likely not occur to any significant extent during the time period of this study. Thus, only the direct costs associated with commuting are included in this analysis.

All growth scenarios incorporate the assumption that the deficiencies, rehabilitation, and growth related expenses are to be paid out of the City and County operating budgets. Hence these expenses are attributed to the gross receipts tax, impact fees, and transfer payments depending on the specific scenario.

Section 1 enumerated the extent of the infrastructure deficiencies and rehabilitation in the region. One cause of this has been the method of financing such investments. To reflect the consequences of the growth projections, the costs of remediation and new infrastructure are assumed to be met from revenues generated in the City and County. To reflect this issue in the growth projections, I assumed that in the future such deficiencies would not arise and that the present deficiencies would be fully remedied over the next 20 years.[10] This is the basis for the taxation assumptions embodied in the Balanced and Trend Scenarios.

6.6 Results

The aggregate results are presented in Tables 92, 93 and 94. Table 92 reports the results for employment projections. The growth scenarios all result in considerably higher employment over the time period. Balanced A Scenario results in a projected employment level of 451,373 by 2020 while Balance B and C yield 452,150 and 453,178, respectively. The Trend Scenario, with its increased transportation costs yields a lower level of employment (450,684) than the other growth scenarios.

Table 92 Employment Projections (Jobs)

	Scenario				
Year	Slow Growth	Balanced A	Balanced B	Balanced C	Trend
2000	340,444	345,051	345,645	346,431	344,588
2005	343,168	379,433	380,087	380,950	378,925
2010	345,913	401,702	402,387	403,309	401,125
2015	348,681	426,411	427,158	428,116	425,790
2020	351,470	451,373	452,150	453,178	450,684

Table 93 Aggregate Output and Earnings Projections (Million 1999$)

Year	Scenario				
	Slow Growth	Balanced A	Balanced B	Balanced C	Trend
Output					
2000	$20,899.79	$21,161.84	$21,198.89	$21,245.64	$21,132.95
2005	$21,067.09	$23,254.44	$23,295.19	$23,347.02	$23,222.74
2010	$21,235.67	$24,604.31	$24,646.44	$24,702.12	$24,568.36
2015	$21,405.20	$26,104.29	$26,151.50	$26,208.42	$26,065.55
2020	$21,576.44	$27,620.40	$27,668.87	$27,730.48	$27,577.44
Earnings					
2000	$8,433.50	$8,560.48	$8,571.66	$8,594.24	$8,551.76
2005	$8,500.95	$9,409.46	$9,421.75	$9,446.65	$9,399.90
2010	$8,568.98	$9,958.04	$9,971.11	$9,997.87	$9,947.53
2015	$8,637.51	$10,567.26	$10,581.33	$10,609.27	$10,555.56
2020	$8,706.62	$11,182.81	$11,197.42	$11,226.72	$11,169.85

Table 93 reports the aggregate results for output and labor earnings. At this aggregate level, there is little difference across the three versions of the growth projections. Under the Slow Growth Scenario, output increases from $20.899 billion in 2000 to only $21.576 by 2020. Under Balanced A the County output grows to $27.620 billion annually by 2020. Under Balanced B and C the output levels reach $27.669 billion and $27.730 billion annually, respectively. The Trend Scenario projection is for output to equal $27.577 annually by 2020. Earnings growth parallels the output growth projections.

It is clear from Tables 92 and 93 that there is substantial growth for the local economy under all of the growth scenarios. The difference between the Slow Growth projections and those of the Balanced Scenarios and the Trend Scenario provide a measure of the financial benefits of growth. Thus, the gain in output by 2020 under Balanced A is projected to be $6.04 billion. Absent the investment in infrastructure. such growth is unlikely to be possible. Over the forecast period, the cumulative gain in output under the

Table 94 Projected Tax Revenues to Bernalillo County, Balanced Scenario A

(Million 1999$)

Year	GRT Revenues Total	GRT Revenue County	All Tax Revenues
2000	$1,051.14	158.73	$407.34
2001	$1,072.15	161.67	$419.38
2002	$1,091.69	164.43	$429.71
2003	$1,110.11	167.06	$438.77
2004	$1,127.66	169.58	$446.92
2005	$1,156.79	173.43	$467.50
2006	$1,169.83	$175.47	$471.02
2007	$1,183.76	$177.57	$475.05
2008	$1,197.91	$179.68	$479.49
2009	$1,212.28	$181.81	$484.24
2010	$1,224.35	$183.65	$485.09
2011	$1,239.44	$185.91	$491.19
2012	$1,254.57	$188.14	$497.23
2013	$1,269.72	$190.33	$503.25
2014	$1,284.90	$192.49	$509.21
2015	$1,299.83	$194.97	$515.56
2016	$1,315.09	$197.04	$521.42
2017	$1,330.35	$199.09	$527.27
2018	$1,345.61	$201.15	$533.12
2019	$1,360.87	$203.20	$538.96
2020	$1,376.14	$205.26	$544.81
Total Revenue	**$25,674.18**	**$3,850.65**	**$10,186.54**

Note: All Tax Revenues are estimated from the I-O model results using factors in the FISCALS Model of the City of Albuquerque. All three of the growth scenarios yield similar results for Albuquerque, and the values in the table are for the Balanced A Scenario. Values reported in millions of $1990. The GRT Revenues Total column reports the entire gross receipts tax revenue generated from economic activity within Bernalillo County. The GRT Revenue County column reports the estimated gross receipts tax revenues accruing to the City and County governments. The All Tax Revenues column reports the total revenues estimated from IO model results using factors in the FISCALS Model of the City of Albuquerque.

Balanced A Scenario is more than $60 billion. Thus, the cost of foregoing this investment is a substantial loss of output, earnings, and employment.

Tax revenues for the period are reported in Table 94 (pg.329). These data were derived from the I-O model's projections of employment and earnings by sector and applying the coefficients imputed from the City of Albuquerque's FISCALS model. (The results are likely an underestimate since the County data are only approximated. Further, the results need to be compared with those produced by the more disaggregate FISCALS model.) The stream of *net* revenues that would arise from the year 2000 through 2020 totals $1.654 billion in 1999 dollars (Balanced A). It is important to realize that these revenues are net of those that are required to fund the infrastructure requirements of Section 1. However, they do not incorporate the growth related expenditures in areas of social infrastructure, such as police and fire protection. The growth related impacts are summarized in Figures 44 and 45.

Figure 44 Output Effects of the Planned Growth Strategy (Balanced Scenario A)

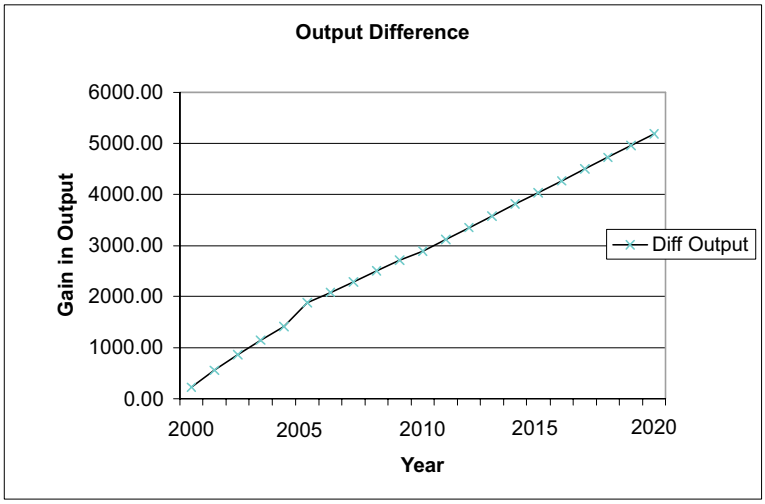
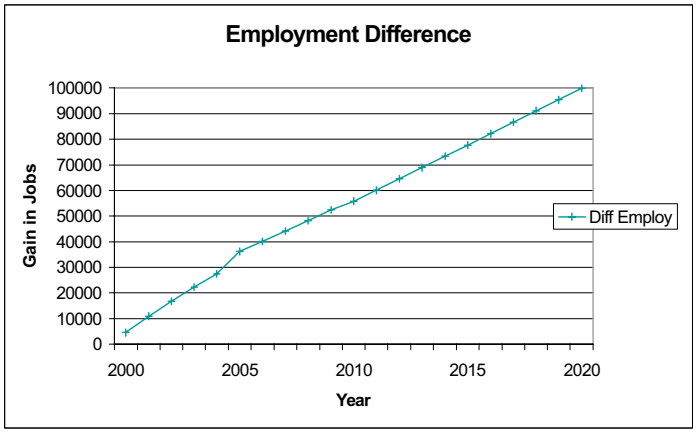


Figure 45 Employment Effects of the Planned Growth Strategy (Balanced Scenario A)



The net tax revenue return to growth is projected to be approximately $1.654 billion over the entire period. It is important to understand the assumptions that generate this positive net revenue flow. The FISCALS model analysis performed by the City

and County is reported in Table 95. The rehabilitation expenditures are estimated at $1.8 billion in 1999 dollars, and the deficiency and growth capital expenditures are $.46 billion and $1.16 billion, respectively. Taken together, these total $3.42 billion over the forecast period. These costs were allocated as increases in gross receipts tax revenues to the sectors directly affected by household consumption.[11] For the analysis, I assume that City and County operating costs are covered by the existing revenue structure (that is, require no additional revenues) including those that are due to growth. These growth-related *operating* costs sum to $1.53 billion over the forecast period. However, the existing tax structure is assumed to cover this expenditure.

Table 95 Public Sector Cost Estimate – FISCALS Model

		Balanced Scenario (A) (000$)
City Operating (GF-Transit)	Subtotal Growth	$965,911
	Base	$5,824,917
	Total	$6,790,828
City Operating (Transit)	Total	$615,225
City Operating (Water and WW)	Subtotal Growth	$406,496
	Base	$1,233,918
	Total	$1,640,414
City Capital (Non-infrastructure)	Subtotal Growth	$161,460
	Base	$2,035,296
	Total	$2,196,756
City/County Capital (PGS) (Infrastructure)	Rehabilitation	$1,800,000
	Deficiency	$464,600
	Growth	$1,000,200
	Total	$3,264,800
County Operating	Total	$3,686,700
County Capital	Total	$325,780

Note: These costs are in 1999 dollars and represent cumulative costs over the period 2000–2020.

A property of I-O models is that they are based on linear expansion functions. That is, they assume constant returns to scale. What *could* differentiate the alternate growth scenarios (Downtown, Balanced, and Trend) is that each would be characterized by a different employment mix. The Downtown Scenario would have more employment growth in the Business Services sector while the Trend Scenario would have more employment growth in the Wholesale and Retail Trade sector. However, the employment growth scenario utilized in the MRGCOG projections does not account for this. Thus, the major measures of economic activity such as output per capita and earning per capita will be the same across the alternate growth scenarios. This point as well as the non-pecuniary aspects of growth will be discussed in the next section.

As the results reported in Tables 92 (pg.328) and 93 (pg.329) demonstrate, the financial returns to the infrastructure investment are positive. This investment would pass a benefit-cost criterion. The analysis also provides some information to the debate of the "best" growth path for the region. The Trend Scenario imposes higher costs on the local economy through transportation costs. However, we cannot make comparisons of individual levels of satisfaction. While commuting is costly, the evidence from much larger cities is that people are willing to incur these costs to enjoy more space or other amenities associated with living in a more rural setting. Among the Balanced Scenarios, Balanced C yields the highest levels of output, employment, and earnings. By imposing higher impact fees, the costs of the infrastructure investment are concentrated in a single sector, so there is a smaller overall impact on household consumption and on local economic activity.

6.7 Discussion Points

In the previous section, only the financial impacts were presented as benefits. Other categories of benefits are relevant and should be included in the analysis of whether the infrastructure costs to support growth are justified.

The study conducted by Parsons Brinckerhoff omits, as per the terms of the contract, several categories of infrastructure that require capital expenditures. For example, school construction, and police and fire facilities are both omitted. The costs associated with these types of infrastructure will be sensitive to the spatial distribution of the growth. Inclusion of these costs would likely make the Trend Scenario perform more poorly and further demonstrate the benefits to a more compact development pattern.

The spatial distribution of the growth (Balanced vs. Downtown vs. Trend) will have a substantial effect on the pattern of employment growth. As discussed earlier, it is likely that the spatial distribution of employment and the sector pattern of growth will be related. While the overall impacts on the economic growth of the spatial distribution is small, the issue raises concerns for the planned growth scenario. It is not possible to separate the spatial and sector distribution of the growth of the regional economy. A planned growth strategy should take account of the job mix implied by the spatial pattern of growth.

The reliance on gross receipts tax implies that the central city is not depleted financially by the suburban flight, as urban areas more dependent on the property tax for revenues and with a less aggressive annexation history have been. Thus, the Albuquerque revenue projections do not vary significantly across the growth scenarios. However, the outlying areas of the County will be required to incur expenditures to maintain and expand infrastructure (roads, water, etc) to support growth.

There are several non-pecuniary costs and benefits associated with growth that have not been addressed in this study. Benefits, such as job availability and the retention of qualified workers, are not included, and neither are the values individuals place on the amenities associated with larger urban areas (arts, recreation, etc). On the other hand, there are costs associated with growth that have not been explicitly incorporated as yet. Environmental issues, such as water and air quality, and the level of congestion, need to be considered before a growth plan is adopted.

6.8 Conclusions

An efficient housing and land development market is essential for the economic growth of a region. In many parts of the country growth has been constrained by the inadequate response of the housing market to the changing employment conditions. Consequently housing prices rise rapidly and employers find it difficult to hire new workers since housing costs are a significant determinant of household location decisions.

The municipal government may encourage the development of an efficient housing market through the construction of appropriate infrastructure, such as water delivery systems, waste water systems, and public transportation. This study has presented estimates of measures of the pecuniary benefits of economic growth associated with the rehabilitation and construction of local infrastructure in the Albuquerque/ Bernalillo County area. The pecuniary net benefits of such construction are estimated to be positive.

Further work towards a planned growth strategy should address the issues associated with sprawl and the linkage between the spatial distribution of growth of employment centers and the nature of the employment associated with such growth. To the extent the local governments can affect the spatial distribution, they will also be able to affect the mix of employment in the region. This may have the greatest long-term effects on the economic vitality of the region.

Table 96 Bernalillo County Multipliers by Sector

Sector	Type I Output	Type II Output	Type I Employment	Type II Employment	Type I Income	Type II Income
Agriculture	1.26	1.42	1.25	1.42	1.40	1.67
Mining	1.09	1.16	1.42	1.83	1.27	1.52
Construction	1.28	1.47	1.42	1.70	1.43	1.70
Food Processing	1.27	1.38	1.85	2.25	1.76	2.10
Textiles	1.23	1.43	1.23	1.45	1.29	1.53
Wood Processing	1.30	1.48	1.48	1.81	1.46	1.73
Print and Publishing	1.23	1.44	1.31	1.58	1.33	1.58
Chemical and Drugs	1.25	1.38	1.68	2.09	1.57	1.86
Miscellaneous Mfg.	1.19	1.51	1.17	1.40	1.17	1.40
Build Materials	1.17	1.33	1.26	1.60	1.22	1.46
Heavy Mfg.	1.24	1.44	1.41	1.83	1.28	1.53
Technical Mfg.	1.30	1.52	1.51	1.98	1.34	1.60
Light Mfg.	1.18	1.41	1.20	1.43	1.22	1.45
Transportation, Communications, and Utilities	1.25	1.44	1.48	1.89	1.31	1.56
Personal Services	1.29	1.47	1.25	1.40	1.51	1.79
Wholesale and Retail Trade	1.11	1.43	1.07	1.26	1.07	1.27
Recreation Services	1.27	1.52	1.13	1.25	1.25	1.49
Finance, Insurance, and Real Estate	1.22	1.34	1.37	1.60	1.42	1.69
Business Services	1.24	1.56	1.21	1.47	1.20	1.43
Medical, Legal, and Educational Services	1.28	1.60	1.21	1.50	1.19	1.41
State and Local Govt.	1.08	1.58	1.03	1.27	1.03	1.22
Federal Govt.	1.01	1.55	1.01	1.45	1.00	1.19

Appendix B

The Input - Output Method

Input-output models are a device for organizing the basic accounting relations that describe the production sector of the economy. The input-output method starts with a very simple idea. All the sectors of the economy are tied together by virtue of economic relations called "linkages," and the production of a good or service can be described by a "recipe." The ingredients of this recipe are the outputs of the other sectors of the economy as well as the primary inputs such as labor, capital, and other raw resources. A simple example will serve to demonstrate. Consider a commodity such as steel. A particular economy with a given technology will allocate the steel it produces in a unique way. Some of the steel will be used to make equipment for making more steel (e.g., rolling mill equipment), some will be exported (or some will be imported), and some will be used in the manufacture of cars, buildings, bridges, etc. Obviously, all of the steel that is allocated or used up must add up to all of the steel made. If the total amount of steel made is 1,000,000 tons an allocation might be as follows:

Steel used to make steel	100,000 tons
Steel used to make cars	500,000 tons
Steel used to make bridges	100,000 tons
Steel used to make buildings	290,000 tons
Steel sold to households	10,000 tons
TOTAL steel production/allocation	1,000,000 tons

The steel used to produce other commodities in the economy reflects the "linkages" mentioned above. The extent to which the economy is an integrated whole depends on the strength of these linkages. Linkages that tie steel to the output of more finished products are known as forward linkages while those (not shown in this example) that relate steel to basic raw materials and labor are known as backward linkages. A similar table could be constructed for every commodity in the economy and, taken together, these would describe the entire economy. A common unit of measurement is necessary if the sectors are to be linked into a single model of the economy. Thus, all inputs and outputs are measured in dollar units rather than physical units. To make use of all of these tables for the various commodities in the economy requires an analytical device that relates all of the backward and forward linkages in the economy in a manner that permits investigation of "what if" scenarios. This analytical device is the input-output table.

A schematic representation of an input-output model is represented in Table B.1. This figure shows the economy organized into several key blocks for presentation.

The shaded area is the production sector of the economy. The Final Demand for the products is broken down into Consumption, Investment, Government, and Export. Total Output is the sum of the Intermediate Production (what is sold by Sector A to Sector A and to Sector B) and the Final Demand. A simple numerical example is represented in Table B.2. The row sums of the matrix denote the intermediate demands for the outputs of each sector-thus, the row sum for sector 1 denotes the output of this sector that is required as inputs to sector 1 and the other sectors. The column sums denote the payments for intermediate goods used in the production of the output of sector 1. In addition to the intermediate demand, there are several categories of final demand illustrated in the figure. Household consumption, investment, and government expenditures are all final demands in that they use the output of a sector directly and not as an input to another product. In addition to the payments for intermediate inputs, there are several categories of primary inputs such as payments for labor and other value added components. Finally, exports (E_i) and imports (M_i) appear in the model. Total gross output is the sum of intermediate demand, final demand, and exports. Total gross outlay is the sum of payments for intermediate inputs, labor, other value added components, and imports.

Table B.1 A Stylized Input-Output Model of a Regional Economy

	Sector A	Sector B	Consumption	Investment	Gov't	Exports	Total Output
Sector A							
Sector B							
Wages							
Return to Capital							
Indirect Taxes							
Imports							
Total Payments							

Table B.2 A Simple Numerical Example*

	Sector A	Sector B	Consumption	Other Final Demand	Total Output
Sector A	150	500	50	300	1000
Sector B	200	100	400	1300	2000
Wages	300	500	50	150	1000
Other Value Added	350	900	500	400	2150
Total Payments	1,000	2,000	1,000	2,150	6,150

* All values are in millions of dollars.

As noted, input-output models are a description of the interindustry flows in the economy. A table is created (see Tables B.1 and B.2) that is based on the fundamental accounting relationships linking intermediate and final demands to gross outputs. These yield the following system of equations:

$$X_1 - a_{11}X_1 - a_{12}X_2 - \ldots - a_{1n}X_n = Y_1$$

$$X_2 - a_{21}X_1 - a_{22}X2 - \ldots - a_{2n}X_n = Y_2$$

.
.
.

$$X_n - a_{n1}X_1 - a_{n2}X_2 - \ldots - a_{nn}X_n = Y_n$$

which may be rearranged to yield:

$$(1-a_{11})X_1 - a_{12}X_2 - \ldots - a_{1n}X_n = Y_1$$

$$- a_{21}X_2 + (1-a_{22})X_2 - \ldots - a_{2n}X_n = Y_2$$

.
.
.

$$- a_{n1}X_1 - \ldots + (1-a_{nn})X_n = Y_n$$

where:

X_i denotes output of sector i
Y_i denotes final demand for output of sector i

and a_{ij} denotes the amount of i used in the production of one dollar's worth of j.

The crucial assumptions for these equations to hold is that the money value of goods and services delivered by an industry i to other producing sectors is a linear and homogenous function of the output level of the purchasing sectors. The specific assumptions are: (1) the linear output function means constant returns to scale and no substitution between inputs; (2) additivity, the total effect of production is the sum of the separate effects (this rules out any external economies or diseconomies); and (3) the system is in equilibrium at given prices.[12]

In matrix notation the above system of equations can be represented as:

$$\mathbf{(I-A)X = Y}$$

and the outputs necessary to satisfy intermediate and final demand may be solved for as:

$$\mathbf{X = (I-A)^{-1}Y}$$

where $\mathbf{(I-A)^{-1}}$ is known as the Leontief inverse.

To conduct economic impact analyses, this relation can be used to solve for the changes in gross outputs that must be generated to satisfy changes in final demands due to exogenous shocks to a local economy. Input-output models constructed in this manner are known as "demand side" models because all impacts are applied through changes in the final demand from the baseline data.

It is useful to be able to distinguish **A** and **(I-A)** conveniently in the discussions to follow and so the elements of the **A** matrix are denoted by a_{ij} and those of the Leontief inverse as α_{ij}.

The **A** matrix is derived from the interindustry flow matrix **z** in the following manner:

$$A = z * \hat{q}^{-1}$$

Through its multiplier impact analysis, the input-output model is capable of generating estimates of the changes in output of given commodities, changes in employment, and changes in income so long as one is willing to accept the technical assumptions noted above. How critical are these assumptions to the task; estimation of the economic impacts due to critical habitat designation? To the extent the initial impacts on productive activities are small, the input-output model works quite well in providing estimates of the impacts.

In addition to the interindustry effects captured in the Leontief inverse, special input coefficients can be generated for items of interest such as labor, water, and electric power. The general methodology is as follows, with employment (labor) serving as an example. Construct a vector of the inputs per unit of gross output:

$$E = [e_1, e_2, \ldots, e_n]$$

where ei denotes the employment (labor input) in persons per unit of dollar output for sector i. From this, construct a vector of total employment:

$$\mathcal{E} = \hat{E}\,X \text{ where } \hat{E} = \begin{bmatrix} e_1 & 0 \\ 0 & e_2 \end{bmatrix}. \text{ Thus } \mathcal{E} = \begin{bmatrix} e_1 & X_1 \\ e_2 & X_2 \end{bmatrix}$$

and this final vector is the level of employment in each sector associated with the output levels X1 and X2. A change in these output levels, due to a change in final demand, results in a change in the level of employment based on the coefficients e1 and e2.13

B.1 Multipliers

Multipliers describe the effects of exogenous shocks on the regional economy. In general multipliers capture the indirect effects that arise as well as the direct impacts generated by the exogenous shock. There are several types of multipliers that may be computed depending on the economic measure sought (output, income, or employment) and whether the consequential effects are viewed as important to the analysis. Economic impacts are generated by direct shocks to the economy, and these result in indirect effects through the economic linkages in the economy. There is a further set of economic effects that is generated through household income changes that occur as a result of the initial impact and that lead to changes in consumption and thus to further changes in final demand. These are known as the induced effects of the original impact. There is not much debate concerning the validity of estimating the direct and indirect effects. However, there are

differences of opinion concerning what types of effects can be captured under the induced label.

The computational steps to derive the basic multipliers are described below.

B.1.1 Output Multiplier

For a given sector, the output multiplier is defined as the total value of production in all sectors of the economy that is necessary to satisfy one dollar's worth of final demand for the given sector's output. Simple output multipliers capture the direct and indirect effects of the exogenous shock and are computed by taking the column sum of the respective rows of the Leontief inverse matrix. In matrix notation, the simple output multiplier is the row vector O = [O1, . . . ,On] where:

$$\mathbf{O = i'(I-A)^{-1}}$$

and where i' denotes the unity row.

These are the output multipliers that are reported for the various regions below.

B.1.2 Income Multipliers

These translate the impacts of final demand spending changes into changes in income received by households. These multipliers translate an initial dollar of output for a sector into a direct plus indirect estimate of the value of resulting employment and, in turn, household income. Income multipliers can be computed as "simple income multipliers" or as the Type I and II multipliers often reported in impact studies.

Simple income multipliers are represented by the vector $\mathbf{H} = [H_1, \ldots, H_n]$ and are calculated as:

$$\mathbf{H = H_R(I - A)^{-1}}$$

Where $\mathbf{H_R}$ denotes the household row coefficients that represent the wages and salaries paid to the labor input to the production in each sector.

Income multipliers may be computed as either Type I or Type II. The former capture the direct and indirect effects on the incomes of households while the latter add the induced effects that arise from the employment consequences of the output changes. These employment effects generate household income effects augmented by the direct and indirect effects.

Type I multipliers are computed as:

$$\mathbf{M = H_R(I - A)^{-1}(H_R)^{-1}}$$

The usual Type II multipliers capture the direct and indirect effects of the Type I multipliers as well as the induced effects attributable to consumption effects on

final demand. These consumption effects work through the total final demand to increase the level of gross output required to meet the sum of intermediate and final demand. Bradley and Gander (1969) prove that the ratio of Type II to Type I multipliers is a constant for each sector of the economy. This constant is defined as:

$1/b$, where $b = [(1-h)-\mathbf{H}_R(\mathbf{I}-\mathbf{A})^{-1}\mathbf{HC}]$

where h denotes intersection of the household row and column as shown in Table B.1 above; $\mathbf{H}_R$ is the household row and $\mathbf{H}_C$ is the household (consumption) column in the input-output table in the **A** matrix. Thus, the Type II income multiplier for a given sector i is computed as the Type I multiplier divided by b.

Appendix C

Aggregation Sectors

The Aggregation Scheme—each of the 22 sectors will be briefly described here.

Agriculture: This sector consists of the 2x sectors in the IMPLAN database and covers all cropping, livestock, and agricultural services.

Mining: This sector consists of the sectors in the IMPLAN database related to mining and covers all metallic mining, sand a gravel operations, oil and gas, and non-metallic minerals. Of these sectors, those that are prominent in the Bernalillo County economy are sand and gravel operations.

Construction: All construction activities are included in this sector. These include new building, roads, as well as maintenance of existing structures.

Food Processing: All food production including both human and animal food products. Includes dairy, cereal, and vegetable production.

Textiles: All textiles including clothing, weaving, upholstery, and carpet manufacture.

Wood Processing: All processing of wood products including furniture manufacturing.

Printing and Publishing: Includes all printing production (newspapers, fliers, etc) as well as magazine and book publishing.

Chemical and Drugs: This sector includes chemical processing, drug manufacture, and other primarily chemical oriented manufacturing.

Miscellaneous Manufacturing: This captures all manufacturing not elsewhere noted.

Building Materials: The production of materials used in construction including cement, insulation, and stone products. Excludes wood products.

Heavy Manufacturing: Iron and steel products, metal hardware, sheet metal work, plating and polishing, and so on.

Technical Manufacturing: The “hi-tech” sectors including semiconductor chip manufacture, optical and ceramic materials, lab equipment, and computer manufacture or assembly.

Light Manufacturing: Non-technical manufacturing that is not considered under Heavy Manufacturing. Includes electrical components other than listed under Technical Manufacturing, jewelry, musical instruments, games, etc.

Transportation, Communications, and Utilities: This sector consists of all transportation providers (except those that arrange travel), all television and radio, telephone, electrical and other utilities.
Personal Services: This sector consists of those services that are primarily provided to individuals rather than businesses. Included in this sector are hairdressers, laundry, cleaning and shoe repair, and repair facilities.

Wholesale and Retail Trade: All retail establishments and wholesale trade.

Recreation Services: Lodging, restaurants, movies, bowling alleys, golf, racing, and membership sports and clubs.

Finance, Insurance, and Real Estate: This sector includes banking, financial services, insurance carriers, and real estate brokers.

Business Services: R&D, consulting, accounting, advertising, personnel services, and protective services.

Medical, Legal, and Educational Services: Hospitals, nursing homes, legal services, doctors and dentists, and educational services not state provided.

State and Local Government: All state and local government services.

Federal Government: All federal government services including military and the labs.

Appendix D

Steps in the Analysis

1. Choose a study region—Bernalillo County to correspond to Section 1.

2. Construct a baseline I-O data set for 1993 using the IMPLAN database.

3. Aggregate the 300 sectors present in the County economy to 22 sectors. Purpose of aggregation is to reduce the dimensionality to allow us to look at the results and to make some sense of them. and

4. Adjust the data in the IMPLAN database to reflect local economic conditions. This is especially important for the tax structure since IMPLAN utilizes national averages and the Bernalillo County economy (as does New Mexico) has a unique tax structure (little property tax and substantial reliance on the gross receipts tax). For some previous work I had done on the New Mexico Computable General Equilibrium project I had worked up tax rates across sectors that reflect the New Mexico tax structure. I applied those rates to the sectors in the Bernalillo County model to compute tax payments. The total tax revenue on the IMPLAN data set is fairly close to the true levels so this was used to balance the tax levels.

An additional local data issue has to do with employment. The IMPLAN database defines employment as "total wage and salary employees and self-employed jobs in a region. It includes both full-time and part-time workers and is measured in total jobs." Based on the 1995 IMPLAN values and the data provided in Section 1, Table 38, the IMPLAN levels are approximately 20% higher. This is consistent with part-time employment. However, the distribution of part-time employment is not uniform across sectors, and there is no data consistent with Parsons Brinckerhoff at the level of detail used in the I-O model. Therefore, the analysis is conducted using the IMPLAN database definition of employment. The largest differences are likely in the Retail Trade, Personal Services, and Recreation Services sectors.

Maintained Assumption: The employment growth in Section 1 (the scenarios) incorporates the feedback (induced) effects that may arise from the employment associated with the expansion of the infrastructure.

5. An I-O model programmed in GAUSS was used with the (adjusted) IMPLAN database to construct scenarios for the growth in the County through 2020.

Notes

1. Section 1 demonstrates that much of the required capital expenditure over the next forecast period is needed to correct deficiencies and rehabilitate existing infrastructure. This will have important consequences for the financing of the infrastructure, and this point will be discussed later.

2. In economic terms, we would describe such urban areas as having housing markets with inelastic supply of housing. That is, the housing market is slow to increase the supply of housing in response to an increase in demand.

3. I will refer to the analysis of the costs associated with growth and rehabilitation related infrastructure as Section 1. In fact, Parsons Brinckerhoff assembled some of their data from other sources and the responsibility for these data should not be assigned to Parsons Brinckerhoff. The infrastructure figures came from the engineering sub-consultants including the following: CH2M-Hill supplied the water costs, Camp Dresser McKee the wastewater costs, Wilson & Co. the hydrology costs, while Parsons Brinckerhoff themselves supplied the costs for streets and transit. The street costs were based on MRGCOG's Metropolitan Transportation Program as refined by County of Bernalillo staff. Furthermore, the *non*-Public Works-type infrastructure costs were obtained from City FISCALS and from the County of Bernalillo.

4. Based on the MRGCOG projections, the Planned Growth Strategy study maintained the assumption that the distribution of employment growth would be independent of the spatial distribution of the new jobs. A later analysis varied this assumption by what is known of the location choices of firms in different sectors. Employment growth concentrated in the Downtown and Uptown areas would be more concentrated among Business Services and Legal Services while growth in the Atrisco Park area would be more concentrated in Light Manufacturing and storage or transportation sectors. Thus, the sector distribution of each of the growth scenarios would be expected to be different. For the present study, this enhancement is not included. However, this will be considered in the Planned Growth Strategy, Part 2 – Preferred Alternative.

5. The FISCALS model of the City of Albuquerque was constructed by Paul Tischler and Associates, Bethesda, Maryland. The FISCALS analysis reported here was conducted by Chris Hyer, City of Albuquerque.
6. The actual construction of this infrastructure is not incorporated as a direct impact to the economy since it is assumed to be a component of the growth projection itself.

7. Such aggregation is required to preserve confidentiality among the firms in a region. That is, the firm data are reported by firm category known as Standard Industrial Classification. Each Standard Industrial Classification category must contain enough firms that one would be unable to discern the activities of a particular firm.

8. Although IMPLAN provides software for the purpose of conducting impact analysis it is relatively cumbersome to use in practice. Thus, the analysis reported here is conducted with a model programmed in GAUSS. This software was developed by the author and has been used in several other studies (see, e.g., Berrens et al. 1999).

9. The direct cost does not include the value of time used in travel. This is a real resource cost and should be included in a benefit-cost analysis of transportation projects. The I-O accounts on which the model is based do not account for such costs, however. Thus, for the purposes of the current analysis only the direct costs will be included.

10. It is probably desirable to remedy some deficiencies more quickly that this. While the required taxation would reduce some economic activities in the region temporarily, it is probable that future economic activity would make up for the loss.

11. These are: Wholesale and Retail Trade; Personal Services; Business Services; Recreational Services; and Transportation, Communications, and Utilities.

12. Under some moderately restrictive assumptions, it is possible to express the structure of the economy through the interindustry flows that relate the amount of the output of a sector that is used to produce the output of another sector. The key assumptions have to do with the nature of the production functions and the way that industries producing multiple products are modeled. Input-output models assume that production can be characterized by what is known as a Leontief production function. If the only inputs are labor and capital, the Leontief production function is written as:

$$X = \min\{K/a, L/b\}$$

where X denotes the output of the industry, K is capital, L is labor, and the coefficients a and b denote the exact production relation.
This production function rules out substitutions among the inputs if relative prices of these inputs change. Price changes of inputs occur when there are changes in supply that are not offset by changes in demand and vice versa. If the price changes are small, this aspect of the Leontief production function will not lead to significant biases in the estimation of the overall impacts. However, if the price changes are large, the input-output analysis will tend to overestimate the economic impacts of exogenous shocks to the economy.

13. IMPLAN employs a similar computation to generate some of the induced effects on the economy that arise through changes in employment and thus regional consumption levels. These induced effects are added to those changes in final demand that arise from the direct and indirect effects of the impact to produce total effects. For several reasons, this technique is flawed (see Borgen and Cooke 1991). We report the results that include these additional induced effects to illustrate an "upper bound" on the impacts of critical habitat, but we caution the reader that these measures are controversial.

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Section 3

Other Consequences of Growth

7.0 The Social and Economic Consequences of Urban Growth

The main purpose of the technical chapters of the Planned Growth Strategy, Part 1 – Findings Report is to document the financial costs and benefits associated with alternative development patterns in the Albuquerque metropolitan area. As citizens review and evaluate the merits of implementing the Planned Growth Strategy proposals, it is important to take into consideration other topics and issues that relate to the area's future that cannot be measured in dollars. They relate to quality of life, aesthetics, personal safety, sense of community, and the natural environment, to name a few.

In this chapter of the report, we offer a list of these issues and conditions (Table 97). We describe in a general way the impacts of these topics or issues, making clear how they may affect citizens here and elsewhere today. Next, we briefly describe the extent to which these conditions apply or exist in Albuquerque and Bernalillo County. Lastly, we discuss the ways in which the Planned Growth Strategy may mitigate some of the adverse conditions and reinforce and sustain favorable ones.

Table 97 Summary of Other Asserted Social and Economic Benefits and Costs

Benefit	Cost
Range of housing choices	Loss of agriculture lands and reduced farm productivity
Personal open space	Adverse impact on unique/fragile lands and public open space
Low-density living	Negative visual impact
Lower crime rates	Increased water consumption
Positive visual impact	Reduced access to recreational facilities
Lower housing prices	Weakened sense of community
Better school quality	Exclusion or exclusivity
Consumer choice among government services	Segregation of jobs and housing
	Higher energy consumption and increased air pollution.
	Inner city deterioration
	"Leap-frog" development

This last factor is important because the general statements of benefits and problems associated with urban growth may not be directly related to Planned Growth Strategy recommendations. This approach does involve, however, introducing at this point some of the findings and recommendations of the Planned Growth Strategy, Part 2 – Preferred Alternative report. These findings and recommendations are presented in a very summary way below. The reader is referred to Section 1 Preferred Alternative and Section 2 Implementation of the Part 2 report for a complete discussion.

The City/County Comprehensive Plan policies that address the subject are also included. In some instances, the Comprehensive Plan does not contain a policy related directly to the topic.

The general conditions reported here have been identified in a major national study, *The Costs of Sprawl Revisited*, published in 1999 by the National Academy Press. Parsons Brinckerhoff staff made a significant contribution to this national report.

The discussion that follows rounds out the fiscal emphasis elsewhere in the Planned Growth Strategy, Part 1 – Findings Report. The discussion acknowledges that urban development patterns clearly have benefits as well as costs. One person's asset is another's liability. In all, this chapter documents a number of issues important to consider when developing a growth strategy, including the role that public policy can play in maintaining and enhancing the many aspects of quality of life valued by Albuquerque and Bernalillo County residents.

7.1 Assertions About Benefits

7.1.1 Range of Housing Choices, Personal Open Space, and Low-Density Living

General Description and Impacts

Many consumer preference surveys reveal that a key part of the "American Dream" is ownership of a detached, single-family home with attached private open space. That concept, put into practice on a large scale, leads to relatively low residential density throughout a metropolitan region. Consumers obviously value the choice to live in low-density areas, and most housing developers consistently build low-density subdivisions because they are easy to market.

Prevalence in Albuquerque

Albuquerque's housing development is predominantly low-density single family houses with attached private open space, although much of the recent entry-level housing has been built on lots smaller than allowed in the R-1 zone. The increasingly common R-LT zone allows a standard minimum lot size of 40 feet by 100 feet for a detached home as compared to the 50 feet by 100 feet minimum lot size required in the R-1 zone. The zone of RD for seven dwelling units per acre (which is common in the southwest quadrant of the city) allows an increase of two dwelling units over the standard R-1 density of five dwelling units per acre.

How Affected by Planned Growth Strategy

While the Planned Growth Strategy recognizes that there are efficiencies to be gained through somewhat higher density development, it does not mandate higher density development. Rather, the Planned Growth Strategy suggests that development bear costs that reflect the actual costs for public infrastructure and other services. This differs from current practice in which tax and rate payers pay a significant part of the cost of all new development and lower-cost developments contribute to the public expense of higher cost developments. Density increases suggested in the Planned Growth Strategy area modest and reflect average densities in the 1960 City Limits. The Planned Growth Strategy supports livable older neighborhoods with urban quality of life, low crime rates, and good schools. Implementing the Planned Growth Strategy would create more areas of living choice, notably within the 1960 City Limits and in activity centers and transit-focused corridors.

Comprehensive Plan

Established & Developing Urban Areas. Policy e "New growth shall be accommodated through development in areas where vacant land is contiguous to existing or programmed urban facilities and services and where the integrity of existing neighborhoods can be ensured," and Policy o "Redevelopment and rehabilitation of older neighborhoods in the Established Urban Area shall be continued and strengthened."

7.1.2 Lower Crime Rates

General Description and Impacts

Most homeowners and businesses consider a low crime rate to be very important in their locational decisions and perceptions about their quality of life. A substantial amount of statistical evidence associates lower crime rates with lower density residential areas. Other research that looks closely at the causes of crime, however, finds that crime is overwhelmingly explained by demographic factors, such as income level, educational attainment, family status, and other social factors, and not by development patterns. Though there is an association between density and crime, there is no demonstrated causality between low-density development and low crime rates. Suburban residents perceive themselves to be safer than urban residents do, an important consideration.

Prevalence in Albuquerque

Albuquerque's crime rates do not appear to be based on density but rather on social and economic conditions. Since social and economic conditions that are related to the incidence of crime tend to characterize low-income neighborhoods, the incidence of crime is higher in these areas.

How Affected by Planned Growth Strategy

The Planned Growth Strategy vision can help to increase public safety by creating environments with "more eyes on the street" for more hours each day. Importantly, safety is related to perception as well as actual conditions. When public spaces (e.g., sidewalks, plazas) are not utilized, residents and visitors increasingly retreat into private indoor places, reinforcing negative perceptions of security and detracting from the community's attractiveness. Positive redevelopment of mixed-use activity centers and corridors would increase security and the perception of it in several ways:

- A diverse mix of local land uses activates the public realm for more hours each day than single use districts, as local and regional residents are able to conveniently access jobs, shops, restaurants, entertainment (e.g., cinemas), and services (e.g., daycare). In short, activities and amenities that attract people create busier, safer places.
- The Planned Growth Strategy vision would make this rich mixture of land uses more accessible to pedestrians, bicyclists, and transit users through careful attention to urban design. While local and regional auto traffic are also welcome, a higher percentage of local residents are likely to walk or bike, and more regional residents can access jobs and other routine needs by transit, putting relatively more human activity in the pedestrian realm.

- Integrating residential development with other land uses and increasing the density of households within walking distance of transit means relatively more people are able to walk about the area during more hours of the day.

While good urban design is an important aspect of safe environments, other benefits of the Planned Growth Strategy Preferred Alternative—such as economic growth through better quality of life, access to regional jobs through expanded transit, and community renewal—can also contribute to mitigating some of the causes of crime. One might attempt to avoid crime by housing location choice, but crime rates in the community may remain high. Planned Growth Strategy is concerned with fostering the physical, community, and economic conditions that result in a lower crime rate. The Planned Growth Strategy encourages positive engagement in correcting local problems, such as crime, rather than the relocation from such problems.

Comprehensive Plan

Economic Development. Policy a "New employment opportunities which will accommodate a wide range of occupational skills and salary levels shall be encouraged and new jobs located convenient to areas of most need."

7.1.3 Positive Visual Impact

General Description and Impacts

Low-density, higher-income communities often have more personal open space and attractive landscaping than higher density residential areas, and these features are considered by many people as more visually appealing than higher density areas.

How Affected by Planned Growth Strategy

See comments above from "Range of Housing Choices..."

Comprehensive Plan

Developed Landscape. Policy section, particularly Policy a "The natural and visual environment, particularly features unique to Albuquerque, shall be respected as a significant determinant in development decisions."

7.1.4 Lower Housing Prices

General Description and Impacts

Some research shows evidence that growth control measures restrict the supply of land and drive up land prices, thereby increasing the cost of housing to consumers.

Prevalence in Albuquerque

Some Albuquerque developers opt to build in areas remote from the urban center in order to capitalize on lower land costs. One consequence of this pattern is that most families must have a car for each worker, negating some of the savings realized on a less expensive, albeit remotely located, home. The current system of providing infrastructure for new growth may be constraining land supply at present. Developed lot costs are higher in Albuquerque than in comparable surrounding metropolitan areas.

How Affected by Planned Growth Strategy

The Planned Growth Strategy Preferred Alternative is based on official population and employment forecasts. The Planned Growth Strategy does not attempt to reduce growth but to better provide for it and achieve outcomes that reflect public policies and preferences. The Growth Strategy recommends levels of expenditures for growth-related infrastructure that are consistent with these forecasts and, in some instances, are higher than current spending. In addition, more efficiently supporting urban growth through a management strategy results in less private and public spending to support the same amount of growth. The Planned Growth Strategy would start to create additional viable options, so families could choose to live in a denser urban environment, closer to the urban core, easily accessed by bus and walking as opposed to making every trip by automobile, thereby reducing private travel costs.

Comprehensive Plan

Housing. Policy a "The supply of affordable housing shall be preserved and increased and the opportunity to obtain standard housing for a reasonable proportion of income assured."

7.1.5 Better School Quality

General Description and Impacts

Many households perceive that school quality in suburban locations is higher for an equivalent or lower public tax burden, and numerous studies confirm that households are willing to pay higher housing costs to access "good" schools. Like the incidence of crime, most studies find student performance highly correlated with income level, family status, and other sociodemographic variables. Thus, suburban schools may not be better per se, but rather, serve a different (higher income) student population than more centrally located schools.

Prevalence in Albuquerque

The Planned Growth Strategy study areas are served by one public schools system, the Albuquerque Public Schools. Costs do not vary by location. Student performance at outlying schools in Albuquerque does appear to exceed that of many inner-city schools. There are some notable exceptions at both the elementary and mid-school levels. School performance is strongly linked to the student's motivation, instructor skills, and parent's involvement in a child's education, which factors can result in high achievement in any location.

How Affected by Planned Growth Strategy

The Planned Growth Strategy supports livable, older neighborhoods with good quality of life, low crime rates, and well-performing schools. As with crime, one might move to an area with schools where the average achievement level is higher, but educational achievement in the community may be unchanged. The Planned Growth Strategy is concerned with fostering the community and economic conditions that result in a higher educational achievement in all parts of the Albuquerque area. Rather than escape, the Planned Growth Strategy encourages positive engagement in correcting local problems, such as lower academic performance, rather than relocation from such problems.

7.1.6 Consumer Choice among Government Services

General Description and Impacts

Regionally dispersed development is associated with the proliferation and fragmentation of local governments, providing residents with more opportunities to match bundles of taxes and services to their personal preferences. By giving people stronger influence over conditions in their own localities, development dispersed to other outlying jurisdictions fosters self-government, democratic participation, and citizen control over local affairs. Both large centralized and fragmented governments offer opportunities to achieve economies of scale. Local governments may be able to economize by targeting services to a more homogenous group of residents; whereas, larger government can spread overhead and administrative costs over a larger constituency.

Prevalence in Albuquerque

Within the Planned Growth Strategy study area, fragmentation of local government into many jurisdictions is not a predominant characteristic. This area does include Los Ranchos de Albuquerque, Paradise Hills, the City of Albuquerque, and the unincorporated portion of Bernalillo County. Though we do not have the same situation as metro Phoenix with multiple jurisdictions, we do have several "bundles" of services from which to choose.

How Affected by Planned Growth Strategy

The Planned Growth Strategy Preferred Alternative does not assume that there should be one standard of urban services or one tax structure or one vision for the future within the metropolitan area. The Planned Growth Strategy, Part 2 – Preferred Alternative report makes general recommendations that should be finalized through planning efforts within neighborhoods, Community Planning Areas, corridors, centers, and so on. These planning efforts will involve neighbors, developers, and other stakeholders. The Planned Growth Strategy implementation recommendations will result in more effective planning that will better reflect preferences within different parts of the metropolitan area. As such, a *variety* of well-functioning subareas is expected to result.

7.2 Assertions About Costs

7.2.1 Loss of Agricultural Lands and Reduced Farm Productivity

General Description and Impacts

Low intensity development removes land from productive farming uses. Both residential and commercial uses built at low densities require more land for the placement of structures. Widely dispersed development far from the edges of already developed areas renders intermediate and adjacent parcels less efficient for agricultural use, increasing development pressure. This encroaching development pressure and generally rising land values create incentives for agricultural landowners to sell to speculators and incentives for speculators to assemble and

sell large parcels of land.

Prevalence in Albuquerque

This trend is evident in the Albuquerque/Bernalillo County area, most notably in the North and South Valleys.

How Affected by Planned Growth Strategy

The Planned Growth Strategy emphasizes more efficient and compact development and redevelopment, likely reducing near-term pressure to urbanize agricultural land. The Planned Growth Strategy also recommends keeping growth rates in the County North Valley and South Valley at current levels and supports more intense development in areas that are more environmentally suitable for urban growth.

Comprehensive Plan

Rural. Policy section, particularly Policy d "Land which is suitable for agriculture shall be maintained to the extent feasible in agricultural production and discouraged from non-agricultural development."

7.2.2 Adverse Impact on Unique/Fragile Lands and Public Open Space

General Description and Impacts

More environmentally fragile lands are harmed by traditional suburban development patterns than by more compact settlement patterns. Low-density, auto-oriented development inherently consumes more land, with a greater probability that fragile environmental lands will be converted to residential and other uses. At the same time, local governments sometimes misjudge the cumulative regional consequences of environmental degradation because they are not well connected in their development decision-making. Each can make incremental decisions for short-term local economic gain without realizing effects on other nearby jurisdictions or on the natural environment areawide.

Prevalence in Albuquerque

Archeologically valuable areas are prevalent in Albuquerque and Bernalillo County, as are environmentally fragile, high-desert lands. Both archaeologically and environmentally significant lands have been protected to a degree through the Open Space acquisition program. The Planned Growth Strategy, Part 1 – Findings Report indicates that the urban growth consumes approximately 1.5 square miles of land per year.

How Affected by Planned Growth Strategy

The Planned Growth Strategy Preferred Alternative would reduce the pace and extent of outward edge development that likely is detrimental to archaeological and environmental resources. The Planned Growth Strategy encourages the adoption of environmental standards within new developments that incorporate the natural landscape. The Planned Growth Strategy supports controlling development in "obsolete" and "premature" subdivisions where scattered growth has the potential to seriously degrade the landscape. Planned Growth Strategy advocates a proactive

approach to correcting sites with contamination problems so that they can become better-functioning assets to the community.

Comprehensive Plan

Developed Landscape. Policy section, particularly Policy a "The natural and visual environment, particularly features unique to Albuquerque, shall be respected as a significant determinant in development decisions."

Open Space Network. Policy section, particularly Policy a "Open space lands and waters shall be acquired or regulated as appropriate to serve one or more of the following purposes: conservation of natural resources, provision of opportunities for outdoor education and recreation, shaping of urban form, conservation of archaeological resources, provision of trail corridors, and protection of the public from natural hazards," and Policy f "A multi-purpose network of open areas and trail corridors along arroyos and appropriate ditches shall be created . . . [and] managed to protect natural features, views, drainage and other functions."

7.2.3 Negative Visual Impact

General Description and Impacts

Usual development practices frequently bring housing and commercial development within the view shed of scenic resources, and the loss of open space and deterioration of dramatic landscapes may over time harm a region's competitive ability to retain and attract workers. Many people prefer the visual qualities of compact urban development or the uniqueness of older neighborhoods to what they see as homogenous subdivision and strip mall architecture. A lack of civic spaces, landmark buildings, and pedestrian-scaled amenities detract from the quality of life.

Prevalence in Albuquerque

The mountains to the east, volcanoes and escarpment to the west, and panoramic views are important to Albuquerqueans; this preference is consistent with lower profile development that preserves outward views to geographic features.

How Affected by Planned Growth Strategy

The Planned Growth Strategy emphasizes a more visually pleasing urban environment. Building a more aesthetically enjoyable community as selected locations are redeveloped with higher intensity land uses is important. A more visually pleasing cityscape could reduce resistance to higher intensity development and encourage areas of economic vitality. The Planned Growth Strategy supports the policy recommendations in the West Side Strategic Plan and many other plans that encourage preservation of view corridors. More effective planning, resulting from Planned Growth Strategy implementation, will help protect view corridors.

Comprehensive Plan

Established & Developing Urban Areas. Policy m "Urban and site design which maintains and enhances unique vistas and improves the quality of the visual environment shall be encouraged.

Also *Developed Landscape*. Policy section, particularly Policy a "The natural and visual environment, particularly features unique to Albuquerque, shall be respected as a significant determinant in development decisions."

7.2.4 Increased Water Consumption

General Description and Impacts

Low-density growth patterns cause increases in demand for water by urban users. This is especially significant in the Southwest where water resources are scarce, sustained water shortages sometimes exist, and dry heat drives up evaporation.

Prevalence in Albuquerque

Low-density single family detached development uses more water than higher density types of development, though Albuquerque has made significant reductions in water use through its conservation program. The water conservation ordinance limits to 20% the proportion of a new residential lot that can be in high-water landscaping.

How Affected by Planned Growth Strategy

Compact development envisioned by the Planned Growth Strategy Preferred Alternative would improve water efficiency. The Planned Growth Strategy suggests that water impact fees might reflect the water consumption attributes of different housing types. This would provide a financial incentive for lower water use. Planned Growth Strategy supports use of xeriscape landscaping in design standards.

Comprehensive Plan

Established & Developing Urban Areas. Policy d "The location, density and design of new development shall respect . . . [environmental] carrying capacities, etc."

7.2.5 Reduced Access to Recreational Facilities

General Description and Impacts

The provision of parks for public use by residents may be deficient in low-density areas near the fringe of the urban area.

Prevalence in Albuquerque

Albuquerque's low-density development has spread the population, and reaching developed park standards is a problem. Current financial limitations result in a backlog of park development in new growth areas. The conditions in some older neighborhoods contribute to declining populations in these areas. In turn, this makes inefficient use of existing parks.

How Affected by Planned Growth Strategy

Achieving the Planned Growth Strategy Preferred Alternative would enable local government to make more efficient use of existing neighborhood parks by more families living closer to the parks, forestalling additional demand for parks at the urban edge. The Planned Growth Strategy recommends linking park improvements with development permitting, insuring that parks are available in a timely way to serve growth. The Planned Growth Strategy prioritizes providing adequate funding for park maintenance and rehabilitation.

Comprehensive Plan

Open Space. Policy h "Developing areas shall have neighborhood parks and open areas located to serve the population of the area."

7.2.6 Weakened Sense of Community

General Description and Impacts

Linkages with neighbors are diminished because low residential density, heavy emphasis on car travel rather than foot travel, and a lack of neighborhood retail stores and other meeting places reduce interpersonal contacts and a sense of place. Linkages with other residents throughout the metropolitan region are also diminished by the diffusion of households and jobs throughout the metro area.

Prevalence in Albuquerque

Albuquerque exhibits many of these characteristics.

How Affected by Planned Growth Strategy

Implementing the Preferred Alternative can, over a period of time, create more compact and interactive mixed-use areas and community and village centers conducive to sociable behavior and a sense of community. The Planned Growth Strategy calls for fostering neighborhoods that exhibit shared values of inclusion in interesting and stimulating community life rather than exclusion. The Planned Growth Strategy supports the widespread adoption of community-based education within the Albuquerque Public Schools. This entails school facilities serving as community centers, addressing the needs of all community residents, and engaging the community and parents in the education of our youth.

Comprehensive Plan

Established & Developing Urban Areas. Policy i "Employment and service uses shall be located to complement residential areas," and Policy j "Where new commercial development occurs, it should generally be located in existing commercially zoned areas as follows: In small neighborhood oriented centers provided with pedestrian and bicycle access within reasonable distance of residential areas for walking or bicycling."

Also *Education*. Policy e "Variety and flexibility in educational and recreational resources shall be encouraged through joint use of facilities."

7.2.7 Exclusion or Exclusivity

General Description and Impacts

Many low- and moderate-income households cannot afford low-density suburbs, and these households become disproportionately concentrated in central cities and older neighborhoods. Such neighborhoods often are characterized by housing that is older, smaller, less well-maintained, and functionally deficient. This concentration of lower income groups fosters conditions that give rise to social problems, such as crime, drug abuse, delinquency, unemployment, and mental illness.

Prevalence in Albuquerque

Segregation in Albuquerque is de facto and more by income than by race or ethnic origin. Albuquerque does have relatively low-cost housing developments built recently at the city's edge.

How Affected by Planned Growth Strategy

The Planned Growth Strategy supports working to counter this trend through increased infill, redevelopment, and mixing of housing types and densities in new and existing neighborhoods. The result of implementing this recommendation should be a variety of households in different parts of the urban area.

7.2.8 Segregation of Jobs and Housing

General Description and Impacts

The segregation of housing and employment sites (and other land uses) in many communities is an important factor contributing to increases in vehicle miles of travel. Most dispersed, low-density developments are designed such that residents are required to travel longer distances by automobile to access work. Unlimited expansion of urban areas on the fringe also permits many employers to move to locations that are far from inner-city neighborhoods. Consequently, unemployed workers living in those neighborhoods can neither readily learn about job opportunities in outward locations nor afford to commute to such jobs even if they learn about and qualify for them. This mismatch aggravates higher rates of unemployment in centrally located areas and suburban shortages of unskilled workers.

Prevalence in Albuquerque

In Albuquerque, less than 8% of residential construction is occurring within the 1960 City Limits, while nearly 36% of non-residential construction (i.e., job-generating uses) is taking place in that area. At the same time, about 56% of residential construction is occurring in the urban area's outer ring, especially on the west side. Less than 30% of the non-residential construction is in the outer ring area. This contributes to longer work commutes. The second general trend, i.e., jobs moving to suburban locations, does not appear to be occurring as yet in Albuquerque as it has in other larger metropolitan areas. Retail and service jobs in new growth areas are weakly linked by transit to low-income neighborhoods.

How Affected by Planned Growth Strategy

One of the main objectives of the Planned Growth Strategy Preferred Alternative is to increase housing starts in the 1960 City Limits and employment growth on the west side to better balance jobs and housing locations. The Planned Growth Strategy supports greatly expanded transit service and land use patterns that work well with transit. Implementing these recommendations will increase accessibility to employment locations.

Comprehensive Plan

Economic Development. Policy g "Concentrations of employment in activity centers should be promoted in an effort to balance jobs with housing and population in order to reduce the need to travel."

7.2.9 Higher Energy Consumption and Increased Air Pollution

General Description and Impacts

Dispersed, low-density development increases vehicle miles traveled and consumes more scarce energy, particularly imported oil, than more compact development. Low-density fringe development requires more travel overall, with most of this travel being by energy-inefficient autos rather than more efficient modes of mass transit. Tailpipe exhaust, gas vapors, air conditioning leakage, and dust and chemicals lifted from road surfaces all reduce air quality and affect public health.

Prevalence in Albuquerque

Vehicle miles traveled per day in Albuquerque have increased steadily from 12 mpd in 1970 to about 23 mpd presently, with a corresponding increase in fuel use and emissions.

How Affected by Planned Growth Strategy

The Planned Growth Strategy recommends centers and corridors, new mixed-use neighborhoods at the fringe and better jobs-housing balance that support transit and alternative transportation modes that will gradually convert many trips to transit, walking, and bicycling, reduce the number of vehicular trips and their lengths, and positively affect fuel use and emissions.

Comprehensive Plan

Energy Management. Policy c "Land use planning that will maximize potential for efficient use of alternative and renewable energy sources shall be undertaken," and Policy d "A transportation system that is more energy efficient shall be developed. In particular, promote: a variety of transportation modes including expansion of transit, paratransit and railway systems"

Also *Air Quality*. Policy b "Automobile travel's adverse effects on air quality shall be reduced through a balanced land use/transportation system that promotes the efficient placement of housing, employment and services."

Also *Economic Development*. Policy g "Concentrations of employment in activity centers should be promoted in an effort to balance jobs with housing and population in order to reduce the need to travel."

7.2.10 Inner-City Deterioration

General Description and Impacts

Deteriorating inner-city conditions motivate many economically viable families and businesses to move farther out, and the same conditions discourage viable households and firms from moving into central areas in general. As a result, the economic and social condition of neighborhoods and businesses remaining in central areas deteriorates.

Prevalence in Albuquerque

Job-producing development is more prevalent in the 1960 City Limits than at the fringe. Nonetheless, many older commercial, office, and industrial areas are deteriorating in quality and competitiveness, and personal wealth is moving out of older neighborhoods to fringe developments in this and other jurisdictions in the region.

How Affected by Planned Growth Strategy

The Planned Growth Strategy emphasizes reinvesting in older parts of the urban area and reversing residential and commercial decline in many low income neighborhoods. Better quality of life (e.g., lower crime, better schools, services) in older neighborhoods will encourage more middle and upper income households to reside in these places, stimulate reinvestment in homes and businesses, and increase local economic activity and value.

Comprehensive Plan

Economic Development. Policy a "New employment opportunities which will accommodate a wide range of occupational skills and salary levels shall be encouraged and new jobs located convenient to areas of most need," and *Established & Developing Urban Areas*. Policy o "Redevelopment and rehabilitation of older neighborhoods in the Established Urban Area shall be continued and strengthened."

Also *Housing*. Policy b "Quality of existing housing improved through concentrated renovation programs in deteriorating neighborhoods."

7.2.11 "Leap-Frog" Development

General Description and Impacts

"Leap-frog" development, which locates new urban growth at some distance from the existing urban fringe, does not capitalize on infrastructure capacity that may already be present in other areas. In addition, dispersed development increases costs for linearly related infrastructure (e.g., roads, water and sewer mains).

Prevalence in Albuquerque

Planned Communities in Comprehensive Plan Reserve and Rural areas, if development were to begin in less than 25 years, would constitute "leap-frog" growth. Existing no net cost policies, if adequately implemented, would off-set, to a degree, the financial consequences of such development. However, inadequate policies exist at present to control development between the Planned Communities and the urban edge. Such development, as presently regulated, would contribute to the problems identified.

How Affected by Planned Growth Strategy

The Planned Growth Strategy recommendations address this issue by defining "no net cost." In addition, policies are recommended to control scattered site development in "obsolete" and "premature" subdivisions that are located between a proposed Planned Community and the urban edge. Implementing Planned Growth Strategy recommendations would prove to be an attraction for more people and jobs within the areas already served with urban infrastructure, re-energizing the economic health of older areas and increasing their contribution to gross receipts taxes. The Planned Growth

Strategy recommends that urban growth occur in the most cost effective way, that it, by using existing infrastructure capacity first.

Comprehensive Plan

Service Provision. Policy c "The existing public service area should be the highest priority for service, capacity, use, maintenance and rehabilitation."