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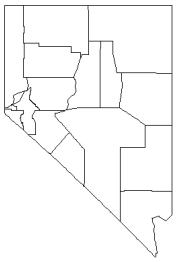
TARGETED ECONOMIC DEVELOPMENT

FOR HUMBOLDT COUNTY

PART II

SCREENING OF ECONOMIC SECTORS



UNIVERSITY OF NEVADA, RENO

TARGETED ECONOMIC DEVELOPMENT

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PART II

SCREENING OF ECONOMIC SECTORS

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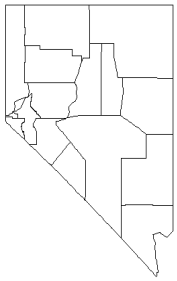

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Introduction

The University Center for Economic Development conducted a study for targeted economic development for four Nevada counties within the proposed new Economic Development District, the Great Basin Development District. The proposed district consists of the northwest Nevada counties of Eureka, Humboldt, Lander and White Pine Counties.

This publication will investigate economic targeting for Humboldt County. An earlier publication, or Part I of the targeting study, presented a detailed analysis of socio-economic national, state and county trends. This was completed to provide information for decision-makers to determine feasible targets for Humboldt County. A synopsis of Part I follows:

- Humboldt County's population from the 2000 Census was 16,106, which ranked Humboldt County 9th among Nevada's seventeen counties.
- The Nevada State Demographer projects county population each year. From 1970 to 2000, the average annual growth rate of Humboldt County population has been 3.58 percent, which ranks Humboldt County 9th among Nevada's seventeen counties.
- During the past two years, Humboldt County has realized a decline in annual population growth rates. Population growth rates for Humboldt County declined from 0.67 percent in 1999 to 0.33 percent in 2000.
- Total 1999 place of work earnings for Humboldt County were $335,575,000. Place of work earnings were adjusted by adding net residence adjustment to derive residential earnings. For Humboldt County, the net resident adjustment for 1999 was -$10,583,000. This means $10,583,000 more was earned by people living outside Humboldt County and working in Humboldt County than people living in Humboldt County and working outside Humboldt County. The -$10,583,000 constitutes a large leakage of income from Humboldt County.
- For Humboldt County, the unemployment rate increased from 4.3% in 1995 to 6.6% in 1998, but subsequently declined to 5.1% by 2000. The number of unemployed increased from 350 people in 1995 to 550 people in 1998, but declined to 380 people in 2000. However, during this same time period, the county's labor force increased from 8,030 in 1995 to 8.760 in 1997 and subsequently declined to 7,350 in 2000. Also, the

unemployment rate for the county increasd from 4.3% in 1995 to 6.6% in 1998, but subsequently declined to 5.1% in 2000. These figures show the fallacy in using a singular statistic to judge the viability of a county's economy. If only Humboldt County's unemployment rate was used to judge county economic viability, the county would be judged as a viable and expanding economy. However, labor force, resident employment and industrial employment declined from 1997 to 2000 which indicates a local economy that is either stagnant or declining. An alternative procedure to judge a county's economic vitality would be the out-migration/population loss statistics as prepared by Feser and Sweeney (1998).

- The Metal Mining Sector in Humboldt County made up 24 percent of total county employment in 1998. Using location quotient methodologies, the natural resource industries (agriculture and mining) are major exporting sectors.
- From 1992 to 1998, Humboldt County realized an increase of 1,959 jobs. Employing shift-share analysis, growth in Humboldt County was primarily due to overall growth of the national economy. The county also realized overall negative competitive advantage growth. The Metal Mining Sector had a large competitive advantage effect, which means that the local Metal Mining Sector was more competitive than the average national Metal Mining Sector.
- Humboldt County was classified as a "Strong Growth and Strong Entrepreneurship" county. This means that Humboldt County had employment growth greater than the U.S. average and the ratio of entrepreneurs to workers was greater than the national ratio.
- The State Department of Employment, Training and Rehabilitation forecast employment from 4th Quarter 2000 to 3rd Quarter 2002. Humboldt County is forecast to lose 340 jobs by 3rd Quarter 2002 of employment in the Metal Mining Sector forecast to decrease by 21 percent..

Part I data and results will be incorporated into the economic targeting analysis. After the targeting analysis has been completed, additional procedures to enhance the targeting analysis will be discussed.

Targeted Economic Development for Local Communities:
Target Industry Analysis

Industry targeting identifies economic sectors with a competitive advantage in terms of labor, location and public services. This allows community leaders to focus their development programs on specific industries or sectors.

Targeting programs provide several advantages to community developers. It permits clearer identification of specific industry requirements. Targeting enables the community to provide fewer but more highly valued programs. A targeting program also helps reduce the amount of financial incentives needed to encourage the industry to locate in the region (Barkley et al., 1998).

According to Doescher (1989), the primary objective of a target industry study is "to develop a list of *industries*, which have a moderate-to-strong likelihood of containing *companies*, which might be interested in locating in the community under study." Successful targeting depends on the quality of the target industries and the way in which communities use target industry analysis in their economic development.

Doescher outlines several generalized steps to begin the targeted economic development process. One step is the identification of industries, which are likely to include companies interested in relocating or setting up new branch plants. The formation of the industry list begins with the consideration of regional and national industry growth rates. These include past and projected national growth trends in employment, output and number of establishments by industry. This helps to focus on industries that "should contain a disproportionately high number of companies which are likely to be establishing new branch plants." However, these growth rates are based on past behavior. The consideration of other factors may be incorporated. Some of these include capacity utilization, international competition, and technological change. Companies interested in relocation may have a variety of motives, specific to the company. For example, the company may have outgrown the existing plant or facing competition from abroad or existing facilities may require costly technological renovations.

The second step is to match industry location requirements with community characteristics. When companies consider relocation sites, they generally contemplate a number of factors. These location factors may be local labor force skills, access to interstate highways and/or airports, local taxes, etc. Industries vary with respect to the importance placed on each

factor. Matching industries with communities can be accomplished by eliminating all unsuitable industries from consideration based on knowledge of location requirements. Doescher (1989) suggests refocusing on the features of a community and determine which industries fit community characteristics or simultaneously match potential industries in terms of how their requirements will match the community's characteristics.

Conventionally, factors that influenced industrial locations were access to markets, labor, raw materials and transportation. Blair and Premus (1987) established that although these are still important, productivity, education, taxes, community attitudes toward business and other factors have grown in importance.

There are several specific approaches used to conduct target industry analysis studies. Johnson (1996) and Holland (1997) have added considerable to the body of knowledge in conducting target industry studies using IMPLAN Pro software and data. Both authors propose a progressive series of screening procedures for targeting the "best" industries for a region.

In Johnson's approach, the first screening of potential sectors is on the basis of export base and import substitution strategies. Total exports are calculated by adding domestic and foreign exports. Export base of a regional economy consists of those goods and service sectors that sell a large portion of their products outside the region. Expansion of export base industries leads to expansion of non-basic industries through the "multiplier" or ripple effect. "Import Substitution" refers to replacing imported goods and services with goods and services produced in the local community. When this can occur, economic leakages are plugged and the ripple effects from a given export base are strengthened.

Imports are calculated using total gross commodity demand minus net commodity supply. Commodities produced in one region often use goods and services (inputs) imported from outside the region. This is called economic leakage (Johnson 1996). Holland uses a similar approach, sorting data based on export base and import substitution of a regional economy. He also incorporates a process called "ground truthing" to verify IMPLAN data through community visits and acquisition of additional data (Holland 1997).

The second layer of screening is based on desirability criteria. It provides analysis of quality of jobs, income potential, employment potential, as well as revenue potential and demand for steam, electricity and transportation services. All businesses create indirect jobs in addition to the employees they employ themselves. Local suppliers and those that are generated by the

purchases of goods and services of employees create these indirect jobs. Businesses create property income to owners and investors, and owners of property in addition to wage income. Property income is an indicator of the sector's profitability. Total income is a good indicator of the value of the sector to the region. Again strong linkages to other sectors (multipliers) mean that the sector creates indirect as well as direct benefits. This variable measures the direct plus indirect wage and property income per dollar output. High employment sectors are often low wage sectors, which are not an indicator of quality jobs. However, the number of jobs created should be a consideration and by including both number and quality of jobs as criteria, those sectors that have both will be favored and those that have neither are eliminated. Again, by including direct and indirect employment, sectors with strong linkages to good sectors are favored. As an indicator of revenue generating capacity, the compensation per employee was calculated (Johnson 1996). Holland also used quality factors in determining optimal industries. Quality factors he suggested are employee compensation, indirect business taxes, property income, other property income, total value added and employment (Holland 1997). Finally Johnson uses an overall ranking scheme incorporating a weighted rank. This system provides an optimal solution with consideration to all desirability criteria for imports and export (Johnson 1996).

Cluster Analysis

One method of expanding the targeted economic development study is to develop clusters based on identified sectors. A great deal of research has proven clusters to benefit regional productivity. Policy should therefore create, develop and support clusters (Steiner 1996).

Cluster targeting was advanced by Michael Porter in his book "The Competitive Advantage of Nations" (1990). Porter agrees that economic vitality is a direct result of competitiveness of local industries. Porter describes four factors that influence competitiveness, which are: (1) factor conditions; (2) home demand; (3) related and supporting industries; and (4) firm strategy, structure and activity. In addition to these four factors, Porter approach includes the role of government and chance. Historical accidents and/or government actions tend to play an important role in early economic development or location of industrial clusters.

There are many definitions of economic clusters. Ashcroft, Coppedge and Lopez (2000) describe an economic cluster as a group of firms with related products, inputs or customers. A

cluster will also utilize similar skills in many of its employees and depend upon specialized inputs. Steiner describes clusters as "regional specialization on interlinked activities of complementary firms (in production and service sectors) and their cooperation with public, semipublic and private research and development institutions creates synergies, increases productivity, and leads to economic advantages." Steiner continues to outline five types of clusters: 1) knowledge clusters, 2) progressive production clusters; 3) sectoral clusters; 4) technology clusters and 5) eco-clusters.

Despite a wide variety of definitions of clusters, most share several key elements:

- Specialization
- Proximity
- Cooperation (Steiner, 1996)

Building on existing clusters provides the following benefits

- The location has already proven attractive to these types of manufacturers
- Multiplier effects of new firms generally are greater than those from noncluster firms
- Firms within industry clusters have stronger growth than firms that are not in clusters
- Firms within clusters have greater potential for new spin-off firms than groupings of unrelated firms (Barkley et al, 1998).

One approach to targeted economic development is the growth of industry clusters. Cluster analysis focuses on a geographic concentration of industries that share technical, skill and financial or distributional advantages. Industry clusters develop a competitive advantage in the marketplace. Clusters are important to regions because they generate wealth, exports, jobs and sources of information. Firms prefer clusters because of economics of agglomeration.

There are four stages to cluster-based economic development: (1) Mobilization; (2) Diagnostic; (3) Collaborative Strategy; and (4) Implementation. The mobilization stage requires that a community generate local interest. During the diagnostic stage, communities collect information about the attributes of the region's cluster and economic infrastructure. This is accomplished by analyzing past growth and economic development infrastructure. The collaborative stage allows the community to form solutions based on shared views of the

community marketplace. Finally the cluster based economic development is implemented by developing organizations that fit the characteristics of the community (Lamie et al, 1996).

Rural Clusters

As noted by Isserman (2001), farms, ranches and mines remain the central focus for rural economies. Agricultural and mining activities cannot occur in heavily populated areas. The reason is that people would trample the alfalfa fields, complain about livestock odor and dust, start forest fires and initiate lawsuits when blasting or mine subsidence damaged their homes. The primary and secondary activities in manufacturing, such as agricultural processing, farm machinery and gold mills create economic clusters from which rural areas can prosper. Rural economies such as the proposed Great Basin Development District are unique because their economies are natural resource based.

Rural areas such as the proposed Great Basin Development District house economic activities that seek separate or isolated locations. Some of these rural industries are deliberately isolated by government policy, such as, military bases, atomic test sites, national parks and prisons. Others are located in isolated areas by the private sector, such as manufacturing branch plants, tourism resorts and retirement villages. In essence the resource based industries and isolation can provide unique attributes for economic targeting in rural areas such as Humboldt County and the proposed Great Basin Development District.

Targeted Economic Development

Targeted economic development is a synthesis of targeted industry analysis, industrial cluster analysis and community assessment and planning. Targeted economic development is a synthesized approach to analyzing a community, county or regional economy to identify options for attraction, retention or expansion. Industrial targeting is consistent with expansion of current businesses and entrepreneurship. Current businesses could be encouraged to grow because of excess demand identified in a targeted industry analysis.

Definitions of targeted economic development vary widely. Barkley describes targeted economic development as tailoring of industrialization through an analytical process that focuses efforts on specific industries or clusters of related industries. The process identifies industries that exhibit competitive advantage in labor, location and public services. By narrowing the scope of potential industrial recruitments, the community can more effectively consider industrial recruitment options (Barkley et al, 1998).

One criticism of economic development targeting is "picking winner" (Barkley et al. 1998). For example, an industry targeted because of past rapid growth may be at its end of a growth phase. Past employment growth may be a poor predictor of future employment growth. Therefore, effort should be made to incorporate estimates of prospective industrial and occupational growth.

Targeted Economic Development:
Application to Existing Economic Sectors

The data used in the analysis is from IMPLAN Professional, which is an economic impact assessment modeling system (Minnesota IMPLAN 2000). The IMPLAN system provides the data necessary to construct an input-output model of any state, county, groups of counties, or sub-county area. IMPLAN provides multipliers for any of 528 economic sectors. The data and modeling abilities of IMPLAN will be used to analyze economic targeting for existing industries in Humboldt County.

The economic sector targeting process is a four-step process. Step 1 is the identification of export enhancement and import substitution candidate sectors. The second step is

development of factors to be used to evaluate sectors for targeting. The third step is a screening process to eliminate sectors from the targeting pool. The fourth and last step is to develop a method to rank candidate sectors for targeting. This four-step process will be applied to sectors already in existence in Humboldt County and those candidate new sectors for Humboldt County and the proposed Great Basin Development District.

The four step process to derive sectors for targeting follows on the next four pages:

STEP ONE - Community Export Enhancement vs. Community Import Substitution

Community Export Enhancement

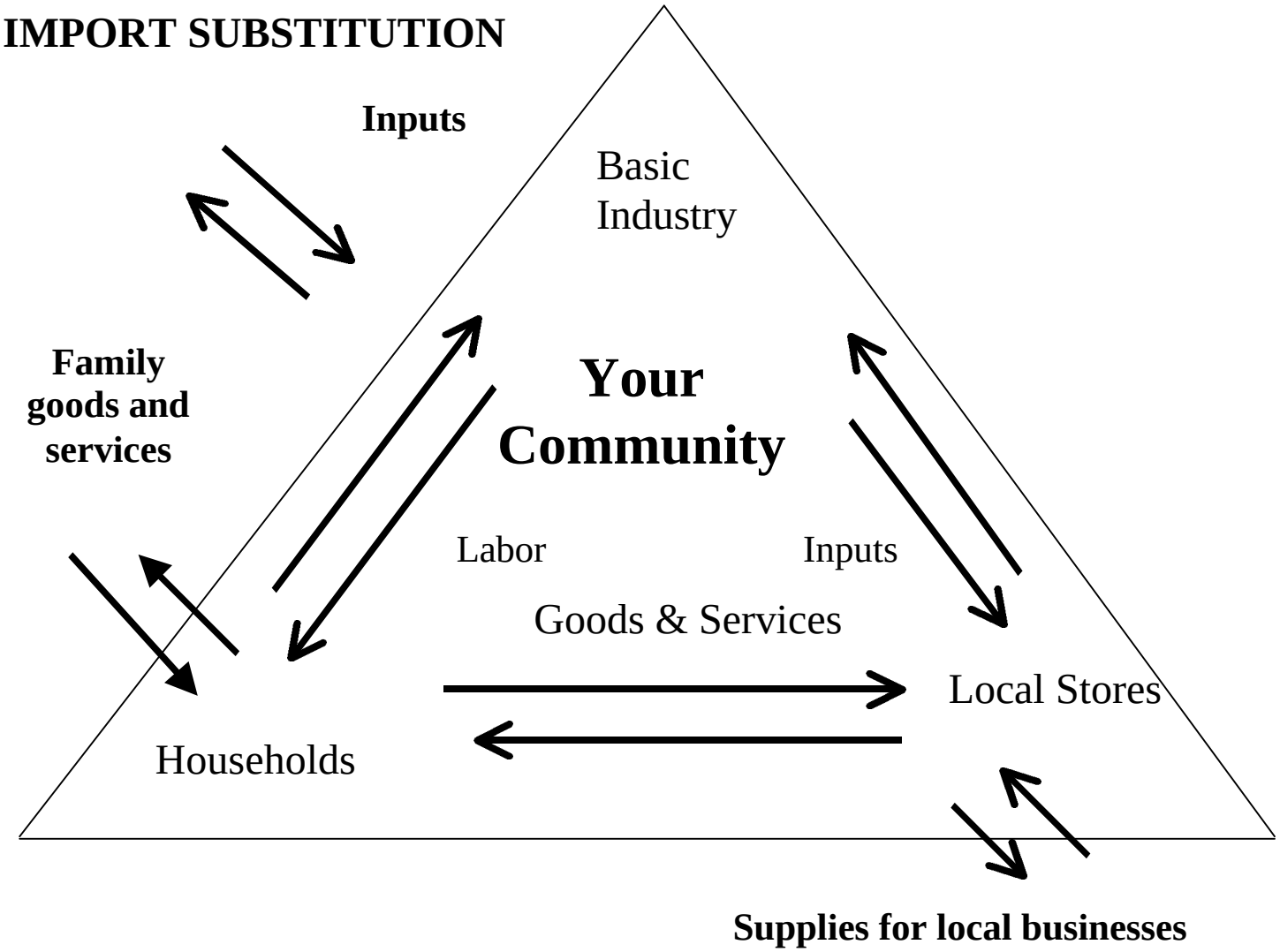
Export Enhancement is expanding the volume of goods and services the region sells to the rest of the world. To examine export enhancement opportunities, total exports, including domestic and foreign exports, were calculated.

The export base of a regional economy consists of goods and service sectors that sell a large portion of their products outside the region. The expansion of an export base industry leads to expansion of local non-basic industries through the "multiplier" or ripple effect. Those local sectors identified for export enhancement have sectoral location quotient values of 1.25 or higher.

Community Import Substitution

Import Substitution is replacing items purchased outside the region with local production. To examine import substitution opportunities, the region's total imports were calculated by taking commodity demand minus commodity supply.

Commodities produced in one region often use goods and services (inputs) imported from outside the region. When import substitution can occur, economic leakages are plugged and the ripple effects from a give export base are strengthened. Those local sectors identified for import substitution have sector location quotient values of 0.75 or less.



STEP TWO - Desirability Criterion

The four desirability criteria were designed to give the community additional information about economic sectors. The four desirability criteria or factors are defined below:

Quality of Job: The direct, indirect and induced employee compensation per job. All businesses create indirect jobs in addition to the employees that the business hires. These indirect jobs are created by local suppliers and are generated by purchase of goods, and services by employees. The quality of jobs is determined by what the business pays its employees but also the linkages with other high quality employers.

Income Potential: The direct and indirect total income per dollar of sectoral output. Businesses create proprietorship income in addition to employee compensation. Proprietor income is an indicator of sectoral profitability. Therefore, total income is a good indication of the value of the sector of the region. Again, strong linkages to other sectors (multipliers) mean that the sector creates indirect as well as direct benefits. This variable measures the direct plus indirect employee compensation and proprietor income per dollar of output.

Employment Potential: The direct and indirect employment per million dollars of output. High employment sectors are often low employment compensation sectors, which are not an indicator of quality jobs. However, the number of jobs created should be a consideration and by including both number and quality of jobs as criteria, those sectors that do both will be favored and those that do neither are eliminated. Again, by including direct and indirect employment, sectors with strong linkages to high employment potential sectors are favored.

Projected Employment Growth Rate: This can be defined as either the forecast county sectoral employment growth rate from 4th Quarter 2000 to 3rd Quarter 2002 or the two-digit national sector employment forecast for 2008. (State of Nevada Department of Employment, Training and Rehabilitation, 2001; Braddock, 1999). These values will be used to incorporate future employment growth projections into the targeted analysis.

STEP THREE- Screening Process

The screening process used for this paper closely follows procedures outlined by Johnson (1996). The screening process involves two steps. For each step, criteria are developed to screen existing and new economic sectors. These screened sectors are candidates for the final step, which employs weighting criteria to prioritize sectors for targeting.

STEP FOUR- Weighting

All of the factors used for selecting sectors for targeting derive values in different units. Factor units will be in dollars per job, dollars per dollar of output, forecast percentage change in employment, and total employment per million dollars of output. In order to combine factor values and weigh them, a normalizing procedure is used.

The normalizing procedure used for this analysis is the Z-score, which is shown below:

(1.) $Z_{i,j} = (X_{ij} - \overline{X}_j) / \sigma_j$

where: $Z_{i,j}$ is the Z-score for sector i and criteria j;

X_{ij} is the value for sector i and criteria j;

$\overline{X}_j$ is the average or mean value for criteria j; and

σ_j is the standard deviation for criteria j.

From these Z-score rankings, the criteria are multiplied by their respective weights and summed to derive economic sector scores or:

(2.) $T_i = \sum_{j=1}^{n} W_j Z_{ij} \quad i = 1, 2, \ldots, m$

(3.) $\sum_{j=1}^{n} W_j = 1.0$

where: T_i is the targeted economic sector value for sector i;

W_j is the criteria weight for criteria j. Also the summation of all criteria weights equal to one.

Z_{ij} is the Z-score for sector i and criteria j;

i represents sectors; and

j represents criteria.

m is the number of sectors.

n is the number of criteria.

Economic sectors are ranked by the value of T_i. Sectors ranked highest may be investigated for either growth or relocation possibilities in Humboldt County and the proposed Great Basin Development District.

Results of Existing Sectors in Humboldt County

Table 1 shows the 1998 sectoral location quotient values and those sectors designated as either export enhancement or import substitution sectors. From Table 1, the natural resource industries are the primary export base industries for Humboldt County. As addressed by Isserman (2001), although they are cyclical, these natural resource industries have provided rural areas with an economic cluster.

From Table 1, twenty-five sectors were designated as export enhancement sectors. In addition, seventy-one sectors were designated as import substitution sectors. These sectors could provide opportunities for local entrepreneurs. The sectoral employment data for Humboldt County and the nation was derived from IMPLAN data sources. (Minnesota IMPLAN, 2000).

Table 1. Sectoral Location Quotient Values and Sectoral Designation as Export Enhancement or Import Substitution

Sector	Location Quotient	Designation
Sheep, Lambs and Goats	1.666049	Export
Plating and Polishing	1.352081	Export
Industrial Gases	4.485444	Export
Other Nonprofit Organizations	1.441415	Export
Surgical Appliances and Supplies	1.259594	Export
Metal Mining Services	72.08696	Export
Food Grains	1.292369	Export
Ready-mixed Concrete	1.749411	Export
Sanitary Services and Steam Supply	1.96625	Export
Dimension Stone	5.699023	Export
Newspapers	1.528095	Export
Agricultural, Forestry, Fishery Services	4.031175	Export
Grass Seeds	32.16309	Export
Automobile Repair and Services	1.330684	Export
Inorganic Chemicals Nec.	7.007475	Export
Range Fed Cattle	8.873523	Export
Automotive Dealers & Service Stations	1.501681	Export
Railroads and Related Services	4.065667	Export
Amusement and Recreation Services, N.E.C.	3.035081	Export
Hay and Pasture	5.497396	Export
Electric Services	1.702049	Export
Hotels and Lodging Places	4.884605	Export
New Residential Structures	1.334905	Export
Gas Production and Distribution	5.865443	Export
Gold Ores	1608.053	Export
Colleges, Universities, Schools	0.007758	Import
Elementary and Secondary Schools	0.015204	Import
Hogs, Pigs and Swine	0.136679	Import
Other Educational Services	0.024196	Import
Business Associations	0.061348	Import
Portrait and Photographic Studios	0.222771	Import
Social Services, N.E.C.	0.049412	Import
Electrical Repair Service	0.161684	Import
Transportation Services	0.130965	Import
Arrangement Of Passenger Transportation	0.123032	Import
Job Trainings & Related Services	0.201644	Import
Local, Interurban Passenger Transit	0.084314	Import
Photofinishing, Commercial Photography	0.197078	Import
Bowling Alleys and Pool Halls	0.81725	Import
Feed Grains	0.095215	Import
Commercial Fishing	0.168151	Import
Miscellaneous Personal Services	0.277525	Import

Table 1. Continued

Sector	Location Quotient	Designation
Miscellaneous Livestock	0.667197	Import
Legal Services	0.103341	Import
Laundry, Cleaning and Shoe Repair	0.436757	Import
New Mineral Extraction Facilities	0.232351	Import
Other Business Services	0.073926	Import
Furniture & Home Furnishings Stores	0.276466	Import
Child Day Care Services	0.543321	Import
Credit Agencies	0.626028	Import
Beauty and Barber Shops	0.54398	Import
Insurance Carriers	0.09288	Import
Federal Government - Military	0.219067	Import
Apparel & Accessory Stores	0.389876	Import
Security and Commodity Brokers	0.254588	Import
Special Industry Machinery N.E.C.	0.702997	Import
Commercial Printing	0.247325	Import
Oil Bearing Crops	0.398426	Import
Automobile Parking and Car Wash	0.662112	Import
Radio and TV Broadcasting	0.606602	Import
Labor and Civic Organizations	0.669074	Import
New Utility Structures	0.407481	Import
Engineering, Architectural Services	0.207858	Import
New Highways and Streets	0.466686	Import
U.S. Postal Service	0.415873	Import
Services To Buildings	0.662318	Import
Motion Pictures	0.452704	Import
Industrial Machines N.E.C.	0.989353	Import
Insurance Agents and Brokers	0.543054	Import
Management and Consulting Services	0.262457	Import
Accounting, Auditing and Bookkeeping	0.281936	Import
Ranch Fed Cattle	0.909734	Import
Miscellaneous Repair Shops	1.121918	Import
Air Transportation	0.34221	Import
Dairy Farm Products	0.570021	Import
Miscellaneous Plastics Products	0.390854	Import
Other Medical and Health Services	0.660402	Import
Maintenance and Repair, Residential	0.595249	Import
Building Materials & Gardening	1.023793	Import
Other State and Local Govt Enterprises	0.55124	Import
Maintenance and Repair Other Facilities	0.317932	Import
Communications, Except Radio and TV	0.287803	Import
Personnel Supply Services	0.572357	Import
Federal Government - Non-Military	0.602919	Import
Miscellaneous Retail	0.670643	Import

Table 1. Continued

Sector	Location Quotient	Designation
New Government Facilities	0.684701	Import
General Merchandise Stores	1.249109	Import
Banking	0.366032	Import
Doctors and Dentists	0.537681	Import
Food Stores	1.010821	Import
New Industrial and Commercial Buildings	0.766001	Import
Eating & Drinking	0.649085	Import
State & Local Government - Education	0.600133	Import
Motor Freight Transport and Warehousing	1.07925	Import
Wholesale Trade	0.462034	Import
State & Local Government - Non-Education	1.169661	Import
Real Estate	0.399109	Import

*The export designation means the sector falls under the export enhancement economic development strategy. The import designation means the sector falls under the import substitution economic development strategy.

Once the existing economic sectors have been designated as export enhancement or import substitution sectors, they are analyzed for candidates of the target analysis through a screening process. The screening process was a two-step process. In the first step, the average QUALITY OF JOB as measured by direct, indirect and induced employee compensation per employee was approximately $25,000. Economic sectors which are characterized as low wage (i.e., below $25,000) and yielding low INCOME POTENTIAL (less than 0.5) did not proceed to Step 2. However, if an economic sector is characterized as high wage (greater than or equal to $30,000) it was retained for step two of the analysis. In the next step of the screening process, economic sectors were excluded if they failed to meet at least two of the following three criteria: (1) scored greater than 0.40 on INCOME POTENTIAL; (2) had a forecast positive growth rate; and (3) created more than 15 employees per million of output (EMPLOYMENT POTENTIAL).

Data obtained for the four criteria were normalized (observations adjusted for mean and variance) and the resulting Z-scores for each criteria were multiplied by respective weights and summed. Table 2 represents a list of existing industries that possess either a strong economic linkage with Humboldt County, are positive growth industries or produce the type of high quality jobs that Humboldt County desires.

Table 2. Normal Scores for Existing Industries Targets in Humboldt County

	Quality of Job	Z score	Income Potential	Z-score	Projected Growth-rates	Z-score	Employment Potential	Z-score	Industry Index	Rank
Accounting, Auditing and Bookkeeping	40819	0.04	0.86	1.48	1.90	0.51	17.43	0.36	0.60	3
Air Transportation	40258	0.00	0.45	-0.79	1.70	-0.72	11.05	0.19	-0.36	13
Doctors and Dentists	28830	-0.83	0.62	0.17	3.30	0.55	17.63	1.56	-0.02	8
Federal Government - Non-Military	41757	0.11	0.86	1.45	-0.50	1.11	20.58	-1.69	0.53	4
Maintenance and Repair Other Facilities	35451	-0.35	0.65	0.30	0.90	0.28	16.24	-0.49	-0.04	9
Maintenance and Repair, Residential	31015	-0.67	0.50	-0.50	0.90	-0.05	14.52	-0.49	-0.48	14
Management and Consulting Services	28913	-0.82	0.56	-0.18	3.80	0.55	17.66	1.98	-0.07	10
New Government Facilities	48311	0.59	0.42	-0.97	0.90	-1.18	8.63	-0.49	-0.34	12
New Highways and Streets	35945	-0.31	0.42	-0.95	0.90	-0.79	10.68	-0.49	-0.61	17
New Mineral Extraction Facilities	44866	0.34	0.62	0.14	0.90	-0.20	13.72	-0.49	0.09	7
New Utility Structures	36397	-0.28	0.47	-0.70	0.90	-0.57	11.82	-0.49	-0.48	15
Radio and TV Broadcasting	31146	-0.66	0.41	-0.98	0.20	-0.33	13.06	-1.09	-0.73	18
Railroads and Related Services	90492	3.66	0.49	-0.59	1.30	-1.63	6.28	-0.15	0.95	2
Sanitary Services and Steam Supply	45854	0.41	0.42	-0.94	3.00	-1.14	8.84	1.30	-0.21	11
Security and Commodity Brokers	33821	-0.46	0.71	0.65	3.40	0.44	17.07	1.64	0.26	6
State & Local Government - Education	36752	-0.25	1.00	2.22	1.30	2.39	27.21	-0.15	1.03	1
State & Local Government - Non-Education	36375	-0.28	0.78	1.04	1.10	1.30	21.57	-0.32	0.43	5
Wholesale Trade	36761	-0.25	0.44	-0.85	0.70	-0.54	11.98	-0.66	-0.53	16

Quality of Job is defined as the direct, indirect and induced employment employee compensation per job for a given sector.
Income Potential is defined as the direct and indirect total income per dollar of sectoral output for a given sector.
Projected Employment Growth Rate is defined as the forecast county sectoral employment growth rate from 4th Quarter 2000 to 3rd Quarter 20002 for a given sector.
Employment Potential is defined as the direct and indirect employment per million dollars of output for a given sector.

The standardized series of observations was ranked in descending order to derive a meaningful comparison of performance levels among targeted industries. Based on the weighting scheme assumed, the highest eighteen scoring existing industries in Humboldt County were:

1. State and Local Government, Education
2. Railroads and Related Services
3. Accounting, Auditing and Bookkeeping
4. Federal Government, Non-Military
5. State and Local Government, Non-Education
6. Security and Commodity Broker
7. New Mineral Extraction Facilities
8. Doctors and Dentists
9. Maintenance and Repair, Other Facilities
10. Management and Consulting Services
11. Sanitary Services and Steam Supply
12. New Government Facilities
13. Air Transportation
14. Maintenance and Repair, Residential
15. New Utility Structure
16. Wholesale Trade
17. New Highways and Street
18. Radio and TV Broadcasting

Of interest are the commercial sectors, which ranked high among existing industries. These are market based industries which will require further threshold and feasibility analysis but could be targeted for local entrepreneur development.

Results for New Economic Sectors in the Great Basin Development District

There are two ways in which a new firm can increase the economic activity in an area. One is through "export enhancement" sales of products to buyers outside the area can be increased. The second is "import substitution" which decreases purchases of inputs and final goods and services from sellers outside the area.

Export enhancement increases the size of an area's economic base and brings dollars into the area creating jobs and increasing incomes. Import substitution reduces leakages from the area, increasing the multiplier for most other sectors, and also creates jobs and increases incomes. This part of the study identifies both types of opportunities. Not all economic sectors should be encouraged to locate in any particular area. Economic sectors are usually classified as market oriented, input oriented or footloose industries. Market oriented industries, in order to operate efficiently, must locate close to the consumers of their products or services. Most service industries, such as banking, real estate and personal services fall into this category. Input oriented sectors, for similar reasons, must locate close to their sources of raw materials or important inputs. Mining, forestry and relate industries are of this type. Market and input oriented industries cannot easily be encouraged to locate in areas other than those with appropriate conditions. Local economic developers should not ignore these industries because much can be done to help them flourish, but it is the "footloose industries" - those with flexibility to locate in a range of areas offering cost savings or strategic advantages - upon which the primary recruitment, retention and expansion efforts can be focused.

Firms are often attracted or discouraged by an area's current industry mix. When firms are attracted by the mix of current industries, it is referred to as an agglomeration effect. Firms may be attracted because agglomeration effect reduces costs of inputs, assures a supply of labor or inputs, or provides higher quality business services. By identifying clusters of target industries, a county can reduce costs and increase the benefits of economic development efforts and support existing industries by enhancing agglomeration benefits.

For new economic sectors, the following four steps were employed to screen sectors for possible targeting analysis.

STEP ONE: SECTOR IDENTIFICATION

In the first step, economic sectors were identified for potential inclusion in the analysis. First, the 528 sectors within the IMPLAN model were identified. Those sectors with an output value for GBDD of zero were identified and designated as potential new economic sectors to locate in GBDD. The IMPLAN input-output data base for the state of Nevada was used as a basis for much of this process. First, all input or market oriented sectors were eliminated from further consideration. This meant that all agriculture and mining sectors were eliminated as well as banking and personal services sectors.

STEP TWO: DESIRABILITY CRITERION

The same four desirability criteria that are used for the existing sector analysis will be employed on the project. These factors were quality of job, income potential, employment potential and projected employment growth. The difference in the existing business and potential new business is that U.S. Department of Commerce data ending 2008 (Braddock 1999) is used to derive average annual growth rates for the future GBDD area.

STEP THREE -SCREENING

The screening process follows procedures outlined by Johnson (1985) and employed by Harris et al (2000). For each step, criteria are developed to screen new economic sectors. These criteria are similar to earlier analysis for existing sectors except for forecasts of national sectoral growth. Average annual employment growth rates nationally for individual economic sectors were derived for published materials until 2008 (Braddock 1999). These screen sectors became candidates for the final step, which employs weights to prioritize sectors for targeting.

STEP FOUR - WEIGHTING

As shown earlier, these factors all derive values in different units. The factors were normalized by Z-scores. A target index was derived for each industry, which along with value of sectoral inputs helps rank sectors for possible targeting.

Results for New Economic Sectors

These four criteria and weighting schemes were used to select economic sectors from the Nevada IMPLAN model for inclusion in the GBDD. Since the Nevada economy has a much wider array of sectors than the Humboldt County model or a GBDD model, this step was a necessary intermediate step so that all potential beneficial economic sectors could be considered. The GBDD model was used for final ranking because the economy of Humboldt was simply too linked to its neighboring jurisdictions. To ignore these linkages would overlook many intersectoral linkages and benefits of a selected economic sector to Humboldt County as well as the GBDD. This approach does not identify the precise benefits that would flow to Humboldt County residents since some will flow to other counties and cities in GBDD, but because of retail spending in Humboldt County and White Pine County and the close labor ties with neighboring jurisdictions makes this regional approach preferable.

Once potential new economic sectors for GBDD have been identified, the screening process begins. In the first step, the average QUALITY OF JOB as measured by direct, indirect and induced employee compensation per employee for the state model was approximately $31,000. Low wage for the state model was one standard deviation below the average, which yielded low salaries as $24,000 or below. Therefore, economic sectors were characterized as low wage sectors if their quality of job values were $24,000 or less. Economic sectors which were characterized as low wage ($24,000 or less) and yielding low INCOME POTENTIAL (less than 0.4) did not proceed to Step 2. However, if an economic sector is characterized as high wage (greater than $39,000) it was retained for step two of the analysis. In the next step of the screening process, economic sectors were excluded if they failed to meet at least two of the following three criteria: (1) scored greater than 0.35 for INCOME POTENTIAL; (2) had a positive forecast growth rate; and (3) created more than 10 jobs per million dollars of output (EMPLOYMENT POTENTIAL).

Sectors were screened following the two step process. The remaining sectoral data for the four criteria were normalized (observations adjusted for mean and variance) and the resulting Z-

scores for each criteria were multiplied by the appropriate weights and summed. The weights were the same employed with existing sectors in Humboldt County with Quality of Job weighed 40 percent, Income Potential weighted 30 percent, Forecast Growth Rates weighted 20 percent and Potential Employment weighted 10 percent.

The IMPLAN data set also estimates the value of imports by sector to the GBDD. Table 2 shows sectoral Z-scores, rank of Z-scores, sectoral value of imports to GBDD and ranks value of imports to GBDD. There were 57 economic sectors screened for possible inclusion to GBDD. The Computer and Data Processing Service Sector had the highest Z-score and second highest import value. The sector among others could be considered for inclusion in GBDD. Table 3 represents a list of sectors not in GBDD that possess either strong economic linkage, positive employment growth or produce high quality of jobs which are desired by the GBDD. Also these economic sectors may have import levels which might achieve a threshold for possible business creation or relocation.

Table 3. Sectoral Normalized Scores and Value of Imports for Potential New Economic Sectors for the Great Basin Development District

Sector Number	Sector	Economic Sector Z-score	Rank	Economic Sector Imports ($1,000,000)	Rank
492	Hospitals	0.39	12	37.43	1
475	Computer and Data Processing Services	1.34	1	13.39	2
245	Lime	-0.09	27	4.65	3
259	Iron and Steel Foundries	-0.35	43	2.91	4
436	Water Transportation	-0.83	56	2.07	5
484	Theatrical Producers, Bands Etc.	0.58	5	1.96	6
137	Millwork	-0.19	34	1.52	7
243	Concrete Products, N.E.C	-0.40	46	1.19	8
486	Commercial Sports Except Racing	0.91	3	1.14	9
138	Wood Kitchen Cabinets	-0.47	47	1.00	10
379	Storage Batteries	0.24	17	0.86	11
304	Miscellaneous Fabricated Wire Products	-0.30	40	0.86	12
147	Wood Products, N.E.C	-0.68	52	0.64	13
419	Dolls	0.42	10	0.53	14
339	Electronic Computers	0.38	13	0.51	15
303	Pipe, Valves, and Pipe Fittings	-0.17	32	0.50	16
412	Ophthalmic Goods	-0.52	48	0.49	17
178	Miscellaneous Publishing	-0.40	45	0.44	18
321	Special Dies and Tools and Accessories	-0.28	39	0.41	19
186	Alkalies & Chlorine	0.13	19	0.32	20
414	Watches, Clocks, and Parts	-0.67	51	0.30	21
241	Pottery Products, N.E.C	-0.52	49	0.26	22
247	Cut Stone and Stone Products	-0.34	42	0.24	23
157	Wood Partitions and Fixtures	-0.11	29	0.24	24
402	Automatic Temperature Controls	0.34	15	0.23	25
418	Musical Instruments	-0.17	31	0.18	26
279	Metal Sanitary Ware	-0.37	44	0.17	27
284	Fabricated Plate Work (Boiler Shops)	0.29	16	0.16	28
185	Plate Making	0.05	22	0.14	29
142	Wood Pallets and Skids	-0.69	54	0.14	30
403	Mechanical Measuring Devices	-0.10	28	0.12	31
324	Welding Apparatus	0.14	18	0.12	32
297	Small Arms Ammunition	-0.71	55	0.10	33
240	Porcelain Electrical Supplies	-0.03	24	0.09	34
409	Dental Equipment and Supplies	0.11	21	0.08	35
374	Communications Equipment N.E.C.	0.43	9	0.07	36
101	Manufactured Ice	-0.22	36	0.06	37

Table 3. Continued

Sector Number	Sector	Economic Sector Z-score	Rank	Economic Sector Imports ($1,000,000)	Rank
344	Typewriters and Office Machines N.E.C.	0.72	4	0.05	38
184	Typesetting	-1.07	57	0.04	39
344	Typewriters and Office Machines N.E.C.	0.72	4	0.05	38
184	Typesetting	-1.07	57	0.04	39
411	Electromedical Apparatus	0.44	8	0.04	40
253	Nonmetallic Mineral Products, N.E.C.	-0.33	41	0.04	41
376	Printed Circuit Boards	0.41	11	0.03	42
341	Computer Terminals	0.93	2	0.02	43
154	Wood Office Furniture	0.13	20	0.02	44
400	Search & Navigation Equipment	0.56	7	0.02	45
405	Analytical Instruments	-0.20	35	0.02	46
353	Scales and Balances	-0.09	26	0.02	47
236	Structural Clay Products, N.E.C	0.57	6	0.02	48
330	Food Products Machinery	-0.53	50	0.01	49
262	Primary Nonferrous Metals, N.E.C.	-0.15	30	0.01	50
155	Metal Office Furniture	-0.09	25	0.01	51
318	Machine Tools, Metal Cutting Types	-0.24	37	0.01	52
319	Machine Tools, Metal Forming Types	0.34	14	0.01	53
406	Optical Instruments & Lenses	-0.69	53	0.01	54
404	Instruments To Measure Electricity	-0.18	33	0.00	55
269	Brass, Bronze, and Copper Foundries	0.02	23	0.00	56
445	Water Supply and Sewerage Systems	-0.26	38	0.00	57

Further Analysis

From the existing sector and new sector analysis, potential targeting sectors can be derived. However, to narrow the list, additional analysis should be considered.

Targeting Profiles

From the sectors screened, profiles could be developed to target specific sectors. Table 4 shows a profile input form. The target profile form is more detailed than the four criteria approach used earlier and includes resource use and environmental quality estimates. There are additional criteria used which were not part of the four criteria model. These added criteria are:

Table 4. Targeting Profile Data Collection Sheet

Targeting Profile Sheet

County: _____

Sector: _____

Seven Components for Industry Targeting

Total Employee Compensation per Employee _____

Total Employee Compensation per Dollar of Output _____

Employment Growth Rate in GBDD 1989-1999 _____

Total Employment Per $ Million Output _____

International Competitiveness _____

Long-Term Prospects _____

Environmental Concerns _____

Growth and Change

Percentage Employment Growth Expected in U.S. _____

Employment Growth in the U.S. _____

Percentage Employment Growth in County _____

Employment Growth in County _____

Table 4 (Continued)

General Information

Number of Firms that Employ 1 to 19 persons _____

Number of Firms that Employ 20 to 49 persons _____

Number of Firms that Employ 50 to 99 persons _____

Number of Firms that Employ 100 to 499 persons _____

Average Acres per Establishment _____

Percent of Total Output Purchased by Federal Gov't _____

U.S. Employees per Establishment _____

Energy and Utility Usage Per Establishment

Electricity per Year (1,000 kwh) _____

Natural Gas per Year (1,000 cu. ft.) _____

Water Consumption per Year (1,000 gallons) _____

Water Discharge per Year (1,000 gallons) _____

Education

High School Graduates (%) _____

13 to 16 Years of Education (%) _____

16 or more years of Education (%) _____

Table 4. (Continued)

Transportation Mode

Shipments by Rail (%) _____

Shipments by Highway (%) _____

Shipments by Air (%) _____

Shipments by water (%) _____

Occupations

Executive, Administration, Managerial (%) _____

Professional (%) _____

Technicians (%) _____

Administrative Support (%) _____

Production (%) _____

Operators, Fabricators or Laborers (%) _____

Export and Import

Percent of Total Output Exported out of Study Area (%) _____

Percent of Total Input Imported from outside of Study Area (%) _____

Table 4. (Continued)

Major Study Area Linkage
Forward Linkages

Sector Number	Description	Percentage (%)

Backward Linkages

Sector Number	Description	Percentage (%)

INTERNATIONAL COMPETITIVENESS is an evaluation based on recent international trade trends and government forecasts. This criteria can examine recent changes in employment, value of shipments, capital investments, total imports and total exports. The evaluation scale rates international performance in terms of the following categories: excellent, very good, good, fair, poor and very poor.

LONG-TERM PROSPECTS evaluates projected industry growth in the face of international competition, regulatory constraints, technological changes, and future market demands. The evaluation scale rates long-term growth prospects in terms of the following categories: excellent, very good, good, fair, poor and very poor.

ENVIRONMENTAL CONCERNS evaluates the potential environmental impacts of selected industries based on common industry practices and known by-products. The evaluation scale rates environmental concerns in terms of the following categories: severe, many, few, not applicable and not available.

Additional information will be completed for the county for Table 1 to provide information for additional targeting. The Growth and Change Section shows the following information:

PERCENTAGE EMPLOYMENT GROWTH IN THE U.S. is the reported growth rate for the nation from 1998 to 2008 as reported in Bureau of Labor Statistics data.

EMPLOYMENT GROWTH IN THE U.S. is the number of new employees for a given sector as forecast by the Bureau of Labor Statistics.

PERCENTAGE EMPLOYMENT GROWTH IN COUNTY is the forecast growth rate for Humboldt County as published by the Nevada Department of Employment, Training and Rehabilitation.

EMPLOYMENT GROWTH IN COUNTY is the forecast growth in Humboldt County by the State of Nevada Department of Employment, Training and Rehabilitation.
The next section is called the General Information Section. The General Information Section shows the following:

NUMBER OF FIRMS THAT EMPLOY 1 TO 19 PERSONS is the number of firms from the U.S. County Business Patterns in the four digit SIC code.

NUMBER OF FIRMS THAT EMPLOY 20 TO 49 PERSONS is the number of firms from the U.S. County Business Patterns in the four digit SIC code.

NUMBER OF FIRMS THAT EMPLOY 50 TO 99 PERSONS is the number of firms from the U.S. County Business Patterns in the four digit SIC code.

NUMBER OF FIRMS THAT EMPLOYE 100 OR MORE PERSONS is the number of firms from the U.S. County Business Patterns in the four digit SIC code.

AVERAGE ACRES PER ESTABLISHMENT is the number of acres per establishment from national data.

PERCENT OF TOTAL OUTPUT PURCHASED BY FEDERAL GOVERNMENT is the dollar value of federal government expenditures for a given sector as a percentage of total sectoral output. These values can be obtained from the IMPLAN database.

U.S. EMPLOYEES PER ESTABLISHMENT is the number of employees for a given SIC sector divided by the number of establishments in this SIC sector. Data can be obtained from U.S. County Business Patterns.

The next section is Energy and Utility Usage Per Establishment. The Energy and Utility Usage per Establishment is as follows:

ELECTRICITY PER YEAR (1,000 kwh) is the number of kilowatts per establishment for a given SIC sector. Data will be obtained from U.S. Census of Manufacturing.

NATURAL GAS PER YEAR (1,000 cu.ft.) is the number of cubic feet of natural gas used per establishment for a given SIC sector. Data will be obtained from U.S. Census of Manufacturing.

WATER CONSUMPTION PER YEAR (1,000 gallons) is the number of gallons consumed per establishment for a given SIC sector. Data will be obtained from U.S. Census of Manufacturing.

The next section is Education. The Education Section is as follows:

HIGH SCHOOL GRADUATES (%) is the percentage of population in Humboldt County that has a high school diploma. The data will be obtained from the 2000 Census.

13 TO 16 YEARS OF EDUCATION (%) is the percentage of Humboldt County population with 13 to 16 years of education. The data will be obtained from the 2000 Census.

16 OR MORE YEARS OF EDUCATION(%) is the percentage of Humboldt County population with 16 or more years of education. The data will be obtained from the 2000 Census.

The next section is Transportation Mode.

SHIPMENTS BY RAIL (%) is the percentage of total shipments that are shipped by rail. This value will be determined through U.S. Census of Manufacturing data.

SHIPMENTS BY HIGHWAY (%) is the percentage of total shipments that are shipped by highway. This value will be determined through U.S. Census of Manufacturing data.

SHIPMENTS BY AIR (%) is the percentage of total shipments that are shipped by air. This value will be derived through U.S. Census of Manufacturing data.

SHIPMENTS BY WATER (%) is the percentage of total shipment that are shipped by waterways. This value will be derived through U.S. Census of Manufacturing data.

The next section is the Occupation Section. The Occupation Section is as follows:

EXECUTIVE, ADMINISTRATIVE AND MANAGERIAL (%) is the percent of total labor force in the given SIC category that is classified as executive, administrative and managerial. This data will be collected from national occupation by industry data.

PROFESSIONAL (%) is the percent of total labor force in a given SIC category that is classified as professional. This data will be collected from national occupation by industry data.

TECHNICIANS (%) is the percent of total labor force in a given SIC category that is classified as technicians. This data will be collected from national occupation by industry data.

ADMINISTRATIVE SUPPORT (%) is the percent of total labor force in a given SIC category that is classified as administrative support. This data will be collected from national occupation by industry data.

PRODUCTION (%) is the percent of total labor force in a given SIC category that is classified as production. This data will be collected from national occupation by industry data.

OPERATORS, FABRICATORS OR LABORERS (%) is the percent of total labor force in a given SIC category that is classified as operators, fabricators or laborers. This data will be collected from national occupation by industry data.

The next section is the Exports and Imports Section. The Export and Import Section is as follows:

PERCENT OF TOTAL OUTPUT EXPORTED OUTSIDE THE STUDY AREA (%) is the value of exports for a given sector divided by sectoral total output. Data for this analysis is collected from the study area's input-output tables.

PERCENT OF TOTAL INPUT IMPORTED FROM OUTSIDE OF STUDY AREA (%) is the value of imports for a given sector divided by the sector input. Data for this analysis is collected from the study area's input-output tables.

The last section of the targeting input sheet is Major Study Area Linkage Information. The Major Study Area Linkage Information is as follows:

FORWARD LINKAGES are the percent of total output for a given economic sector that is purchased by other sectors in the study area. From this analysis, value-added opportunities can be recognized. Data for this analysis is obtained through the study area input-output model.

BACKWARD LINKAGES are the percent of total input for a given economic sector that purchases inputs from other local economic sectors. From this analysis, sales leakage or import substitution opportunities will be identified. Data for this analysis is obtained through the study area input-output model.

Impacts of Target Industries

Using the input-output model, economic impacts of target sectors defined earlier could be derived. Impacts to total retail sales, employment number and total incomes for the county can be estimated. The results of the input-output model will be subsequently used for the Nevada fiscal impact model to measure potential fiscal consequences of expanding existing sectors or attracting proposed target industries. Through this analysis, Humboldt County and GBDD decision makers can make an informed decision about approaches to expand and diversify the local economy.

Conclusions

With changing international and national economies, decision makers in Humboldt County and the proposed Great Basin Development District have become aware of diversifying their local economy. The natural resource industries will continue to be important to this area but other sectors should be considered. In addition, local entrepreneurship development and enhancement could provide a basis for future economic development while keeping capital sources local.

Results of this section will be used for a workshop to narrow the choices of targeted industries. By selecting targeted industries, economic and fiscal impacts can be derived that will be useful input for further targeting.

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