

Arizona Supply Chain Analysis

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Executive Summary

The purpose of this analysis is to identify supplier gaps in Arizona based on secondary data as well as a statewide buyer survey. The buyer survey includes results from a web-based questionnaire, as well as personal interviews. The analysis is structured around twelve industries of opportunity identified in “Arizona’s Economic Future,” prepared by Economy.com in August 2002. The following summarizes the findings from both the secondary data analysis and the buyer survey.

Supplier Gaps

- Electronic components, steel and other primary metals and specialized scientific supplies were noted as supplier gaps in both the survey and the secondary data analysis. Electronic components are important in software, telecommunications, high tech instruments, aerospace, other high tech and industrial machinery manufacturing, according to the secondary data. Steel and primary metals are important for industrial machinery, and scientific supplies are important for high tech instruments.
- Other gaps noted in the survey that were not apparent from the secondary data included window hardware, solenoids, locks, die casting magnets, office furniture, computers, power panels, batteries, chemicals and gases and optic lasers. Most of these items (with the exception of office furniture and computers) represent highly specialized products that may only be produced by a limited number of companies throughout the country. Alternatively, professional services were noted as a gap for many industries in the secondary data analysis, but not in the survey results.
- It is generally the case that companies are buying more basic goods locally. These include office supplies and printing; local services such as security, building maintenance and food service; standard manufactured products and hardware (particularly fabricated metal products) and professional and business services. The types of products being purchased outside Arizona are typically more specialized.
- In general, the demand from a particular industry group may not be large compared to total commodity production, but when added to demand from all other industries in Arizona there is a deficit. It is not clear from the secondary data whether that deficit is causing a problem for the industries of opportunity. However, it would appear from this analysis that Arizona is a net importer of many manufactured goods that are used by the industries of opportunity.

Other Purchasing Issues

In addition to identifying specific supplier gaps, the buyer survey included a variety of questions about purchasing methods and issues in identifying suppliers.

- For the companies that responded to the survey, almost all indicated that most purchasing for their Arizona operations is done at a centralized facility located within the state. This is significant because it makes it easier for ADOC or local economic development organizations to develop relationships with local buyers.
- Companies use a wide variety of methods to identify suppliers and potential suppliers. The most common was internet search, followed by firm records and previous contacts and

experience of the buyer. Often the methods used depend on the commodity or service being purchased and/or contract requirements.

- Survey respondents were asked to rank a number of factors by level of importance that they use when choosing suppliers. Quality of the product was by far the most important to buyers with 96 percent of buyers ranking quality as most important or very important. Reliability of delivery was ranked most important or very important by 89 percent of buyers. Other key factors included price and service/maintenance.
- About half of the survey respondents purchase less than 25 percent of their supplies outside Arizona. However, another 25 percent purchase at least half of their supplies outside the state. Seventy-four percent of the companies responding to the survey indicated they have no “buy local” policy in place.
- It is difficult to say whether non-local purchases are occurring because products are not available in Arizona, or whether local suppliers are unable to meet other specific criteria. However, the primary reason the products and services that *could be* purchased in Arizona are not according to survey respondents is that companies cannot locate local suppliers.
- In addition to reasons for not purchasing locally, buyers were asked what it would take for them to buy more supplies in Arizona. Availability appeared to be the biggest issue, particularly for specialized supplies and components and particularly outside of the metro areas. However, price was ranked only slightly below availability.

Review of Programs to Connect Buyers and Suppliers

One of the ways that buyer supplier relationships in Arizona could be strengthened is through a statewide program that would provide resources to allow buyers and local suppliers to identify each other more easily to and provide better feedback to suppliers enabling them to compete more effectively with non-local vendors. This study includes reviews of three such programs: AZBusinessLinc used in Tucson; Connectory which is a similar program used in California; and FOCUS which is used for government procurement in California.

- AZBusinessLinc is an on-line supplier database owned by the City of Tucson that allows companies to enter a detailed profile that can be searched by potential buyers. The program is currently marketed to buyers through the efforts of a five person staff who meet regularly with large local companies to discuss current and anticipated procurement needs. The most appealing features of the database to these companies are speed and level of detail of the supplier selection criteria. The access to staff people from the City of Tucson who will do much of the leg work in identifying potential suppliers free of charge is also very important. The database is marketed to sellers exclusively through strategic partnerships with other cities, cluster organizations and chambers in the five-county Southern Arizona region.
- Connectory.com is a business-to-business, buyer-supplier marketing and communication tool that covers the State of California. It provides a regional source for products, technologies, services, company capabilities, capacities and expertise. In addition to an on-line supplier directory, the Connectory web site also includes a bulletin board that has “want ads” for buyers and suppliers, listings of international trade opportunities, employment opportunities, venture funding opportunities, success stories and upcoming events. Connectory is funded through a

variety of public and private sources including sponsorships and sales of banner ads on the web site.

- FOCUS is California's only nationwide, local government-to-government purchasing program. It allows cities, counties, schools, special districts and other public entities to acquire technology products and services quickly and at competitive rates. The program does require vendors to pre-certify; however once they are part of the program they are able to circumvent future bidding processes. FOCUS gives local government access to pre-screened, competitively bid vendors in the technology industry, avoiding the expense and delay of a protracted government RFP process.

Summary

While there are clearly existing supplier gaps for some types of specialized commodities, it may not be feasible to expect that all these needs can be met locally. The key to increasing the volume of local transactions for products that **are** available locally and making Arizona suppliers more competitive appears to be increased communication between buyers and suppliers about specific buyer requirements, and better methods for identifying local suppliers that are able to meet those requirements.

1.0 Introduction

The purpose of this analysis is to identify Arizona supplier gaps based on secondary data as well as a statewide buyer survey. The analysis is structured around twelve industries of opportunity identified in “Arizona’s Economic Future,” prepared by Economy.com in August 2002. The industries of opportunities listed below were selected based on three criteria: (1) national industry growth projections; (2) estimated relationships between historical regional industry growth and Arizona’s comparative advantages; (3) industries with qualities that would make them competitive in the changing international economy including technology based, highly productive, research intensive, linked to export markets, and consistent with local resources and Arizona’s diverse regional economies. The resulting opportunity industries for Arizona include the following:

- software and systems integration
- health care and biotech
- industrial machinery
- telecommunications
- high tech instruments
- forest products
- engineering research
- transportation and logistics
- agriculture, food processing and ag technology
- aerospace, avionics and defense
- other high tech industries
- local government

Figure 1 shows the definition of each industry group by SIC, as determined by ADOC. For the purpose of this analysis, the SICs listed in Figure 1 were converted to NAICS. Some of these industries are emerging industries in Arizona, while others are more traditional. There is also a mix of industries that are more concentrated in rural areas of the state, versus those whose presence is predominantly in urban areas. Given the broad range of industry types, there is an equally broad range of suppliers.

**Figure 1-1
Definitions for Industries of Opportunity**

Industry Group	SICs
Computer Software and Systems Integration	737
Healthcare and Biotechnology	283 and 80, excluding 805, 808
Industrial Machinery	35, excluding 352, 357
Telecommunications	481, 489, 366
High Tech Instruments	382, 384, 385
Forest Products	08, 24, 26
Engineering Research	873
Transportation and Logistics	40, 42
Agriculture, Food Processing and Ag Technology	01, 07, 20, 352
Defense, Aerospace and Avionics	372, 376, 381
Other High Tech	365, 367, 386, 871
Local Government	91

The first part of the study includes an analysis of secondary data and provides a basis for identifying potential gaps in the supply chain. The results are presented in Chapter 2. The second part of the study

presents the results of a survey of Arizona buyer industries, described in Chapters 3 and 4. This two-fold survey included both a web-based version and personal phone interviews. The purpose was to evaluate the existence of supplier gaps within the industries of opportunity and identify barriers and challenges to connecting buyers with local suppliers. Chapter 5 discusses models that are currently used in Arizona and other locations to connect buyers and suppliers.

2.0 Secondary Data Analysis

Identification of Suppliers by Industry

The first step in the secondary data analysis is to identify suppliers to each of the industries of opportunity based on national input-output data. Using data from IMPLAN, a national vendor of input-output software, it is possible to identify the volume of purchases made by each industry by commodity. Detailed results for Arizona's industries of opportunity are shown in Appendix A.

In most cases, each industry group includes several sub-groups with distinctly different supplier requirements. Thus, in order to provide a more accurate analysis, the results are shown by industry sub-group. For each industry group, the distribution of major purchases by commodity is shown along with total commodity purchases and total industry output and employment nationally. The tables are intended to highlight the largest suppliers for each industry sub-group. In general, the demand from a particular industry group may not be large compared to total commodity production, but when added to demand from all other industries in Arizona there may be a deficit. It is not clear from the secondary data whether that deficit is causing a problem for the industries of opportunity.

Note that input-output data used in this analysis distributes the value of production back to all contributing sectors. For example, if an industrial machinery manufacturer buys a component part from a wholesaler, some of the value of the part will be attributed to the wholesaler, some to transportation, some to the manufacturer of the part, and some to primary metal industries and other suppliers to the part manufacturer. In a typical local economy, not all of those industries will be present, so not all of the value of supplier purchases will be captured in the local economy. However, on a national basis, the vast majority of the purchase value can be distributed back to contributing sectors.

The results on national purchasing patterns provide information on the relative importance of various suppliers as well as the overall size of each industry nationally. The volume of supply purchases by a given industry is of course directly proportional to the overall size of the industry. Thus, the fifth most important supplier to a very large industry may result in a larger volume of commodity purchases than the first most important supplier to a smaller industry. The overall size of each industry sub-group nationally can be compared based on employment and output.

Top national suppliers by industry group are noted below:

- **software and systems integration** – software publishers, advertising, telecommunications
- **health care and biotech** – pharmaceutical manufacturing, lessors of intangible assets
- **industrial machinery** – wholesale trade, iron and steel mills
- **telecommunications** – communications equipment, lessors of intangible assets, electronic components, telecommunications
- **high tech instruments** – wholesale trade, electronic components
- **forest products** – forest product nurseries, agricultural support, sawmills, paper mills
- **engineering research** – real estate, satellites
- **transportation and logistics** – machinery and equipment leasing, truck transportation, automotive repair and maintenance
- **agriculture, food processing and ag technology** – grain farming, all other crop farming, cattle ranching, animal food manufacturing, iron and steel mills, agricultural support

- **aerospace, avionics and defense** – electronic components, communication equipment, aircraft parts
- **other high tech industries** – wholesale trade, photographic film, electronic components, sound recording
- **local government** – other government entities, wholesale trade, telecommunications, real estate

The input-output data used in this analysis does not provide detail on wholesale trade, which is a larger supplier to many industries. The volume of purchases from the wholesale sector is in part an indicator of the amount of purchasing that occurs through wholesalers as opposed to directly from manufacturers. More importantly, the volume of purchases in the wholesale sector only represents the markup or contribution of the wholesaler to the final cost of the product. At the state or local level, wholesale will represent larger share of total commodity purchases than at the national level because many of the original manufacturers will be located elsewhere.

Another interesting pattern that emerges from the national input-output data is that industries frequently buy from closely related industries, perhaps within the same SIC. Since any given industry may produce several products or commodities, it is possible and in fact frequent that these types of purchasing patterns occur. So for example, some industries in the telecommunications group, such as resellers, purchase a large amount of telecommunication services. Thus, a buyer industry and one of its primary suppliers fall within the same SIC.

Overall, the list of the largest suppliers to each industry group is fairly diverse. However, among the top ten or so suppliers to each group, there is a fair amount of crossover with multiple industries of opportunity relying on many of the same types of suppliers.

Representation of Industries of Opportunity in Arizona

The next step in the analysis is to determine the share of buyer industries nationally that are present in Arizona. In this case, Arizona's share of national output by industry sub-group is used as a proxy for allocating the local share of supplier demand to the state. Output is a measure of the value of products or services being produced, based on a combination of labor costs, material costs and value added.

Figure 2-1 shows Arizona's share of output and employment by industry within each industry group. Additional detail is provided in Appendix B.

**Figure 2-1
Arizona Share of Employment and Output
Industries of Opportunity**

Industry	Arizona		National		Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Computer Software and Systems Integration	\$3,973	44,671	\$414,133	3,568,330	1%	1%
Healthcare and Biotechnology	\$15,501	143,558	\$1,045,985	9,020,752	1%	2%
Industrial Machinery	\$1,598	7,779	\$232,496	1,207,369	1%	1%
Telecommunications	\$5,086	25,625	\$452,925	1,645,249	1%	2%
High Tech Instruments	\$1,252	6,875	\$105,984	555,321	1%	1%
Forest Products	\$1,666	11,756	\$263,854	1,327,784	1%	1%
Engineering Research	\$308	5,548	\$60,473	842,806	1%	1%
Transportation and Logistics	\$2,955	22,363	\$235,685	1,803,349	1%	1%
Agriculture, Food Processing and Ag Technology	\$6,263	32,287	\$772,853	4,907,692	1%	1%
Defense, Aerospace and Avionics	\$9,493	37,265	\$168,743	647,779	6%	6%
Other High Tech	\$11,502	78,979	\$339,266	2,700,451	3%	3%
Local Government	\$10,012	140,789	\$540,280	8,809,610	2%	2%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

In most cases, Arizona only represents 1 to 2 percent of both output and employment in each industry of opportunity, although there are a few key exceptions. Specific industries where Arizona represents a large share of national employment and/or output are listed below:

- Semiconductor machinery (5 percent of output and employment)
- Fluid meters and counting devices (7 percent of output, 6 percent of employment)
- Vegetable and melon farming (6 percent of output, 4 percent of employment)
- Aircraft engine and engine parts (8 percent of output and employment)
- Guided missile and space vehicle manufacturing (25 percent of output, 26 percent of employment)
- Semiconductors (11 percent of output, 12 percent of employment)

Although all the industries above represent key industry specialties within Arizona, it is important to remember that some of them are relatively small in terms of employment nationally. Arizona just happens to have a high concentration of employment in that small industry. Examples of specific industries where this is the case include guided missile and space vehicle manufacturing, semiconductor manufacturing and aircraft engine parts.

There are other more ubiquitous industries where Arizona only represents a small percentage of national employment, but given the overall size of the industry nationally, it translates into a large number of Arizona employees and sizeable supplier demand. Industries that fall into this category and employ 15,000 or more people in Arizona include custom computer programming, doctor's offices, ambulatory health care, hospitals, telecommunications, truck transportation, and state and local government.¹

Arizona Supplier Gaps Based on Secondary Data Analysis

The next step in the supplier analysis is to compare demand for specific commodities to Arizona commodity production. By applying Arizona's share of output to total national commodity purchases by

¹ Semiconductor manufacturing also employs more than 15,000 people locally, but is more appropriately classified as a local industry specialty than a large ubiquitous industry.

industry, it is possible to estimate local commodity demand from the industries of opportunity in Arizona. Local (Arizona) commodity demand can then be compared to local commodity production to identify supplier gaps.² Although it will never be the case that all local demand will be fulfilled by industries within Arizona, commodities that are being demanded by multiple local buyer industries are good targets for recruitment and expansion. Having a well developed supplier base is a cornerstone to building and sustaining Arizona's industries of opportunity.

Figures 2-2 through 2-13 show the comparison between local demand from the industries of opportunity in Arizona, demand from all industries in Arizona and commodity production for the top 15 suppliers to each industry group. Commodities in bold are those where total Arizona demand from all industries exceeds Arizona commodity production. Additional commodity detail is shown in Appendix C.

Figure 2-2
Arizona Supplier Gaps for Software and Systems Integration Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers				Arizona Commodity Production*	Arizona Demand All Industries
	Reproduction & Publishing	Info Services Data Processing	Programming & Systems Design	Software Total		
Employment services	\$15.04	\$20.94	\$55.26	\$91.23	\$3,260.78	\$1,734.37
Advertising and related services	\$23.90	\$32.26	\$17.40	\$73.56	\$2,266.81	\$3,155.27
Telecommunications	\$12.04	\$32.22	\$26.20	\$70.46	\$4,352.27	\$5,299.03
Real estate	\$12.23	\$14.89	\$25.32	\$52.44	\$16,370.19	\$12,092.21
Office administrative services	\$7.21	\$9.22	\$23.73	\$40.16	\$909.59	\$833.44
Wholesale trade	\$18.71	\$10.99	\$6.98	\$36.68	\$12,912.26	\$10,831.49
Computer systems design services	\$1.83	\$13.24	\$20.94	\$36.01	\$677.91	\$874.31
Lessors of nonfinancial intangible assets	\$5.28	\$2.81	\$24.52	\$32.60	\$6,494.93	\$1,698.13
Software publishers	\$27.91	\$0.00	\$0.00	\$27.91	\$634.67	\$725.68
Automotive repair and maintenance	\$0.96	\$9.04	\$13.44	\$23.44	\$5,808.50	\$4,104.53
Services to buildings and dwellings	\$3.66	\$5.41	\$13.83	\$22.90	\$1,345.64	\$1,055.66
All other electronic component manufacturing	\$7.12	\$4.28	\$10.73	\$22.14	\$1,059.60	\$1,350.04
Data processing services	\$0.60	\$7.45	\$14.04	\$22.09	\$737.31	\$552.98
Monetary authorities and depository intermediaries	\$4.17	\$5.25	\$7.01	\$16.43	\$4,115.69	\$5,985.75
Colleges, universities, and junior colleges	\$3.27	\$5.10	\$7.70	\$16.08	\$390.97	\$1,602.96
<i>Total Commodity Purchases (millions)</i>	\$195.42	\$286.76	\$385.26	\$867.45	\$106,501.53	\$92,258.54

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

² Local (Arizona) commodity production is defined as net commodity supply or industry commodity production plus non-industry commodity production less foreign exports.

Figure 2-3
Arizona Supplier Gaps for Healthcare and Biotech Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers			Arizona	Arizona
	Pharmaceuticals	Doctors & Hospitals	Healthcare/ Biotech Total	Commodity Production*	Demand All Industries
Real estate	\$0.61	\$992.56	\$993.17	\$16,370.19	\$12,092.21
Wholesale trade	\$22.74	\$342.53	\$365.27	\$12,912.26	\$10,831.49
Employment services	\$0.43	\$318.08	\$318.51	\$3,260.78	\$1,734.37
Legal services	\$1.50	\$282.09	\$283.59	\$2,141.72	\$2,676.00
Securities, commodity contracts, investments	\$0.38	\$276.08	\$276.46	\$2,751.35	\$4,136.42
Pharmaceutical and medicine manufacturing	\$32.26	\$180.10	\$212.37	\$338.40	\$1,956.21
Postal service	\$0.01	\$188.47	\$188.48	\$1,012.70	\$907.69
Management of companies and enterprises	\$15.82	\$159.98	\$175.80	\$1,857.85	\$2,534.70
Management consulting services	\$0.71	\$172.22	\$172.93	\$1,643.20	\$1,409.71
Food services and drinking places	\$0.88	\$169.08	\$169.96	\$7,694.15	\$6,598.51
Telecommunications	\$0.99	\$147.47	\$148.46	\$4,352.27	\$5,299.03
Plastics products	\$2.88	\$136.44	\$139.32	\$751.03	\$1,142.92
Office administrative services	\$0.14	\$129.04	\$129.18	\$909.59	\$833.44
Services to buildings and dwellings	\$0.18	\$124.77	\$124.95	\$1,345.64	\$1,055.66
Business support services	\$0.32	\$121.36	\$121.67	\$1,862.11	\$923.99
<i>Total Commodity Purchases (millions)</i>	<i>\$166.16</i>	<i>\$4,868.32</i>	<i>\$5,034.48</i>	<i>\$92,859.38</i>	<i>\$86,130.17</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.
Industries in bold represent potential supplier gaps

Figure 2-4
Arizona Supplier Gaps for Industrial Machinery Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers	Arizona	Arizona
	Industrial Machinery	Commodity Production*	Demand All Industries
Wholesale trade	\$121.18	\$12,912.26	\$10,831.49
Iron and steel mills	\$48.06	\$129.70	\$571.25
Management of companies and enterprises	\$37.70	\$1,857.85	\$2,534.70
Ferrous metal foundries	\$35.13	\$77.50	\$174.04
Machine shops	\$23.40	\$317.93	\$387.99
All other forging and stamping	\$16.56	\$157.65	\$159.59
All other electronic component manufacturing	\$16.28	\$1,059.60	\$1,350.04
Truck transportation	\$16.19	\$2,435.78	\$2,524.18
Aluminum foundries	\$15.57	\$105.69	\$112.50
Lessors of nonfinancial intangible assets	\$15.27	\$6,494.93	\$1,698.13
AC, refrigeration and forced air heating	\$15.21	\$326.08	\$392.26
Motor and generator manufacturing	\$14.83	\$20.74	\$115.95
Speed changers, mechanical power transmission equipment	\$14.48	\$2.57	\$40.21
Fabricated structural metal manufacturing	\$13.51	\$220.88	\$297.18
Iron and steel forging	\$13.38	\$4.17	\$61.39
<i>Total Commodity Purchases (millions)</i>	<i>\$615.64</i>	<i>\$65,659.02</i>	<i>\$62,994.37</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-5
Arizona Supplier Gaps for Telecommunications Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers			Arizona	Arizona
	Communication Equipment	Telecom-munication	Telecomm Total	Commodity Production*	Demand All Industries
Telecommunications	\$2.31	\$641.54	\$643.85	\$4,352.27	\$5,299.03
Architectural and engineering services	\$4.60	\$107.05	\$111.65	\$2,998.84	\$3,164.91
Telephone apparatus manufacturing	\$6.43	\$85.93	\$92.36	\$140.47	\$285.03
Advertising and related services	\$2.23	\$81.46	\$83.68	\$2,266.81	\$3,155.27
Broadcast and wireless communications equipment	\$74.61	\$0.22	\$74.83	\$423.20	\$770.99
Lessors of nonfinancial intangible assets	\$36.54	\$25.92	\$62.45	\$6,494.93	\$1,698.13
Wholesale trade	\$25.96	\$30.26	\$56.22	\$12,912.26	\$10,831.49
Accounting and bookkeeping services	\$0.87	\$51.77	\$52.64	\$1,006.87	\$1,095.47
All other electronic component manufacturing	\$32.28	\$13.44	\$45.72	\$1,059.60	\$1,350.04
Machinery and equipment rental and leasing	\$0.55	\$36.53	\$37.08	\$1,219.21	\$883.56
Real estate	\$2.01	\$28.10	\$30.10	\$16,370.19	\$12,092.21
Household goods repair and maintenance	\$0.09	\$27.71	\$27.80	\$490.64	\$370.99
Specialized design services	\$0.05	\$26.23	\$26.27	\$354.96	\$370.89
All other miscellaneous professional and technical	\$2.29	\$21.95	\$24.24	\$837.48	\$458.80
Monetary authorities and depository intermediaries	\$2.42	\$21.03	\$23.45	\$4,115.69	\$5,985.75
<i>Total Commodity Purchases (millions)</i>	<i>\$228.30</i>	<i>\$1,283.82</i>	<i>\$1,512.12</i>	<i>\$68,707.49</i>	<i>\$61,872.62</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-6
Arizona Supplier Gaps for High Tech Instrument Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers	Arizona	Arizona
	High Tech Instruments	Commodity Production*	Demand All Industries
Wholesale trade	\$76.15	\$12,912.26	\$10,831.49
All other electronic component manufacturing	\$38.96	\$1,059.60	\$1,350.04
Management of companies and enterprises	\$32.03	\$1,857.85	\$2,534.70
Business support services	\$21.32	\$1,862.11	\$923.99
Surgical and medical instrument manufacturing	\$14.52	\$99.79	\$185.67
Plastics products	\$12.73	\$751.03	\$1,142.92
Advertising and related services	\$12.02	\$2,266.81	\$3,155.27
Paperboard container manufacturing	\$9.14	\$217.73	\$449.75
Electricity and signal testing instruments	\$9.09	\$51.39	\$83.11
Legal services	\$9.08	\$2,141.72	\$2,676.00
Textile and fabric finishing mills	\$8.53	\$9.89	\$34.44
Architectural and engineering services	\$8.25	\$2,998.84	\$3,164.91
Surgical appliance and supplies manufacturing	\$8.15	\$265.15	\$265.24
Scientific research and development services	\$7.90	\$304.99	\$1,204.19
Telecommunications	\$7.66	\$4,352.27	\$5,299.03
<i>Total Commodity Purchases (millions)</i>	<i>\$395.15</i>	<i>\$73,825.25</i>	<i>\$68,807.41</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-7
Arizona Supplier Gaps for Forest Product Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers				Arizona Commodity Production*	Arizona Demand All Industries
	Logging & Forest Pdts	Wood Products	Paper Products	Forest Pdts Total		
Wholesale trade	\$0.86	\$80.70	\$46.26	\$127.82	\$12,912.26	\$10,831.49
Sawmills	\$0.03	\$110.91	\$9.07	\$120.00	\$22.65	\$461.04
Logging	\$3.36	\$94.44	\$15.80	\$113.59	\$26.71	\$20.60
Paper and paperboard mills	\$0.00	\$0.41	\$93.82	\$94.24	\$113.96	\$676.03
Truck transportation	\$0.05	\$29.70	\$17.70	\$47.44	\$2,435.78	\$2,524.18
Forest nurseries, forest products and timber tracts	\$6.31	\$33.63	\$0.00	\$39.94	\$20.84	\$18.85
Automotive repair and maintenance	\$0.56	\$11.30	\$12.04	\$23.90	\$5,808.50	\$4,104.53
Management of companies and enterprises	\$0.13	\$7.16	\$15.21	\$22.50	\$1,857.85	\$2,534.70
Natural gas distribution	\$0.22	\$4.81	\$13.46	\$18.49	\$1,074.38	\$1,417.70
Power generation and supply	\$0.02	\$8.83	\$9.01	\$17.86	\$4,919.68	\$3,102.05
Miscellaneous wood product manufacturing	\$0.00	\$16.05	\$0.01	\$16.06	\$44.47	\$104.95
Pulp mills	\$0.00	\$0.00	\$13.68	\$13.68	\$6.05	\$16.16
Veneer and plywood manufacturing	\$0.00	\$13.38	\$0.03	\$13.41	\$1.59	\$169.42
Cut stock, resawing lumber and planing	\$0.00	\$11.26	\$0.01	\$11.27	\$10.10	\$56.85
Commercial machinery repair and maintenance	\$0.26	\$5.20	\$5.51	\$10.97	\$834.42	\$534.52
<i>Total Commodity Purchases (millions)</i>	\$18.40	\$474.07	\$294.48	\$786.94	\$53,883.37	\$51,340.54

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-8
Arizona Supplier Gaps for Engineering Research Services
Millions of Dollars

Supplier Industries	Top 15 Suppliers Engineering Services	Arizona Commodity Production*	Arizona Demand All Industries
Real estate	\$2.70	\$16,370.19	\$12,092.21
Employment services	\$1.72	\$3,260.78	\$1,734.37
Glass and glass products- except glass containers	\$1.44	\$96.08	\$223.04
Legal services	\$1.18	\$2,141.72	\$2,676.00
Wholesale trade	\$1.11	\$12,912.26	\$10,831.49
Commercial printing	\$1.09	\$491.89	\$566.54
Telecommunications	\$0.82	\$4,352.27	\$5,299.03
Office administrative services	\$0.80	\$909.59	\$833.44
All other miscellaneous professional and technical	\$0.76	\$837.48	\$458.80
Management consulting services	\$0.69	\$1,643.20	\$1,409.71
Architectural and engineering services	\$0.69	\$2,998.84	\$3,164.91
Periodical publishers	\$0.64	\$138.07	\$331.27
Maintenance and repair of nonresidential buildings	\$0.64	\$750.57	\$1,672.57
Broadcast and wireless communications equipment	\$0.60	\$423.20	\$770.99
<i>Total Commodity Purchases (millions)</i>	\$39.76	\$70,539.47	\$62,246.08

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-9
Arizona Supplier Gaps for Transportation and Logistics Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers			Arizona Commodity Production*	Arizona Demand All Industries
	Rail Transport	Truck Transport	Transport Total		
Truck transportation	\$1.26	\$269.76	\$271.02	\$2,435.78	\$2,524.18
Automotive repair and maintenance	\$0.01	\$156.73	\$156.74	\$5,808.50	\$4,104.53
Scenic and sightseeing transportation and support	\$35.62	\$101.57	\$137.19	\$697.27	\$673.00
Wholesale trade	\$9.23	\$114.63	\$123.86	\$12,912.26	\$10,831.49
Petroleum refineries	\$8.27	\$112.23	\$120.50	\$42.77	\$2,744.31
Insurance carriers	\$0.14	\$65.25	\$65.40	\$3,859.06	\$4,631.49
Motor vehicle parts manufacturing	\$3.42	\$43.51	\$46.92	\$797.02	\$1,832.00
Machinery and equipment rental and leasing	\$34.85	\$9.87	\$44.72	\$1,219.21	\$883.56
Warehousing and storage	\$0.02	\$37.75	\$37.77	\$475.31	\$480.22
Automotive equipment rental and leasing	\$0.29	\$31.46	\$31.75	\$3,017.58	\$1,408.71
Telecommunications	\$0.23	\$28.02	\$28.25	\$4,352.27	\$5,299.03
Management of companies and enterprises	\$0.00	\$25.86	\$25.86	\$1,857.85	\$2,534.70
Real estate	\$1.30	\$22.42	\$23.72	\$16,370.19	\$12,092.21
Management consulting services	\$4.35	\$16.63	\$20.98	\$1,643.20	\$1,409.71
Rail transportation	\$0.82	\$16.77	\$17.59	\$333.58	\$450.47
Total Commodity Purchases (millions)	\$155.75	\$1,131.96	\$1,287.72	\$74,065.59	\$67,271.70

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-10
Arizona Supplier Gaps for Agriculture, Food Processing and Ag Technology Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers				Arizona Commodity Production*	Arizona Demand All Industries
	Agriculture	Food Processing	Farm & Garden Equipment	Agriculture Total		
Cattle ranching and farming	\$156.87	\$329.53	\$0.00	\$486.41	\$1,139.49	\$733.50
Wholesale trade	\$131.66	\$262.69	\$22.05	\$416.41	\$12,912.26	\$10,831.49
Grain farming	\$121.09	\$80.28	\$0.00	\$201.37	\$37.22	\$178.98
Other animal food manufacturing	\$166.12	\$15.75	\$0.00	\$181.88	\$70.47	\$116.48
Real estate	\$172.66	\$8.64	\$0.40	\$181.70	\$16,370.19	\$12,092.21
All other crop farming	\$164.19	\$8.60	\$0.00	\$172.79	\$173.30	\$244.25
Agriculture and forestry support activities	\$164.45	\$0.00	\$0.00	\$164.45	\$493.87	\$198.88
Poultry and egg production	\$17.46	\$118.96	\$0.00	\$136.41	\$13.35	\$72.20
Truck transportation	\$31.13	\$65.23	\$5.53	\$101.89	\$2,435.78	\$2,524.18
Animal production- except cattle and poultry	\$9.18	\$81.37	\$0.00	\$90.55	\$40.12	\$185.16
Management of companies and enterprises	\$0.00	\$76.37	\$4.97	\$81.34	\$1,857.85	\$2,534.70
Animal slaughtering, except poultry	\$0.13	\$80.23	\$0.00	\$80.36	\$379.52	\$580.29
Paperboard container manufacturing	\$1.94	\$73.78	\$0.19	\$75.91	\$217.73	\$449.75
Petroleum refineries	\$71.61	\$2.53	\$0.13	\$74.28	\$42.77	\$2,744.31
Lessors of nonfinancial intangible assets	\$0.00	\$69.43	\$0.09	\$69.52	\$6,494.93	\$1,698.13
Total Commodity Purchases (millions)	\$1,519.56	\$1,948.75	\$126.31	\$3,594.62	\$75,991.61	\$73,510.19

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-11
Arizona Supplier Gaps for Aerospace, Avionics and Defense Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers			Arizona Commodity Production*	Arizona Demand All Industries
	Search & Nav. Instruments	Aircraft and Space Vehicles	Aerospace Total		
Wholesale trade	\$67.36	\$378.93	\$446.29	\$12,912.26	\$10,831.49
Other aircraft parts and equipment	\$0.00	\$379.91	\$379.91	\$382.55	\$521.51
Search, detection and navigation instruments	\$0.86	\$299.99	\$300.85	\$1,108.23	\$1,071.01
Aircraft engine and engine parts manufacturing	\$0.00	\$285.19	\$285.19	\$672.86	\$1,091.42
Broadcast and wireless communications equipment	\$54.99	\$183.62	\$238.62	\$423.20	\$770.99
Guided missile and space vehicle manufacturing	\$0.00	\$209.99	\$209.99	\$2,890.32	\$1,173.37
All other electronic component manufacturing	\$77.02	\$132.50	\$209.52	\$1,059.60	\$1,350.04
Management of companies and enterprises	\$34.53	\$159.15	\$193.67	\$1,857.85	\$2,534.70
Propulsion units and parts for space vehicles	\$0.00	\$165.83	\$165.83	\$478.33	\$1,214.39
Architectural and engineering services	\$14.50	\$99.05	\$113.55	\$2,998.84	\$3,164.91
Scientific research and development services	\$11.75	\$76.83	\$88.58	\$304.99	\$1,204.19
Metal valve manufacturing	\$0.02	\$67.25	\$67.27	\$472.67	\$512.91
Monetary authorities and depository intermediaries	\$7.97	\$51.41	\$59.39	\$4,115.69	\$5,985.75
Miscellaneous fabricated metal products	\$0.07	\$56.30	\$56.37	\$63.49	\$211.01
Plastics products	\$4.59	\$50.71	\$55.30	\$751.03	\$1,142.92
<i>Total Commodity Purchases (millions)</i>	<i>\$455.90</i>	<i>\$3,495.71</i>	<i>\$3,951.60</i>	<i>\$82,652.59</i>	<i>\$77,119.74</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-12
Arizona Supplier Gaps for Other High Tech Industries
Millions of Dollars

Supplier Industries	Top 15 Suppliers					Arizona Commodity Production*	Arizona Demand All Industries
	Photographic Equipment & Supplies	Media Recording & Reproduction	Electronics	Architecture & Engineering	High Tech Total		
All other electronic component manufacturing	\$0.53	\$0.05	\$417.17	\$0.57	\$418.32	\$1,059.60	\$1,350.04
Wholesale trade	\$7.24	\$0.69	\$363.81	\$6.15	\$377.89	\$12,912.26	\$10,831.49
Broadcast & wireless communication equipment	\$0.24	\$0.00	\$194.87	\$0.00	\$195.12	\$423.20	\$770.99
Architectural and engineering services	\$0.28	\$0.06	\$49.60	\$129.93	\$179.87	\$2,998.84	\$3,164.91
Semiconductors and related device manufacturing	\$0.32	\$0.01	\$114.48	\$0.17	\$114.98	\$1,799.33	\$790.04
Management of companies and enterprises	\$1.06	\$0.15	\$97.38	\$7.56	\$106.16	\$1,857.85	\$2,534.70
Semiconductor machinery manufacturing	\$0.00	\$0.00	\$85.58	\$0.00	\$85.58	\$414.16	\$648.72
Real estate	\$0.14	\$0.26	\$21.39	\$60.58	\$82.37	\$16,370.19	\$12,092.21
Environmental and other technical consulting svcs	\$0.01	\$0.00	\$1.01	\$75.62	\$76.64	\$333.36	\$270.74
Employment services	\$0.08	\$0.15	\$4.66	\$56.99	\$61.89	\$3,260.78	\$1,734.37
Lessors of nonfinancial intangible assets	\$1.45	\$0.06	\$55.08	\$4.80	\$61.39	\$6,494.93	\$1,698.13
Telecommunications	\$0.18	\$0.15	\$24.72	\$28.79	\$53.84	\$4,352.27	\$5,299.03
Computer systems design services	\$0.09	\$0.03	\$40.11	\$6.73	\$46.96	\$677.91	\$874.31
Monetary authorities & depository intermediation	\$0.42	\$0.10	\$28.40	\$16.48	\$45.40	\$4,115.69	\$5,985.75
Advertising and related services	\$0.11	\$0.91	\$31.90	\$10.14	\$43.07	\$2,266.81	\$3,155.27
<i>Total Commodity Purchases (millions)</i>	<i>\$31.10</i>	<i>\$6.38</i>	<i>\$2,050.37</i>	<i>\$648.75</i>	<i>\$2,736.60</i>	<i>\$106,225.93</i>	<i>\$96,206.68</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

Figure 2-13
Arizona Supplier Gaps to State and Local Government (Non-Education)
Millions of Dollars

Supplier Industries	Top 15 Suppliers State & Local Govt	Arizona Commodity Production*	Arizona Demand All Industries
State & Local Non-Education	\$7,161.99	\$5,804.53	\$5,804.53
Real estate	\$406.67	\$16,370.19	\$12,092.21
Securities, commodity contracts, investments	\$278.41	\$2,751.35	\$4,136.42
Monetary authorities and depository credit intermediaries	\$271.60	\$4,115.69	\$5,985.75
Wholesale trade	\$251.84	\$12,912.26	\$10,831.49
Telecommunications	\$246.19	\$4,352.27	\$5,299.03
Employment services	\$210.03	\$3,260.78	\$1,734.37
Legal services	\$187.16	\$2,141.72	\$2,676.00
Services to buildings and dwellings	\$158.84	\$1,345.64	\$1,055.66
Food services and drinking places	\$156.44	\$7,694.15	\$6,598.51
Postal service	\$149.95	\$1,012.70	\$907.69
Hotels and motels	\$138.33	\$1,724.61	\$1,052.76
Management consulting services	\$114.51	\$1,643.20	\$1,409.71
Electronic equipment repair and maintenance	\$103.54	\$655.96	\$498.12
Accounting and bookkeeping services	\$100.09	\$1,006.87	\$1,095.47
<i>Total Commodity Purchases (millions)</i>	<i>\$10,375.77</i>	<i>\$71,797.77</i>	<i>\$66,123.82</i>

Source: Minnesota IMPLAN Group, 2001 data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.
Industries in bold represent potential supplier gaps

In general, the demand from a particular industry group may not be large compared to total commodity production, but when added to demand from all other industries in Arizona there is a deficit. It is not clear from the secondary data whether that deficit is causing a problem for the industries of opportunity. However, it would appear from this analysis that Arizona is a net importer of many manufactured goods that are used by the industries of opportunity. Some of the gaps that do exist are in industries that rely heavily on natural resources and are not likely to expand in Arizona such as pulp mills, logging and grain farming. There are however other industries that appear as gaps in multiple clusters, resulting in a high volume of overall demand, may be good candidates for expansion such as wireless communication equipment, electronic components, computer systems design services and plastic products.

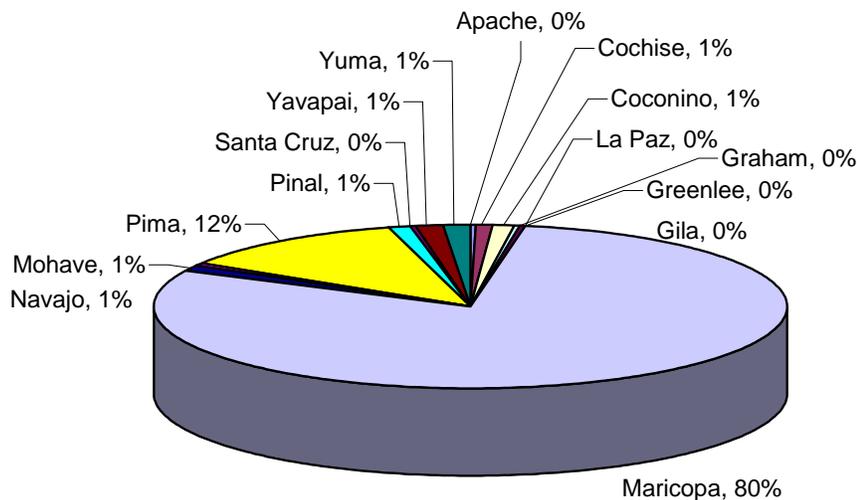
It is important to note that since any given industry sub-group may produce a number of specific products and services, not every industry in the sub-group may demand every commodity listed. Depending on the specific products and services produced in Arizona, relative demand for individual commodities may vary.

In general, the importance of having local suppliers is proportional to the cost of transporting a particular commodity, perishability, and the just-in-time nature of production in a given buyer industry. For example, although there may be gaps for certain suppliers like petroleum refineries, the lack of refineries in Arizona is certainly not a limiting factor in the ability of local industries to obtain gasoline and related petroleum products. In other cases, there may be demand for very specialized products that are hard to find or difficult to transport, and local availability may be very important.

County Level Commodity Production

Although the objective of this study is to find better ways to connect Arizona buyers and Arizona suppliers, the location of buyers within the state may be an issue for certain types of industries. Due to its relatively larger business base, Maricopa County produces the majority of commodities in most categories (Figure 2-14), and 80 percent of the commodities required by the industries of opportunity. However, there are some exceptions. The figure below details share of commodity production by county in terms of output value.

Figure 2-14
Commodity Production by County*



*For composite of commodities required by industries of opportunity.

- Pima County has the highest production statewide in a number of specialized manufactured goods including guided missiles and space vehicles, propulsion units for space vehicles, agricultural chemicals, hardware manufacturing, surgical and medical instruments, surgical appliances, communication equipment as well as services such as software publishing and scientific research and development services.
- Coconino County has especially high production of surgical appliances as well as logging and forest nursery products.
- Yuma County, and to a lesser extent Pinal County, have an established base of agricultural suppliers utilized by the industries of opportunity such as oilseed farming, agricultural support activities, vegetable and melon farming, dry and condensed dairy products and nursery products.
- Navajo County has a significant base of suppliers to the forest products group such as logging, nursery products, pulp mills and paper mills.
- In a few cases, there is little or no Arizona production at all such as for glass containers and ball bearings.

Figure 2-15 shows commodity production by county for a composite list of the top 25 commodities where state-level gaps may exist based on demand from all industries of opportunity. Commodities with state level supply gaps are shown in bold. Top commodities overall where local demand exceeds local supply include telecommunications, electronic components, management of companies and enterprises, truck transportation, broadcast and wireless communication equipment and aircraft parts. Additional commodity detail is shown in Appendix D.

It is important to keep in mind that the supplier gaps identified here are specific to the historical data used in the analysis. It is likely that that mix of commodities produced in Arizona will change in the future. More research on industry growth projections compared to commodities where apparent gaps exist could shed light on this issue. Additionally, some commodities such as electronic component manufacturing will be more vulnerable to global pressures. Other commodities such as aircraft engine parts, petroleum refineries could be vulnerable to other macro conditions such as oil price shocks and these factors will affect future production in Arizona.

Beyond identifying gaps and targeting supplier industries for expansion, the more important factor is whether or not industries that demand products that are currently being produced in Arizona are in fact purchasing locally. It is not possible to ascertain the actual buying patterns of individual businesses from this secondary data, but this information is available through the buyer survey.

**Figure 2-15
Commodity Production by County for Key Commodities
Millions of Dollars**

	Demand from Industries of Opportunity	Arizona Commodity Production*	Commodity Production by County*													
			Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz	Yavapai
Top 25 Suppliers to Industries of Opportunity	\$1,162.83	\$4,352.27	\$19.94	\$36.09	\$23.44	\$7.69	\$0.85	\$0.00	\$3.83	\$3,902.95	\$71.11	\$23.10	\$237.21	\$16.67	\$4.43	\$39.77
Telecommunications	\$782.34	\$1,059.60	\$0.05	\$14.13	\$0.21	\$1.01	\$0.00	\$0.00	\$0.00	\$1,257.82	\$8.30	\$0.00	\$113.14	\$10.52	\$16.41	\$5.38
All other electronic component manufacturing	\$531.59	\$1,657.85	\$0.00	\$6.13	\$13.70	\$9.11	\$0.52	\$0.00	\$0.00	\$1,839.69	\$10.39	\$6.38	\$181.67	\$6.80	\$8.60	\$3.72
Management of companies and enterprises	\$525.31	\$2,435.78	\$0.57	\$26.88	\$54.29	\$7.29	\$4.74	\$3.73	\$3.25	\$2,112.03	\$58.25	\$19.98	\$195.08	\$34.54	\$32.05	\$11.88
Truck transportation	\$517.36	\$4,115.69	\$16.25	\$27.81	\$72.40	\$16.58	\$9.27	\$0.76	\$5.30	\$3,409.10	\$57.20	\$33.92	\$499.76	\$44.11	\$11.82	\$41.22
Monetary authorities and depository intermediaries	\$514.47	\$423.20	\$0.21	\$0.09	\$1.80	\$0.01	\$0.00	\$0.00	\$0.00	\$385.37	\$0.39	\$0.00	\$88.31	\$0.02	\$0.08	\$61.10
Broadcast and wireless communications equipment	\$452.31	\$2,998.84	\$2.70	\$38.80	\$19.81	\$2.34	\$1.39	\$0.10	\$0.82	\$2,448.80	\$64.44	\$2.99	\$453.27	\$23.82	\$0.73	\$17.08
Architectural and engineering services	\$379.91	\$382.55	\$0.03	\$0.02	\$1.12	\$0.00	\$0.01	\$0.00	\$0.00	\$944.01	\$15.44	\$0.00	\$135.69	\$0.00	\$27.02	\$52.49
Other aircraft parts and equipment	\$376.84	\$2,751.35	\$0.32	\$14.16	\$19.03	\$0.82	\$1.34	\$0.02	\$0.10	\$2,482.91	\$14.10	\$1.93	\$258.37	\$1.22	\$2.52	\$9.55
Securities, commodity contracts and investments	\$371.77	\$2,266.81	\$0.80	\$16.83	\$37.90	\$10.01	\$14.37	\$1.64	\$3.21	\$1,657.06	\$47.32	\$38.46	\$343.49	\$14.45	\$4.77	\$49.44
Advertising and related services	\$315.92	\$2,141.72	\$7.29	\$5.84	\$24.72	\$1.60	\$1.07	\$0.53	\$1.03	\$1,771.41	\$12.37	\$4.69	\$297.54	\$6.05	\$3.76	\$20.59
Legal services	\$285.19	\$672.86	\$0.00	\$0.01	\$0.16	\$0.00	\$0.22	\$0.00	\$0.00	\$1,803.69	\$1.03	\$0.00	\$18.63	\$0.00	\$0.51	\$1.01
Aircraft engine and engine parts manufacturing	\$202.36	\$42.77	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.63	\$1.56	\$0.00	\$0.07	\$0.00	\$0.00	\$0.00
Petroleum refineries	\$201.37	\$37.22	\$0.12	\$7.83	\$0.06	\$0.08	\$0.24	\$0.26	\$0.88	\$14.72	\$0.19	\$2.08	\$1.16	\$10.08	\$0.26	\$0.90
Grain farming	\$198.78	\$1,006.87	\$1.37	\$2.21	\$9.86	\$0.58	\$1.02	\$0.21	\$1.13	\$856.81	\$16.85	\$3.73	\$91.69	\$1.80	\$4.44	\$11.50
Accounting and bookkeeping services	\$181.88	\$70.47	\$0.00	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$3.50	\$37.58	\$0.00	\$0.00	\$0.00	\$32.07	\$0.00	\$0.00
Other animal food manufacturing	\$172.79	\$173.30	\$0.77	\$7.43	\$0.42	\$0.35	\$0.18	\$1.09	\$21.63	\$85.24	\$1.36	\$4.27	\$2.68	\$20.69	\$0.19	\$1.87
All other crop farming	\$165.83	\$478.33	\$0.08	\$0.02	\$0.04	\$0.00	\$0.01	\$0.00	\$0.00	\$177.72	\$0.55	\$0.00	\$28.70	\$0.00	\$0.89	\$32.74
Propulsion units and parts for space vehicles	\$153.63	\$475.31	\$1.17	\$8.06	\$4.91	\$0.00	\$0.00	\$0.00	\$0.00	\$177.72	\$0.55	\$0.00	\$32.03	\$1.59	\$24.36	\$11.30
Warehousing and storage	\$145.23	\$677.91	\$0.00	\$45.45	\$2.19	\$1.72	\$0.95	\$0.00	\$0.00	\$570.65	\$1.29	\$0.08	\$60.30	\$0.76	\$0.00	\$3.94
Computer systems design services	\$144.30	\$304.99	\$0.00	\$10.2	\$9.79	\$0.74	\$0.00	\$0.00	\$0.00	\$130.12	\$0.76	\$1.90	\$154.14	\$9.68	\$0.00	\$0.87
Scientific research and development services	\$138.44	\$751.03	\$0.00	\$0.24	\$11.97	\$0.01	\$0.30	\$0.00	\$0.01	\$623.66	\$75.03	\$0.07	\$115.35	\$3.49	\$0.23	\$14.30
Plastics products	\$136.41	\$13.35	\$0.27	\$1.52	\$0.53	\$0.00	\$0.00	\$0.57	\$0.00	\$7.12	\$0.00	\$0.00	\$0.00	\$0.66	\$0.26	\$0.25
Poultry and egg production	\$120.00	\$22.65	\$4.11	\$0.25	\$0.10	\$0.02	\$0.00	\$0.00	\$0.00	\$5.48	\$0.03	\$13.26	\$0.16	\$0.08	\$0.02	\$2.55
Sawmills	\$119.54	\$217.73	\$0.00	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$168.92	\$0.15	\$0.00	\$28.53	\$0.01	\$0.00	\$0.13
Paperboard container manufacturing																\$28.59

3.0 Survey Sample Selection and Design

Identification of Survey Participants

Participants were selected for the web survey based primarily on industry type and availability of a purchasing or operations contact. The industry selections included twelve industries of opportunity consistent with the secondary data analysis. These industries were identified as part of the Statewide Economic Study prepared for the Arizona Department of Commerce (ADOC).

- software and systems integration
- health care and biotech
- industrial machinery
- telecommunications
- high tech instruments
- forest products
- engineering research
- transportation and logistics
- agriculture, food processing and ag technology
- aerospace, avionics and defense
- other high tech industries
- local government

Company contact records were purchased from Dun & Bradstreet for 1,042 establishments in these industries. About 237 additional company names for major employers outside these industries of opportunity were added by the Department of Commerce and the Southern Arizona Technology Council. All data was carefully reviewed to eliminate duplicate records and fill in missing contact information.

Based on the types of industries included, about 278 of the companies had less than 10 employees. Since these companies do not make significant supplier purchases due to their size, and because they would be less likely to respond to this type of web survey in general, a decision was made to limit the list to companies with 10 or more employees. Also, some specific industries that fell into the twelve industries of opportunity above were eliminated because they were not basic industries and did not meet the general objectives of the survey. The result was to delete 261 companies that fell into the following categories: medical, dental and chiropractic offices; rehab facilities; landscape companies; pet groomers; veterinarians; kennels; market research and other nonphysical, non-scientific research. The final list included 679 companies.

From this list, 19 were selected for personal interviews. The personal interviews were generally larger companies (75 or more employees) in high tech and telecommunications industries. Employers in these industries tended to represent the largest employers in the survey sample.

Of the list of potential survey participants 48 percent were in Maricopa County, 36 percent were in Pima County, and the remainder was spread throughout the state. The personal interviews were primarily with firms in Maricopa County, but included a few representative companies from Coconino and Pima counties. The largest industry groups among potential survey participants were industrial machinery and high tech, each making up 24 to 29 percent of the potential participants. Other larger industry groups included agriculture/food processing, major employers, instruments and health care/biotech. However, all of the industry groups had at least 8 potential participants on the survey list.

Survey Design

Both the web-based survey and personal interviews were designed to gather information from buyer industries about their purchasing patterns, policies, issues and challenges. Questions included topics such as centralized purchasing trends, certification requirements for suppliers, most important factors in choosing suppliers, methods for identifying potential suppliers, types of products currently purchased locally, types of products not purchased locally and reasons why not, anticipated future purchasing trends in and out of Arizona, likelihood of future off-shoring of purchases and other general business climate issues that may be impeding local industry growth. Participants were categorized by industry, employment size, location and purchasing volume. A copy of the web-based survey instrument is included in Appendix E.

The personal interviews included additional questions about past experiences using local suppliers, purchases outside of Arizona and outside the United States, challenges in purchasing off shore and actions that the Department of Commerce might take to increase local purchasing. A copy of the interview script is included in Appendix F.

Survey Launch and Promotion

All potential survey participants were sent a personal letter explaining the objectives of the study and inviting them to participate in the survey. A separate version of this letter was sent to businesses that were selected for personal interviews.

The web-based survey was available from April 14, 2005 to June 30, 2005. During the first several weeks of the survey, potential web-survey participants were sent a series of three postcards reminding them of how important it was for them to “share their views” with the Arizona Department of Commerce. During the last week of the survey, personal telephone calls were made to companies encouraging them to spend ten minutes responding to the survey questions. As an additional incentive, survey participants were invited to supply their contact information and be entered into a prize drawing.



Data from the completed surveys are presented and analyzed in this report. Approximately 17 businesses did not receive mailings due to bad addresses. Of the remaining 643 companies, 46 completed the on-line survey (7.2 percent response rate), and their responses are detailed in this report.

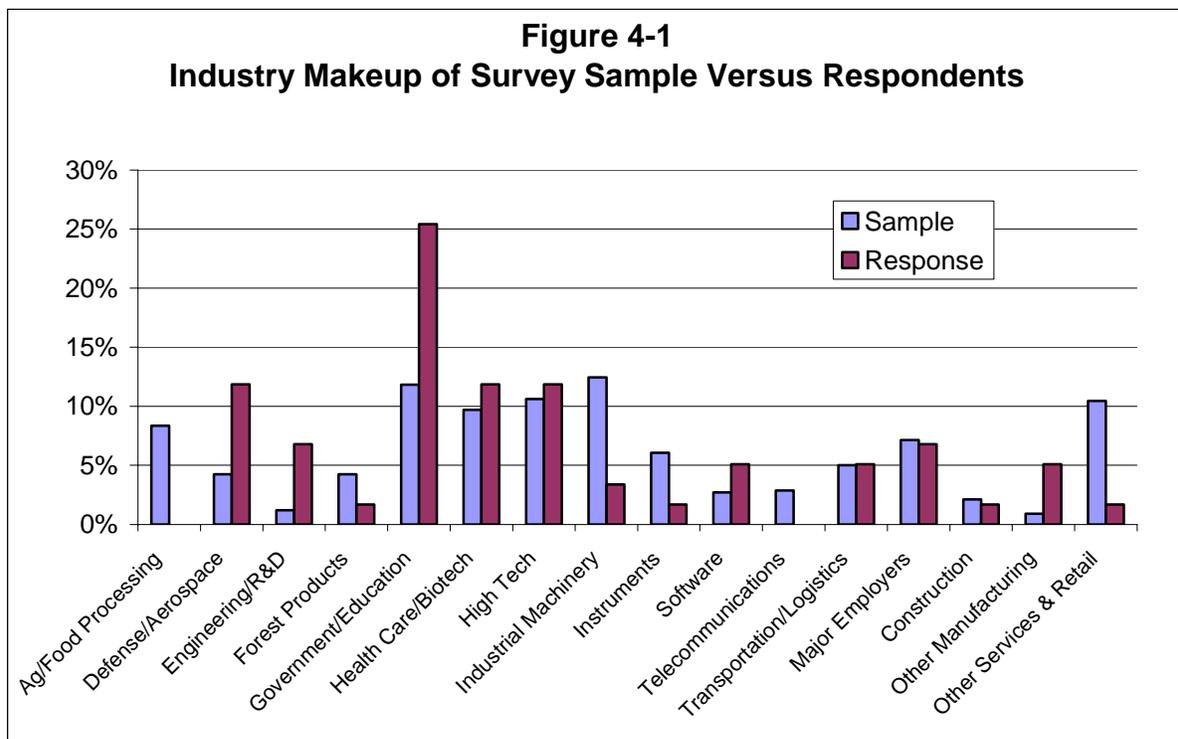
Telephone interviews were conducted to supplement the online survey and obtain more in-depth information on companies' purchasing practices. From a target list of 19 companies, 9 interviews were successfully completed. These particular companies were selected by the Department of Commerce because they represent large buyers and industries critical to Arizona's economic base. Including the telephone interviews, the overall response rate was 8.3 percent. Note that several of the companies on the list for personal interviews were unable to participate because all purchasing is done from a central location outside of Arizona. Because the response rate to the survey was relatively low, there is a good likelihood of a non-response bias and the survey results should be viewed with this in mind.

4.0 Survey Results

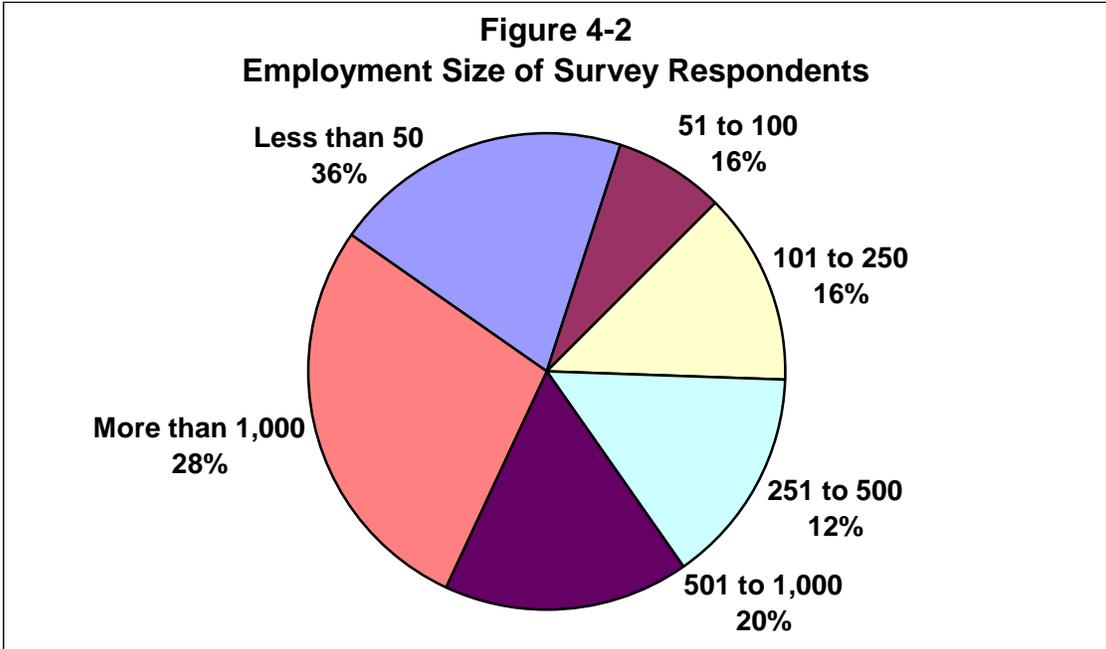
The survey results shown below include a profile of the respondents in terms of industry mix, size, purchasing volumes and location, followed by details on how purchasing decisions are made and the types of goods and services being purchased in and out of Arizona. Results for the web-based survey and the personal interviews are combined in the tables and graphs.

Respondent Profile

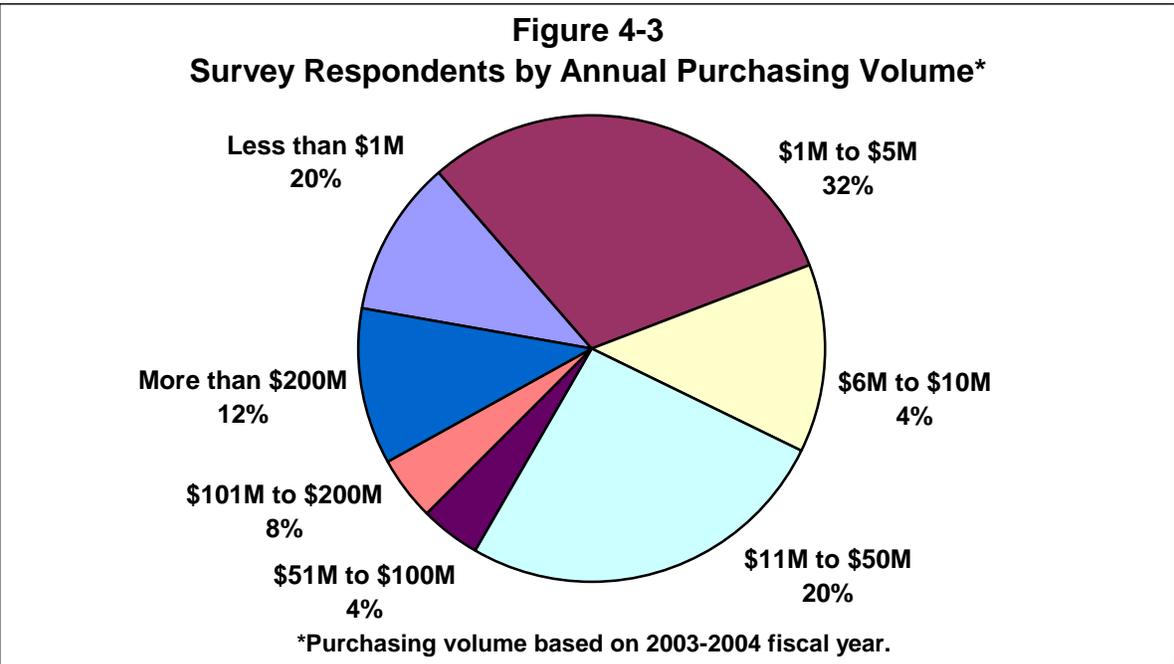
The participants in the web survey represented a broad mix of firms in terms of industry type, employment size and annual purchasing volumes. Figure 4-1 shows the comparison of the industry sectors included in the survey population with the respondents. All industry sectors except for telecommunications and ag/food processing were representative of the total survey sample. Note that in some cases the response group is larger than the sample for a given industry. Respondents placed themselves into industry groups as part of the survey and their classifications may have been different than the industry of opportunity they were associated with in the sample.



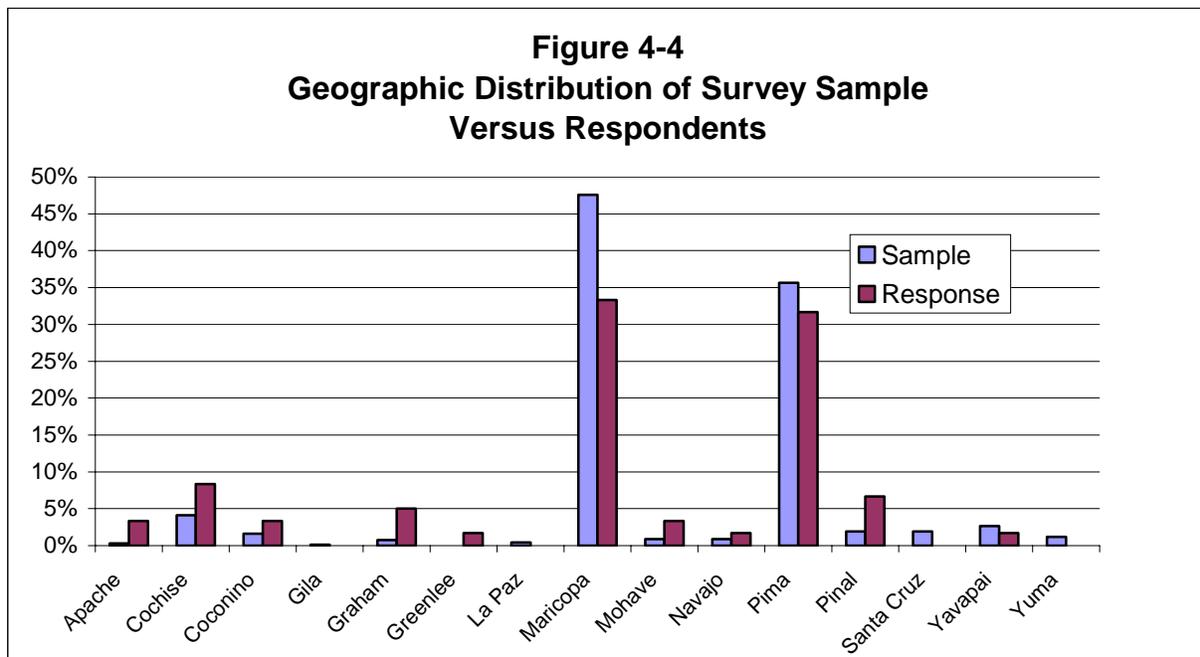
The employment size of businesses responding to the survey ranged from less-than-50 to over-1,000 (Figure 4-2). These figures include Arizona employees only. Over 60 percent of responses came from companies on each end of the spectrum (0-50 employees and over 1,000 employees) A slightly greater number of responses came from smaller companies (those employing 50 or less).



The total volume of supplier purchases made by these companies generally corresponded to employment size, although purchase volume is also largely a function of industry type and the implied ratio of materials to labor. About half of respondents purchase less than \$5 million per year in goods and services, although a full 20 percent purchase more than \$100 million annually (Figure 4-3). Over 70 percent of respondents expect to increase their volume of purchases in the 2004-2005 fiscal year.



The final piece of information used to profile respondents was location. The sample was heavily weighted toward Maricopa and Pima Counties, because these counties account for the largest share of the state’s businesses. All counties in the state except for Greenlee were represented in the sample. Figure 4-4 compares the geographic distribution of the sample relative to the respondent pool. Note that some companies marked multiple locations in their responses, although the sample reflects only the mailing addresses of the primary respondents. In general, the response from the rural areas was good, representing a greater than proportional share relative to the sample.



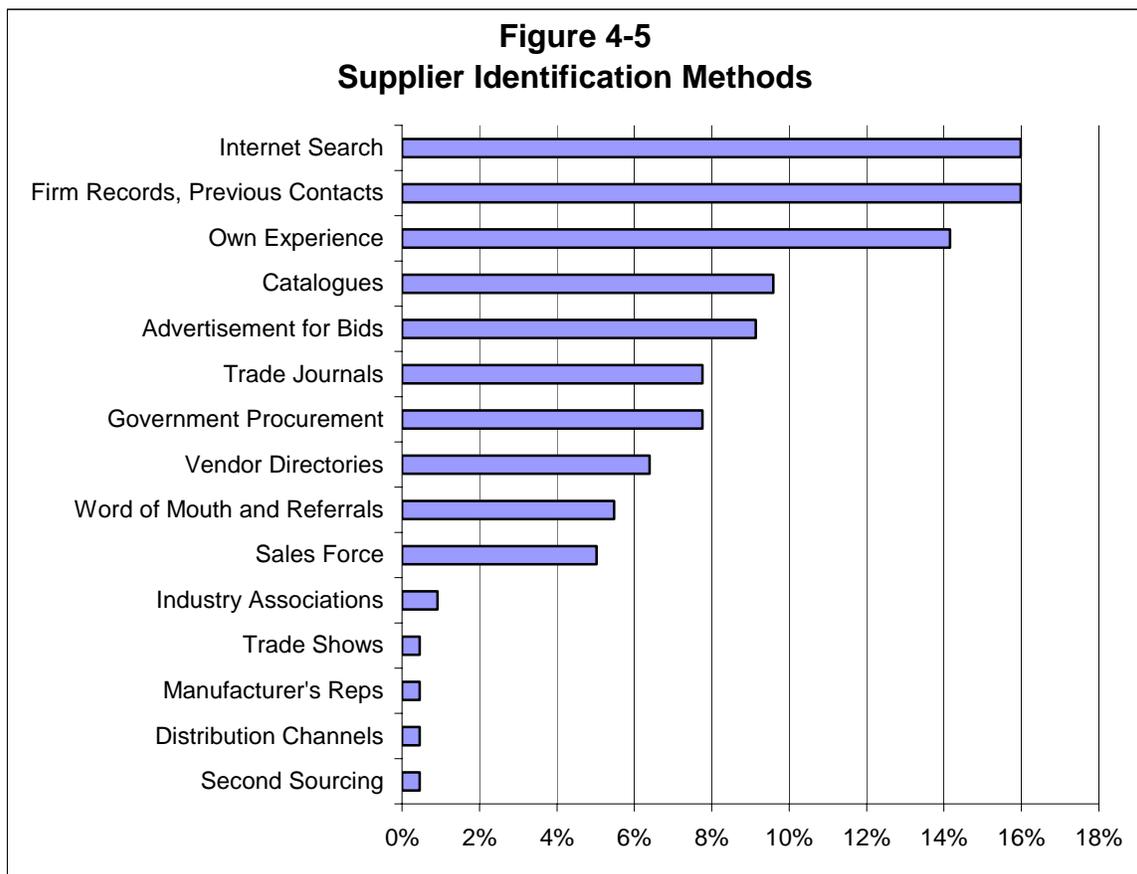
Purchasing Decisions

This next section of the survey describes the process and criteria used in making purchasing decisions. There are two key issues that impact the ability of state and local government to provide procurement assistance. These include whether purchasing is done from a central location, such as a headquarters outside Arizona, and whether all purchasing is done by purchasing department personnel.

For the companies that responded to the survey, almost all indicated that most purchasing for their Arizona operations is done at a centralized facility located within the state. This is significant because it makes it easier for ADOC or local economic development organizations to develop relationships with local buyers. However, close to 40 percent of respondents also noted that purchases under \$5,000 could be made by non-purchasing personnel. It is common, particularly among high tech employers that purchases below a certain amount can be made by non-purchasing personnel who are more directly involved in the production process. This can make it very difficult for outside organizations to track the types of purchases that are being made and to establish meaningful contacts within a company.

Companies use a wide variety of methods to identify suppliers and potential suppliers (Figure 4-5). It is interesting to note that one of the most common methods used to identify suppliers is the Internet. This is significant because almost any size local supplier could develop a web site and gain a presence on the Internet that may allow them to connect with large local buyers.

In contrast, firms that rely on their own records or the experience of their purchasing agents, which are the second and third most common identification methods, may be more difficult for new suppliers or smaller suppliers to reach. Other supplier identification options used by survey participants such as vendor directories, catalogues and trade journals are less difficult to gain access to for suppliers; although there are often many choices of directories and catalogues, and it can be difficult for a small supplier to allocate advertising dollars effectively.



Often the methods used depend on the commodity or service being purchased and/or contract requirements. Noted below are the comments on the restrictions or limitations some companies face when choosing suppliers; particularly high technology companies.

- they go where they can purchase the technology
- government contractors are restricted to buying from approved vendors (indirect purchases are made from local companies and Internet)

- suppliers are selected primarily based on their ability to deliver very specific technology

Because the firms responding to the survey encompass a range of industry sectors – services, industrial manufacturing, government, health care, etc. – it is expected that the criteria for their purchasing decisions would also cover a range of factors. Survey respondents were asked to rank seven factors by level of importance that they use when choosing suppliers (Figure 4-6). Quality of the product was by far the most important to buyers with 96 percent of buyers ranking quality as most important or very important. Reliability of delivery was ranked most important or very important by 89 percent of buyers. Other key factors included price and service/maintenance.

It is interesting to note that geographic proximity rated virtually the same as the supplier having a web presence. Having on-line interface was noted as a key feature of web presence. In general, buyers appear to have limited interest in the physical location of vendors, relative to other factors. For products that must be purchased locally, survey respondents indicated that suppliers located outside metro Phoenix or Tucson would be sufficiently close for most products.

Figure 4-6
Criteria Used to Select Suppliers

	Most Important	Very Important	Important	Slightly Important	Not Important
Price	15 27%	28 51%	12 22%	0 0%	0 0%
Reliability of Delivery	20 37%	28 52%	5 9%	1 2%	0 0%
Quality of Product	34 61%	20 36%	2 4%	0 0%	0 0%
Supplier's Service/Maintenance	12 22%	27 49%	14 25%	1 2%	1 2%
Historical Relationship with Supplier	4 7%	22 40%	24 44%	5 9%	0 0%
Geographic Proximity	1 2%	9 16%	18 33%	18 33%	9 16%
Web Presence	2 4%	7 13%	13 24%	23 43%	9 17%

In addition to general criteria for selecting suppliers, companies were also asked to indicate specific requirements. Almost 60 percent of the companies responded that they have no *specific requirements* for purchasing, however many indicated that there are factors and/or service features that influence their decisions. The most common factors included:

- Ownership (minority, women, or veteran-owned) (47 percent)

- Shipping, Receiving, and Inspection Services (18 percent)
- Warehouse distribution (14 percent)
- Bondable (14 percent)
- ISO 9000 Compliance (11 percent)³
- Training and Field Servicing (11 percent)

Of the 27 specific requirements that were listed in the survey, all but three are considered by at least one of the companies' responding (the exceptions are: AS 9100, CE Mark, and RoHS Compliance).⁴

Other items noted as important factors when selecting suppliers include:

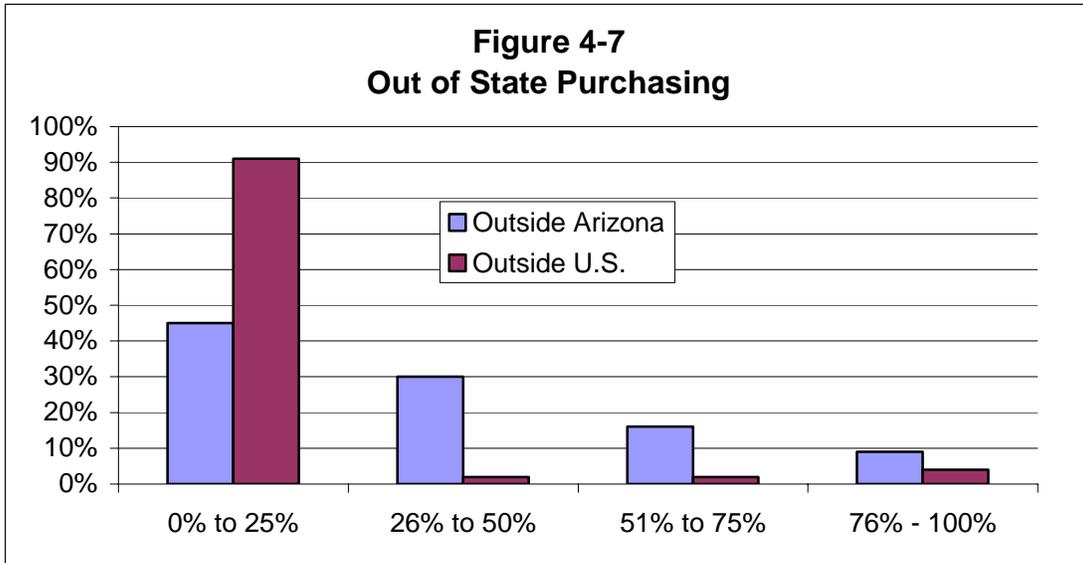
- Technology — technical expertise, electronic interface, the supplier's ability to match and keep up with the company's level of technology
- Capacity — ability to take on additional orders, ability to handle custom work, timely delivery, willingness to provide sample products
- Financial — viability of company, accuracy of invoicing, acceptance of purchasing card
- Compatibility – alignment of supplier's management system with company values

Location of Purchases

About half of the survey respondents purchase less than 25 percent of their supplies outside Arizona (Figure 4-7). However, another 25 percent purchase at least half of their supplies outside the state. Of those purchases that are taking place outside the state, only 8 percent of buyers are making more than 25 percent of their purchases from foreign vendors. This is generally a positive result given that domestic competition may be easier to tackle than foreign competition. However, depending on the reasons for non-local purchasing, out-of-Arizona purchasing trends may make it more difficult to connect buyers with local suppliers. For example, for companies where purchasing of some or all products is controlled from an out-of-state location, or where the product is so specialized that only a few national vendors exist, or where a long-standing relationship exists with a particular supplier outside of Arizona, it may be very difficult to change purchasing patterns.

³ ISO9000 is an international standard designed to provide companies and organizations with a common approach to applying a Quality Management System.

⁴ AS9100 is the quality system requirements for suppliers to the aerospace industry. CE Mark (short for CE Marking) is a declaration by the supplier that the product meets all appropriate provisions of the relevant legislation implementing certain European Directives. CE marking gives companies easier access into the European market to sell their products without adaptation or rechecking. RoHS Compliance is the European Unions Directive on Restrictions of Hazardous Substance including lead, cadmium, mercury, hexavalent chromium, PBB fire retardant and PBDE fire retardant.



Seventy-four percent of the companies responding to the survey state that they have no “buy local” policy in place. This is a **critical point for Arizona’s buyer/supplier network** especially considering these facts:

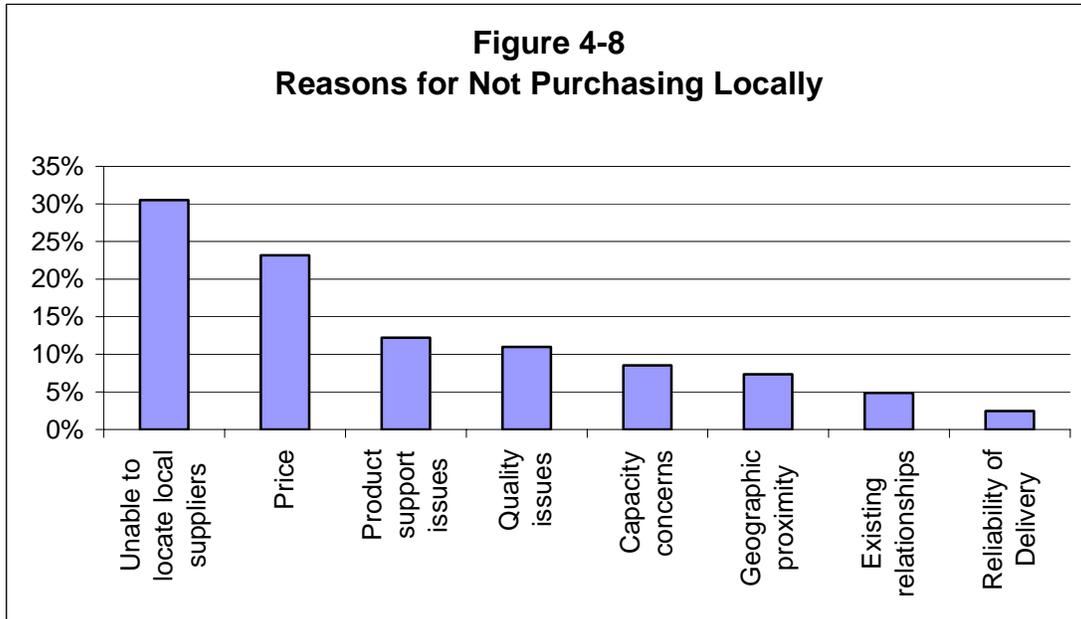
- buyers depend on the Internet to locate potential suppliers
- geographic proximity is not a key factor in selecting suppliers
- many Arizona companies are already spending a significant amount of their purchasing dollars outside the state and outside the U.S.

Types of Purchases

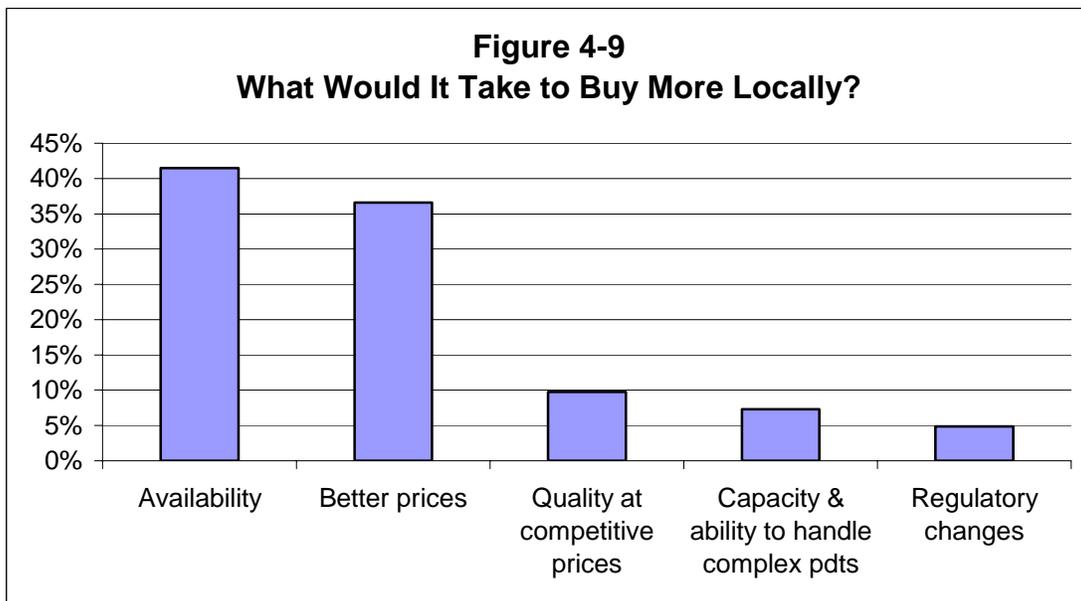
Since the survey includes a wide variety of companies, there are an equally wide variety of goods and services being purchased. However, it is generally the case that companies are buying more basic goods locally. These include office supplies and printing; local services such as security, building maintenance and food service; and standard manufactured products and hardware (particularly fabricated metal products) and professional and business services. The types of products being purchased outside Arizona are typically more specialized, although there is some overlap. In some cases, these products may be available in Arizona, but local suppliers are unable to meet other specific buyer criteria.

Purchases Not Able To Be Made Locally	Purchases Made Locally
<ul style="list-style-type: none"> • Large equipment, vehicles, office furniture, computers • Electronics and electrical components--parts and production materials for electronics, controllers, inverters, power panels, batteries • Technology related to specific contracts (particularly government contracts) • Hardware (rollers, handles, latches), valves, solenoids, digital print, locks, die casting magnets • Composite components • Raw materials, job and production materials with specific requirements • Steel and other primary metals • Special metal processes, fabricated metals • Specialized scientific supplies and equipment • Some chemicals and gases • Optic lasers 	<ul style="list-style-type: none"> • Office, operating, and shipping supplies, printing • Linens, janitorial and cleaning products, landscaping, facility maintenance, security • Building and construction materials • Vending, coffee and food service • Brass and PVC fittings, o-rings, screws, hardware, tools, spouts, fabricated metals, machined components, standard parts • Computer equipment and support, electronics, office machines • Tooling, heat treating, metal plating, anodizing • Professional services (legal, engineering, accounting) • IT services • Medical and scientific supplies • Injection molded plastic parts • Fuel, gas and chemicals • Equipment repair, HVAC

According to the survey, the primary reason the products and services that *could be* purchased in Arizona are not is that companies cannot locate local suppliers (Figure 4-8). While the state cannot impact companies' pricing structures (the number two reason for out-of-state purchasing), there are initiatives and programs that could be put into place to inform local suppliers about buyer issues and help them to become more competitive by helping them understand how to market effectively to local buyers, improve quality standards, or upgrade their production techniques.



In addition to reasons for not purchasing locally, buyers were asked what it would take for them to buy more supplies in Arizona. Availability appeared to be the biggest issue, particularly for specialized supplies and components and particularly outside of the metro areas (Figure 4-9). However, price was ranked only slightly below availability. With the decreasing importance of geographic proximity, Arizona suppliers are competing head to head with non-local suppliers in terms of price. However, quality is often a balancing factor to price.



Some of the specific comments made by buyers regarding local purchasing included the following:

- For companies that do a lot of government contract work, most approved subcontractors with the required technologies are not located in Arizona.

- In order to have a cost advantage, local firms need to have a technological advantage. This requires investing in better equipment to make production more competitive.
- Labor costs are an issue when competition is global. Better technology can reduce labor's share of production costs.
- While many U.S. companies support safe work environments and worker benefits, healthcare costs, environmental health and safety requirements are not considered in many other parts of the world where they are competing, making U.S. labor costs dramatically higher.

Other Issues and Comments

Survey participants were asked to voice concerns about other issues that inhibit their ability to compete such as state and local taxes, workforce and regulatory policies. *Among web survey respondents, 90 percent responded that none of these issues limit their ability to compete with other firms in their industry that are located outside Arizona. Among the interview participants, only one indicated that there were local policies that limited competitiveness.* In this case, the issue involved incentives offered by other states to assist this company in locating facilities.

Other concerns voiced by the survey participants and/or the companies interviewed include the following.

Regulatory and Business Environment Affecting Competitiveness —

The majority of the companies responding to the survey cited no regulations or policies that inhibit their ability to be competitive. Among those that included comments, issues are mixed between global competitiveness and local business climate factors.

- Some countries require offsets but [this company is] satisfied with Arizona in this regard.
- Companies have to compete with companies in other states that offer incentives to locate there.
- There is a lack of cooperation in Arizona on the local, county and state level. Rather than working in tandem to assist and understand a company, they are competitive with each other.
- Health care costs and environmental health and safety requirements are not considered in other parts of the world and dramatically increase labor costs in the U.S.
- Air service is limited outside of metro Phoenix.
- Land costs are high and water is a limited resource.
- Rising housing costs in the Phoenix metro area (43 percent increase in the past year) may cause labor costs to rise or cause other locations outside Arizona appear to be a better value.
- Rising lease rates, particularly in metro Phoenix. Some companies are currently in multi-year leases, but when those leases expire they could be at risk for relocation.
- Competition with China for materials is causing concerns for high tech companies.
- State procurement rules, especially for school districts, hinder competitiveness.

Business Expansion —

- Limitations to expand Williams AFB due to surrounding development are hampering opportunities to grow product line (testing impacts neighbors).

Technology, Education, and Workforce —

- Availability of specialized technology is an issue locally.
- Arizona universities do not grasp “systems engineering concepts” – understanding the components of a system such as electrical engineering, construction engineering, etc. *and* the entire system as a whole. There is a tendency to focus on specific engineering disciplines and not the 'architecture' of the entire system.
- Very happy with the workforce, most of whom are professionals (engineers).
- Lack of jobs for spouses looking for professional work is a concern (outside metro Phoenix or Tucson).
- Lack of a large talent pool to draw from is an issue (outside metro Phoenix or Tucson).
- Schools are under-funded
- Need technological and cost advantage; recommend technical education in Arizona to enhance technical competence that contributes to higher quality products made here; investment in infrastructure to make production more competitive; reduce labor (costs and employment) through better equipment technology to compete in world market.

Comparison of Survey Results to Secondary Data Analysis

Much of the data collected in the survey concerns purchasing decisions and barriers to purchasing supplies locally. However, information regarding the types of commodities that are being purchased locally versus those that are not can be compared with the results from the secondary data analysis. Since the primary reason for not purchasing locally is availability, it can be assumed that most of the commodities that represent non-local purchases by survey respondents are supply gaps. However, it is important to keep in mind that due to the low survey response rate, the a non-response bias is likely and this affects the types of commodities that are reported as gaps based on the response rate from each of the different industries of opportunity.

- Electronic components were noted in both the survey and the secondary data analysis. Specific types of components are used in software, telecommunications, high tech instruments, aerospace, other high tech and industrial machinery manufacturing, according to the secondary data.
- Steel and other primary metals were noted as a supply gap for industrial machinery in both the secondary data and the survey.
- Specialized scientific supplies were noted as a gap for high tech instruments in both the data and the survey.

Other gaps noted in the survey that were not apparent from the secondary data included window hardware, solenoids, locks, die casting magnets, office furniture, computers, power panels, batteries, chemicals and gases and optic lasers. Most of these items (with the exception of office furniture and computers) represent highly specialized products that may only be produced by a limited number of companies throughout the country.

Alternatively, professional services were noted as a gap for many industries in the secondary data analysis, but not in the survey results. The secondary data indicated supplier gaps in a variety of professional services for almost all the industries of opportunity. These services included advertising, computer systems design, legal services, investment and banking services, accounting, architectural and engineering services, specialized design services and management of companies and enterprises. However, the survey did not validate this finding with a number of firms reporting that professional services are purchased locally.

In some cases, the survey responses were not specific enough to match up to particular SICs in the secondary data such as “raw materials”, “job and production materials that meet specific requirements”, “large equipment” or “technology related to specific contracts”, so there may be other items that match up to some of the gaps indicated by the secondary data that cannot be identified.

Another important factor to keep in mind in comparing the results is that survey participants were asked to name commodities that “they would like to purchase locally, but are not able to”, since this is the relevant question for making future connections between buyers and local suppliers. A listing of items that buyers would like to purchase locally is shown in the “Types of Purchases” section of Chapter 3. However, there may be items that buyers expect to purchase elsewhere or are content to purchase elsewhere that would have come up as gaps in the secondary data but were not validated by the survey.

5.0 Models to Connect Buyers and Suppliers

AZBusinessLinc

One of the programs currently being used in Southern Arizona to connect buyers and suppliers is AZBusinessLinc. It has been proposed that this program could be implemented in other parts of the state to improve the supply chain. Although the buyer survey did not reveal a lot of serious red flags, there are certainly improvements that could be made to assist buyers in locating local suppliers and to provide better feedback to suppliers to enable them to compete more effectively with non-local vendors. The following section is a description of how AZBusinessLinc has been implemented by the City of Tucson, and of the advantages of this program.

AZBusinessLinc is an on-line supplier database owned by the City of Tucson that allows companies to enter a detailed profile that can be searched by potential buyers. The only criteria are that the companies are located in Arizona and that they are non-retail. The majority of the 2,300 firms currently in the database are located in a five county area in Southern Arizona because this is where the City of Tucson has focused their marketing efforts.

Profile information includes general contact information, Disadvantaged Business Enterprise (DBE) certification, a wide range of quality certifications, operational experience, facilities/processes, customer support capabilities, industry type/organization type, sales experience, an open ended statement of capabilities and competitive advantages, a detailed description of products/services offered, and keywords for buyer searches. The profile also includes detailed procurement information that is used by the City of Tucson for internal purposes only. The procurement information provides the city with valuable insights into the companies' purchasing patterns and criteria. This is important because many suppliers are also buyers.

The program is currently marketed to buyers through the efforts of a five person staff who meet regularly with local companies to discuss current and anticipated procurement needs. The staff then assists the companies in identifying local suppliers with the desired capabilities. Although companies can search on-line for suppliers at any time, the assistance of these staff people in finding suppliers is a valuable resource. These staff people maintain long term relationships with buyer companies and help to plan for changes in supplier needs and identify appropriate resources.

Although the City of Tucson partners with other cities and organizations such as chambers to raise awareness about the database among buyers and suppliers at local business events, they report that 95 percent of the actual use of AZBusinessLinc is the result of one-on-one relationships developed by staff.

Typical buyer industries that use the database are very large companies, although the city is starting to see more medium sized buyers. About 98 percent of buyers are from the private sector. The most appealing features of the database to these companies are that it is very fast and that you can be very specific in the product you are looking for and the criteria you have for selecting a supplier. The system is also kept very current. Although these buyer companies often also maintain in-house supplier databases, they often find that the information is not as current as the AZBusinessLinc database. The access to staff people from the City of Tucson who will do much of the leg work in searching the database and identifying potential suppliers free of charge is also a big selling point. Interestingly, **none** of the buyer companies

were drawn to the database as a means to comply with a buy local policy. If they are buying locally, it is a function of lower transportation costs and just-in-time production requirements.

The database is marketed to sellers exclusively through strategic partnerships with other cities, cluster organizations and chambers in the five-county Southern Arizona region. These other cities and organizations have been effective at encouraging local businesses and organization members to include themselves in the database and take advantage of this free marketing tool. The City of Tucson in turn provides information back to their strategic partners as to who has registered and if they are involved in successful deals.

Typical sellers are small to medium sized companies with limited in-house marketing capabilities due to their size. They cover a wide range of industries, however, the top industry types in terms of the types of deals that are actually occurring through the database include maintenance repair and operations supplies (MRO), contract manufacturing, and service/support industries such as IT and engineering design. MRO creates far more opportunities than the other two.

The City of Tucson did note that a large share of businesses in the database do not receive any opportunities at all. This is primarily due to the poor quality of information that they include in their profiles, particularly keyword choices that would enable them to come up in searches. There are also some companies whose products and services do not match the types of commodities that buyers are currently searching for.

In order to keep the database very current, suppliers who have not made updates to their profiles within a fixed period of time are notified that they must verify their information within ten day or they will be dropped from the database. The strategic community partners are also very active in encouraging new businesses to register.

The City has worked on over 600 buyer needs over the past three years of which 38 percent have resulted in actual buyer-supplier transactions. However, the failed transactions also provide valuable information to the City that they actively disseminate to local sellers to let them know what problems buyers are experiencing. While price is probably the most common issue, it is by no means the only issue. Production capacity and specific product requirements are also issues.

Because of the one-on-one nature of relationships that have been developed with local buyers, AZBusinessLinc has been a valuable retention and expansion tool for the city. However, it has turned out to be equally valuable as a recruitment tool. The City noted that almost every company they have dealt with that is seriously considering a new location in Tucson is interested in the availability of suppliers in the region and this has been a valuable use of the database. Additionally, new companies are frequently interested in the presence of other similar companies in the area because it demonstrates a local labor force and the general ability of that type of company to be successful locally. This information can also be provided through the database.

The City is currently in the process of upgrading the database. Enhancements will include required fields in the supplier profiles to improve the quality and completeness of the information; automated notification to suppliers to update/verify their information and automatic notification to suppliers when they are included in a buyer search.

Although the profile does not include any sort of SIC or NAICS codes, the City's experience has been that these codes are generally only used by public sector buyers who make up only a very small share of

users of the database. They are however considering developing an internal number system for products and services that could be used as a search criterion in addition to key word searches.

The City did not look at alternative databases at the time that AZBusinessLinc was developed, but they have since become aware of a number of similar databases. Based on their experience with AZBusinessLinc, they still believe it is superior in terms of the comprehensiveness of information, ease of use and one-on-one relationship based approach to marketing.

The City believes that in order for the system to be successful, it needs to be managed and marketed at the local level, given the type of relationship building that is required. It is likely that the system could provide value in other parts of the state in terms of increasing visibility and opportunities for smaller local suppliers. However, the best role for the Department of Commerce would be as an umbrella organization and facilitator to encourage communities and local economic development organizations to buy in to the system.

Connectory

Another similar program used in California is called Connectory. It is generally similar to AZBusinessLinc, but includes some additional features that could enhance AZBusinessLinc if it is expanded for use in other parts of the state.

Connectory.com -- the California Network is a business-to-business, buyer-supplier marketing and communication tool that covers the State of California. Connectory.com began in San Diego's East County in the late 1990s and has since expanded throughout the state.

Its customers include the companies that profile in and use Connectory.com to find suppliers, each other, potential markets/clients and teaming/alliance partners. In addition, economic development organizations throughout California use Connectory.com as a tool to support a wide range of tasks. Connectory.com is the regional source to find products, technologies, services, company capabilities, capacities and expertise.

The following are some of the advantages and additional features offered by Connectory. Many could potentially be incorporated as enhancements to AZBusinessLinc.

- **Searching Criteria.** In general, the profile information in AZBusinessLinc is more complete. However, Connectory offers some advantages in terms of how the search engine functions. Because Connectory.com searches the entire profile and a company's web site content, it is not limited to specific categories or topics but can use specific phrases or search strings. Searches can be statewide or limited by geography (county, city, zip code -- even street address). Other field specific searches include Company Name, Industry Code, and Certifications.
- **Business Connections Forum.** The Connectory web site includes a bulletin board that has "want ads" for buyers needed and suppliers needed, listings of international trade opportunities, employment opportunities, venture funding opportunities and upcoming events. Users of the database can post messages in any of these categories.
- **Success Stories.** The web site includes a series of success stories from local businesses that have used Connectory. These stories serve as powerful marketing tools for the service.
- **Sponsorships.** Connectory is funded through a variety of public and private sources including sponsorships. Sponsorships range from \$5,000 to \$30,000 and include banner pages with web site

links that appear on the Connectory.com site. The size and placement of banners varies depending on the level of sponsorship.

- **Industry and Regional Focus.** Starting in mid-2004, Connectory.com began to support regional portals that focus on industry/ technology companies and their suppliers with a specific region. It also launched industry portals that focus on and provide information for specific industries. Once the use of a database such as this reaches sufficient size that users can be segmented by industry and region, these targeted portals can be a valuable added resource to users.

Fast Open Contracts Utilization Services (FOCUS)

Another California program that is specific to government procurement is FOCUS. Fast Open Contracts Utilization Services (FOCUS) is California's only nationwide, local government-to-government purchasing program. It allows cities, counties, schools, special districts and other public entities to acquire technology products and services quickly, easily and at competitive rates. The complexities of the government procurement process were noted as a barrier by survey participants. A program such as this does require vendors to pre-certify. However, once they are part of the program, they are able to circumvent future bidding processes.

FOCUS gives local government access to pre-screened, competitively bid vendors in the technology industry, avoiding the expense and delay of a protracted government RFP process. There is no cost to vendors to participate in the program. Most favored public agency pricing is offered by all FOCUS vendors.

Public agencies can use the program without going to bid, however each state has its own laws addressing intergovernmental purchasing. It is recommended that prior to implementing such a program statewide that each local jurisdiction's elected body approves the use of the program.

FOCUS is the result of five years of work to bring technology choices from multiple sources to public agencies. Originally formed as a result of dire budgetary constraints in the early 1990s, FOCUS emerged as a tool to procure technology goods and services, quickly and from multiple sources. The pool of vendor-partners offers a broad spectrum of information technology products and services to meet a wide range of needs.

APPENDIX A

**FIGURE A-1
NATIONAL SUPPLIERS TO COMPUTER SOFTWARE AND SYSTEMS INTEGRATION INDUSTRIES**

Supplier Industries	Reproduction & Publishing	Info Services Data Processing	Programming & Systems Design
Employment services	8%	7%	14%
Advertising and related services	12%	11%	5%
Telecommunications	6%	11%	7%
Real estate	6%	5%	7%
Wholesale trade	10%	4%	2%
Software publishers	14%	0%	0%
Office administrative services	4%	3%	6%
Computer systems design services	1%	5%	5%
Lessors of nonfinancial intangible assets	3%	1%	6%
All other electronic component manufacturing	4%	1%	3%
Services to buildings and dwellings	2%	2%	4%
Automotive repair and maintenance- except car wash	0%	3%	3%
Data processing services	0%	3%	4%
Monetary authorities and depository credit intermediaries	2%	2%	2%
Other support services	5%	1%	0%
Colleges, universities and junior colleges	2%	2%	2%
Information services	1%	2%	1%
Food services and drinking places	2%	2%	1%
Postal service	1%	2%	1%
Automotive equipment rental and leasing	1%	3%	1%
Commercial printing	3%	1%	1%
Other computer related services- including facilities	1%	1%	2%
Audio and video media reproduction	0%	4%	0%
Architectural and engineering services	1%	1%	3%
Hotels and motels- including casino hotels	1%	2%	2%
Machinery and equipment rental and leasing	1%	3%	1%
Legal services	2%	1%	1%
Computer storage device manufacturing	1%	2%	1%
Management consulting services	1%	1%	2%
Securities- commodity contracts- investments	1%	1%	1%
Couriers and messengers	1%	1%	1%
Management of companies and enterprises	0%	1%	1%
Investigation and security services	1%	1%	1%
Nondepository credit intermediation	1%	1%	1%
Accounting and bookkeeping services	1%	1%	1%
Commercial machinery repair and maintenance	0%	1%	2%
Water transportation	0%	1%	1%
Power generation and supply	0%	1%	1%
Air transportation	1%	1%	1%
Maintenance and repair of nonresidential buildings	1%	1%	1%
General and consumer goods rental	0%	1%	1%
Business support services	0%	1%	1%
Electronic equipment repair and maintenance	0%	1%	1%
<i>Total Commodity Purchases (millions)</i>	\$22,634	\$22,246	\$43,870
<i>Total Output (millions)</i>	\$87,998	\$84,894	\$241,241
<i>Employment</i>	312,566	557,612	2,698,152

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-2
NATIONAL SUPPLIERS TO HEALTHCARE AND BIOTECH INDUSTRIES**

Supplier Industries	Pharmaceuticals	Doctors & Hospitals
Lessors of nonfinancial intangible assets	20%	1%
Pharmaceutical and medicine manufacturing	18%	3%
Wholesale trade	12%	5%
Real estate	0%	15%
Management of companies and enterprises	9%	2%
Advertising and related services	5%	1%
Legal services	1%	4%
Employment services	0%	5%
Securities, commodity contracts, investments	0%	4%
Plastics products	2%	2%
Scientific research and development services	3%	0%
Food services and drinking places	0%	2%
Management consulting services	0%	3%
Other basic organic chemical manufacturing	2%	1%
Postal service	0%	3%
Telecommunications	1%	2%
Paperboard container manufacturing	2%	0%
Commercial printing	1%	1%
Monetary authorities and depository credit intermediaries	1%	1%
All other miscellaneous professional and technical	2%	0%
Warehousing and storage	2%	0%
Office administrative services	0%	2%
Power generation and supply	1%	1%
Business support services	0%	2%
Services to buildings and dwellings	0%	2%
Colleges, universities and junior colleges	1%	1%
Accounting and bookkeeping services	1%	1%
Insurance carriers	0%	1%
Truck transportation	1%	1%
Other basic inorganic chemical manufacturing	1%	0%
Data processing services	1%	1%
Plastics packaging materials- film and sheet	1%	0%
Plastics bottle manufacturing	1%	0%
Nondepository credit intermediation	1%	1%
Surgical and medical instrument manufacturing	0%	1%
Natural gas distribution	1%	1%
Other miscellaneous chemical product manufacturing	1%	0%
Surgical appliance and supplies manufacturing	0%	1%
Glass container manufacturing	1%	0%
<i>Total Commodity Purchases (millions)</i>	\$57,266	\$416,834
<i>Total Output (millions)</i>	\$122,964	\$923,021
<i>Employment</i>	265,648	8,755,104

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-3
NATIONAL SUPPLIERS TO INDUSTRIAL MACHINERY INDUSTRIES**

<u>Supplier Industries</u>	<u>Industrial Machinery</u>
Wholesale trade	14%
Iron and steel mills	6%
Management of companies and enterprises	4%
Ferrous metal foundries	4%
Machine shops	3%
All other forging and stamping	2%
All other electronic component manufacturing	2%
Truck transportation	2%
Aluminum foundries	2%
Lessors of nonfinancial intangible assets	2%
AC, refrigeration and forced air heating	2%
Motor and generator manufacturing	2%
Speed changers and mechanical power transmission equipmen	2%
Fabricated structural metal manufacturing	2%
Iron and steel forging	2%
Motor vehicle parts manufacturing	2%
Metal valve manufacturing	1%
Turned product and screw, nut and bolt manufacturing	1%
Telecommunications	1%
Semiconductor machinery manufacturing	1%
Plastics products	1%
Advertising and related services	1%
Monetary authorities and depository credit intermediaries	1%
All other miscellaneous professional and technical services	1%
Relay and industrial control manufacturing	1%
Other engine equipment manufacturing	1%
Real estate	1%
Other rubber product manufacturing	1%
Fluid power pump and motor manufacturing	1%
Power generation and supply	1%
Fluid power cylinder and actuator manufacturing	1%
Aluminum sheet, plate and foil manufacturing	1%
Securities, commodity contracts, investments	1%
Scientific research and development services	1%
Ball and roller bearing manufacturing	1%
Copper rolling, drawing and extruding	1%
Sheet metal work manufacturing	1%
Paperboard container manufacturing	1%
Cutting tool and machine tool accessory manufacturing	1%
Paint and coating manufacturing	1%
<i>Total Commodity Purchases (millions)</i>	\$123,197
<i>Total Output (millions)</i>	\$232,496
<i>Employment</i>	1,207,369

Source: Minnesota IMPLAN Group, 2001 data.

FIGURE A-4
NATIONAL SUPPLIERS TO TELECOMMUNICATIONS INDUSTRIES

Supplier Industries	Communication Equipment	Telecom- munication
Telecommunications	1%	41%
Broadcast and wireless communications equipment	28%	0%
Lessors of nonfinancial intangible assets	14%	2%
All other electronic component manufacturing	12%	1%
Wholesale trade	10%	2%
Architectural and engineering services	2%	7%
Telephone apparatus manufacturing	2%	5%
Advertising and related services	1%	5%
Semiconductors and related device manufacturing	4%	0%
Accounting and bookkeeping services	0%	3%
Management of companies and enterprises	3%	0%
Real estate	1%	2%
Machinery and equipment rental and leasing	0%	2%
All other miscellaneous professional and technical	1%	1%
Monetary authorities and depository credit intermediaries	1%	1%
Household goods repair and maintenance	0%	2%
Other communication and energy wire manufacturing	1%	1%
Specialized design services	0%	2%
Commercial printing	0%	1%
Legal services	0%	1%
Custom roll forming	1%	0%
Sheet metal work manufacturing	1%	0%
Plastics products	1%	0%
Nondepository credit intermediation	0%	1%
Fiber optic cable manufacturing	1%	0%
All other forging and stamping	1%	0%
Securities, commodity contracts, investments	1%	0%
<i>Total Commodity Purchases (millions)</i>	\$46,989	\$123,424
<i>Total Output (millions)</i>	\$100,001	\$352,925
<i>Employment</i>	230,928	1,414,321

Source: Minnesota IMPLAN Group, 2001 data.

FIGURE A-5
NATIONAL SUPPLIERS TO HIGH TECH INSTRUMENT INDUSTRIES

Supplier Industries	Instruments
Wholesale trade	14%
All other electronic component manufacturing	7%
Management of companies and enterprises	6%
Business support services	4%
Surgical and medical instrument manufacturing	3%
Plastics products	2%
Advertising and related services	2%
Paperboard container manufacturing	2%
Electricity and signal testing instruments	2%
Legal services	2%
Textile and fabric finishing mills	2%
Architectural and engineering services	2%
Surgical appliance and supplies manufacturing	2%
Scientific research and development services	1%
Telecommunications	1%
Nonwoven fabric mills	1%
Plastics material and resin manufacturing	1%
Monetary authorities and depository credit intermediaries	1%
All other miscellaneous professional and technical	1%
Semiconductors and related device manufacturing	1%
Plastics packaging materials- film and sheet	1%
Truck transportation	1%
Real estate	1%
All other forging and stamping	1%
Lessors of nonfinancial intangible assets	1%
Metal coating and nonprecious engraving	1%
Warehousing and storage	1%
Broadcast and wireless communications equipment	1%
Iron and steel mills	1%
Machine shops	1%
Specialized design services	1%
Power generation and supply	1%
Electronic computer manufacturing	1%
Sheet metal work manufacturing	1%
Securities, commodity contracts, investments	1%
Gasket, packing and sealing device manufacturing	1%
<i>Total Commodity Purchases (millions)</i>	\$45,044
<i>Total Output (millions)</i>	\$105,984
<i>Employment</i>	555,321

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-6
NATIONAL SUPPLIERS TO FOREST PRODUCTS INDUSTRIES**

<u>Supplier Industries</u>	<u>Logging & Forest Pdts</u>	<u>Wood Products</u>	<u>Paper Products</u>
Forest nurseries, forest products and timber tracts	31%	6%	0%
Logging	17%	16%	4%
Wholesale trade	4%	14%	12%
Agriculture and forestry support activities	29%	0%	0%
Paper and paperboard mills	0%	0%	25%
Sawmills	0%	19%	2%
Truck transportation	0%	5%	5%
Automotive repair and maintenance	3%	2%	3%
Management of companies and enterprises	1%	1%	4%
Natural gas distribution	1%	1%	4%
Power generation and supply	0%	2%	2%
Commercial machinery repair and maintenance	1%	1%	1%
Pulp mills	0%	0%	4%
Petroleum refineries	2%	0%	1%
Monetary authorities and depository credit intermediaries	1%	1%	1%
Miscellaneous wood product manufacturing	0%	3%	0%
Paperboard container manufacturing	0%	0%	2%
Veneer and plywood manufacturing	0%	2%	0%
All other miscellaneous professional and technical	0%	1%	1%
Cut stock, resawing lumber and planing	0%	2%	0%
Other basic organic chemical manufacturing	0%	0%	2%
Rail transportation	0%	1%	1%
Adhesive manufacturing	0%	1%	1%
Reconstituted wood product manufacturing	0%	2%	0%
Real estate	1%	0%	1%
Plastics material and resin manufacturing	0%	1%	1%
All other electronic component manufacturing	0%	1%	1%
<i>Total Commodity Purchases (millions)</i>	\$10,613	\$52,264	\$91,396
<i>Total Output (millions)</i>	\$22,317	\$86,552	\$154,986
<i>Employment</i>	142,339	617,314	568,130

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-7
NATIONAL SUPPLIERS TO ENGINEERING RESEARCH SERVICES**

<u>Supplier Industries</u>	<u>Engineering Services</u>
Guided missile and space vehicle manufacturing	41%
Real estate	6%
Employment services	4%
Glass and glass products- except glass containers	3%
Legal services	2%
Wholesale trade	2%
Commercial printing	2%
Telecommunications	2%
Office administrative services	2%
All other miscellaneous professional and technical	2%
Management consulting services	1%
Architectural and engineering services	1%
Periodical publishers	1%
Maintenance and repair of nonresidential buildings	1%
Broadcast and wireless communications equipment	1%
Computer systems design services	1%
Power generation and supply	1%
Advertising and related services	1%
Services to buildings and dwellings	1%
Other basic organic chemical manufacturing	1%
Postal service	1%
Machinery and equipment rental and leasing	1%
Automotive equipment rental and leasing	1%
Data processing services	1%
Electroplating, anodizing and coloring metal	1%
Monetary authorities and depository credit intermediaries	1%
Commercial machinery repair and maintenance	1%
<i>Total Commodity Purchases (millions)</i>	\$9,475
<i>Total Output (millions)</i>	\$60,473
<i>Employment</i>	842,806

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-8
NATIONAL SUPPLIERS TO TRANSPORTATION AND LOGISTICS SERVICES**

<u>Supplier Industries</u>	Rail Transport	Truck Transport
Scenic and sightseeing transportation and support	20%	8%
Truck transportation	1%	21%
Machinery and equipment rental and leasing	20%	1%
Wholesale trade	5%	9%
Petroleum refineries	5%	9%
Automotive repair and maintenance	0%	12%
Railroad rolling stock manufacturing	8%	0%
Motor vehicle parts manufacturing	2%	3%
Insurance carriers	0%	5%
Computer systems design services	4%	0%
Other computer related services- including facilities	3%	1%
Management consulting services	2%	1%
Lessors of nonfinancial intangible assets	3%	1%
Warehousing and storage	0%	3%
Pump and pumping equipment manufacturing	3%	0%
Automotive equipment rental and leasing	0%	2%
Accounting and bookkeeping services	2%	1%
Real estate	1%	2%
Wood preservation	2%	0%
Telecommunications	0%	2%
Monetary authorities and depository credit intermediaries	1%	1%
Advertising and related services	1%	1%
Management of companies and enterprises	0%	2%
Ferrous metal foundaries	2%	0%
Rail transportation	0%	1%
Other communications equipment manufacturing	2%	0%
Nondepository credit intermediation	1%	0%
Other concrete product manufacturing	1%	0%
Tire manufacturing	0%	1%
<i>Total Commodity Purchases (millions)</i>	\$17,957	\$99,124
<i>Total Output (millions)</i>	\$37,279	\$198,405
<i>Employment</i>	179,852	1,623,497

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-9
NATIONAL SUPPLIERS TO AGRICULTURE, FOOD PROCESSING
AND AG TECHNOLOGY INDUSTRIES**

Supplier Industries	Agriculture	Food Processing	Farm & Garden Equipment
Wholesale trade	8%	11%	15%
Cattle ranching and farming	9%	14%	0%
Real estate	10%	0%	0%
Grain farming	7%	3%	0%
Other animal food manufacturing	10%	1%	0%
Iron and steel mills	0%	0%	10%
All other crop farming	10%	0%	0%
Agriculture and forestry support activities	10%	0%	0%
Truck transportation	2%	3%	4%
Other engine equipment manufacturing	0%	0%	8%
Management of companies and enterprises	0%	3%	3%
Poultry and egg production	1%	5%	0%
Motor vehicle parts manufacturing	0%	0%	6%
Petroleum refineries	4%	0%	0%
All other forging and stamping	0%	0%	4%
Ferrous metal foundries	0%	0%	4%
Animal production- except cattle and poultry	1%	3%	0%
Animal slaughtering, except poultry	0%	3%	0%
Paperboard container manufacturing	0%	3%	0%
Pesticide and other agricultural chemical manufacturing	3%	0%	0%
Monetary authorities and depository credit intermediaries	1%	1%	1%
Advertising and related services	0%	2%	1%
Power generation and supply	2%	1%	1%
Plastics plumbing fixtures and all other plastics	0%	1%	2%
Lessors of nonfinancial intangible assets	0%	3%	0%
Tire manufacturing	0%	0%	3%
Oilseed farming	1%	2%	0%
Automotive repair and maintenance	1%	1%	1%
Insurance carriers	2%	1%	0%
Speed changers and mechanical power transmission equipment	0%	0%	3%
Soybean processing	1%	2%	0%
Metal can, box and other container manufacturing	0%	2%	0%
Architectural and engineering services	0%	0%	2%
Sheet metal work manufacturing	0%	0%	2%
Warehousing and storage	1%	1%	0%
Metal valve manufacturing	0%	0%	2%
All other miscellaneous professional and technical services	0%	1%	1%
Phosphatic fertilizer manufacturing	2%	0%	0%
Turned product and screw, nut and bolt manufacturing	0%	0%	2%
Natural gas distribution	0%	1%	1%
Flavoring syrup and concentrate manufacturing	0%	2%	0%
Rail transportation	1%	1%	0%
<i>Total Commodity Purchases (millions)</i>	\$144,002	\$364,694	\$11,589
<i>Total Output (millions)</i>	\$227,583	\$524,751	\$20,519
<i>Employment</i>	3,015,404	1,810,115	82,173

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-10
NATIONAL SUPPLIERS TO AEROSPACE, AVIONICS AND DEFENSE INDUSTRIES**

<u>Supplier Industries</u>	Search & Navigation Instruments	Aircraft and Space Vehicles
Wholesale trade	13%	9%
All other electronic component manufacturing	15%	3%
Broadcast and wireless communications equipment	10%	4%
Management of companies and enterprises	7%	4%
Other aircraft parts and equipment	0%	9%
Search, detection and navigation instruments	0%	7%
Aircraft engine and engine parts manufacturing	0%	7%
Semiconductors and related device manufacturing	5%	1%
Architectural and engineering services	3%	2%
Guided missile and space vehicle manufacturing	0%	5%
Scientific research and development services	2%	2%
Propulsion units and parts for space vehicles	0%	4%
Monetary authorities and depository credit intermediaries	2%	1%
Fiber optic cable manufacturing	3%	0%
All other miscellaneous professional and technical services	1%	1%
Warehousing and storage	1%	1%
Machine shops	1%	1%
Plastics products	1%	1%
Legal services	1%	1%
Custom computer programming services	2%	0%
Real estate	2%	0%
Power generation and supply	1%	1%
All other forging and stamping	1%	1%
Other communication and energy wire manufacturing	1%	0%
Securities, commodity contracts, investments	1%	1%
Telecommunications	1%	1%
Data processing services	1%	1%
Metal valve manufacturing	0%	2%
Electronic computer manufacturing	1%	0%
Sheet metal work manufacturing	1%	0%
Turned product and screw, nut and bolt manufactur	1%	1%
Relay and industrial control manufacturing	1%	0%
Nondepository credit intermediation	1%	1%
Miscellaneous fabricated metal products	0%	1%
Electroplating, anodizing and coloring metal	1%	0%
Custom roll forming	1%	0%
Aluminum sheet, plate and foil manufacturing	0%	1%
Lessors of nonfinancial intangible assets	1%	0%
Computer systems design services	1%	0%
Wiring device manufacturing	1%	0%
Metal coating and nonprecious engraving	1%	0%
Iron and steel mills	0%	1%
Advertising and related services	1%	0%
Electricity and signal testing instruments	1%	0%
Ball and roller bearing manufacturing	0%	1%
<i>Total Commodity Purchases (millions)</i>	\$14,448	\$69,425
<i>Total Output (millions)</i>	\$35,104	\$133,639
<i>Employment</i>	147,391	500,387

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-11
NATIONAL SUPPLIERS TO OTHER HIGH TECH INDUSTRIES**

<u>Supplier Industries</u>	<u>Photographic Equipment & Supplies</u>	<u>Sound Recording & Media Reproduction</u>	<u>Electronics</u>	<u>Architecture and Engineering</u>
Wholesale trade	20%	10%	15%	0%
All other electronic component manufacturing	2%	1%	17%	0%
Advertising and related services	0%	13%	1%	1%
Sound recording industries	0%	15%	0%	0%
Architectural and engineering services	1%	1%	2%	10%
Photographic film and chemical manufacturing	11%	0%	0%	0%
Paper and paperboard mills	8%	2%	0%	0%
Management of companies and enterprises	3%	2%	4%	1%
Audio and video media reproduction	0%	10%	0%	0%
Real estate	0%	4%	1%	5%
Broadcast and wireless communications equipment	1%	0%	8%	0%
Lessors of nonfinancial intangible assets	4%	1%	2%	0%
Employment services	0%	2%	0%	4%
Automotive repair and maintenance, except car washes	3%	1%	1%	0%
Telecommunications	1%	2%	1%	2%
Environmental and other technical consulting services	0%	0%	0%	6%
Semiconductors and related device manufacturing	1%	0%	5%	0%
Monetary authorities and depository credit intermediation	1%	1%	1%	1%
Plastics packaging materials, film and sheet	2%	2%	1%	0%
Plastics plumbing fixtures and all other plastics products	1%	2%	1%	0%
All other miscellaneous professional and technical services	1%	1%	1%	1%
Custom computer programming services	2%	1%	1%	0%
Truck transportation	2%	1%	1%	0%
Paperboard container manufacturing	3%	0%	1%	0%
Power generation and supply	1%	1%	1%	1%
Semiconductor machinery manufacturing	0%	0%	3%	0%
Magnetic and optical recording media manufacturing	0%	3%	0%	0%
Other basic organic chemical manufacturing	3%	0%	0%	0%
Scientific research and development services	1%	1%	2%	0%
Legal services	0%	1%	1%	1%
Plastics material and resin manufacturing	1%	2%	0%	0%
Other basic inorganic chemical manufacturing	2%	0%	1%	0%
Office administrative services	0%	1%	0%	2%
Machine shops	2%	0%	1%	0%
Commercial machinery repair and maintenance	1%	1%	1%	0%
Computer systems design services	0%	0%	2%	1%
Food services and drinking places	1%	1%	0%	1%
Securities, commodity contracts, investments	1%	1%	1%	1%
Accounting and bookkeeping services	0%	1%	0%	1%
Management consulting services	0%	1%	0%	1%
Nondepository credit intermediation and related activities	1%	1%	1%	1%
Hotels and motels, including casino hotels	0%	1%	0%	1%
Postal service	0%	1%	0%	1%
Couriers and messengers	0%	1%	0%	1%
Maintenance and repair of nonresidential buildings	1%	1%	0%	0%
<i>Total Commodity Purchases (millions)</i>	\$7,136	\$6,090	\$39,589	\$74,921
<i>Total Output (millions)</i>	\$15,859	\$16,891	\$56,885	\$131,945
<i>Employment</i>	60,438	60,160	325,176	680,158

Source: Minnesota IMPLAN Group, 2001 data.

**FIGURE A-12
NATIONAL SUPPLIERS TO STATE AND
LOCAL GOVERNMENT (NON-EDUCATION)**

<u>Supplier Industries</u>	State & Local Government
State & Local Non-Education	61%
Real estate	3%
Securities, commodity contracts, investments	2%
Monetary authorities and depository credit intermediaries	2%
Wholesale trade	2%
Telecommunications	2%
Employment services	2%
Legal services	2%
Services to buildings and dwellings	1%
Food services and drinking places	1%
Postal service	1%
Hotels and motels	1%
Management consulting services	1%
Electronic equipment repair and maintenance	1%
Accounting and bookkeeping services	1%
Other State and local government enterprises	1%
Data processing services	1%
State and local government electric utilities	1%
Investigation and security services	1%
Truck transportation	1%
Waste management and remediation services	1%
<i>Total Commodity Purchases (millions)</i>	\$636,999
<i>Total Output (millions)</i>	\$540,280
<i>Employment</i>	8,809,610

Source: Minnesota IMPLAN Group, 2001 data.

APPENDIX B

FIGURE B-1
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
COMPUTER SOFTWARE AND SYSTEMS INTEGRATION

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Reproduction & Publishing	\$759.80	4,673	\$87,998.10	312,566	1%	1%
Software reproducing	\$34.68	383	\$3,380.82	27,570	1%	1%
Software publishers	\$725.12	4,290	\$84,617.28	284,997	1%	2%
Information Services and Data Processing	\$1,094.32	11,389	\$84,893.98	557,612	1%	2%
Information services	\$391.60	3,860	\$36,499.05	193,743	1%	2%
Data processing services	\$702.71	7,529	\$48,394.93	363,869	1%	2%
Programming and Systems Design	\$2,118.54	28,609	\$241,241.10	2,698,152	1%	1%
Custom computer programming services	\$1,119.09	18,295	\$141,812.39	1,773,108	1%	1%
Computer systems design services	\$824.92	8,204	\$68,000.94	605,037	1%	1%
Other computer related services	\$174.53	2,110	\$31,427.77	320,007	1%	1%
Total	\$3,972.66	44,671	\$414,133.18	3,568,330	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-2
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
HEALTH CARE AND BIOTECHNOLOGY

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Pharmaceuticals	\$394.59	1,091	\$122,964.38	265,648	0%	0%
Pharmaceutical and medicine manufacturing	\$394.59	1,091	\$122,964.38	265,648	0%	0%
Doctors and Hospitals	\$15,106.31	142,468	\$923,020.61	8,755,104	2%	2%
Offices of physicians, dentists, and other providers	\$5,732.14	63,522	\$338,367.56	3,739,969	2%	2%
Other ambulatory health care services	\$3,273.24	21,639	\$135,953.98	913,003	2%	2%
Hospitals	\$6,100.93	57,308	\$448,699.06	4,102,132	1%	1%
Total	\$15,500.90	143,558	\$1,045,984.99	9,020,752	1%	2%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-3
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
INDUSTRIAL MACHINERY

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Construction machinery manufacturing	\$76.37	259	\$20,315.93	71,545	0%	0%
Mining machinery and equipment manufacturing	\$13.30	99	\$2,075.18	13,559	1%	1%
Oil and gas field machinery and equipment	\$2.05	18	\$6,232.99	47,226	0%	0%
Sawmill and woodworking machinery	\$8.70	88	\$1,022.58	9,197	1%	1%
Plastics and rubber industry machinery	\$102.81	640	\$3,162.52	16,694	3%	4%
Paper industry machinery manufacturing	\$10.80	74	\$2,597.79	15,830	0%	0%
Textile machinery manufacturing	\$1.02	10	\$1,323.99	10,817	0%	0%
Printing machinery and equipment manufacturing	\$6.00	43	\$3,140.26	19,148	0%	0%
Food product machinery manufacturing	\$7.52	76	\$2,652.39	22,292	0%	0%
Semiconductor machinery manufacturing	\$553.22	1,181	\$11,765.64	22,377	5%	5%
All other industrial machinery manufacturing	\$22.86	92	\$8,509.26	30,611	0%	0%
Other commercial and service industry machines	\$72.99	447	\$10,795.33	62,333	1%	1%
Automatic vending, commercial laundry and dryers	\$8.35	56	\$1,863.16	12,380	0%	0%
Air purification equipment manufacturing	\$3.99	54	\$1,936.81	19,198	0%	0%
Industrial and commercial fan and blower man	\$0.69	6	\$2,020.78	13,986	0%	0%
Heating equipment, except warm air furnaces	\$2.85	21	\$4,080.62	22,483	0%	0%
AC, refrigeration, and forced air heating	\$399.87	2,251	\$24,792.60	127,299	2%	2%
Industrial mold manufacturing	\$35.72	365	\$4,800.48	49,028	1%	1%
Metal cutting machine tool manufacturing	\$42.87	484	\$4,008.91	36,579	1%	1%
Metal forming machine tool manufacturing	\$18.93	183	\$1,749.29	15,997	1%	1%
Special tool, die, jig, and fixture manufacturing	\$36.57	537	\$7,179.45	93,691	1%	1%
Cutting tool and machine tool accessories	\$19.15	163	\$4,659.95	35,380	0%	0%
Rolling mill and other metalworking machinery	\$29.09	122	\$3,843.77	15,818	1%	1%
Turbine and turbine generator set units	\$51.25	127	\$12,040.36	22,080	0%	1%
Other engine equipment manufacturing	\$5.93	17	\$19,335.81	50,431	0%	0%
Speed changers and mechanical power transmissions	\$2.74	20	\$5,338.60	33,655	0%	0%
Pump and pumping equipment manufacturing	\$2.23	11	\$7,273.75	31,020	0%	0%
Air and gas compressor manufacturing	\$2.21	11	\$5,559.70	23,944	0%	0%
Measuring and dispensing pump manufacturing	\$0.94	3	\$1,127.42	3,786	0%	0%
Elevator and moving stairway manufacturing	\$0.00	0	\$2,146.84	9,783	0%	0%
Conveyor and conveying equipment manufacturing	\$4.32	31	\$6,179.78	37,493	0%	0%
Overhead cranes, hoists, and monorail system	\$0.99	5	\$4,448.20	17,781	0%	0%
Industrial truck, trailer, and stacker manufacturing	\$5.43	32	\$5,044.44	27,209	0%	0%
Power-driven hand tool manufacturing	\$17.61	90	\$3,843.00	17,354	0%	1%
Welding and soldering equipment manufacturing	\$0.21	1	\$3,876.33	17,489	0%	0%
Packaging machinery manufacturing	\$0.19	1	\$4,160.68	21,567	0%	0%
Industrial process furnace and oven manufacturing	\$1.93	16	\$2,262.63	16,349	0%	0%
Fluid power cylinder and actuator manufacturing	\$10.08	47	\$3,355.91	17,916	0%	0%
Fluid power pump and motor manufacturing	\$0.11	1	\$2,522.61	22,791	0%	0%
Scales, balances, and miscellaneous general	\$16.50	101	\$9,450.61	53,252	0%	0%
Total	\$1,598.39	7,779	\$232,496.29	1,207,369	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

**FIGURE B-4
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
TELECOMMUNICATIONS**

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Communications Equipment	\$566.87	1,523	\$100,000.54	230,928	1%	1%
Telephone apparatus manufacturing	\$142.04	336	\$50,426.18	96,896	0%	0%
Broadcast and wireless communications equipment	\$399.26	1,003	\$44,172.50	102,140	1%	1%
Other communications equipment manufacturing	\$25.58	183	\$5,401.86	31,892	0%	1%
Telecommunications	\$4,519.13	24,102	\$352,924.69	1,414,321	1%	2%
Telecommunications	\$4,519.13	24,102	\$352,924.69	1,414,321	1%	2%
Total	\$5,086.00	25,625	\$452,925.23	1,645,249	1%	2%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

**FIGURE B-5
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
HIGH TECH INSTRUMENTS**

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Electromedical apparatus manufacturing	\$122.86	535	\$13,407.50	52,498	1%	1%
Automatic environmental control manufacturing	\$177.44	1,370	\$2,967.90	31,363	6%	4%
Industrial process variable instruments	\$46.97	479	\$7,249.53	65,610	1%	1%
Totalizing fluid meters and counting devices	\$277.64	923	\$4,266.61	16,380	7%	6%
Electricity and signal testing instruments	\$84.98	575	\$12,968.98	64,665	1%	1%
Analytical laboratory instrument manufacturing	\$19.92	84	\$8,138.95	34,103	0%	0%
Irradiation apparatus manufacturing	\$8.52	20	\$4,271.73	11,360	0%	0%
Laboratory apparatus and furniture manufacturing	\$16.06	113	\$2,606.67	16,406	1%	1%
Surgical and medical instrument manufacturing	\$114.66	670	\$22,838.59	113,874	1%	1%
Surgical appliance and supplies manufacturing	\$362.46	1,916	\$20,005.88	95,719	2%	2%
Dental equipment and supplies manufacturing	\$12.47	85	\$2,979.68	16,609	0%	1%
Ophthalmic goods manufacturing	\$7.75	105	\$4,282.22	36,735	0%	0%
Total	\$1,251.72	6,875	\$105,984.26	555,321	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-6
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
FOREST PRODUCTS

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Logging and Forest Products	\$42.27	618	\$22,316.74	142,339	0%	0%
Logging	\$33.15	541	\$17,362.75	130,464	0%	0%
Forest nurseries, forest products, and timber	\$9.12	77	\$4,953.99	11,875	0%	1%
Wood Products	\$974.95	8,458	\$86,551.59	617,314	1%	1%
Sawmills	\$18.32	109	\$21,629.81	122,368	0%	0%
Wood preservation	\$2.38	8	\$4,213.31	13,445	0%	0%
Reconstituted wood product manufacturing	\$15.81	73	\$5,365.75	21,545	0%	0%
Veneer and plywood manufacturing	\$0.74	6	\$8,020.23	53,452	0%	0%
Engineered wood member and truss manufacturing	\$223.29	2,026	\$6,129.51	51,286	4%	4%
Wood windows and door manufacturing	\$207.91	1,503	\$11,118.22	76,186	2%	2%
Cut stock, resawing lumber, and planing	\$10.52	43	\$5,913.51	22,936	0%	0%
Other millwork, including flooring	\$52.04	790	\$4,875.67	67,188	1%	1%
Wood container and pallet manufacturing	\$26.10	419	\$4,636.35	69,949	1%	1%
Manufactured home, mobile home, manufacturing	\$288.06	2,370	\$7,192.80	57,820	4%	4%
Prefabricated wood building manufacturing	\$85.75	729	\$3,399.22	26,586	3%	3%
Miscellaneous wood product manufacturing	\$44.03	380	\$4,057.21	34,552	1%	1%
Paper Products	\$649.25	2,680	\$154,985.86	568,130	0%	0%
Pulp mills	\$0.00	0	\$3,232.26	7,623	0%	0%
Paper and paperboard mills	\$129.09	344	\$68,574.23	168,229	0%	0%
Paperboard container manufacturing	\$225.46	1,057	\$45,521.32	208,537	0%	1%
Flexible packaging foil manufacturing	\$41.96	66	\$1,332.41	2,104	3%	3%
Surface-coated paperboard manufacturing	\$16.64	52	\$802.74	2,512	2%	2%
Coated and laminated paper and packaging materials	\$46.73	199	\$13,012.01	53,769	0%	0%
Coated and uncoated paper bag manufacturing	\$7.80	61	\$3,102.26	25,387	0%	0%
Die-cut paper office supplies manufacturing	\$22.55	120	\$2,540.56	12,724	1%	1%
Envelope manufacturing	\$45.79	254	\$3,615.16	22,347	1%	1%
Stationery and related product manufacturing	\$31.37	96	\$1,815.11	6,334	2%	2%
Sanitary paper product manufacturing	\$26.67	157	\$6,999.06	38,010	0%	0%
All other converted paper product manufacturing	\$55.19	275	\$4,438.73	20,555	1%	1%
Total	\$1,666.48	11,756	\$263,854.19	1,327,784	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-7
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
ENGINEERING RESEARCH SERVICES

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Scientific research and development services	\$307.61	5,548	\$60,472.86	842,806	1%	1%
Total	\$307.61	5,548	\$60,472.86	842,806	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-8
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
TRANSPORTATION AND LOGISTICS

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Rail Transportation	\$364.56	2,058	\$37,279.20	179,852	1%	1%
Rail transportation	\$364.56	2,058	\$37,279.20	179,852	1%	1%
Truck Transportation	\$2,590.19	20,305	\$198,405.42	1,623,497	1%	1%
Truck transportation	\$2,590.19	20,305	\$198,405.42	1,623,497	1%	1%
Total	\$2,954.75	22,363	\$235,684.62	1,803,349	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-9
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
AGRICULTURE, FOOD PROCESSING AND AG TECHNOLOGY

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Agriculture	\$2,641.72	18,639	\$227,583.37	3,015,404	1%	1%
Oilseed farming	\$0.81	12	\$14,312.36	311,073	0%	0%
Grain farming	\$47.32	527	\$34,861.38	604,801	0%	0%
Vegetable and melon farming	\$910.19	5,516	\$16,214.81	143,108	6%	4%
Tree nut farming	\$9.10	82	\$1,501.34	23,262	1%	0%
Fruit farming	\$85.75	807	\$10,781.86	108,302	1%	1%
Greenhouse and nursery production	\$81.40	387	\$15,474.24	150,543	1%	0%
Tobacco farming	\$0.00	0	\$1,880.30	42,000	0%	0%
Cotton farming	\$136.65	578	\$4,954.04	36,789	3%	2%
Sugarcane and sugar beet farming	\$0.00	0	\$1,803.16	29,688	0%	0%
All other crop farming	\$181.43	1,459	\$18,357.49	284,012	1%	1%
Cattle ranching and farming	\$1,133.25	8,874	\$65,106.45	908,426	2%	1%
Poultry and egg production	\$13.54	22	\$24,569.31	96,573	0%	0%
Animal production, except cattle and poultry	\$42.28	375	\$17,766.61	276,827	0%	0%
Food Processing	\$3,365.08	12,730	\$524,750.64	1,810,115	1%	1%
Dog and cat food manufacturing	\$109.76	229	\$9,710.01	19,494	1%	1%
Other animal food manufacturing	\$73.85	152	\$18,786.68	37,836	0%	0%
Flour milling	\$16.21	37	\$6,242.16	15,357	0%	0%
Rice milling	\$0.00	0	\$1,804.03	4,689	0%	0%
Malt manufacturing	\$0.00	0	\$499.04	1,221	0%	0%
Wet corn milling	\$1.73	2	\$7,576.92	9,264	0%	0%
Soybean processing	\$0.00	0	\$11,017.44	10,355	0%	0%
Other oilseed processing	\$6.68	12	\$1,365.59	2,584	0%	0%
Fats and oils refining and blending	\$2.87	3	\$6,184.79	6,005	0%	0%
Breakfast cereal manufacturing	\$0.00	0	\$11,033.64	14,282	0%	0%
Sugar manufacturing	\$0.00	0	\$6,273.42	15,355	0%	0%
Confectionery manufacturing from cacao beans	\$0.00	0	\$4,522.24	9,137	0%	0%
Confectionery from purchased chocolate	\$14.80	121	\$8,692.38	42,652	0%	0%
Nonchocolate confectionery manufacturing	\$8.90	32	\$5,766.89	24,384	0%	0%
Frozen food manufacturing	\$2.35	12	\$21,793.92	99,422	0%	0%
Fruit and vegetable canning and drying	\$67.90	273	\$30,031.42	99,302	0%	0%
Fluid milk manufacturing	\$415.01	967	\$24,505.04	56,932	2%	2%
Creamery butter manufacturing	\$0.00	0	\$1,863.06	1,881	0%	0%
Cheese manufacturing	\$0.00	0	\$21,846.62	38,146	0%	0%
Dry, condensed, and evaporated dairy product	\$181.16	293	\$10,002.13	15,981	2%	2%
Ice cream and frozen dessert manufacturing	\$9.03	42	\$6,654.96	22,746	0%	0%
Animal, except poultry, slaughtering	\$535.87	1,405	\$60,909.95	156,880	1%	1%
Meat processed from carcasses	\$87.42	358	\$29,381.40	115,969	0%	0%
Rendering and meat byproduct processing	\$21.68	95	\$2,244.35	9,055	1%	1%
Poultry processing	\$0.97	7	\$36,786.30	261,058	0%	0%
Seafood product preparation and packaging	\$0.00	0	\$8,742.75	46,603	0%	0%
Frozen cakes and other pastries manufacturing	\$0.00	0	\$2,986.20	9,358	0%	0%
Bread and bakery products, except frozen	\$400.05	3,344	\$34,315.59	263,764	1%	1%
Cookie and cracker manufacturing	\$47.16	192	\$9,917.91	36,716	0%	1%
Mixes and dough made from purchased flour	\$0.56	2	\$4,733.22	15,594	0%	0%
Dry pasta manufacturing	\$1.54	13	\$1,228.84	9,265	0%	0%

FIGURE B-9 (continued)
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
AGRICULTURE, FOOD PROCESSING AND AG TECHNOLOGY

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Tortilla manufacturing	\$43.76	508	\$1,363.43	14,805	3%	3%
Roasted nuts and peanut butter manufacturing	\$1.72	5	\$4,313.08	11,251	0%	0%
Other snack food manufacturing	\$183.16	629	\$11,174.48	34,741	2%	2%
Coffee and tea manufacturing	\$5.11	14	\$5,162.16	12,068	0%	0%
Flavoring syrup and concentrate manufacturing	\$0.00	0	\$8,005.75	11,542	0%	0%
Mayonnaise, dressing, and sauce manufacturing	\$13.07	39	\$5,623.46	12,879	0%	0%
Spice and extract manufacturing	\$1.13	6	\$4,593.03	15,099	0%	0%
All other food manufacturing	\$70.28	333	\$12,461.84	53,571	1%	1%
Soft drink and ice manufacturing	\$1,029.10	3,557	\$35,387.91	112,681	3%	3%
Breweries	\$3.54	17	\$16,901.99	27,993	0%	0%
Wineries	\$8.72	32	\$8,137.59	25,430	0%	0%
Distilleries	\$0.00	0	\$4,207.02	6,765	0%	0%
Farm and Garden Equipment	\$256.35	918	\$20,519.09	82,173	1%	1%
Farm machinery and equipment manufacturing	\$51.50	237	\$13,925.07	60,577	0%	0%
Lawn and garden equipment manufacturing	\$204.85	682	\$6,594.02	21,596	3%	3%
Total	\$6,263.15	32,287	\$772,853.09	4,907,692	1%	1%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

FIGURE B-10
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
DEFENSE, AEROSPACE AND AVIONICS

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Search and Navigation Instruments	\$1,283.16	5,547	\$35,104.04	147,391	4%	4%
Search, detection, and navigation instruments	\$1,283.16	5,547	\$35,104.04	147,391	4%	4%
Aircraft and Space Vehicles	\$8,209.66	31,717	\$133,639.16	500,387	6%	6%
Aircraft manufacturing	\$1,764.35	6,432	\$67,405.73	235,787	3%	3%
Aircraft engine and engine parts manufacturing	\$2,049.36	7,038	\$26,800.92	93,794	8%	8%
Other aircraft parts and equipment	\$1,074.48	4,537	\$23,180.42	96,556	5%	5%
Guided missile and space vehicle manufacturing	\$3,304.94	13,580	\$13,267.46	51,948	25%	26%
Propulsion units and parts for space vehicles	\$16.53	130	\$2,984.63	22,302	1%	1%
Total	\$9,492.83	37,265	\$168,743.20	647,779	6%	6%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

**FIGURE B-11
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
OTHER HIGH TECH**

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
Photographic Equipment and Supplies	\$79.05	385	\$15,858.97	\$60,438.00	0%	1%
Photographic film and chemical manufacturing	\$64.44	292	\$12,321.52	38,106	1%	1%
Photographic and photocopying equipment	\$14.61	93	\$3,537.45	22,332	0%	0%
Sound Recording & Media Reproduction	\$19.39	138	\$16,890.69	\$60,160.00	0%	0%
Audio and video media reproduction	\$5.69	48	\$4,726.14	26,893	0%	0%
Sound recording industries	\$13.69	90	\$12,164.55	33,267	0%	0%
Electronics and Audio Video Equipment	\$8,269.09	40,729	\$131,945.01	\$680,158.00	6%	6%
Audio and video equipment manufacturing	\$106.80	594	\$9,018.63	47,490	1%	1%
Electron tube manufacturing	\$0.00	0	\$3,178.74	18,434	0%	0%
Semiconductors and related device manufacturing	\$7,040.05	33,357	\$62,862.48	289,058	11%	12%
All other electronic component manufacturing	\$1,122.24	6,778	\$56,885.16	325,176	2%	2%
Architecture & Engineering	\$3,134.38	37,728	\$174,571.08	1,899,695	2%	2%
Architecture & Engineering Services	\$3,134.38	37,728	\$174,571.08	1,899,695	2%	2%
Total	\$11,501.90	78,979	\$339,265.75	2,700,451	3%	3%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

**FIGURE B-12
ARIZONA SHARE OF EMPLOYMENT AND OUTPUT
STATE AND LOCAL GOVERNMENT**

Industry	Arizona	Arizona	National	National	Arizona Share	
	Output*	Employment	Output*	Employment	Output	Employment
State and local non-education	\$5,804.53	123,734	\$386,469.13	7,759,000	2%	2%
State and local government passenger transit	\$5.35	121	\$9,517.00	214,730	0%	0%
State and local government electric utilities	\$2,413.68	4,309	\$29,399.00	63,368	8%	7%
Other State and local government enterprises	\$1,788.84	12,626	\$114,895.00	772,513	2%	2%
Total	\$10,012.39	140,789	\$540,280.13	8,809,610	2%	2%

Source: Minnesota IMPLAN Group, 2001 data.

*Output in Millions

APPENDIX C

FIGURE C-1
ARIZONA SUPPLIER GAPS FOR SOFTWARE AND SYSTEMS INTEGRATION INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements				Arizona	Arizona
	Reproduction & Publishing	Info Services Data Processing	Programming & Systems Design	Software Total	Commodity Production*	Demand All Industries
Employment services	\$15.04	\$20.94	\$55.26	\$91.23	\$3,260.78	\$1,734.37
Advertising and related services	\$23.90	\$32.26	\$17.40	\$73.56	\$2,266.81	\$3,155.27
Telecommunications	\$12.04	\$32.22	\$26.20	\$70.46	\$4,352.27	\$5,299.03
Real estate	\$12.23	\$14.89	\$25.32	\$52.44	\$16,370.19	\$12,092.21
Office administrative services	\$7.21	\$9.22	\$23.73	\$40.16	\$909.59	\$833.44
Wholesale trade	\$18.71	\$10.99	\$6.98	\$36.68	\$12,912.26	\$10,831.49
Computer systems design services	\$1.83	\$13.24	\$20.94	\$36.01	\$677.91	\$874.31
Lessors of nonfinancial intangible assets	\$5.28	\$2.81	\$24.52	\$32.60	\$6,494.93	\$1,698.13
Software publishers	\$27.91	\$0.00	\$0.00	\$27.91	\$634.67	\$725.68
Automotive repair and maintenance	\$0.96	\$9.04	\$13.44	\$23.44	\$5,808.50	\$4,104.53
Services to buildings and dwellings	\$3.66	\$5.41	\$13.83	\$22.90	\$1,345.64	\$1,055.66
All other electronic component manufacturing	\$7.12	\$4.28	\$10.73	\$22.14	\$1,059.60	\$1,350.04
Data processing services	\$0.60	\$7.45	\$14.04	\$22.09	\$737.31	\$552.98
Monetary authorities and depository intermediaries	\$4.17	\$5.25	\$7.01	\$16.43	\$4,115.69	\$5,985.75
Colleges- universities- and junior colleges	\$3.27	\$5.10	\$7.70	\$16.08	\$390.97	\$1,602.96
Information services	\$2.54	\$6.85	\$5.45	\$14.84	\$425.32	\$620.56
Food services and drinking places	\$2.94	\$6.17	\$5.46	\$14.57	\$7,694.15	\$6,598.51
Architectural and engineering services	\$1.38	\$1.86	\$11.15	\$14.39	\$2,998.84	\$3,164.91
Automotive equipment rental and leasing	\$1.24	\$8.10	\$4.97	\$14.32	\$3,017.58	\$1,408.71
Postal service	\$2.63	\$6.73	\$4.92	\$14.28	\$1,012.70	\$907.69
Other computer related services	\$2.63	\$3.80	\$6.62	\$13.05	\$168.94	\$303.82
Hotels and motels- including casino hotels	\$1.75	\$4.74	\$6.46	\$12.95	\$1,724.61	\$1,052.76
Audio and video media reproduction	\$0.00	\$12.33	\$0.00	\$12.33	\$6.21	\$52.18
Machinery and equipment rental and leasing	\$1.26	\$7.72	\$3.19	\$12.17	\$1,219.21	\$883.56
Other support services	\$8.81	\$3.14	\$0.16	\$12.11	\$422.74	\$636.35
Management consulting services	\$1.52	\$3.82	\$6.53	\$11.87	\$1,643.20	\$1,409.71
Computer storage device manufacturing	\$1.86	\$4.97	\$4.55	\$11.38	\$40.12	\$201.91
Commercial printing	\$4.90	\$4.12	\$2.29	\$11.31	\$491.89	\$566.54
Legal services	\$4.11	\$2.64	\$3.96	\$10.72	\$2,141.72	\$2,676.00
Management of companies and enterprises	\$0.83	\$3.02	\$5.65	\$9.50	\$1,857.85	\$2,534.70
Couriers and messengers	\$1.33	\$3.53	\$4.51	\$9.37	\$889.39	\$1,007.68
Securities- commodity contracts- investments	\$1.95	\$4.08	\$2.88	\$8.91	\$2,751.35	\$4,136.42
Investigation and security services	\$1.45	\$2.22	\$5.01	\$8.68	\$428.23	\$414.58
Commercial machinery repair and maintenance	\$0.53	\$1.70	\$6.11	\$8.33	\$834.42	\$534.52
Water transportation	\$0.01	\$2.83	\$5.28	\$8.12	\$77.66	\$366.79
Accounting and bookkeeping services	\$1.32	\$2.09	\$4.03	\$7.44	\$1,006.87	\$1,095.47
Nondepository credit intermediation	\$1.90	\$2.42	\$2.99	\$7.31	\$3,248.83	\$1,395.99
Power generation and supply	\$0.92	\$2.65	\$3.37	\$6.94	\$4,919.68	\$3,102.05
Air transportation	\$1.06	\$2.38	\$3.13	\$6.56	\$2,524.13	\$1,893.61
Maintenance and repair of nonresidential buildings	\$1.06	\$2.83	\$2.32	\$6.21	\$750.57	\$1,672.57
General and consumer goods rental	\$0.49	\$2.92	\$1.96	\$5.37	\$350.14	\$302.97
Business support services	\$0.82	\$2.07	\$2.37	\$5.26	\$1,862.11	\$923.99
Electronic equipment repair and maintenance	\$0.25	\$1.95	\$2.86	\$5.06	\$655.96	\$498.12
<i>Total Commodity Purchases (millions)</i>	<i>\$195.42</i>	<i>\$286.76</i>	<i>\$385.26</i>	<i>\$867.45</i>	<i>\$106,501.53</i>	<i>\$92,258.54</i>

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-2
ARIZONA SUPPLIER GAPS FOR HEALTHCARE AND BIOTECH INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements			Arizona	Arizona
	Pharmaceuticals	Doctors & Hospitals	Healthcare/ Biotech Total	Commodity Production*	Demand All Industries
Real estate	\$0.61	\$992.56	\$993.17	\$16,370.19	\$12,092.21
Wholesale trade	\$22.74	\$342.53	\$365.27	\$12,912.26	\$10,831.49
Employment services	\$0.43	\$318.08	\$318.51	\$3,260.78	\$1,734.37
Legal services	\$1.50	\$282.09	\$283.59	\$2,141.72	\$2,676.00
Securities, commodity contracts, investments	\$0.38	\$276.08	\$276.46	\$2,751.35	\$4,136.42
Pharmaceutical and medicine manufacturing	\$32.26	\$180.10	\$212.37	\$338.40	\$1,956.21
Postal service	\$0.01	\$188.47	\$188.48	\$1,012.70	\$907.69
Management of companies and enterprises	\$15.82	\$159.98	\$175.80	\$1,857.85	\$2,534.70
Management consulting services	\$0.71	\$172.22	\$172.93	\$1,643.20	\$1,409.71
Food services and drinking places	\$0.88	\$169.08	\$169.96	\$7,694.15	\$6,598.51
Telecommunications	\$0.99	\$147.47	\$148.46	\$4,352.27	\$5,299.03
Plastics products	\$2.88	\$136.44	\$139.32	\$751.03	\$1,142.92
Office administrative services	\$0.14	\$129.04	\$129.18	\$909.59	\$833.44
Services to buildings and dwellings	\$0.18	\$124.77	\$124.95	\$1,345.64	\$1,055.66
Business support services	\$0.32	\$121.36	\$121.67	\$1,862.11	\$923.99
Lessors of nonfinancial intangible assets	\$35.93	\$79.23	\$115.17	\$6,494.93	\$1,698.13
Advertising and related services	\$8.70	\$96.26	\$104.96	\$2,266.81	\$3,155.27
Insurance carriers	\$0.07	\$101.32	\$101.39	\$3,859.06	\$4,631.49
Other basic organic chemical manufacturing	\$2.76	\$89.41	\$92.17	\$121.50	\$449.98
Surgical and medical instrument manufacturing	\$0.00	\$79.99	\$79.99	\$99.79	\$185.67
Power generation and supply	\$1.50	\$78.21	\$79.71	\$4,919.68	\$3,102.05
Accounting and bookkeeping services	\$1.05	\$76.79	\$77.85	\$1,006.87	\$1,095.47
Monetary authorities and depository intermediaries	\$2.15	\$69.82	\$71.97	\$4,115.69	\$5,985.75
Commercial printing	\$2.56	\$61.32	\$63.88	\$491.89	\$566.54
Surgical appliance and supplies manufacturing	\$0.00	\$53.99	\$53.99	\$265.15	\$265.24
Colleges, universities and junior colleges	\$2.10	\$45.13	\$47.23	\$390.97	\$1,602.96
Truck transportation	\$1.57	\$41.07	\$42.63	\$2,435.78	\$2,524.18
Nondepository credit intermediation	\$1.11	\$41.05	\$42.16	\$3,248.83	\$1,395.99
Data processing services	\$1.45	\$40.31	\$41.75	\$737.31	\$552.98
Natural gas distribution	\$0.94	\$38.12	\$39.06	\$1,074.38	\$1,417.70
Other basic inorganic chemical manufacturing	\$1.68	\$33.15	\$34.84	\$129.11	\$194.31
Scientific research and development services	\$5.37	\$23.80	\$29.17	\$304.99	\$1,204.19
All other misc professional and technical services	\$3.43	\$20.29	\$23.72	\$837.48	\$458.80
Paperboard container manufacturing	\$4.18	\$17.75	\$21.93	\$217.73	\$449.75
Plastics packaging materials- film and sheet	\$1.93	\$12.55	\$14.48	\$40.37	\$277.00
Other miscellaneous chemical product manufacturing	\$1.25	\$12.67	\$13.92	\$35.35	\$137.61
Warehousing and storage	\$3.46	\$8.25	\$11.71	\$475.31	\$480.22
Plastics bottle manufacturing	\$2.04	\$6.40	\$8.44	\$87.20	\$133.10
Glass container manufacturing	\$1.09	\$1.15	\$2.24	\$0.00	\$33.44
<i>Total Commodity Purchases (millions)</i>	\$166.16	\$4,868.32	\$5,034.48	\$92,859.38	\$86,130.17

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-3
ARIZONA SUPPLIER GAPS FOR INDUSTRIAL MACHINERY INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements Industrial Machinery	Arizona Commodity Production*	Arizona Demand All Industries
Wholesale trade	\$121.18	\$12,912.26	\$10,831.49
Iron and steel mills	\$48.06	\$129.70	\$571.25
Management of companies and enterprises	\$37.70	\$1,857.85	\$2,534.70
Ferrous metal foundries	\$35.13	\$77.50	\$174.04
Machine shops	\$23.40	\$317.93	\$387.99
All other forging and stamping	\$16.56	\$157.65	\$159.59
All other electronic component manufacturing	\$16.28	\$1,059.60	\$1,350.04
Truck transportation	\$16.19	\$2,435.78	\$2,524.18
Aluminum foundries	\$15.57	\$105.69	\$112.50
Lessors of nonfinancial intangible assets	\$15.27	\$6,494.93	\$1,698.13
AC, refrigeration and forced air heating	\$15.21	\$326.08	\$392.26
Motor and generator manufacturing	\$14.83	\$20.74	\$115.95
Speed changers, mechanical power transmission equipment	\$14.48	\$2.57	\$40.21
Fabricated structural metal manufacturing	\$13.51	\$220.88	\$297.18
Iron and steel forging	\$13.38	\$4.17	\$61.39
Motor vehicle parts manufacturing	\$12.84	\$797.02	\$1,832.00
Metal valve manufacturing	\$12.54	\$472.67	\$512.91
Turned product and screw, nut and bolt manufacturing	\$12.33	\$85.34	\$191.58
Telecommunications	\$11.83	\$4,352.27	\$5,299.03
Semiconductor machinery manufacturing	\$10.27	\$414.16	\$648.72
Plastics products	\$9.88	\$751.03	\$1,142.92
Advertising and related services	\$9.30	\$2,266.81	\$3,155.27
Monetary authorities and depository credit intermediaries	\$9.25	\$4,115.69	\$5,985.75
All other miscellaneous professional and technical services	\$9.22	\$837.48	\$458.80
Relay and industrial control manufacturing	\$9.17	\$18.49	\$102.76
Other engine equipment manufacturing	\$8.82	\$9.07	\$129.63
Real estate	\$7.43	\$16,370.19	\$12,092.21
Other rubber product manufacturing	\$7.32	\$51.32	\$157.01
Fluid power pump and motor manufacturing	\$7.03	\$8.24	\$19.77
Power generation and supply	\$6.98	\$4,919.68	\$3,102.05
Fluid power cylinder and actuator manufacturing	\$6.75	\$21.98	\$39.97
Aluminum sheet, plate and foil manufacturing	\$6.26	\$197.14	\$214.94
Securities, commodity contracts, investments	\$5.54	\$2,751.35	\$4,136.42
Scientific research and development services	\$5.51	\$304.99	\$1,204.19
Ball and roller bearing manufacturing	\$5.39	\$0.04	\$82.62
Copper rolling, drawing and extruding	\$5.17	\$201.28	\$119.34
Sheet metal work manufacturing	\$5.12	\$316.26	\$308.00
Paperboard container manufacturing	\$5.06	\$217.73	\$449.75
Cutting tool and machine tool accessory manufacturing	\$5.00	\$16.91	\$60.23
Paint and coating manufacturing	\$4.86	\$38.59	\$297.60
<i>Total Commodity Purchases (millions)</i>	<i>\$615.64</i>	<i>\$65,659.02</i>	<i>\$62,994.37</i>

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-4
ARIZONA SUPPLIER GAPS FOR TELECOMMUNICATIONS INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements			Arizona Commodity Production*	Arizona Demand All Industries
	Communication Equipment	Telecom- munication	Telecomm Total		
Telecommunications	\$2.31	\$641.54	\$643.85	\$4,352.27	\$5,299.03
Architectural and engineering services	\$4.60	\$107.05	\$111.65	\$2,998.84	\$3,164.91
Telephone apparatus manufacturing	\$6.43	\$85.93	\$92.36	\$140.47	\$285.03
Advertising and related services	\$2.23	\$81.46	\$83.68	\$2,266.81	\$3,155.27
Broadcast and wireless communications equipment	\$74.61	\$0.22	\$74.83	\$423.20	\$770.99
Lessors of nonfinancial intangible assets	\$36.54	\$25.92	\$62.45	\$6,494.93	\$1,698.13
Wholesale trade	\$25.96	\$30.26	\$56.22	\$12,912.26	\$10,831.49
Accounting and bookkeeping services	\$0.87	\$51.77	\$52.64	\$1,006.87	\$1,095.47
All other electronic component manufacturing	\$32.28	\$13.44	\$45.72	\$1,059.60	\$1,350.04
Machinery and equipment rental and leasing	\$0.55	\$36.53	\$37.08	\$1,219.21	\$883.56
Real estate	\$2.01	\$28.10	\$30.10	\$16,370.19	\$12,092.21
Household goods repair and maintenance	\$0.09	\$27.71	\$27.80	\$490.64	\$370.99
Specialized design services	\$0.05	\$26.23	\$26.27	\$354.96	\$370.89
All other miscellaneous professional and technical	\$2.29	\$21.95	\$24.24	\$837.48	\$458.80
Monetary authorities and depositoryintermediaries	\$2.42	\$21.03	\$23.45	\$4,115.69	\$5,985.75
Commercial printing	\$0.01	\$19.96	\$19.97	\$491.89	\$566.54
Semiconductors and related device manufacturing	\$10.02	\$7.11	\$17.14	\$1,799.33	\$790.04
Legal services	\$1.13	\$12.81	\$13.94	\$2,141.72	\$2,676.00
Other communication and energy wire manufacturin	\$2.85	\$10.67	\$13.52	\$118.17	\$224.27
Management of companies and enterprises	\$7.45	\$5.89	\$13.33	\$1,857.85	\$2,534.70
Nondepository credit intermediation	\$1.20	\$8.76	\$9.96	\$3,248.83	\$1,395.99
Plastics products	\$1.92	\$5.25	\$7.17	\$751.03	\$1,142.92
Fiber optic cable manufacturing	\$1.70	\$5.25	\$6.95	\$3.17	\$67.93
All other forging and stamping	\$1.67	\$4.69	\$6.35	\$157.65	\$159.59
Securities, commodity contracts, investments	\$1.40	\$3.73	\$5.13	\$2,751.35	\$4,136.42
Sheet metal work manufacturing	\$2.81	\$0.40	\$3.22	\$316.26	\$308.00
Custom roll forming	\$2.91	\$0.18	\$3.09	\$26.81	\$57.67
<i>Total Commodity Purchases (millions)</i>	\$228.30	\$1,283.82	\$1,512.12	\$68,707.49	\$61,872.62

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-5
ARIZONA SUPPLIER GAPS FOR HIGH TECH INSTRUMENT INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements High Tech Instruments	Arizona Commodity Production*	Arizona Demand All Industries
Wholesale trade	\$76.15	\$12,912.26	\$10,831.49
All other electronic component manufacturing	\$38.96	\$1,059.60	\$1,350.04
Management of companies and enterprises	\$32.03	\$1,857.85	\$2,534.70
Business support services	\$21.32	\$1,862.11	\$923.99
Surgical and medical instrument manufacturing	\$14.52	\$99.79	\$185.67
Plastics products	\$12.73	\$751.03	\$1,142.92
Advertising and related services	\$12.02	\$2,266.81	\$3,155.27
Paperboard container manufacturing	\$9.14	\$217.73	\$449.75
Electricity and signal testing instruments	\$9.09	\$51.39	\$83.11
Legal services	\$9.08	\$2,141.72	\$2,676.00
Textile and fabric finishing mills	\$8.53	\$9.89	\$34.44
Architectural and engineering services	\$8.25	\$2,998.84	\$3,164.91
Surgical appliance and supplies manufacturing	\$8.15	\$265.15	\$265.24
Scientific research and development services	\$7.90	\$304.99	\$1,204.19
Telecommunications	\$7.66	\$4,352.27	\$5,299.03
Nonwoven fabric mills	\$7.36	\$3.73	\$40.97
Plastics material and resin manufacturing	\$7.17	\$82.52	\$318.05
Monetary authorities and depository intermediaries	\$7.13	\$4,115.69	\$5,985.75
All other miscellaneous professional and technical	\$6.84	\$837.48	\$458.80
Semiconductors and related device manufacturing	\$6.79	\$1,799.33	\$790.04
Plastics packaging materials- film and sheet	\$6.74	\$40.37	\$277.00
Truck transportation	\$6.43	\$2,435.78	\$2,524.18
Real estate	\$6.36	\$16,370.19	\$12,092.21
All other forging and stamping	\$6.33	\$157.65	\$159.59
Lessors of nonfinancial intangible assets	\$5.88	\$6,494.93	\$1,698.13
Metal coating and nonprecious engraving	\$5.47	\$72.62	\$154.18
Warehousing and storage	\$5.33	\$475.31	\$480.22
Broadcast and wireless communications equipment	\$5.30	\$423.20	\$770.99
Iron and steel mills	\$5.16	\$129.70	\$571.25
Machine shops	\$5.05	\$317.93	\$387.99
Specialized design services	\$4.68	\$354.96	\$370.89
Power generation and supply	\$4.53	\$4,919.68	\$3,102.05
Electronic computer manufacturing	\$4.43	\$568.29	\$781.87
Sheet metal work manufacturing	\$4.40	\$316.26	\$308.00
Securities, commodity contracts, investments	\$4.15	\$2,751.35	\$4,136.42
Gasket, packing and sealing device manufacturing	\$4.08	\$6.85	\$98.08
<i>Total Commodity Purchases (millions)</i>	\$395.15	\$73,825.25	\$68,807.41

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-6
ARIZONA SUPPLIER GAPS FOR FOREST PRODUCTS INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements				Arizona Commodity Production*	Arizona Demand All Industries
	Logging & Forest Pdts	Wood Products	Paper Products	Forest Pdts Total		
Wholesale trade	\$0.86	\$80.70	\$46.26	\$127.82	\$12,912.26	\$10,831.49
Sawmills	\$0.03	\$110.91	\$9.07	\$120.00	\$22.65	\$461.04
Logging	\$3.36	\$94.44	\$15.80	\$113.59	\$26.71	\$20.60
Paper and paperboard mills	\$0.00	\$0.41	\$93.82	\$94.24	\$113.96	\$676.03
Truck transportation	\$0.05	\$29.70	\$17.70	\$47.44	\$2,435.78	\$2,524.18
Forest nurseries, forest products and timber tracts	\$6.31	\$33.63	\$0.00	\$39.94	\$20.84	\$18.85
Automotive repair and maintenance	\$0.56	\$11.30	\$12.04	\$23.90	\$5,808.50	\$4,104.53
Management of companies and enterprises	\$0.13	\$7.16	\$15.21	\$22.50	\$1,857.85	\$2,534.70
Natural gas distribution	\$0.22	\$4.81	\$13.46	\$18.49	\$1,074.38	\$1,417.70
Power generation and supply	\$0.02	\$8.83	\$9.01	\$17.86	\$4,919.68	\$3,102.05
Miscellaneous wood product manufacturing	\$0.00	\$16.05	\$0.01	\$16.06	\$44.47	\$104.95
Pulp mills	\$0.00	\$0.00	\$13.68	\$13.68	\$6.05	\$16.16
Veneer and plywood manufacturing	\$0.00	\$13.38	\$0.03	\$13.41	\$1.59	\$169.42
Cut stock, resawing lumber and planing	\$0.00	\$11.26	\$0.01	\$11.27	\$10.10	\$56.85
Commercial machinery repair and maintenance	\$0.26	\$5.20	\$5.51	\$10.97	\$834.42	\$534.52
Paperboard container manufacturing	\$0.00	\$2.63	\$7.69	\$10.32	\$217.73	\$449.75
Monetary authorities and depository intermediaries	\$0.22	\$5.62	\$4.02	\$9.86	\$4,115.69	\$5,985.75
Reconstituted wood product manufacturing	\$0.00	\$9.82	\$0.00	\$9.82	\$14.67	\$171.43
All other miscellaneous professional and technical	\$0.02	\$5.49	\$3.75	\$9.26	\$837.48	\$458.80
Rail transportation	\$0.01	\$4.99	\$3.60	\$8.59	\$333.58	\$450.47
Adhesive manufacturing	\$0.00	\$3.77	\$4.05	\$7.82	\$104.55	\$97.80
Petroleum refineries	\$0.34	\$2.44	\$4.81	\$7.58	\$42.77	\$2,744.31
Other basic organic chemical manufacturing	\$0.00	\$0.67	\$6.74	\$7.41	\$121.50	\$449.98
Plastics material and resin manufacturing	\$0.00	\$4.37	\$2.80	\$7.17	\$82.52	\$318.05
All other electronic component manufacturing	\$0.00	\$4.04	\$2.92	\$6.95	\$1,059.60	\$1,350.04
Agriculture and forestry support activities	\$5.91	\$0.00	\$0.00	\$5.91	\$493.87	\$198.88
Real estate	\$0.11	\$2.46	\$2.51	\$5.08	\$16,370.19	\$12,092.21
<i>Total Commodity Purchases (millions)</i>	\$18.40	\$474.07	\$294.48	\$786.94	\$53,883.37	\$51,340.54

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-7
ARIZONA SUPPLIER GAPS FOR ENGINEERING RESEARCH SERVICES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements Engineering Services	Arizona Commodity Production*	Arizona Demand All Industries
Guided missile and space vehicle manufacturing	\$19.96	\$2,890.32	\$1,173.37
Real estate	\$2.70	\$16,370.19	\$12,092.21
Employment services	\$1.72	\$3,260.78	\$1,734.37
Glass and glass products- except glass containers	\$1.44	\$96.08	\$223.04
Legal services	\$1.18	\$2,141.72	\$2,676.00
Wholesale trade	\$1.11	\$12,912.26	\$10,831.49
Commercial printing	\$1.09	\$491.89	\$566.54
Telecommunications	\$0.82	\$4,352.27	\$5,299.03
Office administrative services	\$0.80	\$909.59	\$833.44
All other miscellaneous professional and technical	\$0.76	\$837.48	\$458.80
Management consulting services	\$0.69	\$1,643.20	\$1,409.71
Architectural and engineering services	\$0.69	\$2,998.84	\$3,164.91
Periodical publishers	\$0.64	\$138.07	\$331.27
Maintenance and repair of nonresidential buildings	\$0.64	\$750.57	\$1,672.57
Broadcast and wireless communications equipment	\$0.60	\$423.20	\$770.99
Computer systems design services	\$0.58	\$677.91	\$874.31
Power generation and supply	\$0.57	\$4,919.68	\$3,102.05
Advertising and related services	\$0.56	\$2,266.81	\$3,155.27
Services to buildings and dwellings	\$0.50	\$1,345.64	\$1,055.66
Other basic organic chemical manufacturing	\$0.42	\$121.50	\$449.98
Postal service	\$0.38	\$1,012.70	\$907.69
Machinery and equipment rental and leasing	\$0.34	\$1,219.21	\$883.56
Automotive equipment rental and leasing	\$0.34	\$3,017.58	\$1,408.71
Data processing services	\$0.32	\$737.31	\$552.98
Electroplating, anodizing and coloring metal	\$0.32	\$54.55	\$97.85
Monetary authorities and depository intermediaries	\$0.30	\$4,115.69	\$5,985.75
Commercial machinery repair and maintenance	\$0.29	\$834.42	\$534.52
<i>Total Commodity Purchases (millions)</i>	<i>\$39.76</i>	<i>\$70,539.47</i>	<i>\$62,246.08</i>

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-8
ARIZONA SUPPLIER GAPS FOR TRANSPORTATION & LOGISTICS INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements			Arizona Commodity Production*	Arizona Demand All Industries
	Rail Transport	Truck Transport	Transport Total		
Truck transportation	\$1.26	\$269.76	\$271.02	\$2,435.78	\$2,524.18
Automotive repair and maintenance	\$0.01	\$156.73	\$156.74	\$5,808.50	\$4,104.53
Scenic and sightseeing transportation and support	\$35.62	\$101.57	\$137.19	\$697.27	\$673.00
Wholesale trade	\$9.23	\$114.63	\$123.86	\$12,912.26	\$10,831.49
Petroleum refineries	\$8.27	\$112.23	\$120.50	\$42.77	\$2,744.31
Insurance carriers	\$0.14	\$65.25	\$65.40	\$3,859.06	\$4,631.49
Motor vehicle parts manufacturing	\$3.42	\$43.51	\$46.92	\$797.02	\$1,832.00
Machinery and equipment rental and leasing	\$34.85	\$9.87	\$44.72	\$1,219.21	\$883.56
Warehousing and storage	\$0.02	\$37.75	\$37.77	\$475.31	\$480.22
Automotive equipment rental and leasing	\$0.29	\$31.46	\$31.75	\$3,017.58	\$1,408.71
Telecommunications	\$0.23	\$28.02	\$28.25	\$4,352.27	\$5,299.03
Management of companies and enterprises	\$0.00	\$25.86	\$25.86	\$1,857.85	\$2,534.70
Real estate	\$1.30	\$22.42	\$23.72	\$16,370.19	\$12,092.21
Management consulting services	\$4.35	\$16.63	\$20.98	\$1,643.20	\$1,409.71
Other computer related services	\$5.24	\$12.91	\$18.15	\$168.94	\$303.82
Rail transportation	\$0.82	\$16.77	\$17.59	\$333.58	\$450.47
Lessors of nonfinancial intangible assets	\$4.69	\$12.36	\$17.05	\$6,494.93	\$1,698.13
Advertising and related services	\$1.66	\$14.56	\$16.22	\$2,266.81	\$3,155.27
Monetary authorities and depository intermediaries	\$2.08	\$12.83	\$14.91	\$4,115.69	\$5,985.75
Railroad rolling stock manufacturing	\$14.07	\$0.00	\$14.07	\$4.19	\$30.93
Accounting and bookkeeping services	\$3.35	\$7.67	\$11.02	\$1,006.87	\$1,095.47
Computer systems design services	\$7.33	\$3.59	\$10.91	\$677.91	\$874.31
Tire manufacturing	\$0.01	\$10.13	\$10.14	\$7.27	\$232.14
Nondepository credit intermediation	\$0.90	\$5.46	\$6.35	\$3,248.83	\$1,395.99
Pump and pumping equipment manufacturing	\$4.59	\$0.00	\$4.59	\$2.64	\$57.98
Wood preservation	\$4.34	\$0.00	\$4.34	\$2.65	\$96.66
Ferrous metal foundries	\$3.23	\$0.00	\$3.23	\$77.50	\$174.04
Other communications equipment manufacturing	\$3.03	\$0.00	\$3.03	\$22.80	\$94.48
Other concrete product manufacturing	\$1.44	\$0.00	\$1.44	\$146.74	\$177.12
<i>Total Commodity Purchases (millions)</i>	\$155.75	\$1,131.96	\$1,287.72	\$74,065.59	\$67,271.70

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-9
ARIZONA SUPPLIER GAPS FOR AGRICULTURE, FOOD PROCESSING AND AG TECHNOLOGY INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements				Arizona Commodity Production*	Arizona Demand All Industries
	Agriculture	Food Processing	Farm & Garden Equipment	Agriculture Total		
Cattle ranching and farming	\$156.87	\$329.53	\$0.00	\$486.41	\$1,139.49	\$733.50
Wholesale trade	\$131.66	\$262.69	\$22.05	\$416.41	\$12,912.26	\$10,831.49
Grain farming	\$121.09	\$80.28	\$0.00	\$201.37	\$37.22	\$178.98
Other animal food manufacturing	\$166.12	\$15.75	\$0.00	\$181.88	\$70.47	\$116.48
Real estate	\$172.66	\$8.64	\$0.40	\$181.70	\$16,370.19	\$12,092.21
All other crop farming	\$164.19	\$8.60	\$0.00	\$172.79	\$173.30	\$244.25
Agriculture and forestry support activities	\$164.45	\$0.00	\$0.00	\$164.45	\$493.87	\$198.88
Poultry and egg production	\$17.46	\$118.96	\$0.00	\$136.41	\$13.35	\$72.20
Truck transportation	\$31.13	\$65.23	\$5.53	\$101.89	\$2,435.78	\$2,524.18
Animal production- except cattle and poultry	\$9.18	\$81.37	\$0.00	\$90.55	\$40.12	\$185.16
Management of companies and enterprises	\$0.00	\$76.37	\$4.97	\$81.34	\$1,857.85	\$2,534.70
Animal slaughtering, except poultry	\$0.13	\$80.23	\$0.00	\$80.36	\$379.52	\$580.29
Paperboard container manufacturing	\$1.94	\$73.78	\$0.19	\$75.91	\$217.73	\$449.75
Petroleum refineries	\$71.61	\$2.53	\$0.13	\$74.28	\$42.77	\$2,744.31
Lessors of nonfinancial intangible assets	\$0.00	\$69.43	\$0.09	\$69.52	\$6,494.93	\$1,698.13
Oilseed farming	\$9.70	\$53.01	\$0.00	\$62.70	\$26.13	\$3.63
Metal can, box and other container manufacturing	\$0.00	\$55.71	\$0.00	\$55.71	\$132.94	\$194.06
Pesticide and other agricultural chemical mfg	\$55.24	\$0.00	\$0.00	\$55.24	\$49.08	\$77.74
Soybean processing	\$13.43	\$38.60	\$0.00	\$52.03	\$0.30	\$39.18
Power generation and supply	\$28.25	\$19.14	\$0.79	\$48.18	\$4,919.68	\$3,102.05
Insurance carriers	\$30.27	\$15.70	\$0.44	\$46.41	\$3,859.06	\$4,631.49
Advertising and related services	\$4.53	\$37.13	\$1.77	\$43.42	\$2,266.81	\$3,155.27
Monetary authorities and depository intermediaries	\$19.75	\$21.75	\$1.71	\$43.21	\$4,115.69	\$5,985.75
Automotive repair and maintenance	\$16.40	\$23.91	\$1.16	\$41.48	\$5,808.50	\$4,104.53
Flavoring syrup and concentrate manufacturing	\$0.00	\$38.80	\$0.00	\$38.80	\$7.71	\$172.27
Warehousing and storage	\$18.77	\$13.71	\$0.57	\$33.05	\$475.31	\$480.22
Phosphatic fertilizer manufacturing	\$30.81	\$0.00	\$0.00	\$30.81	\$46.33	\$90.69
Cheese manufacturing	\$0.00	\$29.88	\$0.00	\$29.88	\$7.08	\$273.35
Fluid milk manufacturing	\$0.00	\$29.77	\$0.00	\$29.77	\$384.53	\$335.97
Plastics packaging materials- film and sheet	\$0.49	\$27.70	\$0.00	\$28.19	\$40.37	\$277.00
Natural gas distribution	\$2.83	\$24.16	\$0.74	\$27.73	\$1,074.38	\$1,417.70
Rail transportation	\$12.43	\$14.84	\$0.39	\$27.65	\$333.58	\$450.47
Poultry processing	\$0.00	\$26.36	\$0.00	\$26.36	\$6.24	\$501.55
Flour milling	\$2.10	\$22.04	\$0.00	\$24.14	\$14.24	\$59.68
Plastics bottle manufacturing	\$0.00	\$23.76	\$0.00	\$23.76	\$87.20	\$133.10
Wet corn milling	\$0.48	\$22.42	\$0.00	\$22.90	\$1.25	\$71.66
Plastics plumbing fixtures and all other plastics	\$2.59	\$16.17	\$3.18	\$21.93	\$751.03	\$1,142.92
Vegetable and melon farming	\$4.11	\$17.13	\$0.00	\$21.24	\$802.95	\$250.99
All other miscellaneous professional and technical svcs	\$0.40	\$18.13	\$1.59	\$20.12	\$837.48	\$458.80
Glass container manufacturing	\$0.08	\$19.99	\$0.00	\$20.07	\$0.00	\$33.44
Rendering and meat byproduct processing	\$3.06	\$15.80	\$0.00	\$18.86	\$28.83	\$25.08
Dry- condensed- and evaporated dairy products	\$0.19	\$15.31	\$0.00	\$15.50	\$138.32	\$136.40
Iron and steel mills	\$0.00	\$0.04	\$14.86	\$14.90	\$129.70	\$571.25
Veterinary services	\$14.47	\$0.00	\$0.00	\$14.47	\$265.14	\$208.99
Motor vehicle parts manufacturing	\$4.82	\$1.12	\$8.23	\$14.17	\$797.02	\$1,832.00

FIGURE C-9 (continued)
ARIZONA SUPPLIER GAPS FOR AGRICULTURE, FOOD PROCESSING AND AG TECHNOLOGY INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements				Arizona Commodity Production*	Arizona Demand All Industries
	Agriculture	Food Processing	Farm & Garden Equipment	Agriculture Total		
Greenhouse and nursery production	\$10.55	\$2.99	\$0.00	\$13.54	\$79.16	\$252.08
Fruit and vegetable canning and drying	\$0.00	\$13.23	\$0.00	\$13.23	\$81.84	\$460.39
Other engine equipment manufacturing	\$0.00	\$0.00	\$11.72	\$11.72	\$9.07	\$129.63
Farm machinery and equipment manufacturing	\$10.55	\$0.00	\$0.49	\$11.04	\$41.57	\$58.36
Industrial truck, trailer and stacker manufacturing	\$9.60	\$0.08	\$0.00	\$9.68	\$5.76	\$35.97
Architectural and engineering services	\$0.00	\$6.69	\$2.82	\$9.52	\$2,998.84	\$3,164.91
All other forging and stamping	\$0.40	\$2.04	\$6.13	\$8.57	\$157.65	\$159.59
Machine shops	\$0.41	\$6.17	\$1.49	\$8.07	\$317.93	\$387.99
Tire manufacturing	\$3.78	\$0.29	\$3.97	\$8.05	\$7.27	\$232.14
Ferrous metal foundries	\$0.00	\$0.00	\$6.28	\$6.28	\$77.50	\$174.04
Speed changers, mechanical power transmission equip.	\$0.00	\$0.00	\$3.80	\$3.80	\$2.57	\$40.21
Sheet metal work manufacturing	\$0.00	\$0.11	\$3.15	\$3.26	\$316.26	\$308.00
Metal valve manufacturing	\$0.00	\$0.26	\$2.79	\$3.05	\$472.67	\$512.91
Turned product and screw, nut and bolt manufacturing	\$0.00	\$0.16	\$2.54	\$2.69	\$85.34	\$191.58
All other electronic component manufacturing	\$0.00	\$1.07	\$1.24	\$2.31	\$1,059.60	\$1,350.04
Fluid power pump and motor manufacturing	\$0.00	\$0.00	\$1.92	\$1.92	\$8.24	\$19.77
Aluminum foundries	\$0.00	\$0.00	\$1.85	\$1.85	\$105.69	\$112.50
Iron and steel forging	\$0.00	\$0.00	\$1.81	\$1.81	\$4.17	\$61.39
Paint and coating manufacturing	\$0.07	\$0.07	\$1.66	\$1.80	\$38.59	\$297.60
Rubber and plastics hose and belting manufacturing	\$0.52	\$0.04	\$1.11	\$1.67	\$14.14	\$36.79
Fluid power cylinder and actuator manufacturing	\$0.00	\$0.00	\$1.67	\$1.67	\$21.98	\$39.97
Ball and roller bearing manufacturing	\$0.00	\$0.08	\$1.07	\$1.15	\$0.04	\$82.62
<i>Total Commodity Purchases (millions)</i>	\$1,519.56	\$1,948.75	\$126.31	\$3,594.62	\$75,991.61	\$73,510.19

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-10
ARIZONA SUPPLIER GAPS FOR AEROSPACE, AVIONICS AND DEFENSE INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements			Arizona	Arizona
	Search & Nav. Instruments	Aircraft and Space Vehicles	Aerospace Total	Commodity Production*	Demand All Industries
Wholesale trade	\$67.36	\$378.93	\$446.29	\$12,912.26	\$10,831.49
Other aircraft parts and equipment	\$0.00	\$379.91	\$379.91	\$382.55	\$521.51
Search, detection and navigation instruments	\$0.86	\$299.99	\$300.85	\$1,108.23	\$1,071.01
Aircraft engine and engine parts manufacturing	\$0.00	\$285.19	\$285.19	\$672.86	\$1,091.42
Broadcast and wireless communications equipment	\$54.99	\$183.62	\$238.62	\$423.20	\$770.99
Guided missile and space vehicle manufacturing	\$0.00	\$209.99	\$209.99	\$2,890.32	\$1,173.37
All other electronic component manufacturing	\$77.02	\$132.50	\$209.52	\$1,059.60	\$1,350.04
Management of companies and enterprises	\$34.53	\$159.15	\$193.67	\$1,857.85	\$2,534.70
Propulsion units and parts for space vehicles	\$0.00	\$165.83	\$165.83	\$478.33	\$1,214.39
Architectural and engineering services	\$14.50	\$99.05	\$113.55	\$2,998.84	\$3,164.91
Scientific research and development services	\$11.75	\$76.83	\$88.58	\$304.99	\$1,204.19
Metal valve manufacturing	\$0.02	\$67.25	\$67.27	\$472.67	\$512.91
Monetary authorities and depository credit intermediaries	\$7.97	\$51.41	\$59.39	\$4,115.69	\$5,985.75
Miscellaneous fabricated metal products	\$0.07	\$56.30	\$56.37	\$63.49	\$211.01
All other miscellaneous professional and technical services	\$7.32	\$48.40	\$55.71	\$837.48	\$458.80
Plastics products	\$4.59	\$50.71	\$55.30	\$751.03	\$1,142.92
Warehousing and storage	\$5.72	\$48.44	\$54.17	\$475.31	\$480.22
Semiconductors and related device manufacturing	\$25.75	\$27.86	\$53.61	\$1,799.33	\$790.04
Machine shops	\$5.20	\$47.38	\$52.58	\$317.93	\$387.99
Aluminum sheet, plate and foil manufacturing	\$0.35	\$47.41	\$47.76	\$197.14	\$214.94
Legal services	\$6.19	\$37.22	\$43.42	\$2,141.72	\$2,676.00
Securities, commodity contracts, investments	\$5.16	\$35.05	\$40.21	\$2,751.35	\$4,136.42
Power generation and supply	\$6.19	\$33.64	\$39.83	\$4,919.68	\$3,102.05
Turned product and screws, nuts and bolts	\$2.69	\$36.20	\$38.89	\$85.34	\$191.58
Ball and roller bearing manufacturing	\$0.03	\$35.86	\$35.90	\$0.04	\$82.62
Aluminum foundries	\$0.17	\$32.53	\$32.69	\$105.69	\$112.50
Nonferrous forging	\$0.14	\$32.38	\$32.52	\$0.39	\$45.32
All other forging and stamping	\$7.03	\$25.30	\$32.32	\$157.65	\$159.59
Data processing services	\$5.34	\$25.91	\$31.24	\$737.31	\$552.98
Hardware manufacturing	\$0.02	\$30.93	\$30.94	\$60.50	\$212.66
Nondepository credit intermediation	\$3.92	\$25.79	\$29.71	\$3,248.83	\$1,395.99
Telecommunications	\$5.84	\$23.62	\$29.45	\$4,352.27	\$5,299.03
Iron and steel forging	\$0.28	\$29.14	\$29.42	\$4.17	\$61.39
Fabricated structural metal manufacturing	\$0.06	\$28.91	\$28.97	\$220.88	\$297.18
Specialized design services	\$0.21	\$28.19	\$28.40	\$354.96	\$370.89
Real estate	\$7.96	\$19.44	\$27.40	\$16,370.19	\$12,092.21
Other communication and energy wire manufacturing	\$7.18	\$19.69	\$26.87	\$118.17	\$224.27
Iron and steel mills	\$1.75	\$25.10	\$26.85	\$129.70	\$571.25
Custom computer programming services	\$8.29	\$17.88	\$26.17	\$1,261.38	\$1,357.70
Ferrous metal foundries	\$0.59	\$23.60	\$24.19	\$77.50	\$174.04
Aircraft manufacturing	\$0.00	\$22.60	\$22.60	\$844.33	\$1,284.38
Electroplating, anodizing and coloring metal	\$4.82	\$17.76	\$22.58	\$54.55	\$97.85
Wiring device manufacturing	\$3.21	\$18.30	\$21.51	\$40.25	\$226.02
Metal coating and nonprecious engraving	\$2.72	\$17.60	\$20.32	\$72.62	\$154.18
Advertising and related services	\$3.18	\$13.21	\$16.38	\$2,266.81	\$3,155.27
Computer systems design services	\$4.31	\$10.44	\$14.75	\$677.91	\$874.31
Fiber optic cable manufacturing	\$13.45	\$0.95	\$14.40	\$3.17	\$67.93
Lessors of nonfinancial intangible assets	\$4.99	\$7.32	\$12.31	\$6,494.93	\$1,698.13
Sheet metal work manufacturing	\$6.96	\$2.34	\$9.30	\$316.26	\$308.00
Relay and industrial control manufacturing	\$6.83	\$2.44	\$9.28	\$18.49	\$102.76
Electronic computer manufacturing	\$7.32	\$0.00	\$7.32	\$568.29	\$781.87
Custom roll forming	\$6.32	\$0.23	\$6.56	\$26.81	\$57.67
Electricity and signal testing instruments	\$4.75	\$0.00	\$4.75	\$51.39	\$83.11
<i>Total Commodity Purchases (millions)</i>	\$455.90	\$3,495.71	\$3,951.60	\$82,652.59	\$77,119.74

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-11
ARIZONA SUPPLIER GAPS FOR OTHER HIGH TECH INDUSTRIES
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements					High Tech Total	Arizona Commodity Production*	Arizona Demand All Industries
	Photographic Equipment & Supplies	Media Recording & Reproduction	Electronics	Architecture & Engineering				
All other electronic component manufacturing	\$0.53	\$0.05	\$417.17	\$0.57	\$418.32	\$1,059.60	\$1,350.04	
Wholesale trade	\$7.24	\$0.69	\$363.81	\$6.15	\$377.89	\$12,912.26	\$10,831.49	
Broadcast and wireless communications equipment	\$0.24	\$0.00	\$194.87	\$0.00	\$195.12	\$423.20	\$770.99	
Architectural and engineering services	\$0.28	\$0.06	\$49.60	\$129.93	\$179.87	\$2,998.84	\$3,164.91	
Semiconductors and related device manufacturing	\$0.32	\$0.01	\$114.48	\$0.17	\$114.98	\$1,799.33	\$790.04	
Management of companies and enterprises	\$1.06	\$0.15	\$97.38	\$7.56	\$106.16	\$1,857.85	\$2,534.70	
Semiconductor machinery manufacturing	\$0.00	\$0.00	\$85.58	\$0.00	\$85.58	\$414.16	\$648.72	
Real estate	\$0.14	\$0.26	\$21.39	\$60.58	\$82.37	\$16,370.19	\$12,092.21	
Environmental and other technical consulting svcs	\$0.01	\$0.00	\$1.01	\$75.62	\$76.64	\$333.36	\$270.74	
Employment services	\$0.08	\$0.15	\$4.66	\$56.99	\$61.89	\$3,260.78	\$1,734.37	
Lessors of nonfinancial intangible assets	\$1.45	\$0.06	\$55.08	\$4.80	\$61.39	\$6,494.93	\$1,698.13	
Telecommunications	\$0.18	\$0.15	\$24.72	\$28.79	\$53.84	\$4,352.27	\$5,299.03	
Computer systems design services	\$0.09	\$0.03	\$40.11	\$6.73	\$46.96	\$677.91	\$874.31	
Monetary authorities and depository intermediation	\$0.42	\$0.10	\$28.40	\$16.48	\$45.40	\$4,115.69	\$5,985.75	
Advertising and related services	\$0.11	\$0.91	\$31.90	\$10.14	\$43.07	\$2,266.81	\$3,155.27	
Scientific research and development services	\$0.28	\$0.04	\$38.56	\$3.42	\$42.30	\$304.99	\$1,204.19	
Legal services	\$0.07	\$0.07	\$28.59	\$10.99	\$39.72	\$2,141.72	\$2,676.00	
All other miscellaneous professional and technical svcs	\$0.43	\$0.08	\$25.29	\$12.12	\$37.92	\$837.48	\$458.80	
Electron tube manufacturing	\$0.00	\$0.00	\$37.29	\$0.00	\$37.29	\$5.74	\$20.97	
Automotive repair and maintenance	\$1.15	\$0.09	\$29.11	\$6.08	\$36.43	\$5,808.50	\$4,104.53	
Power generation and supply	\$0.31	\$0.07	\$24.90	\$7.03	\$32.31	\$4,919.68	\$3,102.05	
Plastics plumbing fixtures and all other plastics	\$0.42	\$0.14	\$30.08	\$0.79	\$31.43	\$751.03	\$1,142.92	
Plastics packaging materials, film and sheet	\$0.73	\$0.12	\$27.86	\$0.07	\$28.78	\$40.37	\$277.00	
Office administrative services	\$0.02	\$0.07	\$1.67	\$25.98	\$27.74	\$909.59	\$833.44	
Securities, commodity contracts, investments	\$0.21	\$0.04	\$17.96	\$7.36	\$25.58	\$2,751.35	\$4,136.42	
Other support services	\$0.05	\$0.01	\$3.70	\$21.43	\$25.19	\$422.74	\$636.35	
Food services and drinking places	\$0.18	\$0.05	\$11.34	\$12.62	\$24.20	\$7,694.15	\$6,598.51	
Warehousing and storage	\$0.20	\$0.03	\$21.78	\$1.52	\$23.53	\$475.31	\$480.22	
Data processing services	\$0.09	\$0.03	\$13.28	\$9.31	\$22.71	\$737.31	\$552.98	
Hotels and motels, including casino hotels	\$0.14	\$0.04	\$8.63	\$13.30	\$22.11	\$1,724.61	\$1,052.76	
Management consulting services	\$0.14	\$0.05	\$8.63	\$12.22	\$21.04	\$1,643.20	\$1,409.71	
Nondepository credit intermediation	\$0.20	\$0.05	\$13.97	\$6.76	\$20.99	\$3,248.83	\$1,395.99	
Custom computer programming services	\$0.75	\$0.07	\$15.77	\$4.08	\$20.67	\$1,261.38	\$1,357.70	
Postal service	\$0.04	\$0.05	\$1.90	\$18.27	\$20.26	\$1,012.70	\$907.69	
Accounting and bookkeeping services	\$0.13	\$0.07	\$9.93	\$10.02	\$20.15	\$1,006.87	\$1,095.47	
Truck transportation	\$0.83	\$0.06	\$17.96	\$1.21	\$20.07	\$2,435.78	\$2,524.18	
Paperboard container manufacturing	\$0.92	\$0.01	\$16.22	\$1.95	\$19.10	\$217.73	\$449.75	
Services to buildings and dwellings	\$0.03	\$0.05	\$2.12	\$16.74	\$18.94	\$1,345.64	\$1,055.66	
Machine shops	\$0.61	\$0.03	\$17.65	\$0.61	\$18.90	\$317.93	\$387.99	
Other basic inorganic chemical manufacturing	\$0.85	\$0.00	\$17.26	\$0.00	\$18.11	\$129.11	\$194.31	
Couriers and messengers	\$0.10	\$0.05	\$6.60	\$11.31	\$18.06	\$889.39	\$1,007.68	
Commercial machinery repair and maintenance	\$0.53	\$0.04	\$13.41	\$2.84	\$16.82	\$834.42	\$534.52	
Maintenance and repair of nonresidential buildings	\$0.25	\$0.04	\$8.38	\$6.49	\$15.16	\$750.57	\$1,672.57	
Machinery and equipment rental and leasing	\$0.16	\$0.05	\$7.70	\$6.90	\$14.80	\$1,219.21	\$883.56	
Electroplating, anodizing, and coloring metal	\$0.32	\$0.01	\$13.32	\$0.00	\$13.66	\$54.55	\$97.85	
Other basic organic chemical manufacturing	\$0.96	\$0.00	\$11.49	\$0.22	\$12.67	\$121.50	\$449.98	
Plastics material and resin manufacturing	\$0.30	\$0.14	\$8.53	\$0.00	\$8.97	\$82.52	\$318.05	
Commercial printing	\$0.00	\$0.06	\$0.05	\$7.54	\$7.65	\$491.89	\$566.54	
Paper and paperboard mills	\$2.82	\$0.12	\$2.19	\$2.17	\$7.30	\$113.96	\$676.03	
Photographic film and chemical manufacturing	\$3.95	\$0.00	\$2.43	\$0.50	\$6.88	\$46.29	\$112.33	
Other miscellaneous chemical product manufacturing	\$0.38	\$0.00	\$3.45	\$0.03	\$3.86	\$35.35	\$137.61	
Coated and laminated paper and packaging material	\$0.35	\$0.01	\$1.17	\$0.97	\$2.50	\$56.48	\$184.73	
Sound recording industries	\$0.00	\$1.03	\$0.00	\$0.53	\$1.55	\$14.38	\$183.34	
Magnetic and optical recording media manufacturing	\$0.00	\$0.23	\$0.05	\$0.84	\$1.11	\$28.31	\$73.41	
Audio and video media reproduction	\$0.00	\$0.67	\$0.00	\$0.00	\$0.67	\$6.21	\$52.18	
<i>Total Commodity Purchases (millions)</i>	<i>\$31.10</i>	<i>\$6.38</i>	<i>\$2,050.37</i>	<i>\$648.75</i>	<i>\$2,736.60</i>	<i>\$106,225.93</i>	<i>\$96,206.68</i>	

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

FIGURE C-11
ARIZONA SUPPLIER GAPS TO STATE AND LOCAL GOVERNMENT (NON-EDUCATION)
MILLIONS OF DOLLARS

Supplier Industries	Supplier Requirements State & Local Govt	Arizona Commodity Production*	Arizona Demand All Industries
State & Local Non-Education	\$7,161.99	\$5,804.53	\$5,804.53
Real estate	\$406.67	\$16,370.19	\$12,092.21
Securities, commodity contracts, investments	\$278.41	\$2,751.35	\$4,136.42
Monetary authorities and depository credit intermediaries	\$271.60	\$4,115.69	\$5,985.75
Wholesale trade	\$251.84	\$12,912.26	\$10,831.49
Telecommunications	\$246.19	\$4,352.27	\$5,299.03
Employment services	\$210.03	\$3,260.78	\$1,734.37
Legal services	\$187.16	\$2,141.72	\$2,676.00
Services to buildings and dwellings	\$158.84	\$1,345.64	\$1,055.66
Food services and drinking places	\$156.44	\$7,694.15	\$6,598.51
Postal service	\$149.95	\$1,012.70	\$907.69
Hotels and motels	\$138.33	\$1,724.61	\$1,052.76
Management consulting services	\$114.51	\$1,643.20	\$1,409.71
Electronic equipment repair and maintenance	\$103.54	\$655.96	\$498.12
Accounting and bookkeeping services	\$100.09	\$1,006.87	\$1,095.47
Other State and local government enterprises	\$92.32	\$824.13	\$804.61
Data processing services	\$90.25	\$737.31	\$552.98
State and local government electric utilities	\$71.70	\$0.00	\$0.00
Investigation and security services	\$64.39	\$428.23	\$414.58
Truck transportation	\$62.27	\$2,435.78	\$2,524.18
Waste management and remediation services	\$59.28	\$580.41	\$649.74
<i>Total Commodity Purchases (millions)</i>	<i>\$10,375.77</i>	<i>\$71,797.77</i>	<i>\$66,123.82</i>

Source: Minnesota IMPLAN Group, 2001 Data.

* Represents net commodity supply=industry commodity production + non-industry commodity production - foreign exports.

Industries in bold represent potential supplier gaps

APPENDIX D

**APPENDIX D
COMMODITY PRODUCTION BY COUNTY
MILLIONS OF DOLLARS**

Supplier Industries	Demand from Industries of Opportunity	Arizona Commodity Production	Commodity Production by County														Yavapai	Yuma
			Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz			
Wholesale trade	\$2,072.12	\$12,912.26	\$18.05	\$39.82	\$72.41	\$25.80	\$8.16	\$10.01	\$9.74	\$12,328.47	\$92.47	\$27.47	\$876.04	\$118.66	\$215.92	\$232.76	\$217.87	
Telecommunications	\$1,162.83	\$4,352.27	\$19.94	\$36.09	\$23.44	\$7.59	\$0.85	\$0.30	\$3.83	\$3,902.95	\$71.11	\$23.10	\$237.21	\$167.73	\$4.43	\$30.23	\$39.77	
Real estate	\$878.41	\$16,370.19	\$47.57	\$108.53	\$189.24	\$69.63	\$8.12	\$0.30	\$25.40	\$13,117.37	\$187.87	\$69.23	\$2,003.69	\$107.73	\$62.09	\$292.49	\$98.23	
All other electronic component manufacturing	\$782.34	\$1,059.60	\$0.05	\$14.13	\$0.21	\$1.01	\$0.00	\$0.00	\$0.00	\$1,257.82	\$8.30	\$0.00	\$113.14	\$10.52	\$16.41	\$2.72	\$5.38	
Management of companies and enterprises	\$531.59	\$1,857.85	\$0.00	\$13.70	\$13.70	\$9.11	\$0.52	\$0.00	\$0.00	\$1,839.69	\$10.39	\$6.38	\$181.67	\$6.80	\$8.80	\$3.13	\$11.88	
Truck transportation	\$525.31	\$2,435.78	\$0.57	\$26.88	\$54.29	\$7.29	\$4.74	\$3.73	\$3.25	\$2,112.03	\$58.25	\$19.98	\$195.08	\$34.54	\$32.05	\$35.81	\$41.22	
Monetary authorities and depository intermediaries	\$517.36	\$4,115.69	\$16.25	\$27.81	\$72.40	\$16.58	\$9.27	\$0.76	\$5.30	\$3,409.10	\$57.20	\$33.92	\$499.76	\$44.11	\$11.82	\$71.39	\$61.10	
Broadcast and wireless communications equipment	\$514.47	\$423.20	\$0.21	\$0.09	\$1.80	\$0.01	\$0.00	\$0.00	\$0.00	\$385.37	\$0.39	\$0.00	\$88.31	\$0.02	\$0.08	\$22.24	\$0.02	
Cattle ranching and farming	\$486.41	\$1,139.49	\$19.42	\$66.53	\$14.96	\$19.96	\$16.80	\$13.57	\$2.01	\$541.64	\$16.28	\$27.87	\$63.80	\$256.76	\$8.03	\$69.06	\$9.16	
Employment services	\$456.09	\$3,260.78	\$4.88	\$6.76	\$5.31	\$0.00	\$0.12	\$0.00	\$0.62	\$2,472.95	\$15.11	\$0.39	\$313.23	\$12.06	\$0.11	\$22.52	\$8.66	
Architectural and engineering services	\$452.31	\$2,998.84	\$2.70	\$38.80	\$19.81	\$2.34	\$1.39	\$0.10	\$0.82	\$2,448.80	\$64.44	\$2.99	\$453.27	\$23.82	\$0.73	\$38.89	\$17.08	
Other aircraft parts and equipment	\$379.91	\$382.55	\$0.03	\$0.02	\$1.12	\$0.00	\$0.01	\$0.00	\$0.00	\$944.01	\$15.44	\$0.00	\$135.69	\$0.00	\$27.02	\$52.49	\$0.33	
Securities- commodity contracts- investments	\$376.84	\$2,751.35	\$0.32	\$14.16	\$19.03	\$0.82	\$1.34	\$0.62	\$0.10	\$2,482.91	\$47.32	\$1.93	\$258.37	\$1.22	\$2.52	\$35.57	\$9.55	
Advertising and related services	\$371.77	\$2,266.81	\$0.80	\$16.83	\$37.90	\$10.01	\$14.37	\$1.64	\$3.21	\$1,657.06	\$47.32	\$38.46	\$343.49	\$14.45	\$4.77	\$40.28	\$49.44	
Legal services	\$315.92	\$2,141.72	\$7.29	\$5.84	\$24.72	\$1.60	\$1.07	\$0.53	\$1.03	\$1,771.41	\$12.37	\$4.69	\$297.54	\$6.05	\$3.76	\$21.78	\$20.59	
Lessons of nonfinancial intangible assets	\$309.08	\$6,494.93	\$0.00	\$10.85	\$9.19	\$0.00	\$0.00	\$0.00	\$0.00	\$7,702.33	\$2.57	\$0.00	\$62.42	\$0.00	\$0.00	\$4.51	\$0.00	
Automotive repair and maintenance	\$305.42	\$5,808.50	\$33.50	\$102.25	\$144.34	\$39.37	\$27.73	\$0.00	\$0.90	\$3,740.70	\$231.61	\$70.43	\$949.48	\$81.46	\$22.86	\$244.14	\$119.90	
Search, detection and navigation instruments	\$300.85	\$1,108.23	\$6.74	\$1.86	\$0.09	\$0.19	\$0.00	\$0.00	\$0.00	\$1,038.16	\$10.03	\$0.00	\$173.80	\$0.01	\$0.08	\$12.72	\$0.27	
Aircraft engine and engine parts manufacturing	\$285.19	\$672.86	\$0.00	\$0.01	\$0.16	\$0.00	\$0.22	\$0.00	\$0.00	\$1,803.69	\$1.08	\$0.00	\$18.63	\$0.00	\$0.51	\$1.01	\$0.04	
Guided missile and space vehicle manufacturing	\$229.95	\$2,890.32	\$0.04	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$282.11	\$0.04	\$0.00	\$2,609.62	\$0.00	\$0.06	\$0.19	\$0.04	
Services to buildings and dwellings	\$224.08	\$1,345.64	\$0.59	\$5.80	\$12.62	\$2.87	\$3.42	\$0.94	\$1.47	\$1,052.19	\$16.63	\$3.14	\$193.95	\$5.11	\$2.16	\$29.38	\$16.47	
Food services and drinking places	\$209.77	\$7,694.15	\$48.98	\$121.46	\$285.50	\$47.78	\$24.40	\$4.97	\$21.14	\$5,228.01	\$172.73	\$100.46	\$1,160.27	\$103.92	\$33.99	\$205.00	\$145.80	
Semiconductors and related device manufacturing	\$209.65	\$1,799.33	\$0.03	\$0.02	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00	\$6,756.57	\$0.01	\$0.00	\$355.75	\$0.01	\$0.02	\$0.46	\$0.01	
Petroleum refineries	\$202.36	\$42.77	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41.63	\$1.56	\$0.00	\$0.07	\$0.00	\$0.00	\$0.00	\$0.00	
Grain farming	\$201.37	\$37.22	\$0.12	\$7.83	\$0.06	\$0.08	\$0.24	\$0.26	\$0.88	\$14.72	\$0.19	\$2.08	\$1.16	\$10.08	\$0.26	\$0.90	\$9.55	
Postal service	\$199.14	\$1,012.70	\$4.96	\$24.05	\$17.47	\$6.28	\$2.39	\$0.75	\$1.26	\$669.76	\$14.02	\$12.08	\$200.38	\$12.90	\$2.73	\$27.54	\$20.52	
Accounting and bookkeeping services	\$198.78	\$1,006.87	\$1.37	\$2.21	\$9.86	\$0.58	\$1.02	\$0.21	\$1.13	\$856.81	\$16.85	\$3.73	\$91.69	\$1.80	\$4.44	\$11.50	\$9.68	
Data processing services	\$188.71	\$737.31	\$0.07	\$2.05	\$0.58	\$0.15	\$0.05	\$0.01	\$0.14	\$618.82	\$1.00	\$0.59	\$115.25	\$0.19	\$0.52	\$1.30	\$0.77	
Hotels and motels- including casino hotels	\$186.34	\$1,724.61	\$17.60	\$17.51	\$114.60	\$6.89	\$4.31	\$0.16	\$2.87	\$1,117.15	\$21.54	\$19.49	\$307.10	\$10.93	\$8.33	\$52.70	\$23.42	
Other animal food manufacturing	\$181.88	\$70.47	\$0.00	\$0.00	\$0.33	\$0.00	\$0.00	\$0.00	\$3.50	\$37.58	\$0.00	\$0.00	\$0.00	\$32.07	\$0.00	\$0.00	\$0.01	
Management consulting services	\$180.96	\$1,643.20	\$1.31	\$7.38	\$9.49	\$0.40	\$3.21	\$0.02	\$0.08	\$1,506.92	\$8.58	\$0.89	\$105.54	\$2.98	\$12.96	\$10.15	\$5.30	
All other crop farming	\$172.79	\$173.30	\$0.77	\$7.43	\$0.42	\$0.35	\$0.18	\$1.09	\$21.63	\$85.24	\$1.36	\$4.27	\$2.68	\$0.19	\$1.87	\$32.74	\$3.74	
Agriculture and forestry support activities	\$170.37	\$493.87	\$0.78	\$9.00	\$1.19	\$0.21	\$8.18	\$0.14	\$11.02	\$100.93	\$0.90	\$2.47	\$6.50	\$28.29	\$1.91	\$3.62	\$319.43	
Propulsion units and parts for space vehicles	\$165.83	\$478.33	\$0.08	\$0.02	\$0.04	\$0.00	\$0.01	\$0.00	\$0.00	\$177.72	\$0.55	\$0.00	\$298.70	\$0.00	\$0.89	\$1.86	\$0.03	
Power generation and supply	\$164.14	\$4,919.68	\$36.46	\$108.77	\$15.00	\$0.00	\$6.28	\$4.55	\$0.00	\$4,356.40	\$37.75	\$0.49	\$331.50	\$7.79	\$8.60	\$0.00	\$10.47	
All other miscellaneous professional and technical service	\$164.07	\$837.48	\$0.00	\$3.48	\$2.25	\$0.01	\$0.05	\$0.00	\$0.00	\$722.67	\$0.05	\$0.27	\$104.62	\$0.35	\$1.68	\$2.49	\$0.17	
Warehousing and storage	\$153.83	\$475.31	\$1.17	\$8.06	\$4.91	\$0.00	\$0.00	\$0.00	\$0.00	\$395.55	\$0.39	\$0.00	\$32.03	\$1.59	\$24.36	\$2.48	\$11.30	
Computer systems design services	\$145.23	\$677.91	\$0.00	\$45.45	\$2.19	\$1.72	\$0.95	\$0.00	\$0.00	\$570.65	\$1.29	\$0.08	\$60.30	\$0.76	\$0.00	\$3.94	\$0.24	
Scientific research and development services	\$144.30	\$304.99	\$0.00	\$10.02	\$9.79	\$0.74	\$0.00	\$0.00	\$0.00	\$130.12	\$0.76	\$1.90	\$154.14	\$9.68	\$0.00	\$1.10	\$0.87	
Plastics products	\$138.44	\$751.03	\$0.00	\$0.24	\$11.97	\$0.01	\$0.30	\$0.00	\$0.01	\$623.66	\$75.03	\$0.07	\$115.35	\$3.49	\$0.23	\$14.30	\$0.25	
Scenic and sightseeing transportation and support	\$137.19	\$697.27	\$1.41	\$11.44	\$30.86	\$3.57	\$0.12	\$0.14	\$0.46	\$555.73	\$10.50	\$1.44	\$106.41	\$6.59	\$39.21	\$8.99	\$17.79	
Poultry and egg production	\$136.41	\$13.35	\$0.27	\$1.52	\$0.53	\$0.00	\$0.00	\$0.57	\$0.00	\$7.12	\$0.00	\$0.00	\$0.66	\$0.26	\$2.55	\$0.00	\$0.00	
Machinery and equipment rental and leasing	\$121.29	\$1,219.21	\$0.00	\$0.08	\$28.65	\$6.63	\$2.01	\$0.00	\$0.08	\$1,085.50	\$4.00	\$6.72	\$50.19	\$19.55	\$10.61	\$11.97	\$38.78	
Sawmills	\$120.00	\$22.65	\$4.11	\$0.25	\$0.10	\$0.02	\$0.00	\$0.00	\$0.00	\$5.48	\$0.03	\$13.26	\$0.16	\$0.08	\$0.02	\$0.13	\$0.91	
Paperboard container manufacturing	\$119.54	\$217.73	\$0.00	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$168.92	\$0.15	\$0.00	\$28.53	\$0.01	\$0.00	\$0.12	\$28.59	
Electronic equipment repair and maintenance	\$113.65	\$655.96	\$0.00	\$47.01	\$1.71	\$1.00	\$0.00	\$0.00	\$0.00	\$550.06	\$7.29	\$6.74	\$32.23	\$0.55	\$0.00	\$4.18	\$5.22	
Logging	\$113.59	\$26.71	\$1.64	\$9.04	\$4.27	\$7.11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9.32	\$6.98	\$0.00	\$0.00	\$0.00	\$0.00	
Insurance carriers	\$111.80	\$3,859.06	\$23.47	\$9.04	\$44.59	\$13.15	\$2.18	\$0.00	\$0.66	\$3,283.47	\$40.07	\$19.65	\$382.91	\$7.03	\$2.70	\$55.53	\$19.55	
Office administrative services	\$108.86	\$909.59	\$2.84	\$38.20	\$19.80	\$0.58	\$1.65	\$0.00	\$0.01	\$709.44	\$1.71	\$1.99	\$115.20	\$1.83	\$4.36	\$5.18	\$6.80	
Machine shops	\$107.99	\$317.93	\$0.01	\$0.59	\$2.96	\$1.56	\$0.00	\$0.00	\$0.00	\$246.22	\$11.02	\$0.01	\$44.36	\$1.54	\$0.88	\$6.68	\$2.08	

Source: Minnesota IMPLAN Group, 2001 Data.

**APPENDIX D
COMMODITY PRODUCTION BY COUNTY
MILLIONS OF DOLLARS**

Supplier Industries	Demand from Industries of Opportunity	Arizona Commodity Production	Commodity Production by County														Yavapai	Yuma
			Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz			
Paper and paperboard mills	\$101.53	\$113.96	\$0.00	\$0.00	\$1.80	\$0.00	\$0.00	\$0.00	\$0.00	\$116.82	\$0.03	\$0.07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Semiconductor machinery manufacturing	\$95.85	\$414.16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$588.30	\$0.00	\$42.01	\$0.00	\$0.00	\$0.00	\$2.24	\$0.00	
Iron and steel mills	\$94.97	\$129.70	\$0.02	\$0.09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$129.13	\$0.00	\$8.34	\$2.46	\$0.00	\$0.16	\$0.00	\$0.00	
Telephone apparatus manufacturing	\$92.36	\$140.47	\$0.03	\$0.13	\$0.05	\$0.01	\$0.00	\$0.00	\$0.00	\$152.61	\$0.07	\$18.03	\$0.09	\$0.14	\$0.61	\$0.05	\$0.05	
Other State and local government enterprises	\$92.32	\$824.13	\$11.25	\$7.18	\$13.91	\$18.32	\$1.00	\$1.28	\$3.76	\$490.77	\$10.32	\$190.58	\$17.55	\$5.54	\$27.53	\$17.92	\$0.00	
Animal production-except cattle and poultry	\$90.55	\$40.12	\$1.88	\$3.42	\$0.78	\$1.32	\$0.70	\$0.39	\$0.91	\$10.39	\$0.91	\$5.38	\$8.57	\$0.47	\$2.81	\$3.10	\$0.00	
Metal valve manufacturing	\$82.86	\$472.67	\$0.00	\$0.00	\$0.87	\$0.00	\$0.36	\$0.00	\$0.01	\$551.50	\$0.34	\$57.97	\$0.05	\$3.71	\$0.42	\$0.02	\$0.00	
Investigation and security services	\$81.75	\$428.23	\$0.17	\$12.31	\$1.30	\$0.00	\$0.00	\$0.00	\$0.63	\$364.40	\$5.65	\$40.35	\$0.29	\$0.18	\$2.68	\$1.90	\$0.00	
Nondepository credit intermediation	\$81.63	\$3248.83	\$0.12	\$2.31	\$3.65	\$1.20	\$0.01	\$0.00	\$0.03	\$3,071.82	\$8.25	\$151.37	\$0.61	\$0.46	\$5.61	\$2.68	\$0.00	
Animal slaughtering, except poultry	\$80.36	\$379.52	\$0.00	\$13.66	\$0.00	\$0.00	\$4.55	\$0.00	\$0.00	\$426.60	\$0.02	\$1.61	\$1.04	\$0.00	\$0.00	\$0.03	\$0.00	
Environmental and other technical consulting svcs	\$76.64	\$333.36	\$0.05	\$0.74	\$4.45	\$0.15	\$0.00	\$0.00	\$0.01	\$286.92	\$0.44	\$29.81	\$2.04	\$2.45	\$0.91	\$4.90	\$0.00	
Motor vehicle parts manufacturing	\$73.94	\$797.02	\$0.00	\$8.12	\$5.65	\$0.00	\$0.00	\$0.00	\$0.02	\$903.89	\$5.30	\$53.76	\$0.04	\$2.21	\$5.27	\$13.22	\$0.00	
State and local government electric utilities	\$71.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
All other forging and stamping	\$70.13	\$157.65	\$0.00	\$0.07	\$0.04	\$0.00	\$0.00	\$0.00	\$0.01	\$151.03	\$0.15	\$0.01	\$0.06	\$0.05	\$0.08	\$2.23	\$0.00	
Ferrous metal foundries	\$68.83	\$77.50	\$0.00	\$0.01	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$72.34	\$0.47	\$6.27	\$0.16	\$0.05	\$0.14	\$0.00	\$0.00	
Plastics packaging materials- film and sheet	\$63.71	\$40.37	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$0.00	\$0.01	\$31.09	\$0.25	\$12.58	\$0.21	\$0.10	\$0.12	\$0.00	\$0.00	
Oilseed farming	\$62.70	\$26.13	\$0.22	\$0.45	\$0.67	\$0.89	\$1.12	\$1.34	\$1.56	\$1.78	\$2.01	\$2.45	\$2.82	\$2.90	\$3.12	\$4.00	\$0.00	
Automotive equipment rental and leasing	\$60.73	\$3,017.58	\$2.03	\$6.16	\$10.80	\$1.18	\$0.00	\$0.00	\$0.02	\$2,805.92	\$5.88	\$0.64	\$208.97	\$0.33	\$2.64	\$8.98	\$9.15	
Specialized design services	\$59.36	\$354.96	\$0.42	\$0.40	\$1.94	\$4.37	\$0.03	\$0.00	\$0.01	\$303.50	\$1.27	\$28.36	\$1.44	\$0.01	\$4.59	\$0.48	\$0.00	
Waste management and remediation services	\$59.28	\$580.41	\$13.12	\$9.84	\$10.75	\$4.09	\$0.34	\$0.21	\$2.08	\$414.72	\$22.33	\$52.34	\$5.84	\$0.00	\$22.91	\$15.13	\$0.00	
Miscellaneous fabricated metal products	\$56.37	\$63.49	\$0.00	\$0.36	\$1.00	\$0.00	\$0.00	\$0.00	\$0.00	\$58.71	\$2.97	\$36.62	\$0.09	\$0.01	\$0.47	\$0.02	\$0.00	
Software publishers	\$55.81	\$634.67	\$0.00	\$1.50	\$0.04	\$0.02	\$0.01	\$0.00	\$0.00	\$341.19	\$0.06	\$0.25	\$349.93	\$0.02	\$0.00	\$2.44	\$0.01	
Metal can, box and other container manufacturing	\$55.71	\$132.94	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.03	\$134.71	\$0.02	\$1.74	\$0.53	\$0.00	\$0.18	\$0.00	\$0.00	
Pesticide and other agricultural chemical mfg	\$55.24	\$49.08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$26.40	\$0.01	\$0.00	\$0.39	\$0.00	\$0.02	\$1.94	\$0.00	
Aluminum sheet, plate and foil manufacturing	\$54.02	\$197.14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$204.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.07	\$0.01	\$0.00	
Turned product and screw, nut and bolt manufacturing	\$53.92	\$85.34	\$0.00	\$0.02	\$0.07	\$0.04	\$0.00	\$0.00	\$1.73	\$71.13	\$0.27	\$11.80	\$9.81	\$0.03	\$0.20	\$0.06	\$0.00	
Rail transportation	\$53.83	\$333.58	\$5.61	\$6.28	\$26.78	\$3.22	\$3.20	\$0.00	\$2.45	\$56.57	\$12.16	\$99.95	\$122.20	\$12.59	\$5.38	\$8.76	\$17.92	
Soybean processing	\$52.03	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.24	\$0.00	\$0.04	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	
Commercial printing	\$51.34	\$491.89	\$0.01	\$1.94	\$8.41	\$0.54	\$0.00	\$0.04	\$0.00	\$388.36	\$10.97	\$82.63	\$2.29	\$0.57	\$11.05	\$2.75	\$0.00	
Aluminum foundries	\$50.11	\$105.69	\$0.00	\$1.34	\$0.12	\$0.00	\$0.00	\$0.00	\$0.00	\$63.39	\$0.00	\$13.99	\$0.78	\$6.90	\$18.69	\$0.57	\$0.00	
Other support services	\$49.41	\$422.74	\$0.35	\$1.03	\$2.15	\$2.21	\$0.10	\$0.02	\$0.07	\$374.50	\$7.91	\$25.28	\$2.05	\$2.13	\$2.25	\$0.90	\$0.00	
Custom computer programming services	\$46.84	\$1,261.38	\$0.00	\$7.38	\$1.62	\$0.37	\$0.21	\$0.00	\$0.00	\$1,063.05	\$2.02	\$3.48	\$135.87	\$1.57	\$0.24	\$11.06	\$0.10	
Natural gas distribution	\$46.22	\$1,074.38	\$4.57	\$30.85	\$27.49	\$21.92	\$0.69	\$2.23	\$0.36	\$752.90	\$30.85	\$5.02	\$164.77	\$14.23	\$1.34	\$12.24	\$7.06	
Commercial machinery repair and maintenance	\$44.73	\$834.42	\$0.42	\$6.87	\$7.55	\$7.71	\$13.36	\$0.40	\$0.00	\$605.78	\$10.13	\$2.07	\$143.93	\$11.87	\$0.31	\$10.90	\$13.29	
Iron and steel forging	\$44.61	\$4.17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3.82	\$0.00	\$0.31	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	
Other computer related services	\$44.24	\$168.94	\$0.01	\$1.03	\$0.81	\$0.01	\$0.02	\$0.00	\$0.00	\$154.87	\$6.13	\$0.05	\$15.02	\$0.97	\$0.18	\$0.56	\$0.15	
Fabricated structural metal manufacturing	\$42.47	\$220.88	\$0.00	\$0.41	\$0.47	\$0.38	\$0.00	\$0.00	\$0.00	\$176.46	\$0.12	\$0.00	\$47.76	\$0.42	\$0.03	\$0.67	\$0.02	
Ball and roller bearing manufacturing	\$42.44	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.04	\$0.00	
Other communication and energy wire manufacturing	\$40.39	\$118.17	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$144.82	\$0.36	\$10.15	\$0.15	\$0.02	\$0.00	\$0.00	\$0.00	
Forest nurseries, forest products and timber tracts	\$39.94	\$20.84	\$0.41	\$0.03	\$4.92	\$1.03	\$0.00	\$0.01	\$0.00	\$2.13	\$0.00	\$2.44	\$7.17	\$3.01	\$0.01	\$0.06	\$0.02	
Flavoring syrup and concentrate manufacturing	\$38.80	\$7.71	\$0.00	\$0.01	\$0.47	\$0.00	\$0.00	\$0.00	\$0.00	\$5.58	\$0.01	\$1.08	\$0.41	\$0.09	\$0.01	\$0.02	\$0.00	
Electron tube manufacturing	\$37.29	\$5.74	\$0.00	\$0.00	\$0.06	\$0.00	\$0.00	\$0.00	\$0.00	\$1.85	\$0.00	\$3.81	\$0.00	\$0.00	\$0.01	\$0.01	\$0.00	

Source: Minnesota IMPLAN Group, 2001 Data.

**APPENDIX D
COMMODITY PRODUCTION BY COUNTY
MILLIONS OF DOLLARS**

Supplier Industries	Demand from Industries of Opportunity	Arizona Commodity Production	Commodity Production by County														Yavapai	Yuma
			Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz			
Couriers and messengers	\$36.79	\$889.39	\$0.01	\$6.98	\$12.43	\$3.86	\$1.12	\$0.19	\$0.40	\$715.97	\$84.70	\$3.29	\$2.12	\$25.72	\$8.50			
Electroplating, anodizing and coloring metal	\$36.55	\$54.55	\$0.00	\$0.00	\$0.04	\$0.00	\$0.00	\$0.00	\$0.55	\$50.10	\$2.61	\$0.03	\$0.37	\$0.38	\$0.43			
Nonferrous forging	\$32.52	\$0.39	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.38	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00			
Colleges-universities- and junior colleges	\$32.16	\$390.97	\$15.93	\$3.62	\$4.89	\$1.48	\$1.13	\$0.21	\$0.77	\$270.15	\$46.52	\$6.19	\$0.77	\$31.95	\$3.37			
Business support services	\$31.84	\$1,862.11	\$0.34	\$10.52	\$7.76	\$0.52	\$0.13	\$0.00	\$0.53	\$1,444.18	\$373.42	\$1.04	\$0.29	\$3.28	\$12.22			
Hardware manufacturing	\$30.94	\$60.50	\$0.00	\$0.01	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$11.81	\$61.23	\$0.00	\$0.00	\$1.38	\$0.04			
Phosphatic fertilizer manufacturing	\$30.81	\$46.33	\$0.00	\$0.52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.75	\$1.23	\$16.61	\$0.00	\$2.20	\$2.14			
Cheese manufacturing	\$29.88	\$7.08	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.90	\$0.76	\$4.36	\$0.00	\$0.05	\$0.00			
Fluid milk manufacturing	\$29.77	\$384.53	\$0.00	\$0.00	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$368.31	\$0.00	\$16.90	\$0.00	\$0.00	\$0.00			
Information services	\$29.67	\$425.32	\$0.21	\$2.55	\$1.21	\$0.08	\$0.02	\$0.00	\$0.04	\$377.41	\$99.13	\$0.35	\$0.05	\$2.13	\$0.75			
Maintenance and repair of nonresidential buildings	\$28.21	\$750.57	\$3.29	\$8.86	\$12.25	\$4.90	\$1.20	\$1.67	\$0.58	\$553.69	\$93.19	\$7.07	\$1.91	\$22.71	\$11.97			
Household goods repair and maintenance	\$27.80	\$490.64	\$0.58	\$26.29	\$18.51	\$2.42	\$0.00	\$0.00	\$0.85	\$355.82	\$64.88	\$0.78	\$0.00	\$3.45	\$3.34			
Poultry processing	\$26.36	\$6.24	\$0.00	\$0.08	\$0.00	\$0.00	\$0.03	\$0.00	\$0.00	\$5.08	\$0.28	\$0.78	\$0.01	\$0.01	\$0.00			
Metal coating and nonprecious engraving	\$25.79	\$72.62	\$0.00	\$0.00	\$0.86	\$0.01	\$0.01	\$0.00	\$0.01	\$65.02	\$2.09	\$0.37	\$0.01	\$4.03	\$0.02			
Audio and video media reproduction	\$25.32	\$6.21	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.65	\$3.99	\$0.00	\$0.00	\$0.00	\$0.00			
Sheet metal work manufacturing	\$25.30	\$316.26	\$0.00	\$0.82	\$0.04	\$0.01	\$0.00	\$0.00	\$0.00	\$224.62	\$53.30	\$25.81	\$0.02	\$11.93	\$0.02			
Flour milling	\$24.14	\$14.24	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.01	\$14.98	\$0.00	\$0.07	\$0.00	\$0.00	\$0.00			
Plastics bottle manufacturing	\$23.76	\$87.20	\$0.00	\$0.00	\$0.09	\$0.00	\$0.00	\$0.00	\$0.00	\$48.27	\$10.37	\$0.01	\$0.13	\$31.96	\$0.00			
Plastics material and resin manufacturing	\$23.31	\$82.52	\$0.00	\$0.00	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$109.73	\$2.08	\$0.03	\$0.02	\$0.12	\$0.11			
Wet corn milling	\$22.90	\$1.25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.56	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00			
Computer storage device manufacturing	\$22.76	\$40.12	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$27.00	\$16.83	\$0.00	\$0.00	\$0.00	\$0.05			
Aircraft manufacturing	\$22.60	\$844.33	\$0.03	\$0.01	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$1,139.33	\$0.58	\$0.00	\$1.01	\$2.00	\$3.32			
Wiring device manufacturing	\$21.51	\$40.25	\$0.95	\$4.78	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$26.73	\$0.11	\$0.00	\$0.04	\$8.55	\$0.04			
Fiber optic cable manufacturing	\$21.35	\$3.17	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.22	\$2.48	\$0.00	\$0.01	\$0.00	\$0.00			
Vegetable and melon farming	\$21.24	\$802.95	\$0.00	\$38.56	\$3.12	\$0.00	\$0.41	\$0.00	\$28.68	\$245.14	\$6.32	\$28.62	\$3.13	\$1.70	\$520.06			
Other engine equipment manufacturing	\$20.54	\$9.07	\$0.00	\$0.01	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$10.78	\$0.20	\$0.00	\$0.00	\$0.01	\$0.03			
Other basic organic chemical manufacturing	\$20.50	\$121.50	\$0.00	\$0.37	\$0.01	\$0.01	\$0.00	\$0.00	\$0.00	\$189.02	\$0.95	\$0.34	\$0.15	\$0.00	\$0.23			
Glass container manufacturing	\$20.07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00			
Rendering and meat byproduct processing	\$18.86	\$28.83	\$0.00	\$0.36	\$0.00	\$0.00	\$0.12	\$0.00	\$0.01	\$32.17	\$0.04	\$0.12	\$0.00	\$0.00	\$0.65			
Relay and industrial control manufacturing	\$18.45	\$18.49	\$0.02	\$0.11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$13.91	\$9.06	\$0.01	\$0.18	\$0.43	\$0.01			
Speed changers, mechanical power transmission equip	\$18.28	\$2.57	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.61	\$0.00	\$0.08	\$0.00	\$2.51	\$0.00			
Tire manufacturing	\$18.18	\$7.27	\$0.00	\$0.00	\$0.00	\$0.25	\$0.00	\$0.00	\$0.00	\$8.44	\$0.08	\$0.00	\$0.00	\$0.00	\$0.01			
Other basic inorganic chemical manufacturing	\$18.11	\$129.11	\$0.00	\$0.89	\$6.18	\$27.59	\$0.00	\$0.34	\$0.00	\$77.82	\$36.39	\$7.19	\$0.00	\$0.02	\$0.13			
Water transportation	\$16.23	\$77.66	\$0.01	\$0.10	\$0.28	\$0.03	\$0.00	\$0.00	\$0.00	\$81.58	\$0.92	\$0.06	\$0.35	\$0.08	\$0.16			
Miscellaneous wood product manufacturing	\$16.06	\$44.47	\$0.01	\$0.03	\$5.89	\$0.02	\$0.00	\$0.00	\$0.00	\$23.55	\$3.83	\$6.45	\$5.04	\$0.40	\$0.02			
Dry, condensed and evaporated dairy products	\$15.50	\$138.32	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.17	\$0.00	\$136.93	\$0.00	\$0.00	\$0.00			
AC, refrigeration and forced air heating	\$15.21	\$326.08	\$0.00	\$0.03	\$0.02	\$0.00	\$0.00	\$0.61	\$0.00	\$349.11	\$1.00	\$0.01	\$0.01	\$0.39	\$55.76			
Motor and generator manufacturing	\$14.83	\$20.74	\$0.02	\$0.40	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$31.60	\$0.49	\$0.00	\$0.00	\$0.05	\$0.00			
Surgical and medical instrument manufacturing	\$14.52	\$99.79	\$0.00	\$0.49	\$11.72	\$0.00	\$0.00	\$0.00	\$0.00	\$18.56	\$0.05	\$0.00	\$0.17	\$0.03	\$0.44			
Veterinary services	\$14.47	\$265.14	\$0.26	\$4.22	\$8.96	\$3.59	\$1.15	\$0.00	\$1.41	\$170.61	\$1.58	\$2.55	\$0.65	\$13.42	\$3.54			
Railroad rolling stock manufacturing	\$14.07	\$4.19	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.34	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00			
Electricity and signal testing instruments	\$13.83	\$51.39	\$0.05	\$0.02	\$0.01	\$0.11	\$0.00	\$0.00	\$0.00	\$82.34	\$0.08	\$0.63	\$0.16	\$0.01	\$0.01			

Source: Minnesota IMPLAN Group, 2001 Data.

**APPENDIX D
COMMODITY PRODUCTION BY COUNTY
MILLIONS OF DOLLARS**

Supplier Industries	Demand from Industries of Opportunity	Arizona Commodity Production	Commodity Production by County														
			Apache	Cochise	Cococino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz	Yavapai	Yuma
Pulp mills		\$13.68	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Greenhouse and nursery production		\$13.54	\$0.00	\$0.01	\$0.01	\$0.11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.20	\$60.13	\$0.15	\$10.07	\$4.16	\$0.00	\$2.45
Veneer and plywood manufacturing		\$13.41	\$0.03	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.78	\$0.03	\$0.55	\$0.00	\$0.00	\$0.08
Fruit and vegetable canning and drying		\$13.23	\$0.00	\$0.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$48.72	\$0.03	\$23.71	\$0.51	\$1.65	\$0.15
Air transportation		\$13.12	\$0.00	\$1.27	\$0.00	\$0.16	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,726.06	\$5.28	\$263.87	\$0.55	\$4.61	\$7.89
Electronic computer manufacturing		\$11.75	\$0.00	\$0.22	\$0.08	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$505.18	\$0.19	\$205.01	\$0.17	\$0.26	\$1.39
Cut stock, resawing lumber and planing		\$11.27	\$0.13	\$0.29	\$0.18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$7.86	\$0.30	\$0.55	\$0.09	\$0.00	\$0.11
Farm machinery and equipment manufacturing		\$11.04	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11.32	\$0.03	\$44.75	\$0.25	\$0.01	\$1.77
General and consumer goods retail		\$10.75	\$0.08	\$1.12	\$21.58	\$1.30	\$0.28	\$0.00	\$0.00	\$1.12	\$266.52	\$8.71	\$1.81	\$29.53	\$2.43	\$1.09	\$2.92
Reconstituted wood product manufacturing		\$9.82	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11.50	\$0.00	\$1.84	\$0.00	\$0.00	\$2.38
Industrial truck, trailer and stacker manufacturing		\$9.68	\$0.00	\$0.01	\$0.01	\$0.00	\$0.00	\$0.00	\$0.49	\$0.00	\$6.80	\$0.01	\$0.00	\$0.13	\$0.02	\$0.00	\$0.02
Custom roll forming		\$9.65	\$0.00	\$0.02	\$0.01	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$25.20	\$0.08	\$0.00	\$1.26	\$0.08	\$0.00	\$0.00
Fluid power pump and motor manufacturing		\$8.95	\$0.00	\$0.00	\$0.27	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6.97	\$0.13	\$0.70	\$0.00	\$0.06	\$0.12
Textile and fabric finishing mills		\$8.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9.07	\$0.00	\$0.00	\$0.30	\$0.00	\$0.01	\$0.04
Fluid power cylinder and actuator manufacturing		\$8.43	\$0.00	\$0.00	\$3.05	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$18.07	\$0.11	\$0.00	\$1.45	\$0.00	\$0.18	\$0.00
Surgical appliance and supplies manufacturing		\$8.15	\$0.00	\$9.08	\$216.21	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$45.78	\$0.06	\$0.21	\$1.30	\$3.08	\$8.19
Adhesive manufacturing		\$7.82	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$117.14	\$0.03	\$0.00	\$0.33	\$0.03	\$0.00	\$0.00
Nonwoven fabric mills		\$7.36	\$0.00	\$0.05	\$0.83	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.81	\$0.02	\$0.13	\$0.75	\$0.04	\$0.05	\$0.04
Other rubber product manufacturing		\$7.32	\$0.00	\$0.01	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.69	\$31.86	\$0.35	\$0.00	\$0.04	\$0.00	\$0.03
Photographic film and chemical manufacturing		\$6.88	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$51.20	\$0.83	\$7.25	\$0.00	\$0.00	\$0.40
Paint and coating manufacturing		\$6.66	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.89	\$24.07	\$0.01	\$8.45	\$0.02	\$0.00	\$7.22
Copper rolling, drawing and extruding		\$5.17	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$158.92	\$3.85	\$0.00	\$4.74	\$0.03	\$0.00	\$0.00
Cutting tool and machine tool accessory manufacturing		\$5.00	\$0.00	\$0.01	\$0.39	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12.19	\$1.49	\$0.00	\$4.33	\$0.03	\$0.00	\$0.02
Pump and pumping equipment manufacturing		\$4.59	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.98	\$0.01	\$0.00	\$0.17	\$0.05	\$0.00	\$0.00
Wood preservation		\$4.34	\$0.03	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.18	\$0.00	\$0.00	\$2.37	\$0.00	\$0.01
Gasket, packing and sealing device manufacturing		\$4.08	\$0.00	\$0.00	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$6.83	\$0.73	\$0.00	\$0.51	\$0.04	\$0.00	\$0.00
Other miscellaneous chemical product manufacturing		\$3.86	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$42.98	\$0.02	\$0.00	\$0.15	\$0.05	\$0.00	\$0.69
Other communications equipment manufacturing		\$3.03	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.53	\$0.01	\$23.29	\$0.00	\$0.00	\$0.01
Coated and laminated paper and packaging materials		\$2.50	\$0.00	\$0.35	\$8.36	\$0.00	\$0.03	\$0.00	\$0.00	\$0.00	\$50.00	\$0.12	\$0.00	\$2.92	\$0.11	\$0.12	\$0.32
Rubber and plastics hose and belting manufacturing		\$1.67	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15.45	\$0.00	\$0.00	\$3.97	\$0.00	\$0.04	\$1.28
Sound recording industries		\$1.55	\$0.01	\$0.22	\$0.02	\$0.02	\$0.03	\$0.04	\$0.04	\$0.04	\$10.53	\$0.06	\$0.03	\$3.01	\$0.07	\$0.08	\$0.09
Other concrete product manufacturing		\$1.44	\$0.00	\$0.37	\$0.07	\$0.03	\$0.01	\$0.00	\$0.00	\$0.00	\$115.64	\$0.22	\$0.43	\$16.97	\$13.09	\$0.78	\$0.59
Glass and glass products- except glass containers		\$1.44	\$0.00	\$0.02	\$0.02	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$114.71	\$1.20	\$10.31	\$0.53	\$0.00	\$0.00
Magnetic and optical recording media manufacturing		\$1.11	\$0.00	\$0.00	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$51.45	\$0.14	\$0.00	\$0.78	\$0.00	\$0.19	\$0.01
Periodical publishers		\$0.64	\$0.00	\$0.27	\$1.80	\$0.12	\$0.03	\$0.00	\$0.00	\$0.00	\$0.33	\$113.93	\$2.74	\$20.28	\$0.03	\$0.00	\$0.07

Source: Minnesota IMPLAN Group, 2001 Data.

APPENDIX E

Arizona Business-to-Business Buyer Survey

1

What type of business is your company in? *(check all that apply)*

- Aerospace/Defense
 - Agriculture/Food Processing
 - Architecture/Engineering
 - Bio Industry
 - Forest Products
 - Health Care Services
 - Industrial Machinery
 - Information Technology/Telecommunications
 - Instruments
 - Research/Development
 - Semiconductors/Electronics
 - Software
 - Transportation
 - Other, Please Specify _____
-

2

What is the total size of your employment in all facilities in Arizona?

- Less than 50
- 51-100

- 101-250
 - 251-500
 - 501-1,000
 - More than 1,000
-

3

Where in Arizona is your company located (*check all that apply*)?

- Apache
 - Cochise
 - Coconino
 - Gila
 - Graham
 - Greenlee
 - LaPaz
 - Maricopa
 - Mohave
 - Navajo
 - Pima
 - Pinal
 - Santa Cruz
 - Yavapai
 - Yuma
-

4

If purchasing is done at a centralized location, where is the central purchasing facility located?

5

Are minor purchases or purchases under \$5000 handled by non-purchasing personnel?

- Yes
- No
- Don't Know

6

Are there any specific requirements (for example, minority-owned businesses, restrictions, quality certifications) that influence your purchasing decisions? *(check all that apply)*

- No
- Minority-Owned
- Women-Owned
- Veteran-Owned
- Disabled
- AS 9100
- CE Mark
- ISO 9000 Compliant
- ISO 9000
- ISO 9001
- ISO 9002

- ISO 9003
 - Military Specifications
 - Six Sigma
 - RoHS Compliance
 - Software Process Involvement
 - Statistical Process Control
 - Prime Contractor
 - Sub-Contractor
 - Bondable
 - Secured & Controlled Access
 - Clean Room
 - Shipping, Receiving & Inspection
 - Temperature/Humidity Controlled Labs/QA
 - Test, R&D and Development Facilities
 - Warehouse Distribution
 - Logistics Support
 - Training, LT Field Servicing
 - Other, Please Specify
-

7

Please rate the most important factors in your choice of suppliers.

1	2	3	4	5
Most Important	Very Important	Important	Slightly Important	Not Important

Price

1 2 3 4 5

Reliability of delivery

1 2 3 4 5

Quality of product

1 2 3 4 5

Supplier's service/maintenance

1 2 3 4 5

Historical relationship w/supplier

1 2 3 4 5

Geographic proximity

1 2 3 4 5

Web presence

1 2 3 4 5

Other

1 2 3 4 5

8

If you marked "Other" in Question # 7, above, please specify.

9

How do you identify potential suppliers? *(Please check all that apply)*

- Own experience
- Firm's records or previous contacts

- Catalogues
- Trade journals
- Internet search
- Vendor directories
- Salesforce
- Advertisement for bids
- Government procurement
- Other, Please Specify _____

10

Does your firm have a buy-local policy that gives preference to Arizona suppliers?

- Yes
- No
- Don't Know

11

What products and services do you currently purchase locally?

12

What additional products and services would you prefer to purchase locally but are not able to?

13

Why are you not able to purchase these products locally? *(Mark all that apply)*

- Unable to locate necessary suppliers
- Price
- Transportation
- Geographic proximity
- Reliability of delivery
- Quality issues
- Capability and capacity concerns towards local supplier
- Product support issues
- Existing historic relationship with supplier
- Other, Please Specify _____

14

If local vendors were located in Arizona but outside metro Phoenix or Tucson, would that be close enough for you?

- Yes
- No
- Don't Know
- Comments: _____

15

In round numbers, how much did your company spend in the last fiscal year to procure goods and services?

- Less than \$1 million
 - \$1 to \$5 million
 - \$6 to \$10 million
 - \$11 to \$50 million
 - \$51 to \$100 million
 - \$101 million to \$200 million
 - More than \$200 million
-

16

Do you expect this number to increase or decrease during your fiscal year 2004-05?

- Increase
 - Decrease
 - Don't Know
-

17

What percentage of this amount is spent outside Arizona?

- 0-25%
 - 26-50%
 - 51-75%
 - 76-100%
-

18

What percentage is spent outside the U.S.?

- 0-25%
- 26-50%

51-75%

76-100%

19

What would it take to get you to buy more supplies locally?

20

Are there any state and/or local taxing, economic development, workforce, or other policies that limit or hinder your ability to successfully compete with others in your industry who are located outside of Arizona?

Comments

21

Other comments:

22

Would you like to be entered into a drawing to receive a digital camera or a 1.0 GB USB flash drive?

Yes- Please fill out the contact information below.

No- Please skip the next question and click "Submit"

23

Contact Information:

Name: _____
Company: _____
Address 1: _____
Address 2: _____
City/Town: _____
State/Province: _____
Zip/Postal Code: _____
Country: _____
Email Address: _____



APPENDIX F

Script for Personal Interviews

Hello, my name is _____ . Recently you should have received a letter from Applied Economics regarding a study on supply chain issues in the state that is being conducted by the Arizona Department of Commerce in partnership with the Arizona Technology Council and the Southern Arizona Technology Council.

An important part of the study is interviewing representatives from Arizona businesses. We would like to learn more about any challenges you face in locating suppliers and about general issues that may have an impact on your ability to successfully compete with other companies in your industry who are located outside of Arizona.

As an important member of one of Arizona's key industry sectors, we are hoping that you could spare 15 minutes of your time to answer some questions. I assure you that individual responses to these questions will be kept strictly confidential; only aggregated results will be reported.

Are you the appropriate person for this interview?

If yes... is now convenient for you or can we set another time in the next few days for me to call you back?

If no... get name, title & phone number of person

This first group of questions is related to your purchasing patterns.

1. What are the important factors in choosing suppliers? *For example: price, geographic proximity; small business: minority or women-owned business; historical relationship with supplier, etc.*

	Most Important	Very Important	Important	Slightly Important	Not Important
Price	<input type="checkbox"/>				
Reliability of delivery	<input type="checkbox"/>				
Quality of product	<input type="checkbox"/>				
Supplier's service/ maintenance	<input type="checkbox"/>				
Historical relationship w/supplier	<input type="checkbox"/>				
Geographic proximity	<input type="checkbox"/>				
Web presence	<input type="checkbox"/>				

Other:

2. Generally speaking, how do you locate suppliers? *For example...Internet, word-of-mouth, formal RFP process...*

- Internet
 Word-of-mouth
 RFP or bid process
 Referral

Other

3. What types of products and services are you most likely to purchase locally?
4. What products and services are you most likely to purchase outside of Arizona (U.S. or offshore)?
5. Are you not able to purchase these products locally? If so, why not?
- Capability and capacity concerns towards local supplier
 Existing historic relationship with supplier
 Geographic proximity
 Price
 Product support issues
 Quality Issues

- Reliability of delivery
- Transportation
- Unable to locate necessary suppliers
- Other, *please specify*

6. Do you have any recommendations on what might alleviate the issues mentioned above that might lead you purchase to more supplies locally?

7. Is your purchasing done from a centralized location?

- Yes
- No

If yes, where is the centralized location?

Comments:

8. Are minor purchases or purchases under \$5,000 handled by non-purchasing personnel?

- Yes
- No

Comments:

This group of questions is related to any barriers or challenges (other than supply chain) that you may have in conducting manufacturing operations in Arizona.

9. Are there any state and/or local taxing policies that limit or hinder your ability to successfully compete with other companies in your industry who are located outside of Arizona?

- Yes
- No

Comments:

10. What other factors limit your ability to compete?

Callers... if necessary, prompt for answers or comments on:

- Other operating costs (land, labor, utility costs, local fees).
- Transportation/Logistic problems
- Quality of the workforce

Thank you for your time.