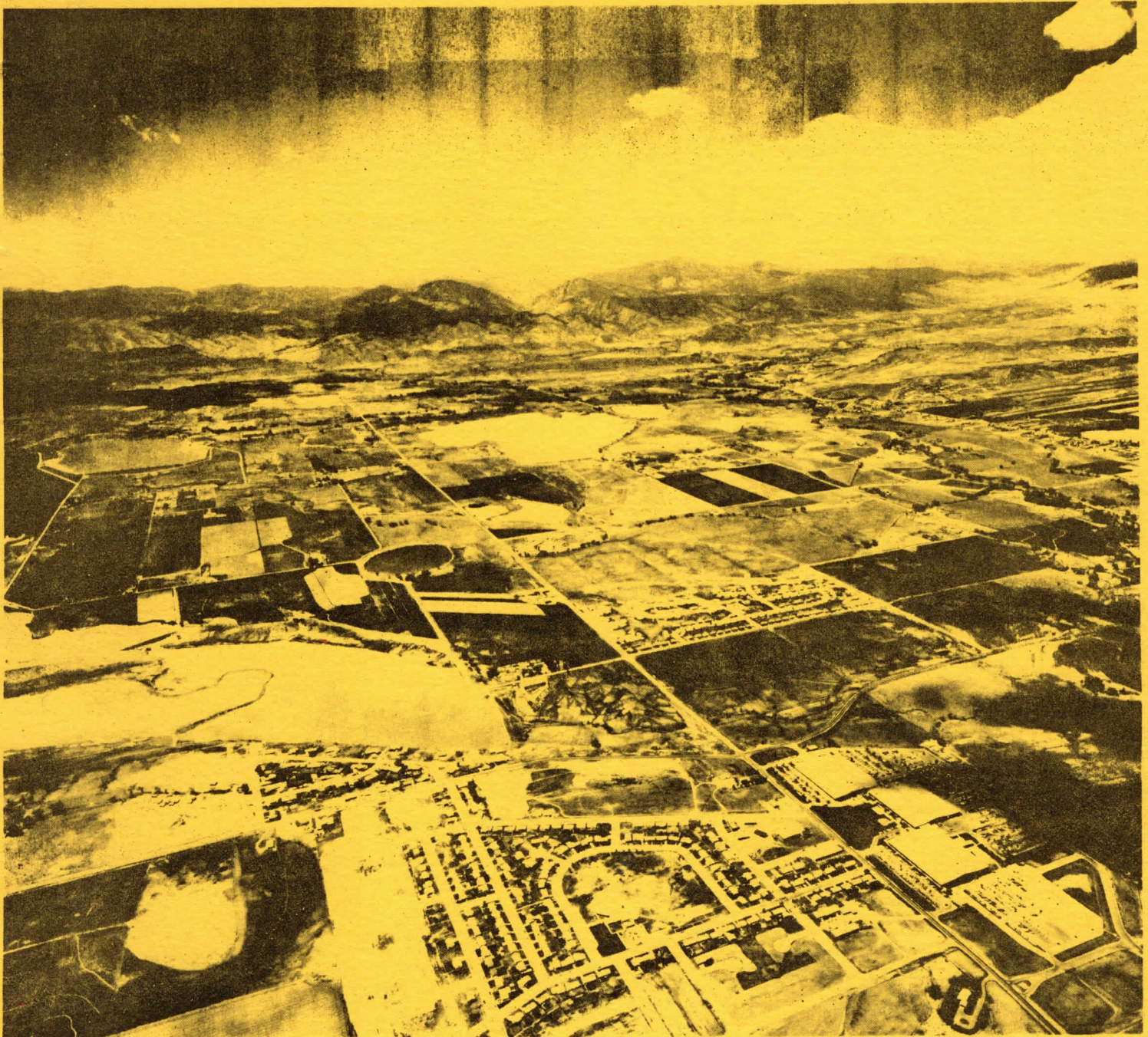# FUTURE ECONOMIC TRENDS
Input/Output Analysis

3: EXECUTIVE SUMMARY

Water Quality Management Plan ③

LARIMER-WELD REGIONAL COUNCIL OF GOVERNMENTS
LOVELAND, COLORADO   JANUARY 1977

EXECUTIVE SUMMARY

Interindustry Analysis and Economic Profile
of the Larimer-Weld Region

Larimer-Weld Regional Council of Governments
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EXECUTIVE SUMMARY

The purpose of this study is to provide a detailed description of the regional economy of Larimer and Weld counties and to develop a means for projecting future economic conditions. The method of analysis used to accomplish both goals is known as input-output. Specifically, the input-output approach utilizes the following base data:

1. An industry by industry sales and purchases distribution, measured in dollars.

2. A measurement of the extent to which each industry purchases labor, raw materials, and processed goods within the Larimer-Weld region as opposed to imports from outside the region.

3. Employment on an industry by industry basis in Larimer and Weld counties.

All of the above data are for 1974, and represent the most recent published and unpublished data available.

In addition to the information provided directly by the base data, the input-output model is used to: (1) Generate <u>provisional forecasts</u> of future economic activity to the year 2000, and (2) Estimate industry by industry employment to the year 2000. These provisional forecasts are based upon expectations for growth held by four key industrial sectors which currently have the greatest economic influence on Larimer and Weld counties. The projections are presented as a demonstration of the capabilities of the input-output technique. Greater accuracy could be obtained if more time and resources could be devoted to the analysis of the growth expectations for the leading economic sectors. Several growth scenarios are shown to indicate the sensitivity or stability of the forecasts to changes in the assumptions.

The Input-Output Technique

The input-output methodology is simply to divide the industries of the Larimer-Weld economy into two groups: (1) Businesses which service and supply inputs mainly to other businesses <u>within</u> the region, and (2) Business firms which sell mainly to customers <u>outside</u> the region. The latter group of firms are often termed "basic" industries. "Basic" industries, along with government, construction, finance, insurance, and real estate, form the demands which determine the business activity of the local suppliers of raw materials, labor, and processed goods. The local economy is said to be "driven" by the growth of basic industry, government, and the other "final demands". Thus, in order to project local business activity, it is important to determine the key economic sectors. These driving sectors will be the businesses which sell most of their output outside the region but purchase a significant share of their inputs inside the region. In order to be of major importance, the businesses must also have a significant size and show expectations of volatility (high future growth, or, possibly, high rates of decline).

In order to determine the nature of each industry in Larimer and Weld counties to see whether the industry is one of the driving sectors and to find the magnitudes involved, a transactions table is constructed. This transactions table is a system of double entry bookkeeping such that sales and purchases by each industry to and from each other industry (as well as labor, government, and exports)[1] are accounted

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[1] Exports are sales to customers outside of Larimer-Weld Counties, excluding governments.

for and measured. The sixteen private sector industries for which transactions have been disaggregated are shown by the row headings in Table II.

Two features of the input-output technique make it particularly desirable for the analysis of growth and development in a regional economy. First, the technique provides information on sales and related variables (such as employment and income) on an industry by industry basis. This information is much more useful than more generally aggregated data. Second, the projections of future business activity in the region are consistent. That is, the projected value of production by each sector is the minimum required to meet the needs of other industries in the region and projected exports. Inputs and outputs must be in accounting balance at all times. This simultaneous balancing of production to requirements among industries in the region provides much more realistic projections than isolated forecasts for individual industries.

The input-output technique provides two forecasting tools: (1) multipliers and (2) projections. A multiplier indicates how much business activity in dollars of transactions is generated within the Larimer-Weld region for each dollar of sales by a given industry to final demand. Final demand is defined as sales to retail consumers, government, and exports outside of the Larimer-Weld region. A multiplier will be large for an industry which purchases a large part of its inputs from within the local economy. This is because the money which it earns from its sales will be spent again in the region. The "basic" or driving industries will usually be characterized by large multipliers.

Several types of multipliers may be calculated. The business multiplier just discussed shows the total business spending within the Larimer-Weld region per dollar of additional sales to final demand by a given industry. An employment multiplier shows the total added employment in Larimer-Weld counties per dollar of additional sales to final demand by a given industry. An income multiplier shows the increase of personal income per dollar of additional sales to final demand by a given industry. The multipliers derived for Larimer and Weld counties all include direct, indirect, and induced effects. This means that if a "basic" industry expands its sales to, say, exports by $1,000, it may spend $600 directly on locally produced goods. The producers of these local goods are then indirectly required to purchase some local goods and services themselves in order to meet this additional demand, and so on. The induced impact refers to the assumption that labor hired directly will respend a fixed proportion of its added income, stimulating further expansion of the regional economy. Thus, both local producers and local labor are assumed to respend locally part of their increased incomes which resulted from the increased exports by the "basic" industry. The total effect is reflected in the multiplier.

The second forecasting tool provided by the input-output technique for the Larimer-Weld economy is the projection of future business activity by sector. In addition to the projection of dollar sales for each sector, variables which may be assumed to rise proportionately with production may also be estimated. In this report labor employment as well as dollar sales are projected to the year 2000.

Projections of future economic activity are derived from the input-output model by focusing on the "basic" or driving industries. Examination of the size of the multipliers and the size and expected growth of the basic industries reveals four key sectors. These are the livestock sector, food processing, electronics and precision instruments, and government. Estimates of expected growth in these sectors to the year 2000 must be obtained in order to drive the input-output model. Scenarios for growth in these four sectors were constructed from information obtained from personal interviews with representatives of major firms in each sector. Government growth estimates were provided by the Larimer-Weld Regional Council of Governments. The expected growth estimates for these sectors are shown in Table I and were introduced into the input-output model to generate new, consistent estimates of the value of sales for each industry. Two basic variants of the growth projections were analyzed. The first assumes that workers do not spend any of their increased incomes within the region, while the second variant assumes that labor continues to respend increased income in the same fashion as indicated by historical data. The two projections are, thus, conservative in the first instance and, perhaps, somewhat high in the second. Some overstatement may occur in the latter case if workers tend to import and save more as their incomes rise. Both of the above projections scenarios may be somewhat conservative, however, because only four major sectors are assumed to drive the model through their expanding sales to export, government, and other final demands. This limited set of "basic" industries analysis was partly predicated on time and funding constraints. Time particularly

was not sufficient to obtain personal interviews with executives in
other sectors of the economy. In order to measure the possible error of
neglecting growth in sales to final demand by other sectors, the four
"basic" sectors were allowed to grow as before, and it was arbitrarily
assumed that all other sectors (except irrigated agriculture) were
reasonably able to expand final demand sales by 4 percent per year.[2]
Again, low and high estimates were obtained depending on whether or not
it was assumed that consumers would respend added income within the
region.

TABLE I

Estimated Yearly Percentage Growth Rates of
Sales to Final Demand

Sector	Time Period				
	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000
Livestock	2%	2%	-2%	-2%	2%
Food Processing	6%	5%	4%	2%	1%
Electronics	17%	6.3%	2.1%	2.1%	1.4%
Government	6.8%	6.8%	6.8%	6.8%	6.8%

Source: Industry estimates from personal interview with business executives
in major firms from each sector. Government sector estimates are based on
historic trends and interviews with local elected officials and administrators
conducted by Larimer-Weld Regional Council of Governments. The Government
sector is an aggregation of all local, state, and federal fund sources,
including assistance programs and research grants at major universities
and such institutions as the Rocky Mountain Forest and Range Experiment
Station. Government excludes resident instruction, expenditures by elemen-
tary, secondary, and university level education institutions. These are
incorporated in the processing sector under "Education."

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[2]

It should be noted that many of these sectors do not sell very much
to final demand (they are essentially "non-basic") and thus allowing
their sales to final demand to rise by 4 percent per year has little
effect.

A more detailed account of the input-output technique and a specific description of the model and computer instructions are contained in the body of the main report. Technicians desiring to extend or modify the model will want to examine the main report closely. The following section of this executive summary will be a discussion of the main findings of the research.

Use and Interpretation of the Projections Tools for Larimer and Weld Counties

In terms of the direct, indirect, and induced (or total interdependence) relationships among sectors of the Larimer-Weld economy, the multiplier analysis is a response to the following question: What are the impacts on total spending, total employment, or total income within Larimer-Weld counties if the final demand sales by any one of the industries should increase? These results are shown in columns 4, 5, and 6 of Table II. Consider, for example, a $100,000 increase in the export sales of the food processing sector. In order to expand food processing sales by $100,000, a total of $194,400 in spending will be generated within the region. This is shown by the business multiplier for food processing of 1.944. The additional employment generated in the region shown by the employment multiplier in column 5 is $(100)(.0222)=2.22$ added workers, and the labor payroll will increase by $(\$100,000)(.120)=\$12,000$ as shown by the income multiplier in column 6. A similar interpretation can be made for a given increase in sales to final demand in any other sector shown at the left of Table II. It must be cautioned that the multipliers alone are insufficient evidence to justify ranking an industry as very important to the growth and development of a region. For instance,

TABLE II
SUMMARY OF INPUT-OUTPUT ANALYSIS, 1974

Sector	(1) 1974 Value of Sales ($1,000.000)	(2) 1974 Employment* (No. of Workers)	(3) 1974 Household Income by Source ($1,000,000)	(4) Direct Plus [1] Indirect plus Induced Business Multiplier	(5) Direct [2] Plus Indirect Plus Induced Employment Multiplier	(6) Direct [3] Plus Indirect Plus Induced Income Multiplier
Livestock	477.64	7,165	35.94	1.673	.0308	0.136
Irr. Ag.	128.23	7,950	5.41	1.487	.0721	0.103
Dryland Ag.	17.48	559	0.94	1.686	.0453	0.147
Food Proc.	809.73	3,402	33.78	1.944	.0222	0.120
Mining	36.21	1,159	13.22	2.370	.0537	0.579
Electronics	406.56	6,884	75.24	1.452	.0226	0.313
Paper	2.70	133	0.80	1.801	.0588	0.369
Printing	10.70	645	4.86	1.980	.0698	0.534
Chem. & Petro.	5.11	100	0.56	1.323	.0243	0.149
Lumber	11.96	431	3.50	2.013	.0522	0.433
Misc. Mfg.	18.65	867	5.58	1.733	.0555	0.378
Utilities	177.42	2,531	24.75	1.332	.0171	0.171
Services	223.81	7,540	69.30	1.783	.0443	0.395
Trade	994.20	14,243	144.55	1.621	.0230	0.224
Education	180.86	17,905	103.91	2.154	.1115	0.675

1/ In dollars of business activity per dollar of output delivered to final demand.
2/ In numbers of workers per $1,000 of output delivered to final demand.
3/ In dollars of income generated per dollar of output delivered to final demand.

* Data on employment include all workers, full and part time. For future study it would be desirable to draw a distinction. Such distinction was precluded by the form of secondary data, finances and time available to this study.

Source: Value of output, federal and state publications; employment and earnings, computer tapes produced by Colorado Department of Employment, multipliers, derived with input-output model in this study.

the mining sector shows the highest business multiplier. An increase of sales to final demand of $100,000 by mining would result in $237,000 of added sales activity among Larimer-Weld businesses. However, examination of column 1 of Table II shows that mining is a relatively small part of the region's economy. It is unlikely that this sector would provide dynamic impetus to regional growth. Likewise, the employment multiplier for mining would indicate that 5.37 more persons would be employed if $100,000 could be added to final demand sales. This is more than twice the employment effect shown for food processing. Examination of column 2 of Table II reveals that food processing employs almost three times as many workers as does mining. Even though food processing is directly and indirectly less labor intensive its absolute size more than makes up for its smaller labor multiplier. Multipliers are, then, but one indication of the importance of any given industry to the economic welfare of the region. Absolute size and expected volatility of growth are also important measures of the role an industry will play in the future economy of the region. Education might serve as an example of the latter consideration. Education is the single largest employer (see column 2 of Table II), but current expectations for future growth at the university level are small because of state legislative limits placed on the major universities in the Larimer-Weld region. Education, thus, is not expected to play a major role in future business expansion. Of course changes in legislative policy could reverse this expectation.

The final result of the input-output analysis of Larimer-Weld counties is the provisional economic growth scenarios to the year 2000. These projections, as explained earlier, are based upon expected

growth for four major economic sectors in the region. These "basic" sectors are livestock, food processing, electronics, and government. These four sectors are most important in that they have high multiplier effects, and/or have high total value of sales and employment relative to other sectors, and/or are expected to have a relatively volatile growth in the 1975-2000 period. When these sectors expand sales to final demand (exports, consumers, and government purchases) they purchase inputs within the region and bring about a cumulative economic expansion.

These forecasts are entitled Four "Basic" Sectors in Table III. A low range and a high range of forecasts is presented for this scenario as well. The low range assumes that workers do not spend increases in income on goods and services sold in the region. The high range assumes that workers continue to spend the proportion of their income in the region as indicated by historical records.

A second set of growth projections is shown following the Four "Basic" sectors scenarios. The second set provides a check on the assumption that only four "basic" or driving sectors will exist. In this latter scenario all sectors are assumed to drive the economy, except irrigated agriculture, which is assumed to be limited by resource constraints. A low and high range is provided for these latter projections in the same manner as for the Four "Basic" sector growth projections. Inspection of Table III reveals the relative stability of the growth projections under differing assumptions. With four "basic" driving sectors leading the region by expanding sales to exports, government, and other final demands, the total sales by industries in the Larimer-Weld region are seen to approximately double (193 to 222 percent increase) in the 25 year period. If the extreme assumption

TABLE III

SUMMARY OF ECONOMIC GROWTH SCENARIOS, 1975-2000

	1975	1980	1985	1990	1995	2000	2000/1975
TOTAL GROSS OUTPUT ($1,000,000)							
Four "Basic" Sectors, Low Range	8,072.66	9,926.36	11,613.89	13,043.37	14,347.74	15,618.92	1.93
Four "Basic" Sectors, High Range	8,072.66	10,301.13	12,374.41	14,211.89	16,028.14	17,953.36	2.22
All Sectors, "Basic" Low Range	8,072.66	10,161.88	12,135.93	13,914.02	15,642.53	17,429.73	2.16
All Sectors "Basic" High Range	8,072.66	10,589.83	13,013.33	15,275.78	17,607.80	20,159.58	2.50
TOTAL EMPLOYMENT (number of persons)							
Four "Basic" Sectors, Low Range	88,972	111,686	135,330	159,495	187,495	221,476	2.49
Four "Basic" Sectors, High Range	88,972	115,869	143,824	172,435	206,045	247,430	2.78
All Sectors "Basic" Low Range	88,972	114,383	141,312	169,473	202,226	242,225	2.72
All Sectors "Basic" High Range	88,972	119,273	151,476	185,254	224,979	273,777	3.08

Source: Base data for 1975 is
Projections for 1980-2000 obtained by use of the Larimer-Weld input-output model.

that all industries (except irrigated agriculture) are able to expand
sales to export, government and other final demands are introduced,
and total sales are projected to rise by about 2.3 times (216 to 250
percent increase) in the 25 year period. Our best estimate, then, is
that sales would slightly more than double over the 25 year period.

Similar estimates for employment are shown in the lower half of
Table III. It is seen that employment over the 25 year period is
projected to rise about 2.64 times with four "basic" sectors and about
2.9 times if all sectors are classed as "basic". Our best estimate,
then, is that employment would rise by slightly over two and three
quarters times by the year 2000.

One major advantage of the input-output model is the disaggregation
by industry which may be achieved. Tables IV-A and IV-B present detailed
industry by industry sales projections for the end of each five year
period from 1975 to 2000. Table IV-A shows sales growth with four
"basic" sectors assumed, while Table IV-B shows growth with all sectors
but irrigated agriculture assumed "basic". Tables V-A and V-B present
detailed industry by industry employment projections for the same intervals
and with the same assumptions as in the sales growth tables.

A Further Implication of the Economic Growth Analysis

The input-output projections contained in this report assume no
resource constraints except in the case of irrigated agriculture. That
is, each sector is free to expand to meet demands placed on it by other
expanding sectors or by sales to final demand. It is possible that
limited supplies of crucial resource inputs such as land and water could

provide "bottlenecks" which limit the output of certain industries. In order to approximate this effect for irrigated agriculture, it was assumed that no expansion in sales to final demand could be achieved by irrigated agriculture.[3] It may be noted, however, that no limit was placed on the expansion of sales by irrigated agriculture to other processing sectors. Thus, while irrigated agriculture could not increase its exports or other final demand sales, production by irrigated agriculture could respond to the needs of local producers for inputs supplied by irrigated agriculture. Two alternatives exist: (1) Necessary irrigated agricultural products may be imported by those industries requiring them, or (2) all industries depending on irrigated agricultural products as inputs cease to grow. Various scenarios of this type can be investigated utilizing the input-output model and the related linear-programming technique. This is one of the many options for future research presented by the versatile input-output technique.

The true power of the input-output technique rests in its application as an analytical tool to aid decision making. Assumptions about growth in various economic sectors may be made and the impacts to regional economy may be quantitatively measured.

Great value lies in the speed with which this may be accomplished. By changing several data cards in the computerized model, new projections can be made in a very short time period. The beneifts in this is that a number of scenarios may be tested rapidly and the effects of each compared on similar grounds. This can greatly assist professional planning staff

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[3]This assumption could be changed in further studies to reflect new irrigated agricultural lands brought in to production by new or improved irrigation methods. Expansion of agricultural lands may be offset by consumption of land for residential or industrial site location expansion, however.

and elected officials in determining the impacts of main decisions which could affect the regional economy.

To maintain the model and insure that the data are current, a periodic updating is required. Funding resources and staff time must be available for this purpose if this is to be a useful planning tool.

TABLE IV-A: PROJECTED SALES BY SECTOR IN FIVE-YEAR INCREMENTS WITH FOUR SECTORS "BASIC": 1975-2000.

(Millions of Dollars)

Sector		1975	1980	1985	1990	1995	2000
Livestock	L	477.64	620.39	776.55	922.73	1,006.95	1,060.27
	H	477.64	622.73	781.30	930.03	1,017.45	1,074.86
Irrigated Agriculture	L	128.23	154.30	182.99	210.86	227.93	239.42
	H	128.23	154.96	184.33	212.90	230.87	243.51
Dryland Agriculture	L	17.48	19.91	22.82	26.12	29.37	33.13
	H	17.48	19.96	22.92	26.26	29.57	33.41
Food Processing	L	809.73	1,071.41	1,357.53	1,643.53	1,811.02	1,902.57
	H	809.73	1,074.05	1,362.88	1,651.75	1,822.83	1,918.98
Mining	L	36.21	37.18	38.21	39.33	40.60	42.16
	H	36.21	37.43	38.73	40.12	41.75	43.75
Electronics	L	406.56	860.14	1,161.43	1,292.91	1,441.11	1,557.09
	H	406.56	860.25	1,161.65	1,293.25	1,441.59	1,557.76
Paper	L	2.70	2.89	3.09	3.30	3.55	3.87
	H	2.70	2.90	3.10	3.32	3.58	3.91
Printing	L	10.70	12.34	13.66	14.66	15.86	17.22
	H	10.70	13.28	15.57	17.59	20.07	23.08
Chemicals and Petroleum	L	5.11	6.85	8.35	9.50	10.41	11.14
	H	5.11	6.88	8.41	9.59	10.54	11.33
Lumber	L	11.96	12.90	13.54	13.87	14.25	14.60
	H	11.96	12.97	13.70	14.11	14.60	15.08
Miscellaneous Manufacturing	L	18.65	19.87	20.95	21.83	22.48	22.94
	H	18.65	22.39	26.06	29.67	33.76	38.62
Utilities	L	177.42	211.43	241.03	265.51	292.68	323.10
	H	177.42	229.93	278.57	323.19	375.63	438.33
Services	L	223.81	236.08	249.38	263.00	275.94	290.29
	H	223.81	253.60	284.95	317.65	354.52	399.45
Trade	L	994.20	1,005.26	1,017.55	1,030.71	1,044.04	1,059.48
	H	994.20	1,085.75	1,180.89	1,281.67	1,404.94	1,560.85
Education	L	180.86	221.66	276.82	352.13	456.52	601.11
	H	180.86	236.10	306.13	397.16	521.28	691.08
Households	L	1,240.68	1,445.20	1,655.73	1,878.40	2,157.76	2,514.70
	H	1,240.68	1,474.87	1,715.94	1,970.91	2,290.79	2,699.52
Final Payments	L	3,330.72	3,988.56	4,574.23	5,054.99	5,497.28	5,925.83
	H	3,330.72	4,193.09	4,989.28	5,692.71	6,414.37	7,199.85
Total Gross Output	L	8,072.66	9,926.37	11,613.89	13,043.37	14,347.74	15,618.92
	H	8,072.66	10,301.13	12,374.41	14,211.89	16,028.14	17,953.36
Percent Change	L	-	22.96%	17.00%	12.31%	10.00%	8.86%
	H	-	27.60%	20.13%	14.85%	12.78%	12.01%
Total Government Expenditures	L	409.98	569.66	791.54	1,099.84	1,528.23	2,123.46
	H	409.98	569.66	791.54	1,099.84	1,528.23	2,123.46

L = Low Range
H = High Range

Source: Projected using the Larimer-Weld Input-Output Model.

TABLE IV-B: PROJECTED SALES BY SECTOR IN FIVE-YEAR INCREMENTS WITH ALL
SECTORS "BASIC": 1975-2000.

(Millions of Dollars)

Sector		1975	1980	1985	1990	1995	2000
Livestock	L	477.64	621.05	778.03	925.19	1,010.61	1,065.40
	H	477.64	623.75	783.56	933.77	1,023.00	1,082.59
Irrigated Agriculture	L	128.23	154.47	183.36	211.47	228.84	240.70
	H	128.23	159.07	193.00	226.65	250.26	269.18
Dryland Agriculture	L	17.48	21.85	27.13	33.30	40.04	48.05
	H	17.48	21.90	27.23	33.46	40.28	48.38
Food Processing	L	809.73	1,072.35	1,359.62	1,647.01	1,816.20	1,909.81
	H	809.73	1,075.33	1,365.72	1,656.48	1,829.86	1,928.80
Mining	L	36.21	43.94	53.20	64.33	77.79	94.17
	H	36.21	44.23	53.79	65.24	79.10	95.99
Electronics	L	406.56	860.26	1,161.69	1,293.34	1,441.75	1,557.98
	H	406.56	860.38	1,161.94	1,293.73	1,442.31	1,558.76
Paper	L	2.70	3.20	3.76	4.41	5.21	6.20
	H	2.70	3.20	3.78	4.44	5.24	6.24
Printing	L	10.70	12.97	15.06	16.99	19.33	22.07
	H	10.70	14.02	17.23	20.35	24.18	28.81
Chemicals and Petroleum	L	5.11	6.94	8.55	9.83	10.90	11.83
	H	5.11	7.07	8.83	10.27	11.52	12.66
Lumber	L	11.96	13.83	15.62	17.34	19.41	21.81
	H	11.96	13.92	15.80	17.62	19.81	22.37
Miscellaneous Manufacturing	L	18.65	20.47	22.28	24.04	25.76	27.54
	H	18.65	23.28	28.05	32.99	38.70	45.52
Utilities	L	177.42	215.82	250.76	281.75	316.82	356.87
	H	177.42	236.62	293.38	347.87	412.30	489.57
Services	L	223.81	255.02	291.36	333.01	380.05	435.88
	H	223.81	274.85	332.02	396.11	471.14	562.44
Trade	L	994.20	1,099.51	1,226.45	1,379.11	1,562.17	1,784.11
	H	994.20	1,190.05	1,412.01	1,667.02	1,977.85	2,361.87
Education	L	180.86	222.24	278.11	354.28	459.72	605.60
	H	180.86	238.41	311.24	405.68	533.94	708.78
Households	L	1,240.68	1,469.25	1,709.03	1,967.29	2,289.95	2,699.58
	H	1,240.68	1,502.79	1,777.77	2,073.96	2,443.94	2,913.56
Final Payments	L	3,330.72	4,068.71	4,751.90	5,351.31	5,937.96	6,542.13
	H	3,330.72	4,300.95	5,227.98	6,090.14	7,004.38	8,023.64
Total Gross Output	L	8,072.66	10,161.88	12,135.93	13,914.02	15,642.53	17,429.73
	H	8,072.66	10,589.83	13,013.33	15,275.78	17,607.80	20,159.58
Percent Change	L	-	25.88%	19.43%	14.65%	12.42%	11.42%
	H	-	31.18%	22.88%	17.38%	15.27%	14.49%
Variance from Base Projection	L	-	2.37%	4.49%	6.68%	9.02%	11.59%
	H	-	2.80%	5.16%	7.51%	9.86%	12.29%
Total Government Expenditures	L	409.98	569.66	791.54	1,099.84	1,528.23	2,123.46
	H	409.98	569.66	791.54	1,099.84	1,528.23	2,123.46

L = Low Range
H = High Range

Source: Projected using the Larimer-Weld Input-Output Model.

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TABLE V-A: PROJECTED EMPLOYMENT BY SECTOR IN FIVE-YEAR INCREMENTS WITH FOUR SECTORS "BASIC": 1975-2000.

Sector		1975	1980	1985	1990	1995	2000
Livestock	L	7,165	9,306	11,648	13,841	15,104	15,904
	H	7,165	9,341	11,720	13,950	15,262	16,123
Irrigated Agriculture	L	7,950	9,567	11,345	13,073	14,132	14,844
	H	7,950	9,608	11,428	13,200	14,314	15,098
Dryland Agriculture	L	559	637	730	836	940	1,060
	H	559	639	733	840	946	1,069
Food Processing	L	3,402	4,286	5,430	6,574	7,244	7,610
	H	3,402	4,296	5,452	6,607	7,291	7,676
Mining	L	1,159	1,190	1,223	1,258	1,299	1,349
	H	1,159	1,198	1,239	1,284	1,336	1,400
Electronics	L	6,884	14,622	19,744	21,979	24,499	26,470
	H	6,884	14,624	19,748	21,985	24,507	26,482
Paper	L	133	142	151	162	174	190
	H	133	142	152	163	175	192
Printing	L	645	740	820	880	952	1,033
	H	645	797	934	1,055	1,204	1,385
Chemicals and Petroleum	L	100	137	167	190	208	223
	H	100	138	168	192	211	227
Lumber	L	431	464	487	499	513	526
	H	431	467	493	508	526	543
Miscellaneous Manufacturing	L	867	914	964	1,004	1,034	1,055
	H	867	1,030	1,199	1,365	1,553	1,776
Utilities	L	2,531	2,960	3,374	3,717	4,098	4,523
	H	2,531	3,219	3,900	4,525	5,259	6,137
Services	L	7,540	8,027	8,479	8,942	9,382	9,870
	H	7,540	8,622	9,688	10,800	12,054	13,581
Trade	L	14,243	14,074	14,246	14,430	14,616	14,833
	H	14,243	15,200	16,532	17,943	19,669	21,852
Education	L	17,905	21,944	27,405	34,861	45,195	59,510
	H	17,905	23,374	30,307	39,319	51,607	68,420
Households	L	124	144	166	188	216	251
	H	124	147	172	197	229	270
Government[1]	L	9,229	12,824	17,818	24,758	34,402	47,801
	H	9,229	12,824	17,818	24,758	34,402	47,801
Finance, Insurance, and [2] Real Estate	L	2,597	3,111	3,567	3,942	4,287	4,622
	H	2,597	3,269	3,890	4,439	5,006	5,619
Construction and Ordnance [2]	L	5,508	6,597	7,566	8,361	9,092	9,802
	H	5,508	6,934	8,251	9,305	10,494	11,779
Total	L	88,972	111,686	135,330	159,495	187,387	221,476
	H	88,972	115,689	143,824	172,435	206,045	247,430

[1] Assumes 6.8 percent growth rate.

[2] Assumes same growth rate as final payments.

L = Low Range
H = High Range

Source: Projected using the Larimer-Weld Input-Output Model.

TABLE V-B: PROJECTED EMPLOYMENT BY SECTOR IN FIVE-YEAR INCREMENTS WITH ALL SECTORS "BASIC": 1975-2000.

Sector		1975	1980	1985	1990	1995	2000
Livestock	L	7,165	9,316	11,670	13,878	15,159	15,981
	H	7,165	9,356	11,753	14,006	15,345	16,239
Irrigated Agriculture	L	7,950	9,577	11,368	13,111	14,188	14,923
	H	7,950	9,862	11,966	14,052	15,516	16,689
Dryland Agriculture	L	559	699	868	1,066	1,281	1,538
	H	559	701	871	1,071	1,289	1,548
Food Processing	L	3,402	4,289	5,438	6,588	7,265	7,639
	H	3,402	4,301	5,463	6,626	7,319	7,715
Mining	L	1,159	1,406	1,702	2,058	2,489	3,013
	H	1,159	1,415	1,721	2,088	2,531	3,072
Electronics	L	6,884	14,624	19,749	21,987	24,510	26,486
	H	6,884	14,626	19,753	21,993	24,519	27,499
Paper	L	133	157	184	216	255	304
	H	133	157	185	218	257	306
Printing	L	645	778	904	1,019	1,160	1,324
	H	645	841	1,034	1,221	1,451	1,729
Chemicals and Petroleum	L	100	139	171	197	218	237
	H	100	141	177	205	230	253
Lumber	L	431	498	562	624	699	785
	H	431	501	569	634	713	805
Miscellaneous Manufacturing	L	867	942	1,025	1,106	1,185	1,267
	H	867	1,071	1,290	1,518	1,780	2,094
Utilities	L	2,531	3,021	3,511	3,944	4,435	4,996
	H	2,531	3,313	4,107	4,870	5,772	6,854
Services	L	7,540	8,671	9,906	11,322	12,922	14,812
	H	7,540	9,345	11,289	13,468	16,019	19,123
Trade	L	14,243	15,393	17,170	19,308	21,870	24,978
	H	14,243	16,601	19,768	23,338	27,689	33,066
Education	L	17,905	22,002	27,533	35,074	45,512	59,954
	H	17,905	23,602	30,813	40,162	52,860	70,169
Households	L	124	147	171	197	229	270
	H	124	150	178	207	244	291
Government[1]	L	9,229	12,824	17,818	24,758	34,402	47,801
	H	9,229	12,824	17,818	24,758	34,402	47,801
Finance, Insurance, and Real Estate[2]	L	2,597	3,172	3,704	4,171	4,628	5,099
	H	2,597	3,354	4,076	4,748	5,461	6,256
Construction and Ordnance[2]	L	5,508	6,728	7,858	8,849	9,819	10,818
	H	5,508	7,112	8,645	10,071	11,582	13,268
Total	L	88,972	114,383	141,312	169,473	202,226	242,225
	H	88,972	119,273	151,476	185,254	224,979	273,777

[1] Assumes 6.8 percent growth rate.

[2] Assumes same growth rate as final payments.

L = Low Range
H = High Range

Source: Projected using the Larimer-Weld Input-Output Model.

GLOSSARY OF TERMS

Final Demand: Final demand is the dollar value of goods and services purchased by the final consumer during a specified accounting period. The final demand sectors employed in this study are governments, exports, private capital formation, finance, insurance and real estate.

Intermediate Demand: Contrasted to final demand, intermediate demand is the dollar value of goods and services which are sold by one producer to another and which are further processed before being delivered to the final consumer.

Aggregation: As used in this study, aggregation refers to combining the data for a number of business firms to form an economic sector or industry.

Disaggregation: Disaggregation as used in this study refers to the separation of economic sectors or industries into smaller components.

Basic Industry or Basic Sector: Those industries or industries aggregated into economic sectors which typically ship a significant portion of their output outside the region.

"Driving" Sectors: In this study the "driving" sectors of the regional economy are the components of final demand. Production in the regional economy occurs in response to (is "driven" by) the levels of final demand.

Business Multiplier: The business multiplier estimates the total dollar value of production generated in an economy in response to a one dollar increase in the final demand for the output of a specific economic sector.

Income Multiplier: These multipliers are estimates of the total change in household income which results from a one dollar change in final demand for the output of any specific sector of the regional economy.

Employment Multiplier: In this study, the employment multipliers estimate the total employment generated in the regional economy in response to an increase in final demand for the output of any specific sector.

Growth Scenario: Growth scenario refers to a set of assumed futures, relating specifically to growth in final demand, from which are derived estimates of economic activity, employment and income in the regional economy.

Induced Impact: Induced impacts are the impacts on economic activity, employment, and household income which result from increased household spending.

Projection: In this report, projection refers to estimation of future levels of economic activity, income and employment based upon the extension of present relationships.

Provisional Forecast: These forecasts are estimates of future values of economic variables which are conditioned by the specified levels of growth in final demand. It is assumed that the relationship between final demand and the economic variables to be projected is known and remains constant over the forecasting period.