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# Measuring Economic Impacts: The Application of Input-Output Analysis to California Water Resources Problems

California Department of Water Resources

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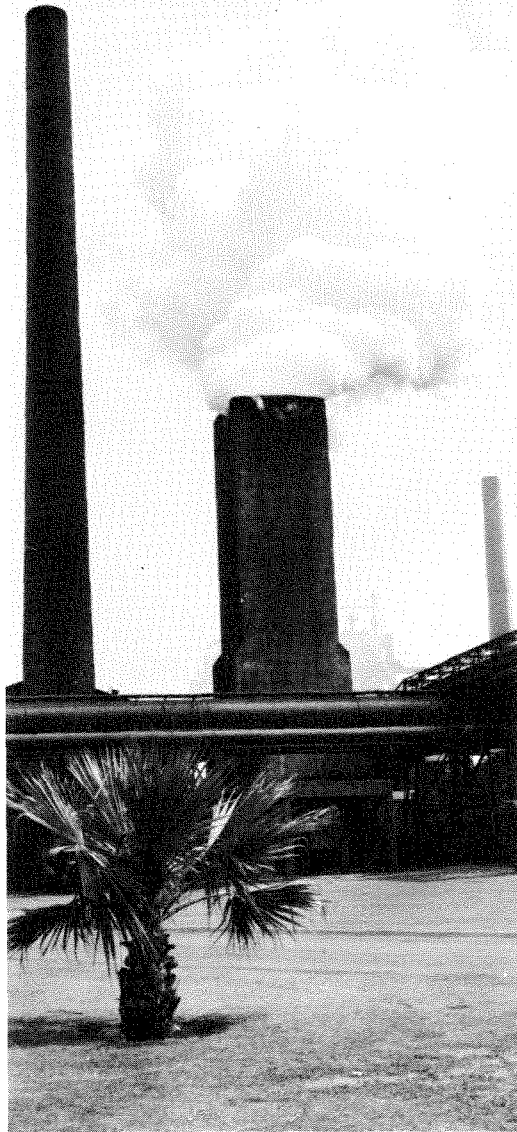
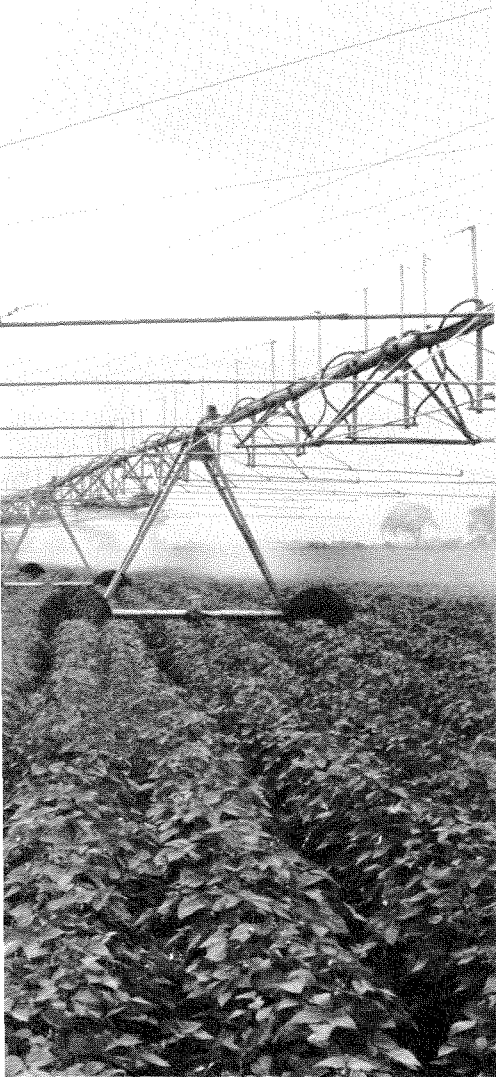
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State of California  
The Resources Agency

Department of  
Water Resources



# Measuring Economic Impacts The Application of Input-Output Analysis to California Water Resources Problems

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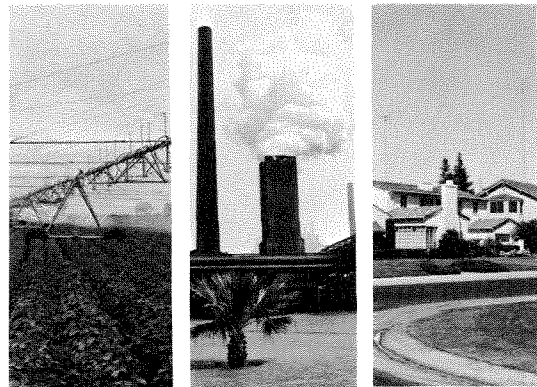
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Water & Power Resources Service  
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**ON THE COVER:**  
FARMS, FACTORIES, AND HOMES are linked together by physical and economic activity and they all feel the effects of changes in water supplies. The California input-output model presented in this report spells out these effects as they ripple through linkages in the economy.



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**Measuring Economic Impacts;  
The Application of Input-Output Analysis  
To California Water Resources Problems** 3

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**Huey D. Johnson**  
Secretary for Resources

**Edmund G. Brown Jr.**  
Governor

**Ronald B. Robie**  
Director

**The Resources  
Agency**

**State of  
California**

**Department of  
Water Resources**

## FOREWORD

The people making water management decisions need to know the economic consequences of those decisions. Estimating the consequences with an input-output model adds a very important dimension to the decision-making process: the impacts of a given water supply situation can be traced through the entire economy.

An input-output model is, in effect, a double-entry bookkeeping system of social accounting. It describes in detail the purchases and the sales between the major elements of an economy, the transactions that link an economy together. These linkages are calculated and used to show ripple effects in the economy resulting from changes in physical conditions, such as an increased or decreased water supply.

In early 1976, the Department of Water Resources began developing a California input-output model for water resources management decisions aided by a federal grant from the Office of Water Research and Technology. This report presents the models and applications resulting from this jointly funded effort. While the study was in progress in early 1977, the economic consequences of the California drought became a subject of much concern. As a result, the Department used the model to make projections of the secondary economic impacts of the drought, an effort which proved useful in making difficult water management decisions.

In developing the models, Department economists collected a great deal of data, making estimates of dollar and resource flows for each industry and cross checking the results with published data. The result is a current and detailed model we hope will be helpful to other agencies in resources evaluation.



Ronald B. Robie, Director  
Department of Water Resources  
The Resources Agency  
State of California

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Most of the numerical results and analyses contained in this report were accomplished using the computer system which is located at the Lawrence Berkeley Laboratory and is owned by the U. S. Department of Energy. The Department appreciates the assistance of Dr. Ray Cooper of the U. S. Department of Energy for authorizing access to the computer system and to the staff of the Lawrence Berkeley Laboratory for their assistance in using the system.

It is doubtful if the multiregional input-output model could have been developed without the data provided by Donald Dowlearn of the California Department of Transportation.

Unpublished data and other information which was of significant value in developing the models was received from a variety of agencies including the U. S. Bureau of Economic Analysis, the U. S. Bureau of Labor Statistics, the U. S. Department of Agriculture, the U. S. Department of Transportation, the California Department of Employment Development, the California Energy Commission, the California Department of Food and Agriculture, the Lawrence Berkeley Laboratory, and the Los Alamos Laboratory. The Department appreciates the assistance of these agencies.

## CONVERSION FACTORS

### Metric to Customary System of Measurement

<u>Quantity</u>	<u>Metric Unit</u>	<u>Multiply by</u>	<u>To get customary equivalent</u>
Length	millimetres (mm)	0.03937	inches (in)
	centimetres (cm) for snow depth	0.3937	inches (in)
	metres (m)	3.2808	feet (ft)
	kilometres (km)	0.62139	miles (mi)
Area	square millimetres (mm <sup>2</sup> )	0.00155	square inches (in <sup>2</sup> )
	square metres (m <sup>2</sup> )	10.764	square feet (ft <sup>2</sup> )
	hectares (ha)	2.4710	acres (ac)
	square kilometres (km <sup>2</sup> )	0.3861	square miles (mi <sup>2</sup> )
Volume	litres (l)	0.26417	gallons (gal)
	megalitres	0.26417	million gallons (10 <sup>6</sup> gal)
	cubic metres (m <sup>3</sup> )	35.315	cubic feet (ft <sup>3</sup> )
	cubic metres (m <sup>3</sup> )	1.308	cubic yards (yd <sup>3</sup> )
	cubic metres (m <sup>3</sup> )	0.0008107	acre-feet (ac-ft)
	cubic dekametres (dam <sup>3</sup> )	0.8107	acre-feet (ac-ft)
	cubic hectometres (hm <sup>3</sup> )	0.8107	thousands of acre-feet
	cubic kilometres (km <sup>3</sup> )	0.8107	millions of acre-feet
Flow	cubic metres per second (m <sup>3</sup> /s)	35.315	cubic feet per second (ft <sup>3</sup> /s)
	litres per minute (l/min)	0.26417	gallons per minute (gal/min)
	litres per day (l/day)	0.26417	gallons per day (gal/day)
	megalitres per day (MI/day)	0.26417	million gallons per day (mgd)
	cubic metres per day (m <sup>3</sup> /day)	0.0008107	acre-feet per day
Mass	kilograms (kg)	2.2046	pounds (lb)
	tonne (t)	1.1023	tons (short, 2,000 lb)
Velocity	metres per second (m/s)	3.2808	feet per second (ft/s)
Power	kilowatts (kW)	1.3405	horsepower (hp)
Pressure	kilopascals (kPa)	0.145054	pounds per square inch (psi)
	kilopascals (kPa)	0.33456	feet head of water
Specific capacity	litres per minute per metre drawdown	0.08052	gallons per minute per foot drawdown
Concentration	milligrams per litre (mg/l)	1.0	parts per million
Electrical conductivity	microsiemens per centimetre ( $\mu$ S/cm)	1.0	micromho per centimetre
Temperature	degrees Celsius ( $^{\circ}$ C)	$(1.8 \times ^{\circ}\text{C}) + 32$	degree Fahrenheit ( $^{\circ}$ F)

## CHAPTER I. EXECUTIVE SUMMARY

This report documents the results of a two-and-one-half year research project undertaken by the California Department of Water Resources, with funding partially provided by the Office of Water Research and Technology, U. S. Department of Interior.

The purpose of the research was to develop techniques for forecasting changes in State and regional economic activity associated with a constrained resource base.

For expository purposes, in addition to this Executive Summary, this report is divided into four sections. The first two sections are Chapters 2 and 3. Chapter 2 presents an analysis related to forecasting the economic impacts of the California drought. Chapter 3 details multiregional economic impacts analyses for several of the possible water projects considered most viable in California. These two chapters are intended to be understandable to lay persons interested in economic issues related to water planning. The last two sections of this report are Technical Appendices and respectively document the 1976 input-output model for California and the 1976 multiregional input-output model for the hydrologic regions of California. These Technical Appendices, designed to provide an in-depth discussion of the economic models developed by the research staff, are fairly quantitative in some sections, and are directed at technically oriented researchers interested in understanding the models and applying them to other problems.

In addition to this introductory statement, this Executive Summary contains overviews of each of the four major sections of this report.

### 1977 California Drought Analysis

During 1976 and 1977 California experienced its most severe drought on record. A consequence of the drought was that the Department of Water Resources research staff associated with this industrial outlooks study redirected its activities toward forecasting the potential economic impacts of the drought. As a part of a Task Force consisting of individuals from State and Federal Government agencies and from the business community, the Department of Water Resources staff assisted in developing estimates of the losses which might accrue to industries experiencing shortages of water. Additionally, in conjunction with the Department's consultant, Dr. Everard Lofting, the industrial outlooks staff projected the secondary impacts of the drought.

The projected impacts of the continuing drought, as estimated during April 1977, are shown in Table 1.

TABLE 1  
PROJECTED 1977 DROUGHT IMPACTS

	Direct Impacts (\$10 <sup>6</sup> )	Direct, Indirect, and Induced Impacts		
		Gross Output (\$10 <sup>6</sup> )	Income (\$10 <sup>6</sup> )	Employment (Jobs 10 <sup>3</sup> )
Optimistic	737	1,000	210	8.5
Most Likely	1,291	1,800	490	51
Pessimistic	1,962	2,900	830	111

Direct economic losses were projected to be between \$737 and \$1,962 million, with a most likely estimate of \$1,291 million. In retrospect, the direct drought damages are estimated to have been \$1,775 million (see Reference 21). Overall, the April 1977 projections of direct impacts were fairly good.

The total impacts of the drought include not only those upon industries experiencing severe water shortages, but also the losses to industries supplying the ones directly impacted. Additional losses accrued as income opportunities were lost and the associated consumption expenditures were not forthcoming.

Table 1 shows that 51,000 job opportunities would most likely be foregone. However, the California economy grows at a rate of around 320,000 jobs per year (173), the forecasted impact of the drought reflected a reduction in the rate of economic growth but not a decline in the overall level of economic activity.

Even in retrospect, it is virtually impossible to measure the indirect and induced losses that resulted from the drought. Too many other factors were simultaneously impacting the California economy to sort out the secondary effects of the drought. However, some evidence that the drought caused an impact on the overall economy is suggested by regional indices of business activity published by Security Pacific Bank (125). These indices indicate that the most heavily impacted areas in California in terms of water availability experienced observable reductions in the growth of business activity. Comparable reductions are not observable for the areas of California not experiencing severe water shortages nor for the United States economy.

#### Multiregional Secondary Impacts Analysis

It is generally recognized that some direct stimulus to a regional economy will have "ripple effects". Direct purchases of industrial commodities stimulate economic activity in

an indirect manner as the industrial inputs in the production process are produced and sold. Both the direct and indirect production activities generate wages and other forms of income that are reinjected into the economy in the form of personal consumption expenditures, thus inducing economic change. In economic terms, the total effect of some direct stimulus is the sum of the direct effect, the interindustry indirect effects, and the income/consumption induced effects.

As the impact upon regional growth is one of the four major components<sup>1/</sup> of an impact analysis, the determination of not only the direct economic effects of some action, but also the secondary effects is a necessary requirement for a complete evaluation. This section of the Executive Summary highlights the results of analyses of the projected direct and secondary effects associated with 12 water projects in California. Details of the estimation method and extended tabulations of the results are included in Chapter 3 of this report.

The results of the regional economic impacts analyses are summarized in the charts of Figure 1. As each chart in Figure 1 presents similar information, the results for the Suisun Marsh Protection Facilities will be discussed in detail as an example, and the results for the other projects are presented for review by the interested reader.

The Suisun Marsh Protection Facilities are designed to stabilize the water quality in a wildlife habitat in the San Francisco Bay Area. As determined by the engineering staff of the Department of Water Resources, the construction of these facilities would require a direct expenditure of \$42 million in 1977 dollars. As indicated in the chart, this direct expenditure in the San Francisco Bay Area would be expected to result in a total change in the value of regional production (denoted gross output in the chart) of \$122 million. In addition to stimulating the Bay Area economy, construction of the Suisun Marsh Protection Facilities would be projected to increase gross output in other areas of the State by \$28 million with the impact across all of California estimated to be \$150 million.

When direct, indirect, and induced effects are considered, regional income from wages, profits and other sources is projected to rise by \$43 million in the Bay Area. Incomes in the other regions of the State are forecast to increase by \$11 million for a total State income change of \$54 million.

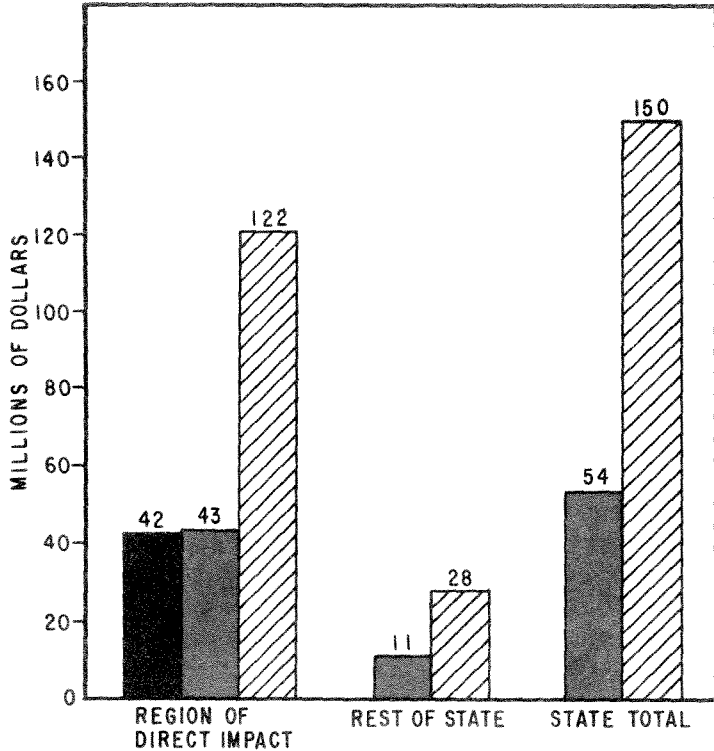
The numerical results aside, three general results of the multiregional economic impacts analysis are of potential interest. First, given the multiregional model developed for

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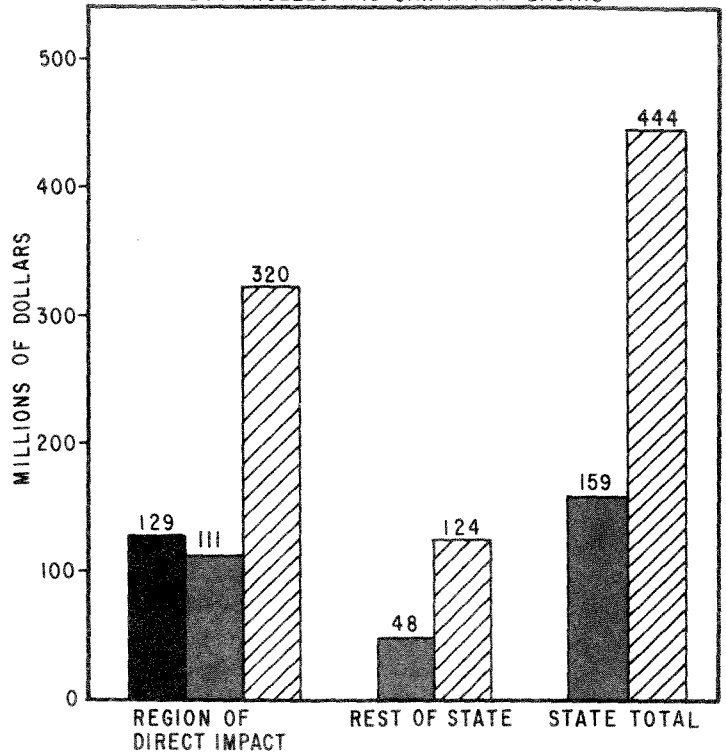
<sup>1/</sup> The other three components are environmental quality, social well-being, and national economic development (136).

Figure 1  
**REGIONAL AND STATE WATER PROJECT IMPACTS IN MILLIONS OF 1977 DOLLARS**

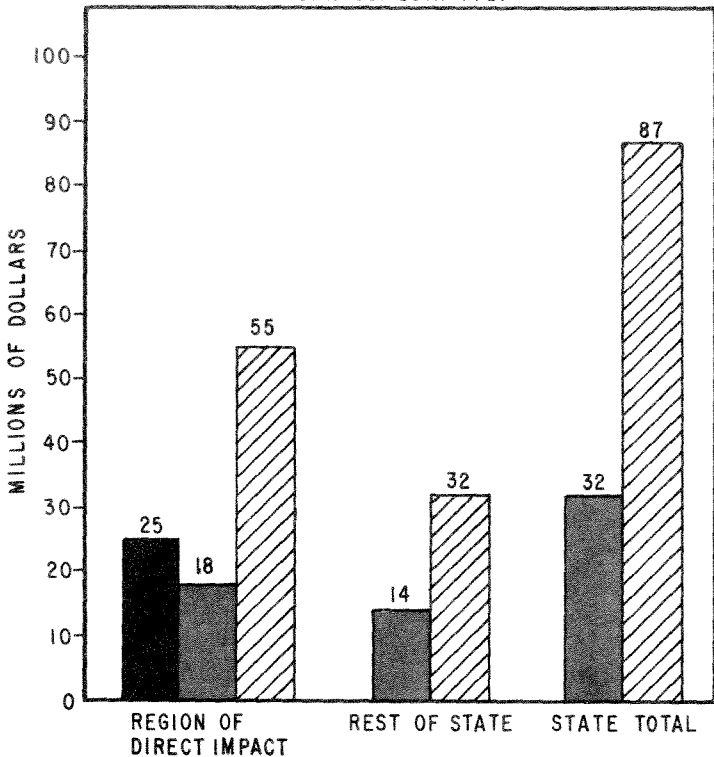
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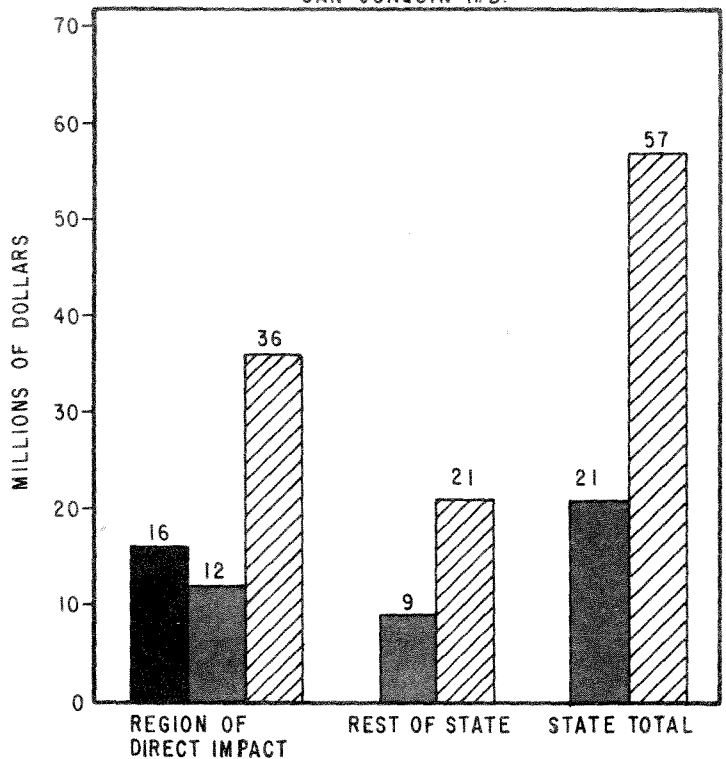
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**LEGEND**

- DIRECT EXPENDITURES
- DIRECT, INDIRECT & INDUCED INCOME IMPACT
- DIRECT, INDIRECT & INDUCED GROSS OUTPUT IMPACT

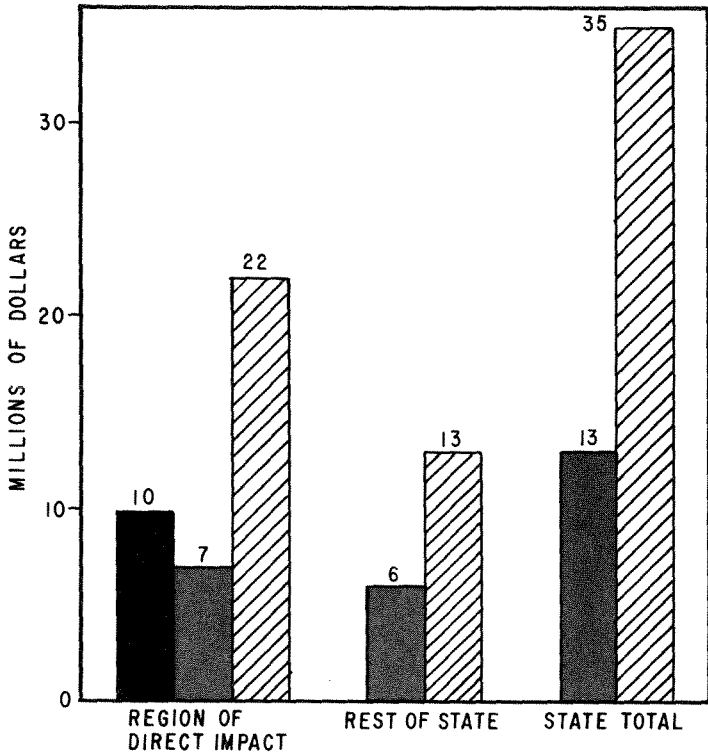
*Note: Scale change for individual projects.*



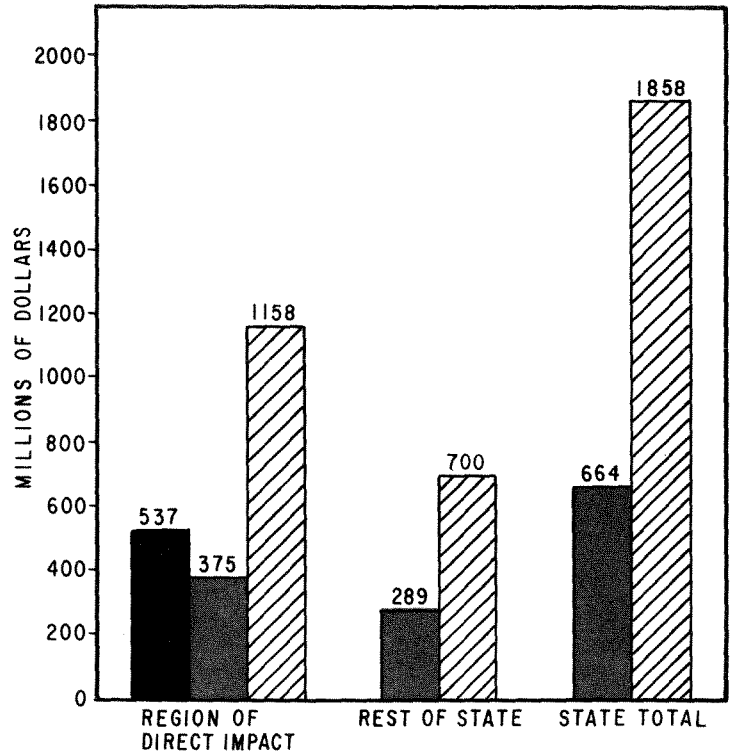
Figure I Continued

REGIONAL AND STATE WATER PROJECT IMPACTS IN MILLIONS OF 1977 DOLLARS

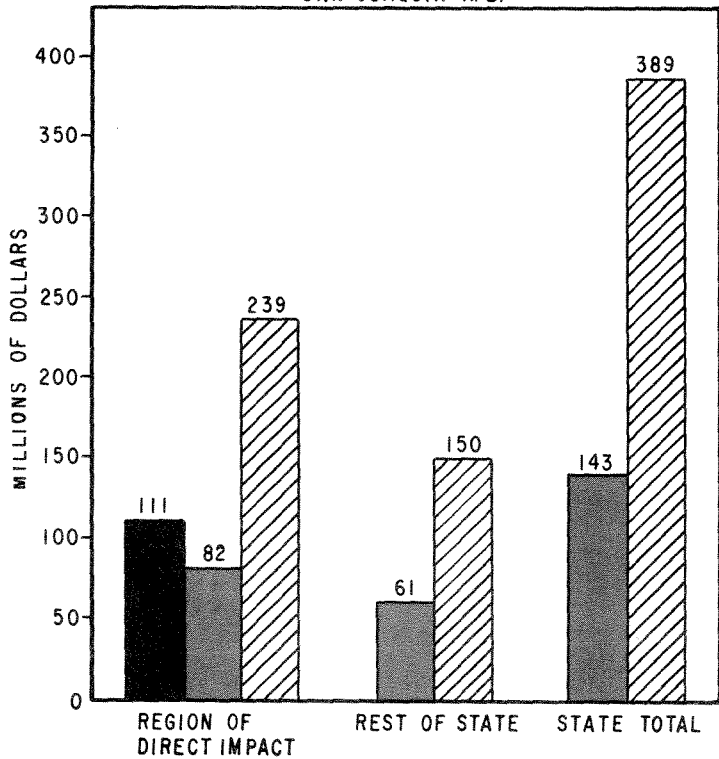
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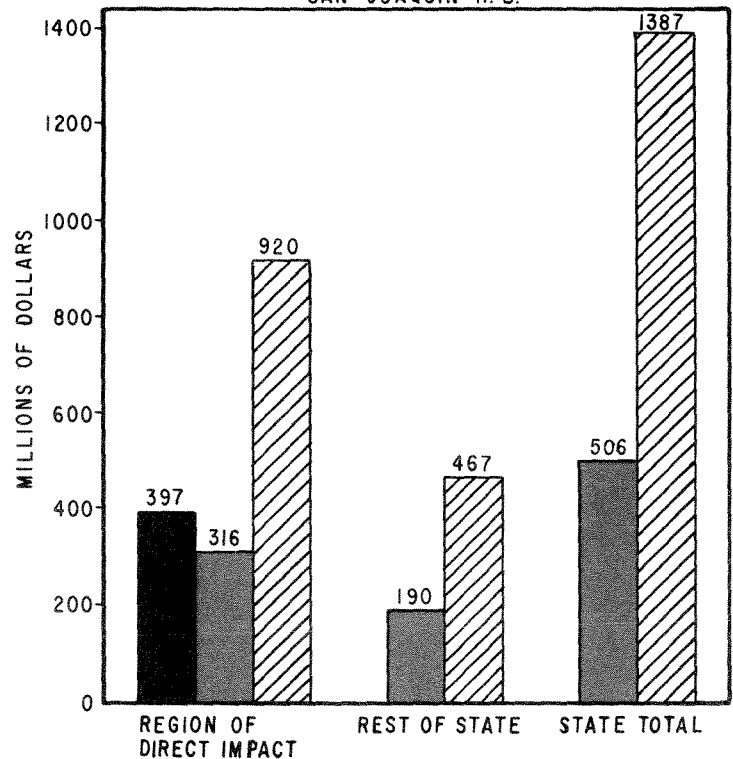
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SAN JOAQUIN H. B.



S. J. VALLEY GROUND WATER STORAGE FACILITIES  
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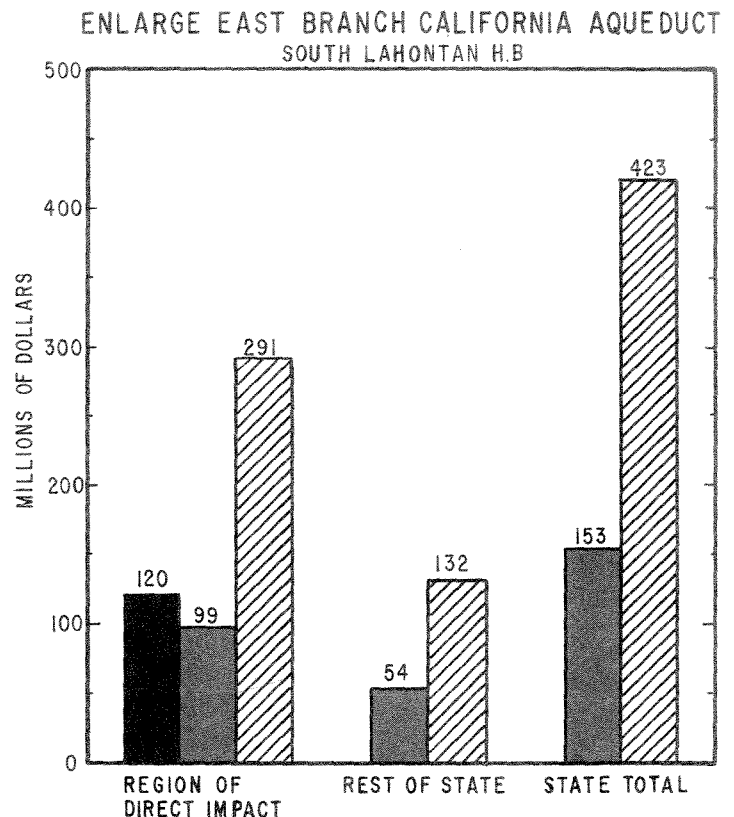
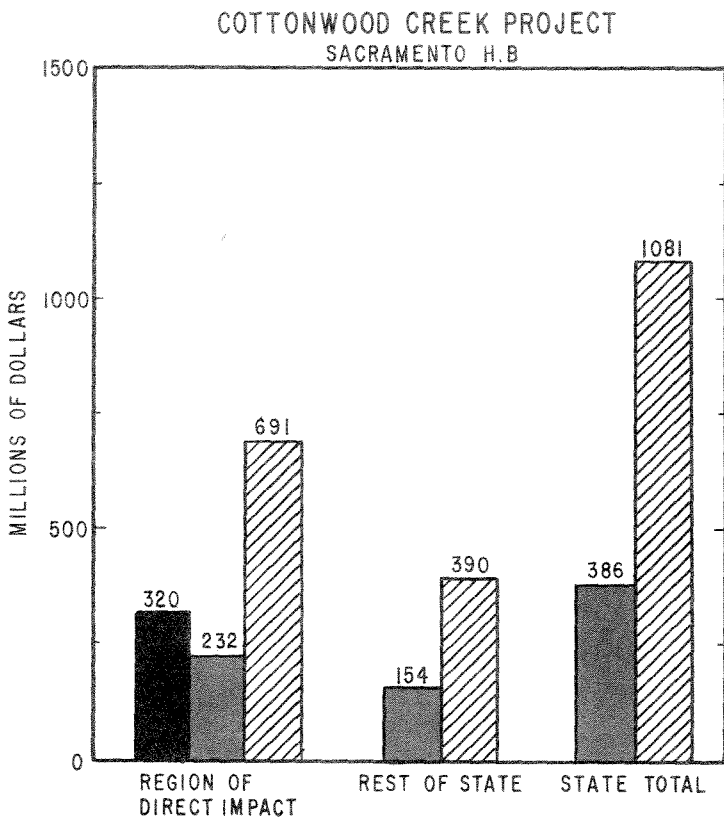
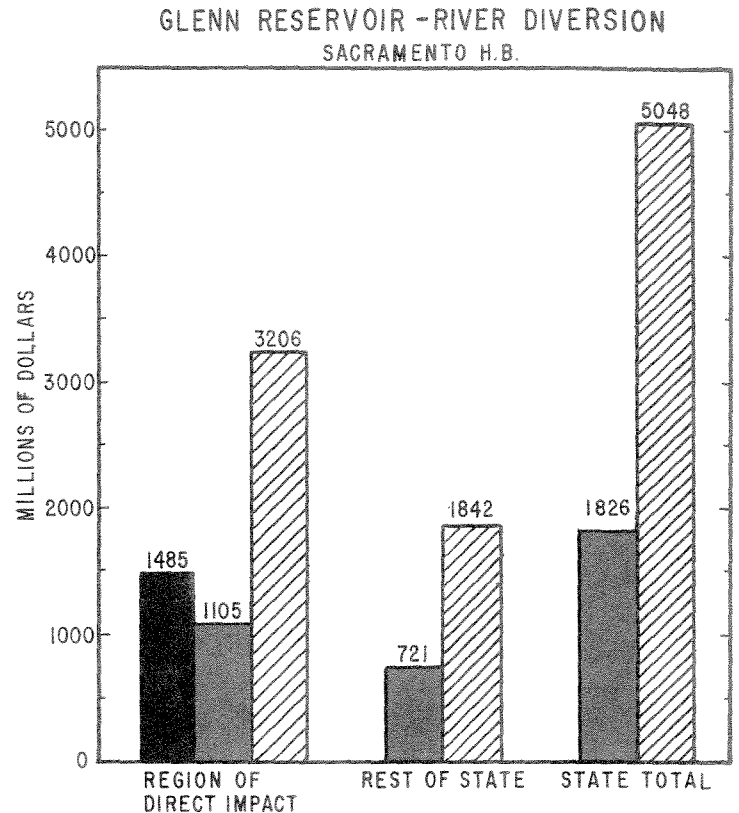
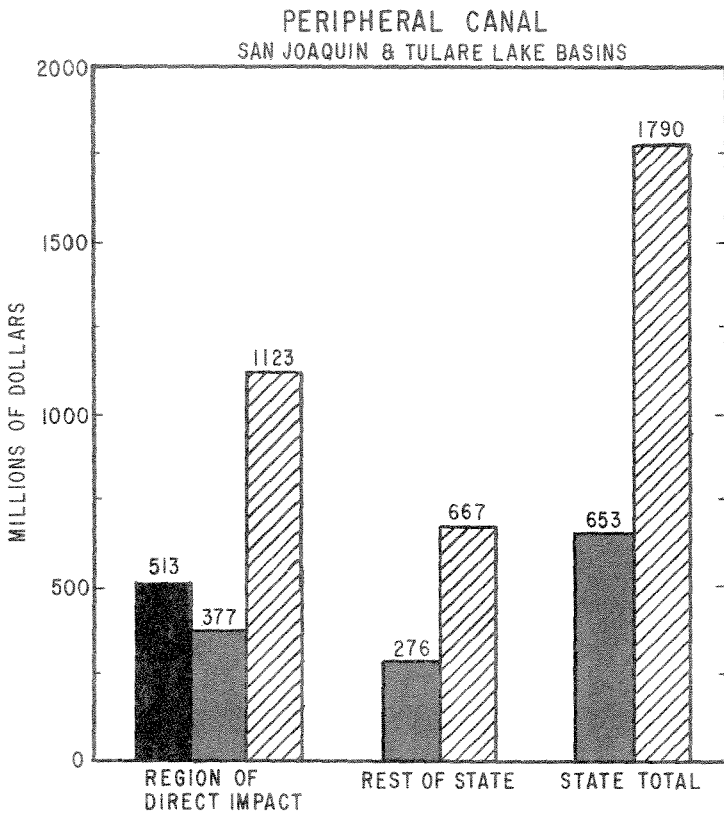


LEGEND

- DIRECT EXPENDITURES
- DIRECT, INDIRECT & INDUCED INCOME IMPACT
- DIRECT, INDIRECT & INDUCED GROSS OUTPUT IMPACT

Note: Scale change for individual projects.

Figure I Continued  
**REGIONAL AND STATE WATER PROJECT  
 IMPACTS IN MILLIONS OF 1977 DOLLARS**



**LEGEND**

- DIRECT EXPENDITURES
- DIRECT, INDIRECT & INDUCED INCOME IMPACT
- DIRECT, INDIRECT & INDUCED GROSS OUTPUT IMPACT

*Note: Scale change for individual projects.*

this research project, evaluation of other projects could be conducted in a short period of time -- less than one day. Second, the spillover impacts from one hydrologic region to another are significant; the results of this study reflect spillover impacts of from 20 to 45 percent of the total impacts. Finally, spillover impacts are not uniform; urban areas tend to have a lower rate of spillover than other areas.

### 1976 California Input-Output Model

An input-output model is used by regional planners and economists to provide a detailed description of an economy and to forecast economic change.

As an example of the descriptive detail provided by an input-output model, the California model developed in this research project shows the sales and purchases patterns for 156 industries covering agriculture, mining, construction, manufacturing, transportation, communications, services, and government. Although the detail provided by an input-output model is too extensive for presentation in this summary, some aggregate data will be discussed.

Two familiar regional accounting values are directly derivable from the input-output transactions table which shows the flows of goods and services expressed in dollars among the various sectors of the economy. These two accounting values are Gross State Income and Gross State Product and their component totals, as derived from the California input-output model, are shown in Table 2.

TABLE 2  
1976 CALIFORNIA GROSS STATE INCOME AND GROSS STATE PRODUCT

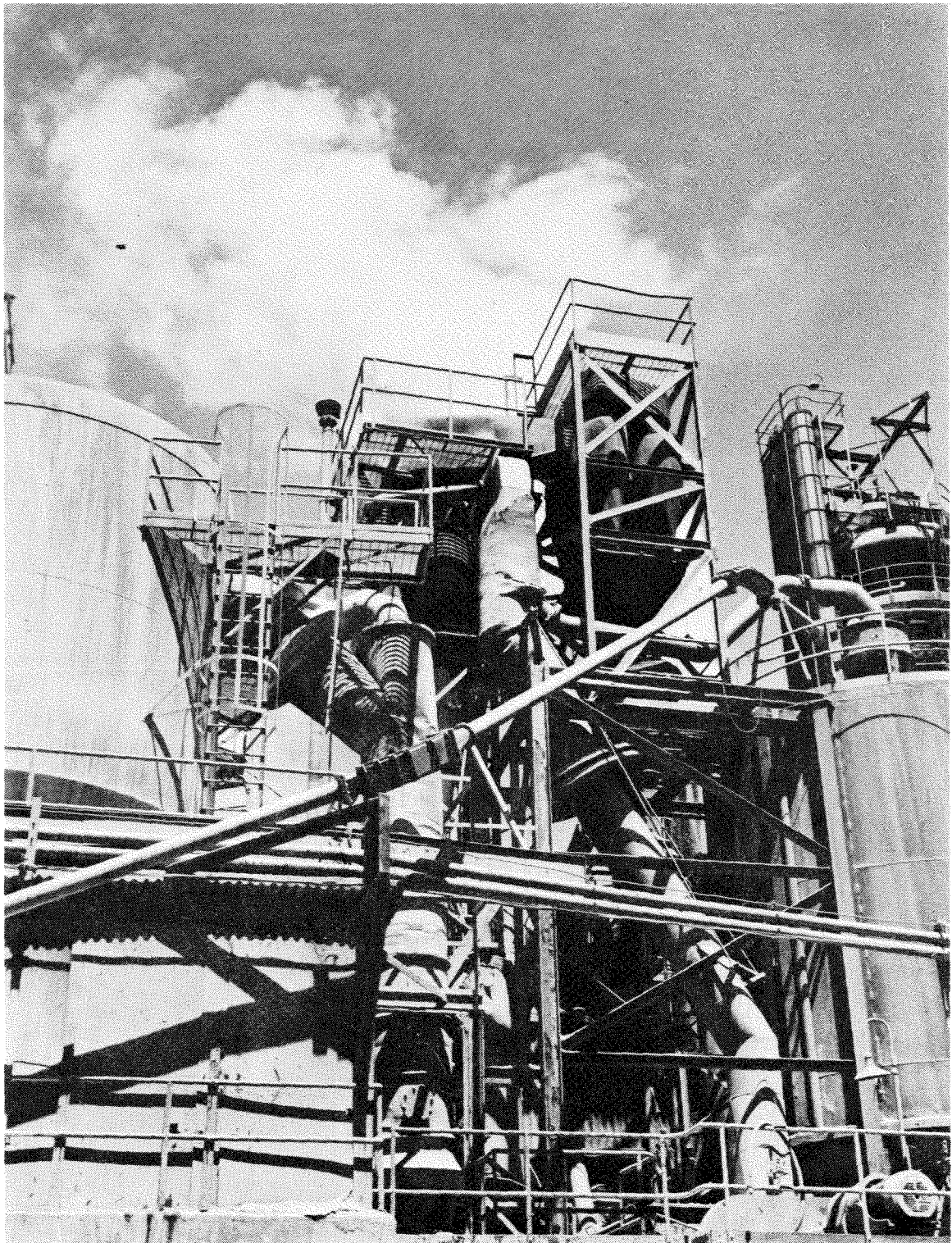
<u>Gross State Income</u>	<u>Billions of Dollars</u>
Employee Compensation	117.0
Profit Type Income	26.7
Net Interest	9.8
Indirect Business Taxes	17.6
Capital Consumption Allowances	15.1
	186.2
<u>Gross State Product</u>	<u>Billions of Dollars</u>
Personal Consumption Expenditures	122.0
Capital Formation	25.3
Federal Government Purchases	15.6
State and Local Government Purchases	28.2
Exports	54.2
Less: Imports	-59.1
	186.2



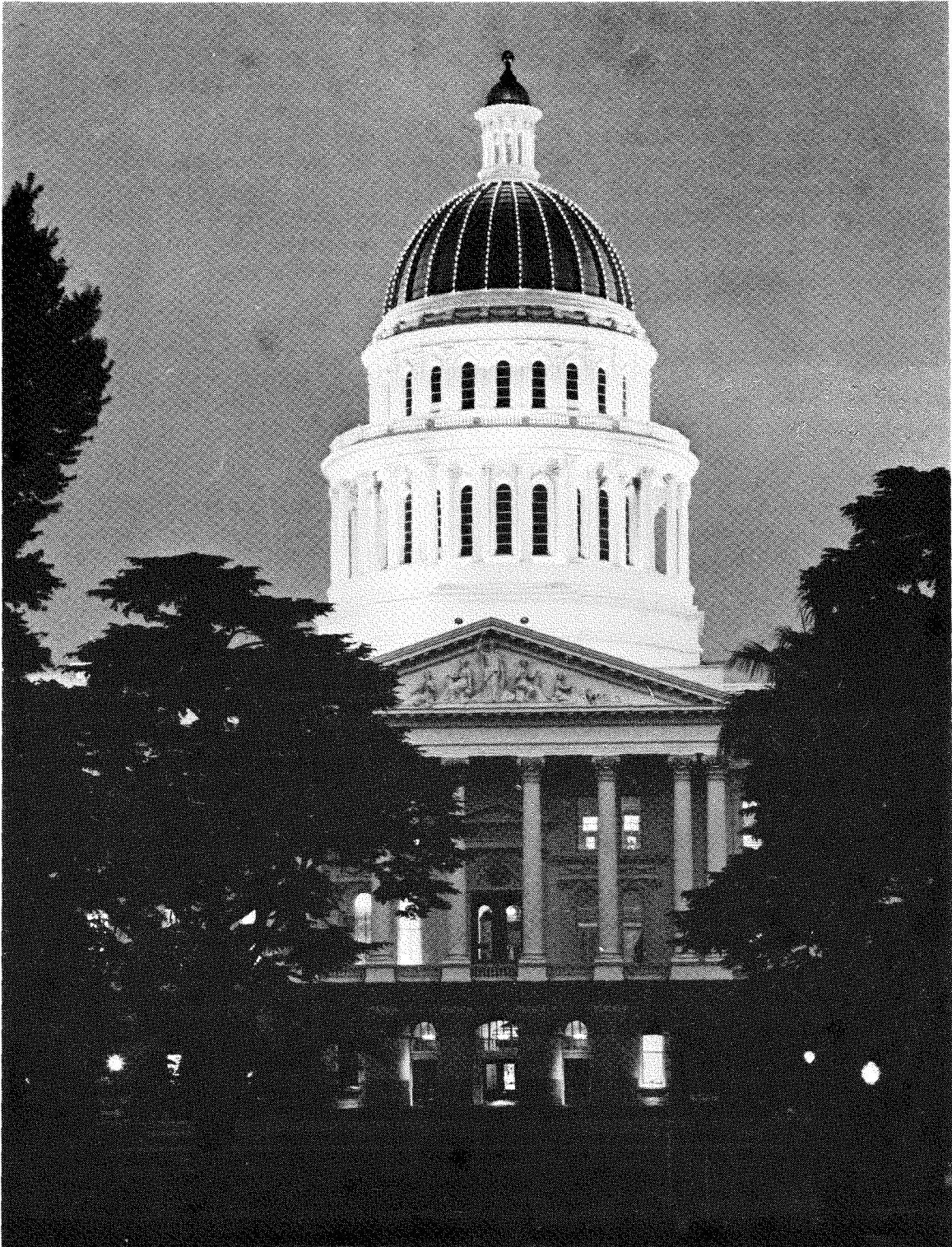
*One of the purposes of input-output analysis is to quantify interrelationships of various sectors of the economy.*



*New construction is represented by five industries in the 156-sector California input-output model.*



*Sixty-eight of the 156 input-output economic activities are classified as manufacturing.*



*Governments are defined as a distinct component of final demand to be consistent with the standard definitions of national income accounting.*

Gross State Income represents the payments made to the primary factors of production; Gross State Product relates to the final disposition of goods and services and includes the State exports and imports trade accounts. Because these two values represent the two sides of the double-entry regional income accounting system, they each total to the same value, \$186.2 billion. For reference, the 1976 Gross National Product for the United States was \$1,706.5 billion (218), California having 10.9 percent of the national total.

In addition to the dollar flows of the input-output model, the research staff developed the estimated resource usage levels for labor, water, and energy for each of the 156 industries. By aggregated industry group, these data are shown in Table 3, which also indicates the level of industrial sales and income. As indicated in the table, manufacturing is the largest industry in terms of both total sales and contributions to gross State income while wholesale and retail trade lead in terms of employment. Water use is concentrated in agriculture, and the next largest user category is residential, which is included in the real estate category. Primary energy use, which includes the use of gasoline, kerosene, distillate oil, residual oil, coke, other refined oil products, natural gas, liquid petroleum gas, and coal, but does not include electricity use, is most concentrated in the transportation and public utilities sectors.

As noted, the input-output model is a forecasting tool as well as an information source. In and of itself, the input-output model is not used generally for estimating direct changes in an economic system.<sup>1/</sup> However, as developed in each of the two previous sections, given forecasts of direct changes, the input-output model provides one of the few methods of forecasting the secondary effects associated with direct changes.

The means by which secondary effects are estimated is through the application of direct, indirect, and induced coefficients and input-output derived multipliers. These coefficients and multipliers for the California economy are presented in the first Technical Appendix for gross output, income, employment, water use, primary energy use, electrical energy use, and total energy use.

As an example of the intermediate results derived from the California input-output model, in 1976 the California dairies, the producers of raw milk, had a total value of production of \$1.1 billion, generated \$399 million in income, employed 14,500

<sup>1/</sup> Input-output models have been used as one of the bases for forecasting direct changes in general economic activity [Bureau of Labor Statistics (156) and Bourque, Conway, and Howard (217)], and for developing comprehensive water planning schemes [Haines (62)]; however, efforts such as these extend well beyond the scope of this study.

TABLE 3  
1976 CALIFORNIA INDUSTRIAL ECONOMIC AND RESOURCE LEVELS<sup>1/</sup>

	Total Sales (Billions of Dollars)		Gross State Income (Billions of Dollars)		Employ- ment (Th. Person Years)		Water Use (Cubic Deka- metres)		Primary Energy Use (Peta- joules)		Electrical Energy Use (Peta- joules)	
		%		%		%		%		%		%
Agriculture, Forestry, and Fishing	11	3	5	3	451	5	42 506	86	63	2	29	7
Mining	4	1	2	1	24	0	392	1	30	1	8	2
Construction	26	8	12	7	402	4	10	0	96	2	1	0
Manufacturing	121	35	41	22	1,696	18	1 172	2	1 028	27	118	30
Transportation and Public Utilities	28	8	16	9	489	5	57	0	1 892	49	31	8
Wholesale and Retail Trade <sup>2/</sup>	36	11	29	16	2,128	23	456	1	118	3	45	11
Finance, Insurance, and Real Estate	37	11	27	14	516	6	4 491 <sup>4/</sup>	9 <sup>4/</sup>	64 <sup>5/</sup>	2 <sup>5/</sup>	15 <sup>5/</sup>	4 <sup>5/</sup>
Services	51	15	30	16	1,841	20	51	0	150	4	64	16
Government	28	8	23	12	1,733	19	284	1	436	11	83	21
State Total, All Industries <sup>3/</sup>	344	100	186	100	9,282	100	49 419	100	3 877	100	394	100

<sup>1/</sup> Data drawn from California transactions table and associated resource.

<sup>2/</sup> Wholesale and Retail Trade Margins.

<sup>3/</sup> Totals may not sum due to rounding error.

<sup>4/</sup> Include residential water use.

<sup>5/</sup> Does not include residential and personal consumption use.





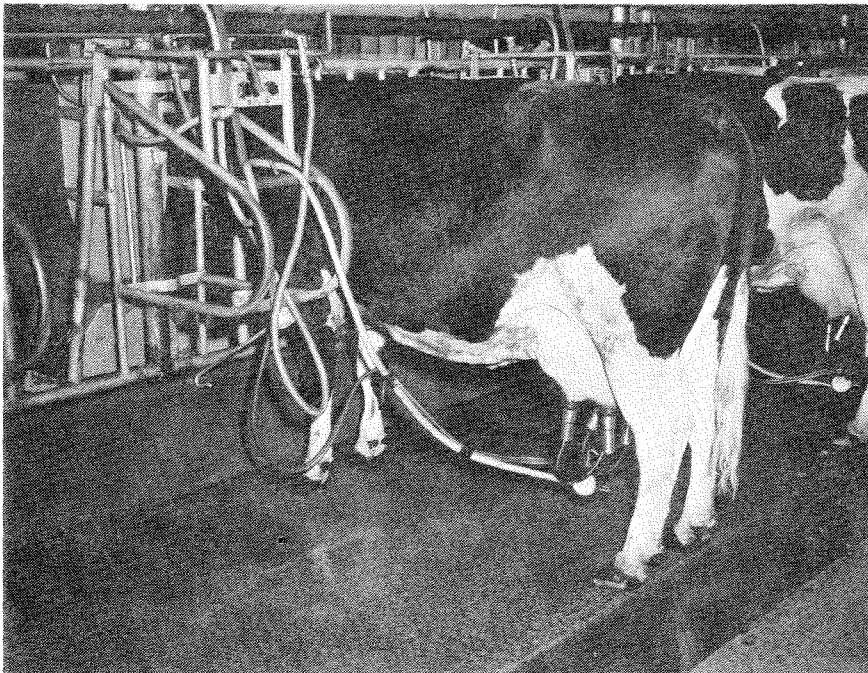
*The "Amusement and Recreation Services" industry includes public swimming pools and a wide variety of recreational activities.*



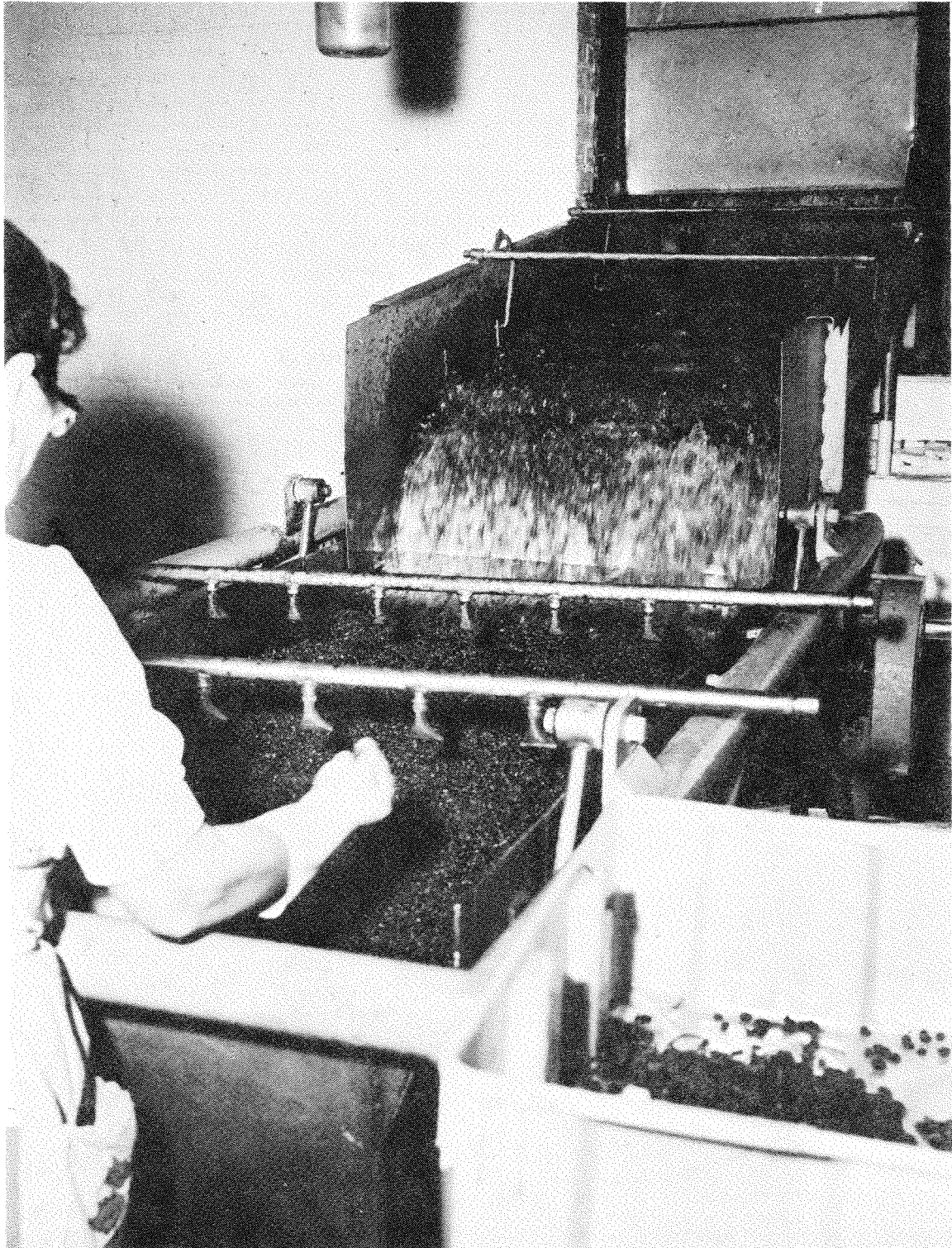
*Pumping plants, such as the one shown above at Wind Gap, require significant amounts of electrical energy.*



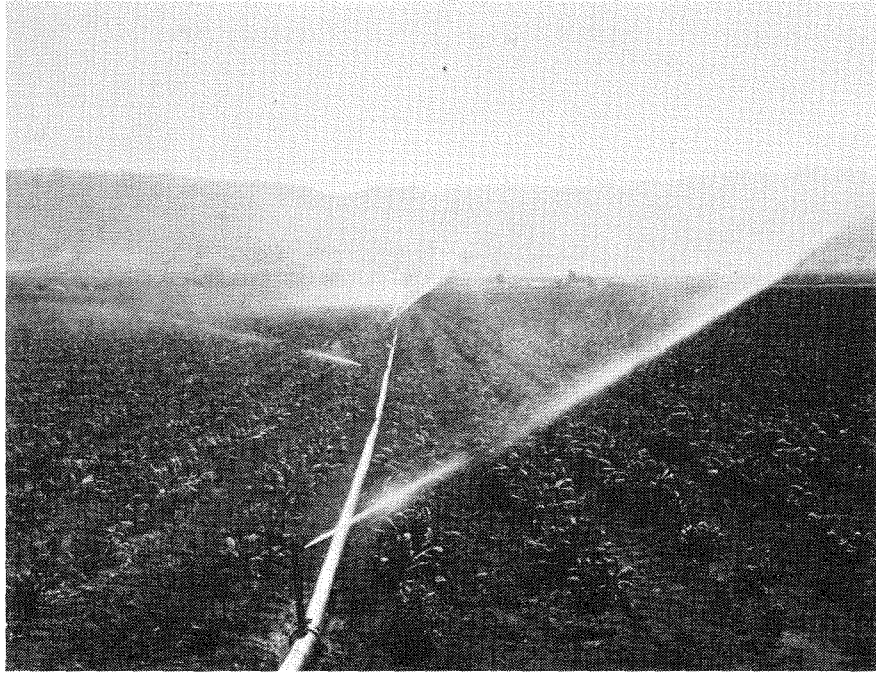
*Agriculture is a large water user, accounting for 86 percent of the water used in California.*



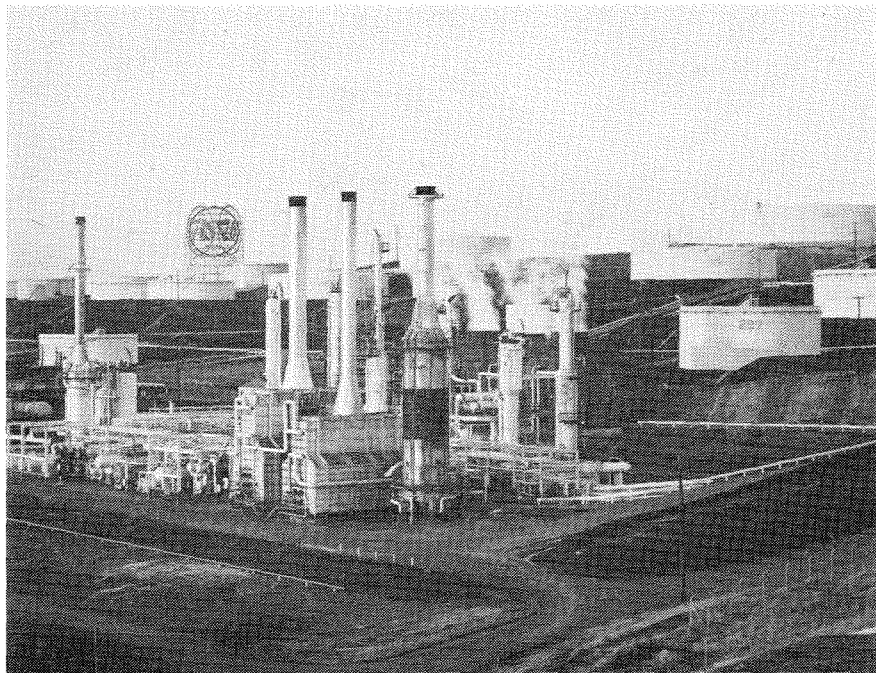
*Although dairies use slightly less than 62 cubic dekametres of water directly per million dollars of product, our research indicates the embodied water in a million dollars of dairy products is over 6 168 cubic dekametres.*



*Food processing industries use a great deal of water themselves and also have large water use multipliers.*



*While irrigated crops use large quantities of water directly, the indirect uses associated with most crops are small.*



*Petroleum refining has a large labor multiplier (14.19), but employs only 2.32 workers directly per million dollars of product.*

person-years of labor, and used 51 400 cubic dekametres of water and 7.4 billion megajoules of energy.

Given a one million dollar increase in the final demand for the products of agricultural dairies, the expected direct changes would be for total sales to increase by \$1 million, income to increase by \$370,000, employment to rise by 13.4 person-years of labor, water use to increase by 47.5 cubic dekametres and total energy use to increase by 6.8 million megajoules.

However, the change in demand for dairy products will result in changes in demand for other products such as grain, hay, milking equipment, and veterinary services. Similarly, to increase the level of the production of these goods and services requires increases of the inputs into their production processes. Furthermore, as incomes are increased, expenditures for consumption goods increase, which causes further expansionary changes.

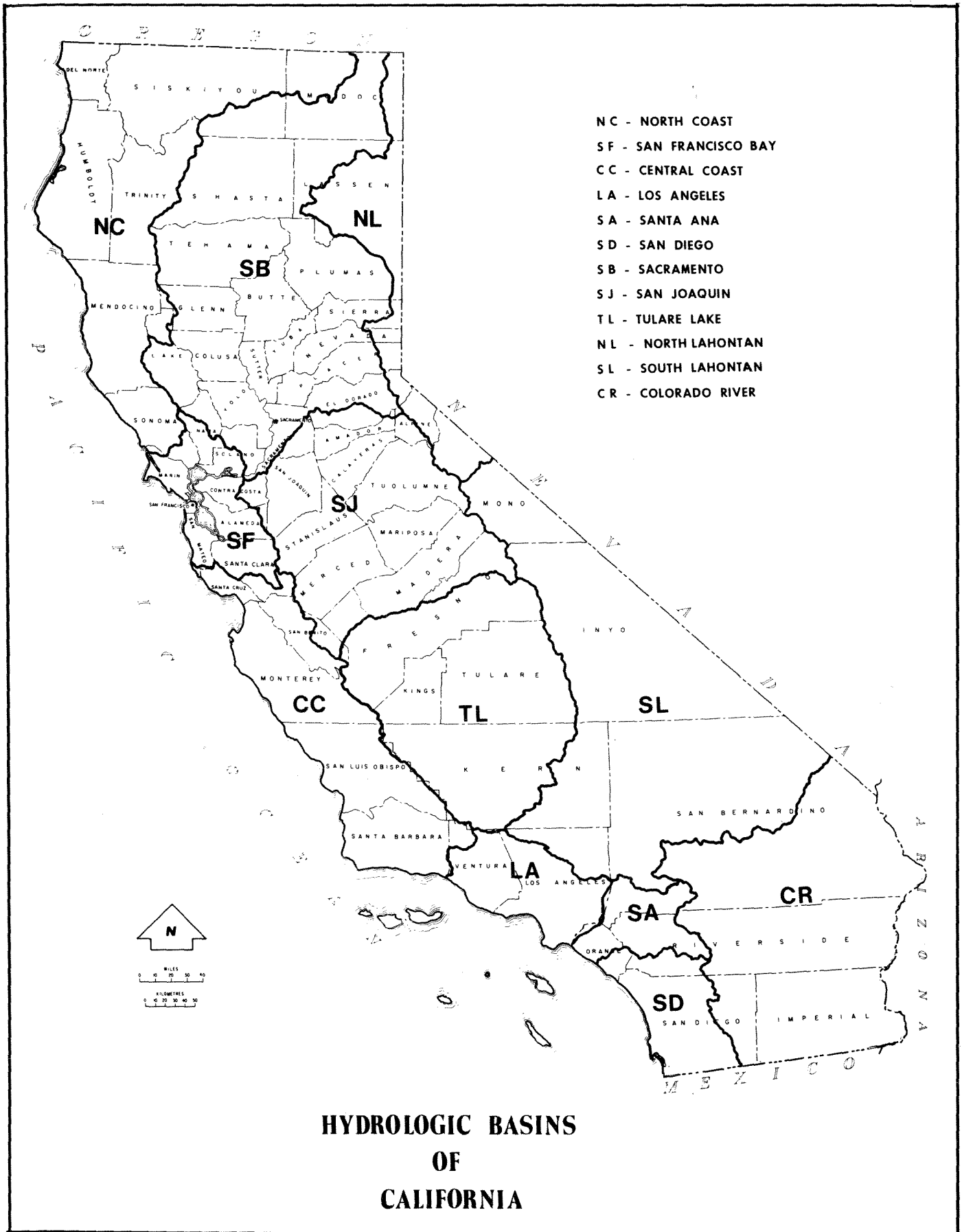
Thus, the total effects of the original \$1 million change in demand for dairy products translates into much larger changes in the context of the entire California economy. Total sales would be expected to rise by \$2.69 million and income by \$1.01 million. The expected total employment increase across all sectors of the economy would be an additional 41.1 person-years, three times the direct change. The forecast total water use would be 106 times the direct increase, or 5 044 cubic dekametres of water. This large increase in water use for the entire economy would derive primarily from the increased use of the water-intensive hay, irrigated pasture, and feed grains inputs into the dairy production process. Finally, total energy would be expected to rise by a factor of 4 to 27 million megajoules.

Two points are made clear by this example. First, secondary effects are significant and cannot be ignored if the analytical perspective is that of the entire California economy. Second, there exists not one "multiplier" for each industry but several, each useful in its own way and each unique in its numerical value.

#### Hydrologic Basin Multiregional Input-Output Model

At times, there is a desire or need for information relating to economic impacts at a level of detail smaller than that for the entire California economy. For water planning purposes, California is divided into twelve hydrologic basins as illustrated in Figure 2. In response to the need for a finer resolution of potential economic effects, a multiregional input-output model was constructed with the regional boundaries established to conform with the California hydrologic basins. This model provided the basis for the previously discussed analysis of potential water projects in California. Since the application of this model has been previously discussed and because the multiregional input-output model is generally similar to the

Figure 2



State model, the remainder of this section will focus on the primary differences between the two models.

The primary extension entailed in constructing the multiregional input-output model is that, in addition to specifying intraregional transactions (purchases and sales within each region), the interregional trade linkages must also be established. As might be anticipated, this required an extensive amount of effort. A special acknowledgment to Mr. Donald Dowlearn of the California Department of Transportation is due for his assistance in providing the data base used for estimating the interregional trade patterns.

As reflected in the discussion relating to water projects, the primary additional information embodied in a multiregional input-output model is related to how secondary effects are distributed across the several California hydrologic basins. As noted, the effects of some change in a regional economy extend significantly beyond the borders of that region; the multiregional input-output model developed for this study is the only known empirical model available for making such interregional determinations.

#### Concluding Comments

To the degree practicable, intermediate results of this research project have been included for consideration and possible use by other researchers. However, an extensive amount of information has not been included. For example, the tables for the California input-output model total 500 pages. The multiregional model constructed is roughly 10 times as large as the California model. The trade data considered or used in developing the model runs to over 6 million numbers. Because of the extensive size of the models and data sets and because of the very limited number of individuals who might be interested in these detailed data, this information is not included in this report. For those individuals, organizations, or agencies interested in obtaining further detailed information, the Department of Water Resources will endeavor to meet their needs on a cost-of-service basis.





## CHAPTER II. CALIFORNIA DROUGHT IMPACT

As originally conceived, this research project was to first develop statewide and regional input-output models and then use these models to investigate and forecast impacts associated with resource constraints. However, as a consequence of the continuation of the 1976 drought into 1977, the priorities of the research study were restructured, and the research staff redirected their efforts toward the need for projections of the economic impacts of the continuing drought.

This chapter will document the research directed at forecasting the drought impacts as accomplished during late 1976 and 1977. Since the Department of Water Resources currently has two survey projects in progress which will focus on the impacts of the drought, an extended retrospective drought analysis was not included in this research study.

### The California Drought<sup>1/</sup>

The recent drought in California was the most severe on record. Precipitation in California during the 1976 water year was 65 percent of normal. Runoff of streams and rivers in 1976 was 47 percent of normal. In a historical context, 1976 is ranked at the 90th percentile in terms of dryness; otherwise stated, in 9 years out of 10 the runoff has been higher than in 1976. Water storage in the State's major reservoirs achieved a new low in the late summer of 1976.

Water conditions in California were worse in 1977 than in 1976. Precipitation was 45 percent of average, a record low. Runoff from rain and snow to streams and rivers was 22 percent of normal, a level expected not to occur more than once in 50 years.

In normal years, 60 percent of the water used in California is derived from surface water. Because of this, as it became clear that the 1976 drought was extending into 1977, a task force was created to develop projections of the economic impact of the continuing drought for 1977.

### Direct Drought Impact Projections

The first task of the task force, which consisted of individuals from several State and Federal Government agencies as well as representatives from the business community, was to

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<sup>1/</sup> Source of data in this section is Reference 23.

forecast what industries would be directly impacted by reduced supplies of surface water and to what degree these industries would be impacted.

At the time this work was initiated, there was a great deal of uncertainty as to what the effects of the drought would be. First, it was still unclear how much surface water would be available and how the available surface water would be distributed among the various users. Second, ground water supplies were uncertain. Only rough estimates could be made of additional ground water pumpage from new and renovated wells. Furthermore, it was unknown whether sufficient electricity would be available to agriculture to pump as much ground water as desired. Finally, in agriculture, farmers were delaying their decisions on what crops to plant because of the uncertainty of water availability.

Due to the uncertainty of the drought situation, three scenarios (optimistic, most likely, and pessimistic) were analyzed to show sensitivity to the possible variations in drought conditions. The optimistic scenario assumed: (1) that there would be no energy curtailments, (2) rainfall would be greater than the 1924 dry year for the remainder of 1977, (3) ground water would be generally available, and (4) surface water delivery deficiencies from the Central Valley Project (CVP) and State Water Project (SWP) would be less than 75 percent and 60 percent respectively. The most likely scenario implied fair energy supplies, rainfall equal to 1924, ground water supplies as projected, and 75 percent and 60 percent of CVP and SWP deficiencies respectively. Pessimistic conditions assumed poor energy supplies, less than 1924 rainfall, less ground water availability than projected, and more than the projected 75 percent and 60 percent CVP and SWP deficiencies.

Direct impacts of the drought were defined as losses in sales as a direct consequence of the drought, or the difference between 1977 sales projections with and without the drought. As an example, direct impacts include the value of wheat not produced because of drought conditions. In some instances, it was difficult to distinguish between drought-related impacts and those caused by other factors, particularly prices. For the purposes of the drought analysis, causes of direct impacts were not sorted out; all impacts were assumed to be as a result of the drought.

Estimates of 1977 agricultural sales for the three drought scenarios were made by a panel of experts from several private and public organizations. Sales impact projections in nonagricultural industries were made by DWR economists who spent 3 weeks questioning individuals in the business community as to what they felt the impact of the drought would be. All direct impact projection estimates were made on a regional basis, then aggregated to state sums by industrial sector.

Direct impacts for some sectors were positive. For example, the drought was projected to have a positive impact on



*One difficulty in forecasting the impacts of the drought was the uncertainty of how much surface water would be available.*



*Ground water supplies, a major source of water during normal years, were also uncertain.*



*The drought resulted in low surface water levels at Shasta Lake, heavily impacting the recreation-related industries of the area.*



*Since hydroelectric power generation declined during the drought, more power was produced from fossil fuels and other energy sources.*

cotton production because cotton prices were high and expected to remain high and because cotton can withstand dry conditions better than many other crops.

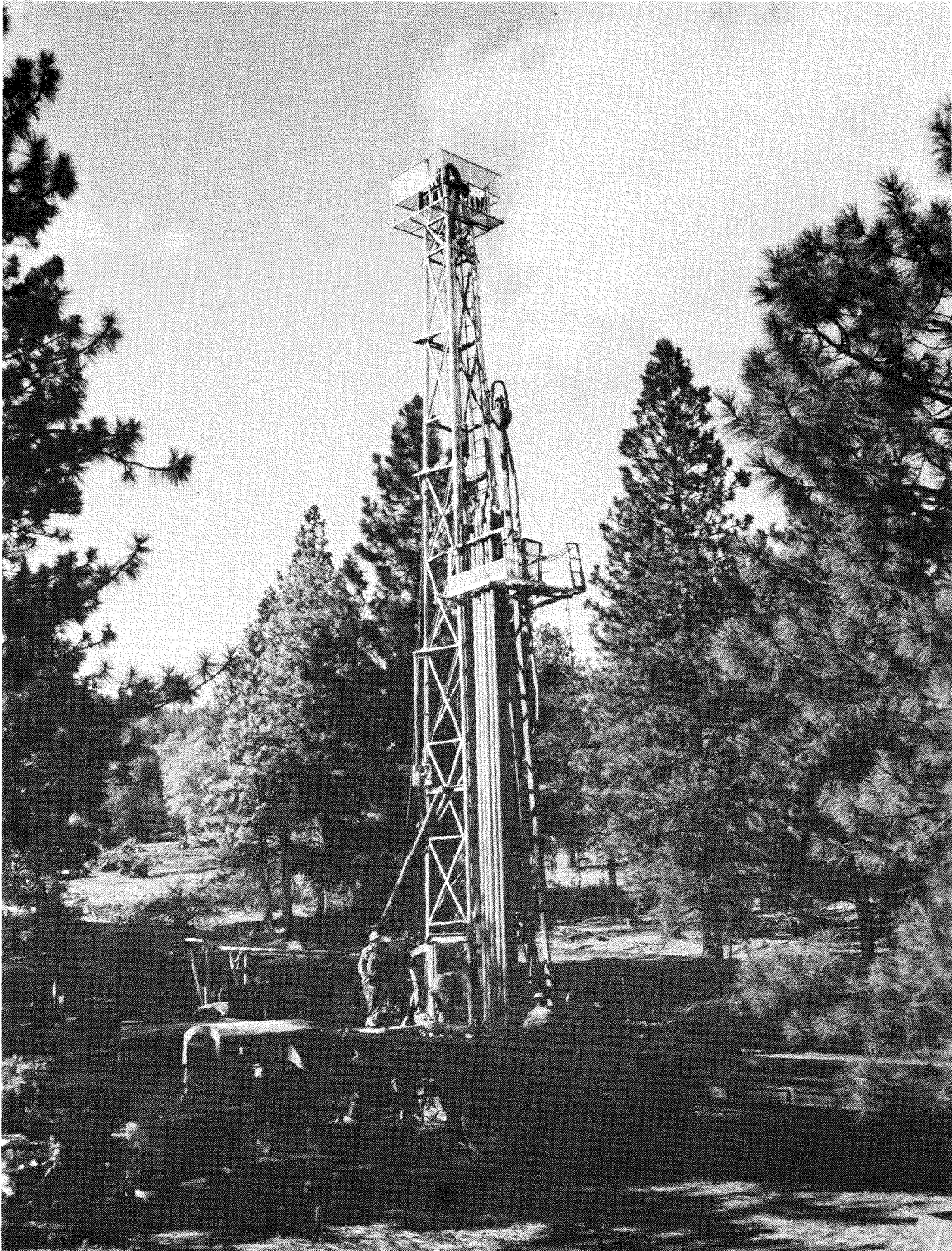
The forecast of direct drought damages, originally made in February, was repeated in April 1977 for the three scenarios using the latest information on the planting intentions of farmers (184). The April 1977 projections of direct drought damages by industrial category for the three scenarios are shown in Table 4. As indicated in the table, the forecasted direct damage totals ranged from \$737 million to \$1,962 million with a most likely direct damage forecast of \$1,291 million.

TABLE 4  
DIRECT DROUGHT DAMAGES BY SECTOR UNDER  
OPTIMISTIC, MOST LIKELY, AND PESSIMISTIC CONDITIONS  
(millions of dollars)

<u>Sector</u>	<u>Optimistic</u>	<u>Most Likely</u>	<u>Pessimistic</u>
Dairy	36	40	42
Poultry and Eggs	0	0	0
Livestock	421	467	491
Cotton	-227	-225	-154
Field Crops	220	200	180
Fruits and Nuts	0	255	706
Vegetables	0	83	99
Forestry, Greenhouse Products	11	21	43
Forestry, Fishery Products	0	0	0
Agriculture, Forestry, Fishery Services	0	0	0
Mining	0	1	3
Construction	1	1	2
Manufacturing	2	4	6
Transportation and Communications	0	0	0
Electric Utilities	315	392	473
Gas, Water, Sanitary Services	0	0	0
Wholesale Trade	0	1	5
Retail Trade	0		1
Finance, Insurance, and Real Estate Services	0	1	1
Federal Electric Utilities	2	6	11
Other Government Enterprises	1	9	11
State and Local Electric Utilities	0	0	0
Other Industries, Not Elsewhere Classified	5	35	42
	0	0	0
<b>TOTAL</b>	<b>737</b>	<b>1,291</b>	<b>1,962</b>

#### Indirect and Induced Drought Impacts

Once direct impacts were predicted for all sectors of the economy, it was then possible to estimate indirect and induced impacts. Indirect drought impacts represent losses in



*Approximately 300 million dollars was spent by agriculture in 1977 for new and renovated wells.*

purchases by industries from directly impacted industries. For example, the direct loss in production and sales to rice growers has indirect impacts due to the reduction in the purchase of inputs in the rice growing production process. This loss in sales to the suppliers of the rice industry is referred to as an indirect impact. Carrying the example further, as a result of lowered production, employees will work fewer hours and have lowered incomes. The resultant decrease in income means that these people will buy fewer goods and services from the entire economy. These impacts are defined as induced impacts.

Statewide indirect and induced impacts were estimated using an input-output model for California. At the time the analysis was made, neither the regional nor the statewide 1976 Department of Water Resources input-output models had been developed. However, Dr. Everard Lofting, Consultant to the Department's input-output research effort, had a 1972 California model and this was modified and used to forecast the indirect and induced impacts.

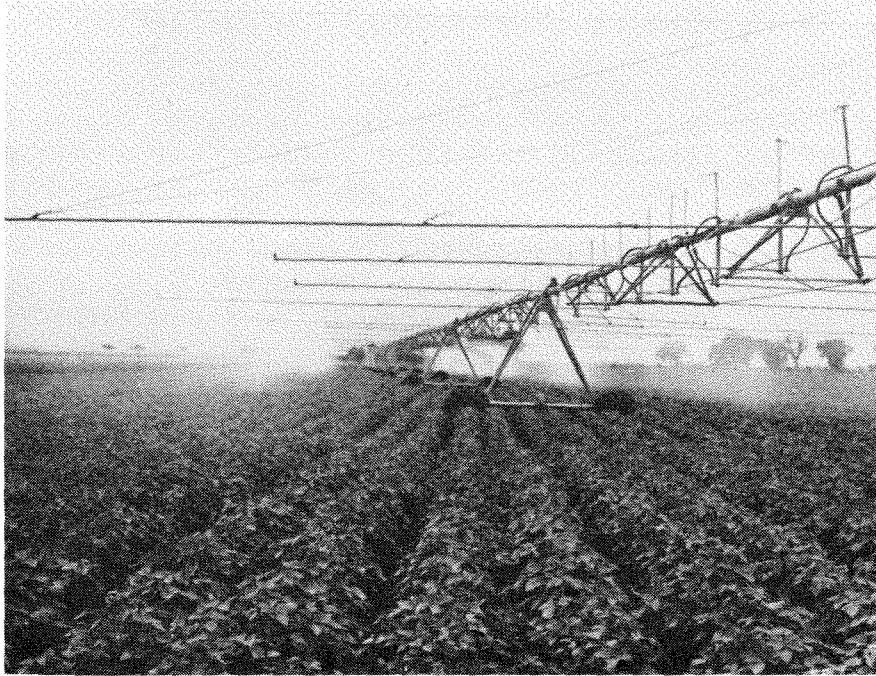
The first step in the modification procedure was to condense a 406-sector 1972 California model into one of 24 sectors. The industrial detail of the reduced model is shown in Table 4. Considerable detail was maintained in the agricultural sectors since they were the sectors most heavily and directly affected by the drought. The second step was to update the 1972 model to reflect 1977 prices and production levels. As the direct drought damages reflected projected changes in total production, coefficients were developed which reflected secondary impacts associated with direct production changes.

The final forecasts of the total economic impacts of the drought, including direct, indirect, and induced changes, are shown in Table 5.

TABLE 5  
1977 DROUGHT LOSSES TO GROSS OUTPUT  
EMPLOYMENT AND PERSONAL INCOME

	<u>Optimistic</u>	<u>Most Likely</u>	<u>Pessimistic</u>
Gross Output (millions of dollars)	1,000	1,800	2,900
Employment (jobs)	8,500	51,000	111,000
Personal Income (millions of dollars)	210	490	830

Because the California economy grows at the rate of around 320,000 jobs per year (186), the forecasted impact of the drought reflected a reduction in the rate of economic growth but not a decline in the overall level of economic activity.



*Water-saving irrigation techniques helped mitigate the impacts of the drought on California agriculture.*



*Fruit and nut growers managed water in a more intensive manner in 1977.*



## Economic Impacts of the Drought in Retrospect

As noted earlier, the Department of Water Resources currently has two comprehensive surveys in progress which are directed at estimating the economic impacts of the drought in retrospect. Because of these efforts, no further analysis of the drought has been made using the input-output methodology for estimating secondary impacts.

The most recently published (August 1978) estimates of the direct impacts of the drought are shown in Table 6. Overall, the total of the direct losses of \$1,775 million attributable to the drought is closest to those of the originally forecasted pessimistic scenario. The forecasts for the livestock and energy components of the economy appear to have been fairly good. Areas where original forecasts do not conform with the most recent estimates related to the costs of new and renovated wells and drought-related damage in California's forests.

TABLE 6

### DIRECT DROUGHT ECONOMIC IMPACTS ESTIMATES AS OF AUGUST 1978

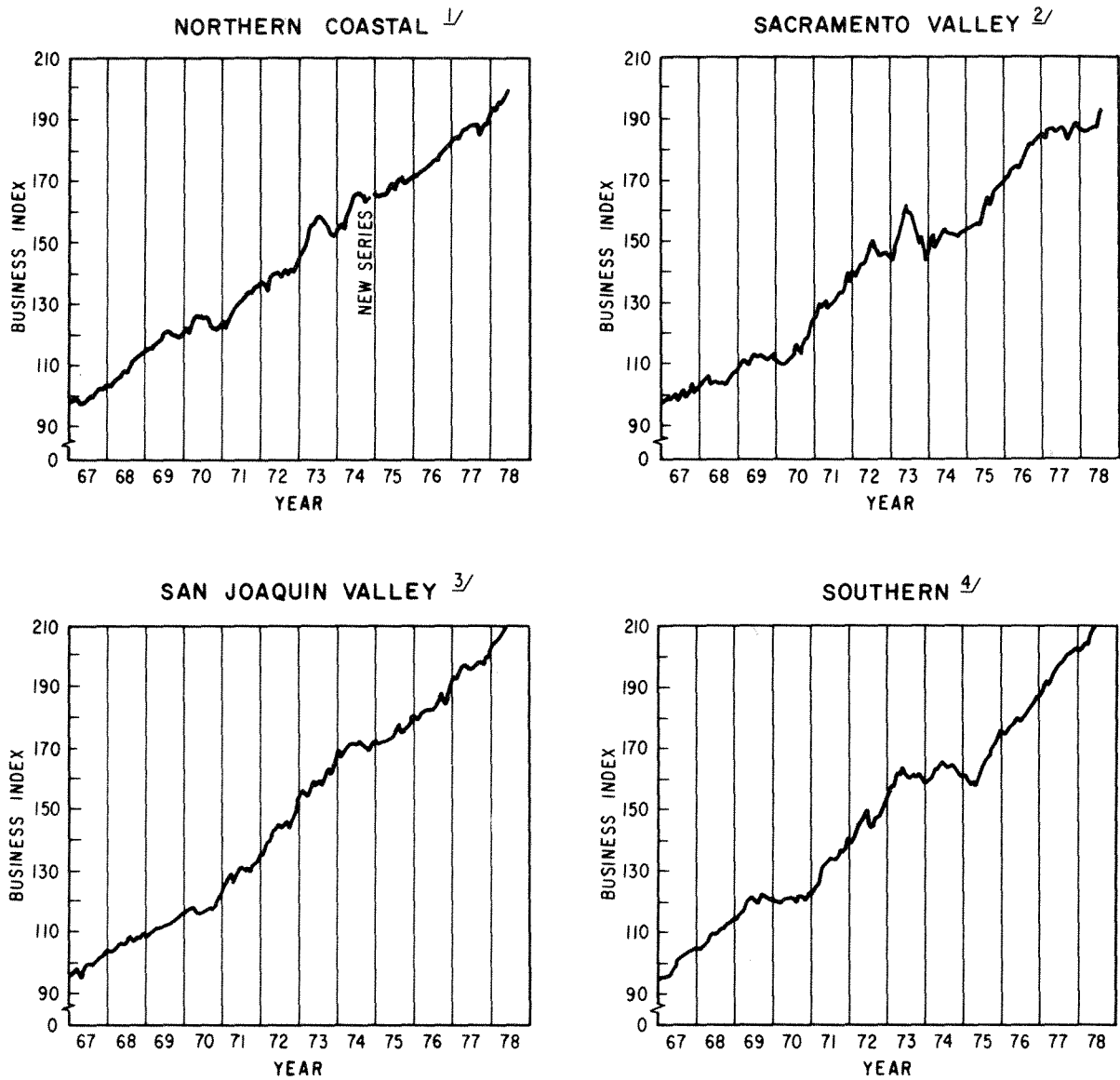
<u>Economic Area Affected</u>	<u>Drought Loss 1977 (millions of dollars)</u>
Agriculture	
Livestock	414.5
Grains	23.0
Irrigated Field Crops	89.0
Fruits, Nuts	40.0
Power Costs	25.0
Well Costs	300.0
Energy	326.0
Recreation	40.0
Forests <sup>1/</sup>	
Loss by Fire	280.0
Loss by Insects	237.5
Industry	(Unknown)
TOTALS	\$1,775.0

<sup>1/</sup> Based on average "onsite" value of \$125 per 1,000 board-feet.

Source: "The 1976-1977 California Drought: A Review".  
Department of Water Resources, May 1978.

In the context of the many factors affecting the California economy which overlay a general trend of economic growth, it is nearly impossible to measure the indirect and induced impacts of the drought. However, some evidence that the drought may have caused an impact on the overall economy is suggested by the regional indices of business activity published by Security Pacific Bank as shown in Figure 3. The 1977 indices for the Sacramento Valley, San Joaquin Valley, and Northern Coastal Area, which includes the San Francisco Bay, have flat periods with low growth. These areas experienced the bulk of the drought impacts. In contrast, the Southern California Area, which had few drought problems, showed a business activity index of growth in 1977 without interruption. During this period, the United States economy was generally expanding and there are few reasons to explain the slowdowns in Northern and Central California, other than the drought.

**Figure 3**  
**INDICES OF BUSINESS ACTIVITY IN CALIFORNIA**  
 1967 = 100



1/ ALAMEDA, CONTRA COSTA, DEL NORTE, HUMBOLDT, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, AND SONOMA COUNTIES.

2/ BUTTE, COLUSA, GLENN, PLACER, SACRAMENTO, SUTTER, TEHAMA, YOLO, AND YUBA COUNTIES.

3/ FRESNO, KERN, KINGS, MADERA, MERCED, SAN JOAQUIN, STANISLAUS, AND TULARE COUNTIES.

4/ LOS ANGELES, ORANGE, RIVERSIDE, SAN BERNARDINO, SAN DIEGO, SANTA BARBARA, AND VENTURA COUNTIES.

\* SOURCE: SECURITY PACIFIC BANK / MONTHLY SUMMARY OF BUSINESS CONDITIONS (1978).



### CHAPTER III. MULTIREGIONAL ECONOMIC IMPACT ANALYSIS

Both State and Federal guidelines for economic impact assessments identify regional economic growth as a major component of project planning (36, 136, 160). The multiregional input-output model developed in this study provides one method of forecasting the total regional impacts of a project or action and, indeed, the January 1978 Economic Practices Manual of the California Office of Planning and Research (36) specifically identified the forthcoming results of this research project as providing a means of forecasting secondary effects.

The central purpose of this chapter is to quantitatively assess the secondary impacts associated with the construction of a broad range of water projects. The multiregional input-output model presented in Technical Appendix II is the forecasting tool used for making the assessments. Because of the structure of the model, impacts are simultaneously estimated at both the hydrologic basin level of detail and statewide.

#### Background Data and Estimation Method

Although multiregional input-output models require a considerable investment for their development, once completed, the application of the models is fairly simple and straightforward. This section details the background data used in making the water projects impacts analysis and outlines the associated estimation method.

Except for the data drawn from the multiregional input-output model, no primary research was conducted and all other data drawn from secondary sources.

The approximate locations of the projects evaluated in this chapter are shown in Figure 4. As the figure illustrates, the individual projects are located throughout the State from the upper Sacramento Valley to Southern California.

The direct costs of design and construction for each of the projects are listed in Table 7. Costs are shown in millions of constant 1977 dollars for each year of activity. In each instance, the first year of activity is designated as year 1. The direct costs were disaggregated into three general categories: conveyances, dams, and hydroelectric facilities. Where projects extended beyond the bounds of a single hydrologic basin, the projects were split, and analyses were made as if there were multiple projects.

The second data set used in developing the forecasts of secondary impacts was the multiregional Type II impact coefficients for gross output and income as presented in Tables 22 and 23 in Technical Appendix II. These data show how direct expenditures "ripple" throughout the California economy, or more precisely,

Figure 4  
 LOCATION OF WATER PROJECTS





*Irrigation has helped make California one of the top producing agricultural states in the nation.*



*The trade models were developed to estimate inter-hydrologic basin trade flows.*



*Facilities for the protection of the wildlife habitat in the Suisun Marsh was one of the water projects evaluated using the multiregional input-output model.*



TABLE 7

DIRECT EXPENDITURES FOR SELECTED WATER PROJECTS  
BY YEAR AND BY CATEGORY OF FACILITY

(in Millions of 1977 Dollars)

Project (Location)	Year	Direct Expenditure <sup>1/</sup>		
		Conveyances	Dams	Power & Pump
1. Suisun Marsh Protection Facilities (San Francisco Bay Hydrologic Basin)	1	.60	0.0	0.0
	2	2.50	0.0	0.0
	3	4.50	0.0	0.0
	4	20.15	0.0	0.0
	5	14.14	0.0	0.0
Project Total		41.89	0.0	0.0
2. Ground Water Storage Facilities (San Fernando Subbasin -- Los Angeles Hydrologic Basin)	1	.06	0.0	0.0
	2	.42	0.0	0.0
	3	.71	0.0	0.0
	4	2.26	0.0	0.0
	5	5.63	0.0	0.0
	6	4.82	0.0	0.0
Project Total		13.90	0.0	0.0
3. Ground Water Storage Facilities (Chino Subbasin -- Santa Ana Hydrologic Basin)	1	.09	.37	.05
	2	.64	2.51	.33
	3	1.08	4.24	.56
	4	3.43	13.44	1.77
	5	8.54	33.47	4.41
	6	7.32	28.67	3.78
Project Total		21.1	82.7	10.9
4. South Delta Water Quality Improvement Facilities (San Joaquin Hydrologic Basin)	1	.52	0.0	0.0
	2	1.60	0.0	0.0
	3	4.00	0.0	0.0
	4	7.90	0.0	0.0
	5	7.84	0.0	0.0
	6	3.1	0.0	0.0
Project Total		24.96	0.0	0.0

<sup>1/</sup> Data provided by Department of Water Resources engineering staff.

TABLE 7 (Continued)

		Direct Expenditure		
	<u>Year</u>	<u>Conveyances</u>	<u>Dams</u>	<u>Power &amp; Pump</u>
5. Relocate Contra Costa Canal Intake to Clifton Court (San Joaquin Hydrologic Basin)	1	.22	0.0	.12
	2	.37	0.0	.20
	3	.61	0.0	.33
	4	1.44	0.0	.79
	5	2.49	0.0	1.36
	6	2.23	0.0	1.22
	7	3.22	0.0	1.77
Project Total		<hr/>	<hr/>	<hr/>
		10.58	0.0	5.79
6. Western Delta Overland Water Facilities (San Joaquin Hydrologic Basin)	1	.22	0.0	0.0
	2	.64	0.0	0.0
	3	1.60	0.0	0.0
	4	3.16	0.0	0.0
	5	3.14	0.0	0.0
	6	1.24	0.0	0.0
Project Total		<hr/>	<hr/>	<hr/>
		10.0	0.0	0.0
7. Los Vaqueros Reservoir (off-stream storage) (San Joaquin Hydrologic Basin)	1	1.91	2.44	.65
	2	4.58	5.86	1.56
	3	18.72	23.91	6.37
	4	27.89	35.62	9.49
	5	42.02	53.68	14.30
	6	50.42	64.42	17.16
	7	59.59	76.13	20.28
Project Total		<hr/>	<hr/>	<hr/>
		205.13	262.06	69.81
8. San Joaquin Ground Water Storage Facilities (San Joaquin Hydrologic Basin)	1	.08	.03	.39
	2	.53	.19	2.67
	3	.89	.33	4.49
	4	2.82	1.03	14.25
	5	7.03	2.57	35.47
	6	6.02	2.20	30.39
Project Total		<hr/>	<hr/>	<hr/>
		17.37	6.35	87.66

TABLE 7 (Continued)

		Direct Expenditure			
		<u>Year</u>	<u>Conveyances</u>	<u>Dams</u>	<u>Power &amp; Pump</u>
9. Mid Valley Canal (Northern Portion --- San Joaquin Hydrologic Basin)	1	.41	0.0	.21	
	2	.68	0.0	.35	
	3	4.35	0.0	2.24	
	4	9.25	0.0	4.76	
	5	10.88	0.0	5.60	
	6	11.83	0.0	6.09	
	7	10.20	0.0	5.25	
	8	4.76	0.0	2.45	
Project Total		52.36	0.0	26.95	
10. Mid Valley Canal (Southern Portion -- Tulare Lake Hydrologic Basin)	1	1.63	0.0	.84	
	2	2.72	0.0	1.40	
	3	17.40	0.0	8.97	
	4	36.98	0.0	19.05	
	5	43.51	0.0	22.41	
	6	47.31	0.0	24.37	
	7	40.79	0.0	21.01	
	8	19.03	0.0	9.81	
Project Total		209.37	0.0	107.86	
11. Peripheral Canal (San Joaquin Hydrologic Basin)	1	1.30	0.0	0.0	
	2	10.60	0.0	0.0	
	3	21.74	0.0	3.96	
	4	43.65	0.0	7.95	
	5	75.55	0.0	13.75	
	6	71.23	0.0	12.97	
	7	36.38	0.0	6.62	
	8	16.33	0.0	2.97	
	9	27.33	0.0	4.97	
	10	50.51	0.0	9.19	
	11	61.34	0.0	11.17	
	12	19.80	0.0	3.60	
Project Total		435.76	0.0	77.15	

TABLE 7 (Continued)

	Year	Direct Expenditure		
		Conveyances	Dams	Power & Pump
12. Glenn Reservoir - River Diversion Unit (Off-stream storage) (Sacramento Hydrologic Basin)	1	1.19	6.06	8.01
	2	1.19	6.06	8.01
	3	1.41	7.16	9.47
	4	6.06	30.83	40.77
	5	7.89	40.18	53.14
	6	8.54	43.49	57.51
	7	10.27	52.29	69.15
	8	3.89	19.82	26.21
	9	4.33	22.02	29.12
	10	7.79	39.63	52.41
	11	11.14	56.69	74.97
	12	11.14	56.69	74.97
	13	8.76	44.59	58.96
	14	13.09	66.6	88.08
	15	10.49	53.39	70.61
	16	8.65	44.04	58.23
Project Total		<u>115.83</u>	<u>589.54</u>	<u>779.62</u>
13. Cottenwood Creek Project (Dutch Gulch and Tehama Reservoir) (Sacramento Hydrologic Basin)	1	0.0	2.08	1.07
	2	0.0	4.15	2.14
	3	0.0	4.15	2.14
	4	0.0	33.93	17.48
	5	0.0	66.48	34.25
	6	0.0	66.48	34.25
	7	0.0	33.93	17.48
Project Total		<u>0.0</u>	<u>211.2</u>	<u>108.81</u>
14. Enlarge East Branch California Aqueduct (South Lahontan Hydrologic Basin)	1	.46	0.0	0.0
	2	2.19	0.0	0.0
	3	4.09	0.0	0.0
	4	12.27	0.0	0.0
	5	40.81	0.0	0.0
	6	46.09	0.0	0.0
	7	14.05	0.0	0.0
	8	.29	0.0	0.0
Project Total		<u>120.25</u>	<u>0.0</u>	<u>0.0</u>

indicate the direct, indirect, and induced change in economic activity resulting from a million dollar change in final demand for each of 41 industries, including the household sector. Coefficients are differentiated by region of direct expenditure and reflect the total impact to each and all regions.

Of note is the difference between "gross output" and "income". Gross output refers to the level of regional production in millions of dollars. Regional income reflects that share of the total costs of regional production that accrue as wage income, profit income, interest income, indirect business tax payments, and charges against the depreciation of capital equipment. In general, the data developed for regional income is of greater interest to regional planners because gross output totals reflect double counting. For example, the value of regional production of crops includes the value of fertilizers used in that production. If the fertilizer is regionally produced, its value is also included in the agricultural chemicals category. The use of regional income data eliminates the double counting embodied in the gross output data.

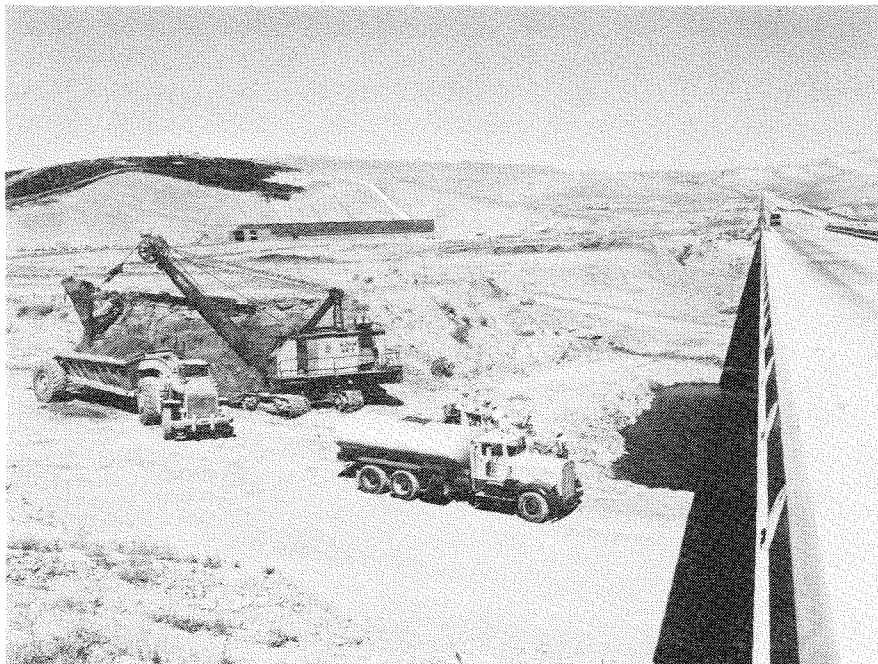
The third and final set of data used in making the multi-regional impacts analysis is presented in Table 8. This data shows how the direct expenditures for the three types of water projects are apportioned according to the 41 multiregional input-output activity sectors. The share of direct labor costs is shown in Table 8 as direct payments to households, sector 41.

The first step in performing the multiregional impacts assessments was to create intermediate data reflecting income and gross output changes associated with direct expenditures for the three classes of water projects. These data are shown in Tables 9 and 10 and differ depending upon the region of direct expenditure and region of total impact. These data in these tables reflect the multiregional input-output coefficients of Tables 22 and 23, weighted according to the final demand shares of Table 8. For example, as shown in Table 9, the change in gross output in the North Coast hydrologic basin associated with a million dollar expenditure for dams in that same area would be \$1.985 million. This number is the weighted sum of the first column of data in Table 22 and the dams share data of Table 8:

(1.8462) x ( 0.0 )	Livestock and Dairies
(1.7727) x (.000161)	Food and Feed Crops
⋮	⋮
(2.5883) x (.000241)	State and Local Government
	Enterprise
(3.1103) x ( 0.0 )	Government Industry
(2.1103) x (.519459)	Households
<hr/>	
$\Sigma = 1.9854$	



*The "induced" effects discussed in this report reflect the stimulation to the economy as income is earned by households and spent for personal consumption.*



*This research illustrates that significant economic impacts beyond the local region result from the construction of water projects.*

TABLE 8

FINAL DEMAND DECIMAL SHARE FOR ALLOCATING DIRECT COSTS  
BY PROJECT TYPE AND SECTOR

Sector	Project Type		
	Conveyance Facilities	Dams	Powerhouses
1. Livestock and Dairies	0.0	0.0	0.0
2. Food and Feed Crops	.000111	.000161	.000020
3. Forestry and Fishery Products	0.0	0.0	0.0
4. Agricultural Services	0.0	0.0	0.0
5. Metals Mining	0.0	0.0	0.0
6. Coal Mining	0.0	0.0	0.0
7. Crude Petroleum and Natural Gas	0.0	0.0	0.0
8. Stone and Clay Mining	.180926	.000221	.008864
9. Chemical and Fertilizer Minerals	0.0	0.0	0.0
10. New Construction	0.0	0.0	0.0
11. Repair Construction	0.0	0.0	0.0
12. Ordnance	0.0	0.0	0.0
13. Food Processing	0.0	0.0	0.0
14. Textile Products	0.0	.000141	.000342
15. Lumber and Wood Products	.027218	.008644	.014955
16. Furniture	0.0	.000010	.000704
17. Paper Products	0.0	0.0	.000131
18. Printing and Publishing	0.0	0.0	0.0
19. Chemicals, Drugs, Plastics, and Paints	.005242	.21931	.003749
20. Petroleum Refining	.078129	.090721	.003146
21. Glass, Stone, and Clay Products	.000352	.011720	.013447
22. Primary Metals Processing	.002534	.001598	.015638
23. Fabricated Metals Products	.008158	.048246	.041035
24. Farm, Construction, and Mining Equipment	.043925	.103194	.299357
25. Industrial Machinery	.000292	.008765	.007950
26. Light Duty Equipment	.000091	.001719	.208121
27. Motor Vehicles	.004981	.054024	.003286
28. Other Transportation Equipment	.012717	0.0	.000010
29. Scientific and Other Equipment	.000020	.000020	.002352
30. Transportation and Warehousing	.093254	.011247	.019085
31. Communications	.001126	.001106	.001276
32. Public Utilities	.002619	.002573	.001528
33. Wholesale and Retail Trade	.055874	.097445	.093678
34. Finance, Insurance, and Real Estate	.011199	.010986	.013819
35. Hotels, Personal, and Repair Services	.004644	.004553	.005276
36. Amusements	0.0	0.0	0.0
37. Medical, Education, and Nonprofit Organ.	.001121	.001096	.001276
38. Federal Government Enterprise	0.0	0.0	0.0
39. State and Local Govt. Enterprise	.000236	.000241	.000271
40. Government Industry	0.0	0.0	0.0
41. Households	.465237	.519459	.240683

Source: Kim, U. et al., Reference 73. Updated to current dollars and aggregated to 41 sectors to conform with multiregional input-output model.

TABLE 9

## GROSS OUTPUT COEFFICIENTS BY PROJECT TYPE AND HYDROLOGIC BASIN

		Project Type -- Conveyance Facilities											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	2.0490	.5958	.0922	.04947	.0372	.0371	.0524	.0016	.0176	.0280	.0174	.0047
	SFB	.0199	2.9073	.0477	.3097	.0503	.0461	.0861	.0013	.0187	.0342	.0468	.0044
	CC	.0119	.3965	2.2570	.5354	.0392	.0243	.0504	.0010	.0193	.0366	.0224	.0056
	LA	.0104	.1452	.0224	3.1221	.0378	.0397	.0492	.0030	.0459	.0542	.0337	.0169
	SJ	.0172	.3696	.0480	.6341	2.1987	.0263	.0416	.0011	.0107	.0713	.0640	.0054
	SB	.0147	.3716	.0569	.5201	.0531	2.2316	.0446	.0011	.0204	.0601	.0354	.0067
	TL	.0147	.2411	.0242	.5703	.0513	.0232	2.3782	.0077	.0237	.0781	.0671	.0061
	NL	.0502	.6602	.0783	.5201	.0682	.0458	.0484	1.7998	.0252	.0332	.0230	.0061
	SL	.0106	.1977	.0519	.4166	.0632	.0359	.1324	.0016	2.4212	.0502	.1104	.0298
	SA	.0109	.1714	.0174	.6360	.0343	.0231	.0488	.0014	.0204	2.4215	.0402	.0212
	SD	.0126	.1334	.0150	.5710	.0345	.0226	.0424	.0024	.0242	.0642	2.4118	.0285
	CD	.0138	.2225	.0615	.6826	.0369	.0478	.0427	.0012	.0246	.0653	.1274	2.0894

		Project Type -- Dams											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	1.9854	.5923	.0933	.5037	.0360	.0357	.0494	.0016	.0171	.0316	.0166	.0048
	SFB	.0156	2.8989	.0408	.3255	.0499	.0434	.0857	.0011	.0172	.0388	.0420	.0047
	CC	.0087	.3901	2.2103	.5482	.0377	.0221	.0460	.0009	.0175	.0424	.0219	.0055
	LA	.0073	.1527	.0221	3.1116	.0374	.0372	.0482	.0030	.0419	.0606	.0350	.0170
	SJ	.0109	.3584	.0486	.6492	2.1308	.0231	.0426	.0010	.0108	.0766	.0690	.0055
	SB	.0117	.3637	.0616	.5350	.0473	2.1654	.0408	.0009	.0158	.0643	.0358	.0068
	TL	.0108	.2439	.0228	.5883	.0458	.0207	2.3283	.0074	.0231	.0800	.0694	.0062
	NL	.0470	.6278	.0749	.5103	.0577	.0400	.0434	1.7115	.0257	.0343	.0191	.0057
	SL	.0073	.1948	.0483	.4315	.0570	.0318	.1316	.0014	2.3950	.0581	.1083	.0301
	SA	.0073	.1735	.0169	.6450	.0333	.0207	.0458	.0013	.0193	2.4006	.0414	.0153
	SD	.0094	.1332	.0145	.5811	.0336	.0206	.0392	.0023	.0233	.0709	2.3793	.0277
	CD	.0099	.2225	.0619	.6857	.0356	.0418	.0396	.0010	.0238	.0701	.1255	2.0469

		Project Type -- Powerhouse											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	1.9679	.6211	.0711	.5195	.0323	.0325	.0474	.0012	.0226	.0445	.0167	.0052
	SFB	.0170	3.0579	.0302	.3437	.0437	.0421	.0474	.0010	.0169	.0465	.0379	.0049
	CC	.0098	.3922	2.3150	.5664	.0349	.0221	.0415	.0010	.0179	.0512	.0304	.0059
	LA	.0088	.1806	.0204	3.2024	.0341	.0352	.0442	.0031	.0258	.0686	.0475	.0169
	SJ	.0122	.3644	.0696	.6670	2.1356	.0230	.0388	.0011	.0116	.0868	.0828	.0060
	SB	.0128	.4507	.0191	.5608	.0427	2.1434	.0364	.0010	.0158	.0833	.0618	.0069
	TL	.0118	.2726	.0225	.6260	.0408	.0209	2.3088	.0065	.0234	.0851	.0980	.0067
	NL	.0402	.7707	.0311	.5397	.0530	.0381	.0401	1.7784	.0288	.0749	.0219	.0061
	SL	.0089	.2391	.0493	.4616	.0510	.0308	.1111	.0014	2.4371	.0783	.1169	.0262
	SA	.0089	.2117	.0147	.6477	.0307	.0208	.0415	.0013	.0216	2.5081	.0609	.0149
	SD	.0101	.1378	.0213	.6113	.0305	.0201	.0348	.0021	.0220	.0857	2.4712	.0291
	CD	.0097	.2188	.0380	.7019	.0328	.0391	.0359	.0011	.0231	.1065	.1473	2.1574

## Legend - Hydrologic Basins

<sup>a/</sup> NC - North Coast	TL - Tulare Lake
SFB - San Francisco Bay	NL - North Lahontan
CC - Central Coast	SL - South Lahontan
LA - Los Angeles	SA - Santa Ana
SJ - San Joaquin	SD - San Diego
SB - Sacramento	CD - Colorado Desert



TABLE 10

## INCOME COEFFICIENTS BY PROJECT TYPE AND HYDROLOGIC BASIN

		Project Type -- Conveyance Facilities											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	.6891	.2539	.0393	.1910	.0118	.0142	.0195	.0007	.0072	.0104	.0073	.0016
	SFB	.0074	1.0254	.0212	.1133	.0162	.0194	.0371	.0006	.0078	.0126	.0205	.0015
	CC	.0042	.1679	.7898	.2088	.0124	.0090	.0187	.0004	.0081	.0134	.0088	.0019
	LA	.0035	.0543	.0090	1.1106	.0129	.0157	.0181	.0012	.0202	.0210	.0137	.0058
	SJ	.0059	.1547	.0216	.2625	.7329	.0100	.0158	.0004	.0044	.0317	.0277	.0019
	SB	.0050	.1495	.0263	.2056	.0185	.7765	.0167	.0004	.0086	.0239	.0139	.0024
	TL	.0053	.0999	.0100	.2298	.0187	.0087	.8145	.0041	.0103	.0353	.0303	.0021
	NL	.0223	.2901	.0344	.1978	.0239	.0178	.0179	.5864	.0099	.0123	.0098	.0021
	SL	.0036	.0775	.0225	.1587	.0233	.0139	.0522	.0007	.8270	.0196	.0586	.0121
	SA	.0037	.0654	.0069	.2483	.0108	.0086	.0174	.0006	.0085	.8697	.0172	.0083
	SD	.0042	.0470	.0057	.2247	.0108	.0084	.0155	.0010	.0102	.0232	.8683	.0099
	CD	.0047	.0892	.0284	.2761	.0120	.0188	.0154	.0005	.0106	.0238	.0614	.7016

		Project Type -- Dams											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	.6216	.2508	.0401	.1937	.0114	.0137	.0182	.0007	.0069	.0116	.0069	.0016
	SFB	.0060	.9762	.0182	.1186	.0161	.0185	.0371	.0005	.0071	.0142	.0183	.0016
	CC	.0031	.1645	.7285	.2128	.0119	.0082	.0170	.0004	.0073	.0153	.0085	.0019
	LA	.0025	.0567	.0088	1.0595	.0127	.0148	.0177	.0012	.0184	.0230	.0141	.0058
	SJ	.0039	.1491	.0219	.2662	.6589	.0089	.0162	.0004	.0044	.0336	.0294	.0019
	SB	.0040	.1455	.0285	.2100	.0162	.7038	.0152	.0004	.0066	.0255	.0137	.0025
	TL	.0039	.1001	.0094	.2350	.0164	.0078	.7466	.0040	.0099	.0356	.0308	.0021
	NL	.0212	.2755	.0338	.1935	.0195	.0155	.0160	.5001	.0099	.0126	.0080	.0019
	SL	.0025	.0760	.0210	.1636	.0206	.0124	.0519	.0006	.7694	.0222	.0570	.0122
	SA	.0025	.0659	.0066	.2508	.0105	.0078	.0162	.0005	.0078	.8138	.0175	.0058
	SD	.0032	.0468	.0055	.2273	.0105	.0077	.0143	.0009	.0097	.0255	.8103	.0096
	CD	.0034	.0887	.0288	.2765	.0116	.0165	.0142	.0004	.0102	.0253	.0595	.6358

		Project Type -- Powerhouses											
		Region of Impact <sup>a/</sup>											
		NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD
Region of Origin <sup>a/</sup>	NC	.6781	.2558	.0273	.1983	.0103	.0124	.0174	.0005	.0089	.0164	.0070	.0018
	SFB	.0064	1.1107	.0132	.1242	.0140	.0178	.0192	.0004	.0069	.0168	.0164	.0017
	CC	.0034	.1631	.8432	.2184	.0111	.0082	.0154	.0004	.0073	.0184	.0115	.0020
	LA	.0030	.0677	.0081	1.1676	.0116	.0141	.0163	.0013	.0106	.0248	.0180	.0058
	SJ	.0043	.1497	.0281	.2697	.7416	.0089	.0147	.0004	.0047	.0365	.0307	.0021
	SB	.0044	.1770	.0080	.2180	.0147	.7699	.0136	.0004	.0064	.0325	.0227	.0025
	TL	.0042	.1095	.0093	.2468	.0146	.0079	.8037	.0034	.0099	.0364	.0398	.0023
	NL	.0180	.3273	.0128	.2021	.0181	.0149	.0148	.6288	.0108	.0283	.0092	.0021
	SL	.0030	.0925	.0213	.1740	.0185	.0120	.0437	.0006	.8579	.0294	.0580	.0105
	SA	.0030	.0804	.0057	.2507	.0097	.0079	.0147	.0005	.0086	.9307	.0242	.0056
	SD	.0034	.0490	.0082	.2368	.0096	.0075	.0126	.0009	.0090	.0308	.9132	.0102
	CD	.0033	.0866	.0172	.2818	.0107	.0154	.0129	.0004	.0098	.0385	.0649	.7459

## Legend - Hydrologic Basins

<sup>a/</sup> NC - North Coast	TL - Tulare Lake
SFB - San Francisco Bay	NL - North Lahontan
CC - Central Coast	SL - South Lahontan
LA - Los Angeles	SA - Santa Ana
SJ - San Joaquin	SD - San Diego
SB - Sacramento	CD - Colorado Desert

The final estimates of the direct, indirect, and induced changes in gross output and income for the various projects are shown in Tables 11 and 12. These data were developed by multiplying the direct expenditures data of Table 7 by the appropriate project impacts coefficients of Tables 9 and 10. State totals for any particular project are the sum of the impacts across all 12 hydrologic basins. Total impacts for each project are the sums of impacts over all years.

### Discussion of Results

As the central focus of this research study is upon the development of methods of forecasting economic impacts, this discussion will emphasize three general results of the multiregional impacts analysis and will not make an in-depth evaluation of the numerical results.

The first result of note is that, given the existence of a multiregional input-output model, the forecasting of secondary impacts is relatively simple and straightforward. Given the direct costs for any other water project located in any hydrologic region of California, the total impacts in terms of gross output and income could be estimated in less than one day.

Second, an analysis based upon a regional input-output model, one hydrologic basin for example, would significantly understate the total statewide impacts. Otherwise, the "spillover" impacts from one region to another are considerable. The results of this study reflect spillover impacts from 20 to 45 percent of the total impact.

Finally, as indicated above, spillover impacts are not uniform from one basin to another. As might be expected, urban economies, which are more self-sufficient across a broad range of economic activities, tend to have fewer spillovers and a correspondingly larger share of the total impact.

TABLE 11-1

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 1 -- SUISUN MARSH PROTECTION FACILITIES

PROJECT LOCATION -- SAN FRANCISCO BAY HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
-HYDROLOGIC BASIN-														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
DIRECT EXPENDITURES	1	2	3	4	5	6	7	8	9	10	11	12		
-YEAR-														
1	.60	.01	1.74	.03	.19	.03	.03	.05	.00	.01	.02	.03	.00	2.14
2	2.50	.05	7.27	.12	.77	.13	.12	.22	.00	.05	.09	.12	.01	8.93
3	4.50	.09	13.08	.21	1.39	.23	.21	.39	.01	.08	.15	.21	.02	16.08
4	20.15	.40	58.58	.96	6.24	1.01	.93	1.73	.03	.38	.69	.94	.09	71.99
5	14.14	.28	41.11	.67	4.38	.71	.65	1.22	.02	.26	.48	.66	.06	50.52
PROJECT TOTAL	41.89	.83	121.79	2.00	12.97	2.11	1.93	3.61	.05	.78	1.43	1.96	.18	149.65

TABLE 11-2

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 2 -- GROUND WATER STORAGE FACILITIES (SAN FERNANDO SUBBASIN)

PROJECT LOCATION -- LOS ANGELES HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
-HYDROLOGIC BASIN-														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
DIRECT EXPENDITURES	1	2	3	4	5	6	7	8	9	10	11	12		
-YEAR-														
1	.06	.00	.01	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00	.21
2	.42	.00	.06	.01	1.31	.02	.02	.02	.00	.02	.02	.01	.01	1.50
3	.71	.01	.10	.02	2.22	.03	.03	.03	.00	.03	.04	.02	.01	2.54
4	2.26	.02	.33	.05	7.06	.09	.09	.11	.01	.10	.12	.08	.04	8.09
5	5.63	.06	.82	.13	17.58	.21	.22	.28	.02	.26	.31	.19	.10	20.16
6	4.82	.05	.70	.11	15.05	.18	.19	.24	.01	.22	.26	.16	.08	17.26
PROJECT TOTAL	13.90	.14	2.02	.31	43.40	.53	.55	.68	.04	.64	.75	.47	.23	49.77

TABLE 11-3

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 3 -- GROUNDWATER STORAGE FACILITIES (CHINO SUBBASIN)

PROJECT LOCATION -- SANTA ANA HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
-HYDROLOGIC BASIN-														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
DIRECT EXPENDITURES	1	2	3	4	5	6	7	8	9	10	11	12		
-YEAR-														
1	.51	.00	.09	.01	.33	.02	.01	.02	.00	.01	1.23	.02	.01	1.75
2	3.48	.03	.62	.06	2.24	.12	.07	.16	.00	.07	8.40	.15	.06	11.97
3	5.88	.05	1.04	.10	3.78	.20	.12	.27	.01	.12	14.20	.25	.10	20.23
4	18.64	.15	3.29	.31	12.00	.62	.39	.86	.02	.37	45.01	.80	.30	64.13
5	46.42	.38	8.20	.78	29.88	1.54	.98	2.13	.06	.92	112.09	2.00	.76	159.71
6	39.77	.32	7.03	.67	25.60	1.32	.84	1.83	.05	.78	96.03	1.71	.65	136.83
PROJECT TOTAL	114.70	.93	20.27	1.93	73.82	3.81	2.43	5.27	.15	2.26	276.96	4.94	1.88	394.64

TABLE 11-4

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 4 -- SOUTH DELTA WATER QUALITY IMPROVEMENT FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.52	.01	.19	.02	.33	1.14	.01	.02	.00	.01	.04	.03	.00	1.81
2	1.60	.03	.59	.08	1.01	3.52	.04	.07	.00	.02	.11	.10	.01	5.58
3	4.00	.07	1.48	.19	2.54	8.79	.11	.17	.00	.04	.29	.26	.02	13.95
4	7.90	.14	2.92	.38	5.01	17.37	.21	.33	.01	.08	.56	.51	.04	27.56
5	7.84	.13	2.90	.38	4.97	17.24	.21	.33	.01	.08	.56	.50	.04	27.35
6	3.10	.05	1.15	.15	1.97	6.82	.08	.13	.00	.03	.22	.20	.02	10.81
PROJECT TOTAL	24.96	.43	9.23	1.20	15.83	54.88	.66	1.04	.03	.27	1.78	1.60	.13	87.06

TABLE 11-5

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 5 -- RELOCATE CONTRA COSTA CANAL INTAKE TO CLIFTON COURT

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.34	.01	.13	.02	.22	.74	.01	.01	.00	.00	.03	.02	.00	1.19
2	.57	.01	.21	.03	.37	1.24	.01	.02	.00	.01	.04	.04	.00	1.99
3	.94	.01	.35	.05	.61	2.05	.02	.04	.00	.01	.07	.07	.01	3.28
4	2.23	.03	.82	.12	1.44	4.85	.06	.09	.00	.02	.17	.16	.01	7.79
5	3.85	.06	1.42	.21	2.49	8.38	.10	.16	.00	.04	.30	.27	.02	13.44
6	3.45	.05	1.27	.19	2.23	7.51	.09	.14	.00	.04	.26	.24	.02	12.05
7	4.99	.08	1.84	.28	3.22	10.86	.13	.20	.01	.05	.38	.35	.03	17.42
PROJECT TOTAL	16.37	.25	6.02	.91	10.57	35.63	.41	.66	.02	.18	1.26	1.16	.09	57.16

TABLE 11-6

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 6 -- WESTERN DELTA OVERLAND WATER FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.22	.00	.08	.01	.14	.48	.01	.01	.00	.00	.02	.01	.00	.77
2	.64	.01	.24	.03	.41	1.41	.02	.03	.00	.01	.05	.04	.00	2.23
3	1.60	.03	.59	.08	1.01	3.52	.04	.07	.00	.02	.11	.10	.01	5.58
4	3.16	.05	1.17	.15	2.00	6.95	.08	.13	.00	.03	.23	.20	.02	11.02
5	3.14	.05	1.16	.15	1.99	6.90	.08	.13	.00	.03	.22	.20	.02	10.95
6	1.24	.02	.46	.06	.79	2.73	.03	.05	.00	.01	.09	.08	.01	4.33
PROJECT TOTAL	10.00	.17	3.70	.48	6.34	21.99	.26	.42	.01	.11	.71	.64	.05	34.88

TABLE 11-7

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 7 -- LOS VAQUEROS RESERVOIR (OFF STREAM STORAGE)

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
--HYDROLOGIC BASIN--														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
-YEAR-	1	2	3	4	5	6	7	8	9	10	11	12		
DIRECT EXPENDITURES														
1	5.00	.07	1.82	.26	3.23	10.79	.12	.21	.01	.05	.38	.34	.03	17.30
2	12.00	.16	4.36	.61	7.75	25.89	.29	.50	.01	.13	.91	.83	.07	41.51
3	49.00	.66	17.81	2.50	31.64	105.71	1.19	2.04	.05	.53	3.72	3.38	.27	169.51
4	73.00	.98	26.53	3.73	47.14	157.49	1.77	3.05	.08	.79	5.54	5.03	.40	252.54
5	110.00	1.48	39.98	5.62	71.03	237.31	2.67	4.59	.12	1.20	8.55	7.58	.61	380.53
6	132.00	1.78	47.98	6.75	85.24	284.77	3.21	5.51	.14	1.43	10.02	9.09	.73	456.64
7	156.00	2.10	56.70	7.97	100.74	336.55	3.79	6.51	.16	1.70	11.84	10.75	.86	539.67
PROJECT TOTAL	537.00	7.24	195.18	27.44	346.77	1158.50	13.05	22.41	.56	5.83	40.76	36.99	2.97	1857.70

TABLE 11-8

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 8 -- SAN JOAQUIN VALLEY GROUND WATER STORAGE FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
--HYDROLOGIC BASIN--														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
-YEAR-	1	2	3	4	5	6	7	8	9	10	11	12		
DIRECT EXPENDITURES														
1	.50	.01	.18	.03	.33	1.07	.01	.02	.00	.01	.04	.04	.00	1.75
2	3.39	.04	1.24	.22	2.24	7.27	.08	.13	.00	.04	.28	.27	.02	11.84
3	5.71	.07	2.08	.37	3.77	12.25	.13	.23	.01	.07	.48	.45	.03	19.95
4	18.10	.23	6.60	1.18	11.96	38.83	.43	.71	.02	.21	1.52	1.43	.11	63.22
5	45.07	.58	16.44	2.93	29.78	96.68	1.06	1.78	.05	.51	3.78	3.56	.26	157.43
6	38.61	.50	14.09	2.51	25.52	82.82	.91	1.52	.04	.44	3.24	3.05	.23	134.87
PROJECT TOTAL	111.38	1.44	40.64	7.24	73.61	238.93	2.62	4.39	.12	1.27	9.33	8.81	.65	389.06

TABLE 11-9

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 9 -- MID VALLEY CANAL (NORTHERN PORTION)

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE														
--HYDROLOGIC BASIN--														
	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
-YEAR-	1	2	3	4	5	6	7	8	9	10	11	12		
DIRECT EXPENDITURES														
1	.62	.01	.23	.03	.40	1.35	.02	.03	.00	.01	.05	.04	.00	2.16
2	1.03	.02	.38	.06	.66	2.24	.03	.04	.00	.01	.08	.07	.01	3.60
3	6.59	.10	2.42	.36	4.25	14.35	.17	.27	.01	.07	.50	.46	.04	23.01
4	14.01	.22	5.15	.78	9.04	30.50	.35	.57	.02	.15	1.07	.99	.08	48.92
5	16.48	.26	6.06	.91	10.63	35.88	.41	.67	.02	.18	1.26	1.16	.09	57.54
6	17.92	.28	6.59	.99	11.56	39.02	.45	.73	.02	.20	1.37	1.26	.10	62.57
7	15.45	.24	5.68	.86	9.97	33.64	.39	.63	.02	.17	1.18	1.09	.09	53.95
8	7.21	.11	2.65	.40	4.65	15.70	.18	.29	.01	.08	.55	.51	.04	25.18
PROJECT TOTAL	79.31	1.23	29.17	4.39	51.18	172.68	2.00	3.22	.09	.87	6.07	5.58	.44	276.93

TABLE 11-10

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 10 -- MID VALLEY CANAL (SOUTHERN PORTION)  
PROJECT LOCATION -- TULARE LAKE HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
		1	2	3	4	5	6	7	8	9	10	11	12		
1	2.47	.03	.62	.06	1.46	.12	.06	5.82	.02	.06	.20	.19	.02	8.64	
2	4.12	.06	1.04	.10	2.43	.20	.09	9.70	.03	.10	.33	.32	.03	14.41	
3	26.37	.36	6.64	.62	15.54	1.26	.59	62.09	.19	.62	2.12	2.05	.17	92.25	
4	56.03	.77	14.11	1.32	33.01	2.67	1.26	131.93	.41	1.32	4.51	4.35	.35	196.02	
5	65.92	.90	16.60	1.56	38.84	3.15	1.48	155.22	.48	1.56	5.31	5.12	.42	230.62	
6	71.68	.98	18.05	1.69	42.24	3.42	1.61	168.78	.52	1.69	5.77	5.56	.45	250.77	
7	61.80	.85	15.56	1.46	36.41	2.95	1.39	145.51	.45	1.46	4.97	4.80	.39	216.20	
8	28.84	.40	7.26	.68	16.99	1.38	.65	67.91	.21	.68	2.32	2.24	.18	100.89	
PROJECT TOTAL	317.23	4.35	79.88	7.49	186.92	15.14	7.11	746.95	2.31	7.49	25.53	24.62	2.00	1109.80	

TABLE 11-11

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 11 -- PERIPHERAL CANAL  
PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA	
		1	2	3	4	5	6	7	8	9	10	11	12		
1	1.30	.02	.48	.06	.82	2.86	.03	.05	.00	.01	.09	.08	.01	4.53	
2	10.60	.18	3.92	.51	6.72	23.31	.28	.44	.01	.11	.76	.68	.06	36.97	
3	25.70	.42	9.48	1.32	16.43	56.26	.66	1.06	.03	.28	1.89	1.72	.14	89.68	
4	51.60	.85	19.03	2.65	32.98	112.95	1.33	2.12	.06	.56	3.80	3.45	.28	180.07	
5	89.30	1.47	32.93	4.58	57.08	195.48	2.30	3.68	.10	.97	6.58	5.97	.49	311.63	
6	84.20	1.38	31.05	4.32	53.82	184.31	2.17	3.47	.09	.91	6.20	5.63	.46	293.83	
7	43.00	.71	15.86	2.21	27.48	94.13	1.11	1.77	.05	.47	3.17	2.88	.24	150.06	
8	19.30	.32	7.12	.99	12.34	42.25	.50	.79	.02	.21	1.42	1.29	.11	67.35	
9	32.30	.53	11.91	1.66	20.64	70.70	.83	1.33	.04	.35	2.38	2.16	.18	112.72	
10	59.70	.98	22.02	3.06	38.16	130.68	1.54	2.46	.07	.65	4.40	3.99	.33	208.33	
11	72.51	1.19	26.74	3.72	46.35	158.72	1.87	2.99	.08	.79	5.34	4.85	.40	253.04	
12	23.40	.38	8.63	1.20	14.96	51.22	.60	.96	.03	.25	1.72	1.57	.13	81.66	
PROJECT TOTAL	512.91	8.44	189.17	26.29	327.77	1122.87	13.23	21.12	.56	5.56	37.77	34.28	2.82	1789.87	

TABLE 11-12

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 12 -- GLENN RESERVOIR-RIVER DIVERSION (OFF STREAM STORAGE)

PROJECT LOCATION -- SACRAMENTO HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	15.26	.19	6.26	.59	8.35	.69	32.95	.59	.01	.25	1.13	.75	.10	51.87
2	15.26	.19	6.26	.59	8.35	.69	32.95	.59	.01	.25	1.13	.75	.10	51.87
3	18.04	.23	7.40	.70	9.87	.82	38.95	.70	.02	.29	1.33	.89	.12	61.32
4	77.66	.97	31.84	3.02	42.51	3.52	167.67	3.01	.08	1.25	5.74	3.84	.53	263.99
5	101.21	1.27	41.50	3.94	55.40	4.59	218.51	3.93	.10	1.64	7.48	5.00	.69	344.04
6	109.54	1.37	44.91	4.26	59.96	4.97	236.50	4.25	.11	1.77	8.10	5.41	.75	372.36
7	131.71	1.65	54.00	5.13	72.10	5.97	284.36	5.11	.13	2.13	9.74	6.51	.90	447.72
8	49.92	.62	20.47	1.94	27.33	2.26	107.78	1.94	.05	.81	3.69	2.47	.34	169.69
9	55.47	.69	22.74	2.16	30.36	2.51	119.76	2.15	.05	.90	4.10	2.74	.38	188.56
10	99.83	1.25	40.93	3.89	54.65	4.53	215.53	3.87	.10	1.61	7.38	4.93	.68	339.35
11	142.80	1.79	58.55	5.56	78.17	6.47	308.31	5.54	.14	2.31	10.56	7.06	.98	485.42
12	142.80	1.79	58.55	5.56	78.17	6.47	308.31	5.54	.14	2.31	10.56	7.06	.98	485.42
13	112.31	1.41	46.05	4.37	61.48	5.09	242.48	4.36	.11	1.81	8.30	5.55	.77	381.77
14	167.77	2.10	68.78	6.53	91.83	7.61	362.22	6.51	.16	2.71	12.41	8.29	1.15	570.30
15	134.49	1.68	55.14	5.23	73.62	6.10	290.37	5.22	.13	2.17	9.95	6.65	.92	457.17
16	110.92	1.39	45.48	4.32	60.72	5.03	239.48	4.30	.11	1.79	8.20	5.48	.76	377.05
PROJECT TOTAL	1484.99	18.58	608.83	57.80	812.86	67.33	3206.11	57.60	1.44	24.00	109.81	73.39	10.16	5047.90

TABLE 11-13

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 13 -- COTTONWOOD CREEK PROJECT (DUTCH GULCH AND TEHAMA RESERVOIR)

PROJECT LOCATION -- SACRAMENTO HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	3.15	.04	1.24	.15	1.71	.14	6.80	.12	.00	.05	.22	.14	.02	10.64
2	6.29	.08	2.47	.30	3.42	.29	13.57	.25	.01	.10	.45	.28	.04	21.25
3	6.29	.08	2.47	.30	3.42	.29	13.57	.25	.01	.10	.45	.28	.04	21.25
4	51.41	.62	20.22	2.42	27.96	2.35	110.94	2.02	.05	.81	3.64	2.29	.35	173.67
5	100.73	1.22	39.62	4.75	54.77	4.61	217.37	3.96	.09	1.59	7.13	4.50	.69	340.29
6	100.73	1.22	39.62	4.75	54.77	4.61	217.37	3.96	.09	1.59	7.13	4.50	.69	340.29
7	51.41	.62	20.22	2.42	27.96	2.35	110.94	2.02	.05	.81	3.64	2.29	.35	173.67
PROJECT TOTAL	320.01	3.86	125.85	15.09	174.01	14.64	690.56	12.58	.30	5.06	22.64	14.29	2.19	1081.06

TABLE 11-14

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 14 -- ENLARGE EAST BRANCH CALIFORNIA AQUEDUCT

PROJECT LOCATION -- SOUTH LAHONTAN HYDROLOGIC BASIN

		DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE												
		--HYDROLOGIC BASIN--												
		NORTH COAST	SAN FRAN- CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA- MENTO	TULARE LAKE	NORTH LAHON- TAN	SOUTH LAHON- TAN	SANTA ANA	SAN DIEGO	COLO- RADO	CALIFORNIA
-YEAR-	DIRECT EXPEN- DITURES	1	2	3	4	5	6	7	8	9	10	11	12	
1	.46	.00	.09	.02	.19	.03	.02	.06	.00	1.11	.02	.05	.01	1.62
2	2.19	.02	.43	.11	.91	.14	.08	.29	.00	5.30	.11	.24	.07	7.71
3	4.09	.04	.81	.21	1.70	.26	.15	.54	.01	9.90	.21	.45	.12	14.40
4	12.27	.13	2.43	.64	5.11	.78	.44	1.62	.02	29.71	.62	1.35	.37	43.21
5	40.81	.43	8.07	2.12	17.00	2.58	1.47	5.40	.07	98.81	2.05	4.51	1.22	143.71
6	46.09	.49	9.11	2.39	19.20	2.91	1.65	6.10	.07	111.59	2.31	5.09	1.37	162.31
7	14.05	.15	2.78	.73	5.85	.89	.50	1.86	.02	34.02	.71	1.55	.42	49.48
8	.29	.00	.06	.02	.12	.02	.01	.04	.00	.70	.01	.03	.01	1.02
PROJECT TOTAL	120.25	1.27	23.77	6.24	50.10	7.60	4.32	15.92	.19	291.15	6.04	13.28	3.58	423.46



TABLE 12-1

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 1 -- SUTSUN MARSH PROTECTION FACILITIES  
PROJECT LOCATION -- SAN FRANCISCO BAY HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.60	.00	.62	.01	.07	.01	.01	.02	.00	.00	.01	.01	.00	.77
2	2.50	.02	2.56	.05	.28	.04	.05	.09	.00	.02	.03	.05	.00	3.21
3	4.50	.03	4.61	.10	.51	.07	.09	.17	.00	.04	.06	.09	.01	5.77
4	20.15	.15	20.66	.43	2.28	.33	.39	.75	.01	.16	.25	.41	.03	25.85
5	14.14	.10	14.50	.30	1.60	.23	.27	.52	.01	.11	.18	.29	.02	18.14
PROJECT TOTAL	41.89	.31	42.95	.89	4.75	.68	.81	1.55	.03	.33	.53	.86	.06	53.74

TABLE 12-2

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 2 -- GROUND WATER STORAGE FACILITIES (SAN FERNANDO SUBBASIN)  
PROJECT LOCATION -- LOS ANGELES HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.06	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.08
2	.42	.00	.02	.00	.47	.01	.01	.01	.00	.01	.01	.01	.00	.54
3	.71	.00	.04	.01	.79	.01	.01	.01	.00	.01	.01	.01	.00	.91
4	2.26	.01	.12	.02	2.51	.03	.04	.04	.00	.05	.05	.03	.01	2.91
5	5.63	.02	.31	.05	6.25	.07	.09	.10	.01	.11	.12	.08	.03	7.24
6	4.82	.02	.26	.04	5.35	.06	.08	.09	.01	.10	.10	.07	.03	6.20
PROJECT TOTAL	13.90	.05	.75	.13	15.44	.18	.22	.25	.02	.28	.29	.19	.08	17.88

TABLE 12-3

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 3 -- GROUNDWATER STORAGE FACILITIES (CHINO SUBBASIN)  
PROJECT LOCATION -- SANTA ANA HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.51	.00	.03	.00	.13	.01	.00	.01	.00	.00	.43	.01	.00	.63
2	3.48	.01	.23	.02	.87	.04	.03	.06	.00	.03	2.91	.06	.02	4.28
3	5.88	.02	.40	.04	1.47	.06	.05	.10	.00	.05	4.91	.11	.04	7.23
4	18.64	.05	1.25	.12	4.67	.20	.15	.30	.01	.15	15.57	.34	.12	22.92
5	46.42	.13	3.12	.30	11.62	.49	.37	.76	.02	.37	38.77	.84	.29	57.08
6	39.77	.11	2.67	.26	9.96	.42	.32	.65	.02	.32	33.22	.72	.25	48.90
PROJECT TOTAL	114.70	.32	7.71	.75	28.71	1.20	.91	1.87	.06	.92	95.80	2.07	.72	141.04

TABLE 12-4

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 4 -- SOUTH DELTA WATER QUALITY IMPROVEMENT FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.52	.00	.08	.01	.14	.38	.01	.01	.00	.00	.02	.01	.00	.66
2	1.60	.01	.25	.03	.42	1.17	.02	.03	.00	.01	.05	.04	.00	2.03
3	4.00	.02	.62	.09	1.05	2.93	.04	.06	.00	.02	.13	.11	.01	5.08
4	7.90	.05	1.22	.17	2.07	5.79	.08	.12	.00	.03	.25	.22	.02	10.03
5	7.84	.05	1.21	.17	2.06	5.75	.08	.12	.00	.03	.25	.22	.01	9.95
6	3.10	.02	.48	.07	.81	2.27	.03	.05	.00	.01	.10	.09	.01	3.94
PROJECT TOTAL	24.96	.15	3.86	.54	6.55	18.29	.25	.39	.01	.11	.79	.69	.05	31.69

TABLE 12-5

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 5 -- RELOCATE CONTRA COSTA CANAL INTAKE TO CLIFTON COURT

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.34	.00	.05	.01	.09	.25	.00	.01	.00	.00	.01	.01	.00	.43
2	.57	.00	.09	.01	.15	.42	.01	.01	.00	.00	.02	.02	.00	.73
3	.94	.01	.14	.02	.25	.69	.01	.01	.00	.00	.03	.03	.00	1.20
4	2.23	.01	.34	.05	.59	1.64	.02	.03	.00	.01	.07	.06	.00	2.85
5	3.85	.02	.59	.09	1.02	2.83	.04	.06	.00	.02	.13	.11	.01	4.92
6	3.45	.02	.53	.08	.91	2.54	.03	.05	.00	.02	.12	.10	.01	4.41
7	4.99	.03	.76	.12	1.32	3.67	.05	.08	.00	.02	.17	.14	.01	6.37
PROJECT TOTAL	16.37	.09	2.50	.39	4.34	12.05	.16	.25	.01	.07	.55	.47	.03	20.91

TABLE 12-6

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 6 -- WESTERN DELTA OVERLAND WATER FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.22	.00	.03	.00	.06	.16	.00	.00	.00	.00	.01	.01	.00	.28
2	.64	.00	.10	.01	.17	.47	.01	.01	.00	.00	.02	.02	.00	.81
3	1.60	.01	.25	.03	.42	1.17	.02	.03	.00	.01	.05	.04	.00	2.03
4	3.16	.02	.49	.07	.83	2.32	.03	.05	.00	.01	.10	.09	.01	4.01
5	3.14	.02	.49	.07	.82	2.30	.03	.05	.00	.01	.10	.09	.01	3.99
6	1.24	.01	.19	.03	.33	.91	.01	.02	.00	.01	.04	.03	.00	1.57
PROJECT TOTAL	10.00	.06	1.55	.22	2.63	7.33	.10	.16	.00	.04	.32	.28	.02	12.70

TABLE 12-7

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 7 -- LOS VAQUEROS RESERVOIR (OFF STREAM STORAGE)

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	5.00	.02	.76	.11	1.33	3.49	.05	.08	.00	.02	.17	.14	.01	6.18
2	12.00	.06	1.82	.27	3.18	8.37	.11	.19	.00	.05	.40	.35	.02	14.83
3	49.00	.23	7.41	1.11	13.00	34.20	.46	.78	.02	.22	1.63	1.42	.09	60.56
4	73.00	.34	11.05	1.65	19.36	50.95	.68	1.16	.03	.32	2.43	2.11	.14	90.22
5	110.00	.52	16.64	2.49	29.18	76.77	1.03	1.74	.04	.49	3.66	3.18	.21	135.95
6	132.00	.62	19.97	2.98	35.01	92.13	1.23	2.09	.05	.59	4.39	3.82	.25	163.14
7	156.00	.74	23.61	3.52	41.38	108.88	1.45	2.47	.06	.69	5.19	4.51	.30	192.80
PROJECT TOTAL	537.00	2.53	81.26	12.13	142.43	374.78	5.00	8.51	.21	2.38	17.86	15.53	1.03	663.67

TABLE 12-8

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 8 -- SAN JOAQUIN VALLEY GROUND WATER STORAGE FACILITIES

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.50	.00	.08	.01	.13	.37	.00	.01	.00	.00	.02	.02	.00	.64
2	3.39	.02	.51	.09	.91	2.49	.03	.05	.00	.02	.12	.10	.01	4.35
3	5.71	.03	.86	.15	1.53	4.20	.05	.09	.00	.03	.20	.17	.01	7.32
4	18.10	.08	2.72	.48	4.86	13.31	.16	.27	.01	.08	.64	.55	.04	23.21
5	45.07	.20	6.78	1.20	12.10	33.15	.41	.67	.02	.21	1.60	1.36	.09	57.80
6	38.61	.17	5.81	1.03	10.36	28.40	.35	.58	.02	.18	1.37	1.16	.08	49.52
PROJECT TOTAL	111.38	.50	16.76	2.98	29.89	81.92	1.01	1.67	.04	.52	3.96	3.36	.23	142.84

TABLE 12-9

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 9 -- MID VALLEY CANAL (NORTHERN PORTION)

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.62	.00	.09	.01	.16	.46	.01	.01	.00	.00	.02	.02	.00	.79
2	1.03	.01	.16	.02	.27	.76	.01	.02	.00	.00	.03	.03	.00	1.32
3	6.59	.04	1.01	.16	1.75	4.85	.06	.10	.00	.03	.22	.19	.01	8.42
4	14.01	.08	2.14	.33	3.71	10.31	.13	.22	.01	.06	.47	.40	.03	17.89
5	16.48	.09	2.52	.39	4.37	12.13	.16	.25	.01	.07	.55	.47	.03	21.04
6	17.92	.10	2.74	.43	4.75	13.19	.17	.28	.01	.08	.60	.51	.04	22.88
7	15.45	.08	2.36	.37	4.09	11.37	.15	.24	.01	.07	.51	.44	.03	19.73
8	7.21	.04	1.10	.17	1.91	5.31	.07	.11	.00	.03	.24	.21	.01	9.21
PROJECT TOTAL	79.31	.42	12.13	1.89	21.01	58.36	.76	1.22	.03	.36	2.64	2.28	.16	101.27

TABLE 12-10

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 10 -- MID VALLEY CANAL (SOUTHERN PORTION)

PROJECT LOCATION -- TULARE LAKE HYDROLOGIC BASIN

## DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-YEAR-	DIRECT EXPENDITURES	-HYDROLOGIC BASIN-											CALIFORNIA	
		NORTH COAST	SAN FRANCISCO BAY	CENTRAL COAST	LCS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO		COLO-RADO
		1	2	3	4	5	6	7	8	9	10	11	12	
1	2.47	.01	.25	.02	.58	.04	.02	2.00	.01	.03	.09	.08	.01	3.15
2	4.12	.02	.43	.04	.97	.07	.03	3.34	.02	.04	.15	.14	.01	5.25
3	26.37	.13	2.72	.26	6.21	.46	.22	21.38	.10	.27	.94	.88	.06	33.63
4	56.03	.28	5.78	.55	13.20	.97	.47	45.43	.22	.57	2.00	1.88	.12	71.46
5	65.92	.32	6.80	.64	15.53	1.14	.56	53.45	.25	.67	2.35	2.21	.14	84.07
6	71.68	.35	7.39	.70	16.89	1.24	.60	58.12	.28	.73	2.56	2.40	.16	91.42
7	61.80	.30	6.38	.60	14.56	1.07	.52	50.11	.24	.63	2.20	2.07	.13	78.82
8	28.84	.14	2.98	.28	6.79	.50	.24	23.38	.11	.29	1.03	.97	.06	36.78
PROJECT TOTAL	317.23	1.56	32.73	3.10	74.73	5.49	2.67	257.22	1.23	3.22	11.32	10.64	.69	404.59

TABLE 12-11

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 11 -- PERIPHERAL CANAL

PROJECT LOCATION -- SAN JOAQUIN HYDROLOGIC BASIN

## DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-YEAR-	DIRECT EXPENDITURES	-HYDROLOGIC BASIN-											CALIFORNIA	
		NORTH COAST	SAN FRANCISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO		COLO-RADO
		1	2	3	4	5	6	7	8	9	10	11	12	
1	1.30	.01	.20	.03	.34	.95	.01	.02	.00	.01	.04	.04	.00	1.65
2	10.60	.06	1.64	.23	2.78	7.77	.11	.17	.00	.05	.34	.29	.02	13.46
3	25.70	.15	3.96	.58	6.77	18.87	.25	.40	.01	.11	.83	.72	.05	32.71
4	51.60	.29	7.94	1.17	13.60	37.89	.51	.81	.02	.23	1.67	1.45	.10	65.68
5	89.30	.50	13.75	2.02	23.54	65.57	.98	1.40	.04	.40	2.90	2.51	.17	113.67
6	84.20	.48	12.96	1.90	22.20	61.82	.83	1.32	.03	.37	2.73	2.37	.16	107.18
7	43.00	.24	6.62	.97	11.34	31.57	.42	.67	.02	.19	1.39	1.21	.08	54.73
8	19.30	.11	2.97	.44	5.09	14.17	.19	.30	.01	.09	.63	.54	.04	24.57
9	32.30	.18	4.97	.73	8.51	23.72	.32	.50	.01	.14	1.05	.91	.06	41.11
10	59.70	.34	9.19	1.35	15.74	43.83	.59	.93	.02	.27	1.94	1.68	.12	75.99
11	72.51	.41	11.16	1.64	19.11	53.24	.71	1.13	.03	.32	2.35	2.04	.14	92.30
12	23.40	.13	3.60	.53	6.17	17.18	.23	.37	.01	.10	.76	.66	.05	29.79
PROJECT TOTAL	512.91	2.90	78.96	11.58	135.19	376.58	5.04	8.02	.21	2.28	16.63	14.44	.99	652.83

TABLE 12-12

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 12 -- GLENN RESERVOIR-RIVER DIVERSION (OFF STREAM STORAGE)

PROJECT LOCATION -- SACRAMENTO HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	15.26	.07	2.48	.27	3.26	.24	11.36	.22	.01	.10	.44	.28	.04	18.76
2	15.26	.07	2.48	.27	3.26	.24	11.36	.22	.01	.10	.44	.28	.04	18.76
3	18.04	.08	2.93	.32	3.86	.28	13.43	.26	.01	.12	.52	.33	.04	22.18
4	77.56	.33	12.61	1.36	16.61	1.21	57.79	1.12	.03	.52	2.26	1.43	.19	95.47
5	101.21	.43	16.43	1.78	21.64	1.58	75.32	1.47	.04	.67	2.94	1.87	.25	124.42
6	109.54	.47	17.78	1.92	23.43	1.71	81.52	1.59	.04	.73	3.18	2.02	.27	134.66
7	131.71	.56	21.38	2.31	28.17	2.05	98.01	1.91	.05	.88	3.83	2.43	.33	161.92
8	49.92	.21	8.10	.88	10.68	.78	37.15	.72	.02	.33	1.45	.92	.12	61.37
9	55.47	.24	9.01	.97	11.86	.86	41.28	.80	.02	.37	1.61	1.02	.14	68.19
10	99.83	.43	16.21	1.75	21.35	1.56	74.29	1.45	.04	.66	2.90	1.84	.25	122.72
11	142.80	.61	23.18	2.51	30.54	2.23	106.27	2.07	.06	.95	4.15	2.63	.36	175.55
12	142.80	.61	23.18	2.51	30.54	2.23	106.27	2.07	.06	.95	4.15	2.63	.36	175.55
13	112.31	.48	18.23	1.97	24.02	1.75	83.58	1.63	.04	.75	3.26	2.07	.28	138.07
14	167.77	.72	27.24	2.95	35.88	2.62	124.85	2.43	.07	1.12	4.87	3.09	.42	206.25
15	134.49	.58	21.83	2.36	28.76	2.10	100.08	1.95	.05	.89	3.91	2.48	.34	165.33
16	110.92	.48	18.01	1.95	23.72	1.73	82.54	1.61	.04	.74	3.22	2.05	.28	136.36
PROJECT TOTAL	1484.99	6.37	241.09	26.09	317.58	23.15	1105.09	21.50	.59	9.88	43.14	27.38	3.70	1825.55

TABLE 12-13

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 13 -- COTTONWOOD CREEK PROJECT (DUTCH GULCH AND TEHAMA RESERVOIR)

PROJECT LOCATION -- SACRAMENTO HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

--HYDROLOGIC BASIN--

-YEAR-	DIRECT EXPENDITURES	NORTH COAST	SAN FRAN-CISCO BAY	CENTRAL COAST	LOS ANGELES	SAN JOAQUIN	SACRA-MENTO	TULARE LAKE	NORTH LAHON-TAN	SOUTH LAHON-TAN	SANTA ANA	SAN DIEGO	COLO-RADO	CALIFORNIA
		1	2	3	4	5	6	7	8	9	10	11	12	
1	3.15	.01	.49	.07	.67	.05	2.29	.05	.00	.02	.09	.05	.01	3.80
2	6.29	.03	.98	.14	1.34	.10	4.57	.09	.00	.04	.18	.11	.02	7.58
3	6.29	.03	.98	.14	1.34	.10	4.57	.09	.00	.04	.18	.11	.02	7.58
4	51.41	.21	8.03	1.11	10.94	.81	37.34	.75	.02	.34	1.43	.86	.13	61.96
5	100.73	.42	15.74	2.17	21.43	1.58	73.16	1.48	.04	.66	2.81	1.69	.25	121.41
6	100.73	.42	15.74	2.17	21.43	1.58	73.16	1.48	.04	.66	2.81	1.69	.25	121.41
7	51.41	.21	8.03	1.11	10.94	.81	37.34	.75	.02	.34	1.43	.86	.13	61.96
PROJECT TOTAL	320.01	1.32	49.99	6.89	68.07	5.02	232.42	4.69	.13	2.09	8.92	5.36	.80	385.70

TABLE 12-14

DIRECT, INDIRECT AND INDUCED INCOME CHANGES BY PROJECT AND YEAR  
(MILLIONS OF 1977 DOLLARS)

PROJECT NUMBER 14 -- ENLARGE EAST BRANCH CALIFORNIA AQUEDUCT

PROJECT LOCATION -- SOUTH LAHONTAN HYDROLOGIC BASIN

DIRECT, INDIRECT AND INDUCED EXPENDITURE CHANGE

-HYDROLOGIC BASIN-

-YEAR-	DIRECT EXPENDITURES	NORTH	SAN	CENTRAL	LOS	SAN	SACRA-	TULARE	NORTH	SOUTH	SANTA	SAN	COLO-	CALIFORNIA
		COAST	FRAN- CISCO BAY	COAST	ANGELES	JOAQUIN	MENTO	LAKE	LAHON- TAN	LAHON- TAN	ANA	DIEGO	RADO	
		1	2	3	4	5	6	7	8	9	10	11	12	
1	.46	.00	.04	.01	.07	.01	.01	.02	.00	.38	.01	.03	.01	.58
2	2.19	.01	.17	.05	.35	.05	.03	.11	.00	1.81	.04	.13	.03	2.78
3	4.09	.01	.32	.09	.65	.10	.06	.21	.00	3.38	.08	.24	.05	5.19
4	12.27	.04	.95	.28	1.95	.29	.17	.64	.01	10.15	.24	.72	.15	15.58
5	40.81	.15	3.16	.92	6.48	.95	.57	2.13	.03	33.75	.80	2.39	.49	51.82
6	46.09	.17	3.57	1.04	7.31	1.07	.64	2.41	.03	38.12	.90	2.70	.56	58.52
7	14.05	.05	1.09	.32	2.23	.33	.20	.73	.01	11.62	.28	.82	.17	17.84
8	.29	.00	.02	.01	.05	.01	.00	.02	.00	.24	.01	.02	.00	.37
PROJECT TOTAL	120.25	.43	9.32	2.71	19.08	2.80	1.67	6.28	.08	99.45	2.36	7.05	1.46	152.68

## TECHNICAL APPENDIX I. CALIFORNIA INPUT-OUTPUT MODEL

As the primary economic tool utilized in this study is the Leontief input-output model, this Technical Appendix is designed to provide an overview of the basic model, define the methods and data sources used in developing the statewide model, and present and discuss the intermediate results of most general interest.

### Input-Output Overview

The first known attempt to define economic activity in terms of intersectoral flows was made by a Frenchman, Francois Quesnay, in 1758 when his *Tableau Economic* was published. During the 1870s, Leon Walras developed the theory of general economic equilibrium wherein profit-maximizing firms and utility-maximizing individuals interact to determine absolute output levels and relative prices. Wassily Leontief developed the first empirical general interindustry<sup>1/</sup> model for the United States in 1936 (90). At the national level, Leontief's work has been continued by the U. S. Department of Commerce, which published input-output tables for the years 1947, 1958, 1963, and 1967 (143). The Bureau of Economic Analysis is currently constructing national tables for 1972. Regional input-output tables for California have been developed by Martin and Carter (103), Irery (63), Lofting and McGahey (98), Demir (49), and the California Department of Water Resources (24). Employment and water resource use levels were explicitly considered in several of the above California studies. Goldman, of the University of California at Berkeley, has constructed and applied several sub-state models (58, 59, 60, 61), most recently for the Fresno region (57).

### Accounting Relationships

In its simplest form, the interindustry transactions table, an input-output model provides a description of the regional flow of goods and services as expressed in the common unit of measure, the dollar.<sup>2/</sup> At a minimum, a regional resource-oriented transactions table, as illustrated in Figure 5, provides a detailed accounting of what the levels of regional economic activities are, how and to what degree there is regional industrial interdependence, what the distribution of primary inputs is, what the depositions of final demands are, and how resource use is linked to economic activity.

1/ The terms input-output model and interindustry model are used interchangeably in this report.

2/ The transaction table may also be interpreted in terms of the flow of physical goods. For a discussion of this interpretation see Dorfman, Samuelson, and Solow (50).

FIGURE 5

BASIC INTERINDUSTRY ACCOUNTING SYSTEM

		Purchasing Sectors					Gross Output	Resource Coefficients			
		Intermediate Use			Final Demand (Net Output)			Total Sales	Employment	Water	Energy
		Sector 1 ... j ... n			Consumption	Investment	Government				
Producing Sector	1	$X_{11} \dots X_{1j} \dots X_{1n}$	$C_1$	$I_1$	$G_1$	$E_1$	$F_1$	$X_1$	$Em_1$	$W_1$	$En_1$
	2	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$
	$\vdots$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$
	$\vdots$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$
	i	$X_{i1} \dots X_{ij} \dots X_{in}$	$C_i$	$I_i$	$G_i$	$E_i$	$F_i$	$X_i$	$Em_i$	$W_i$	$En_i$
	$\vdots$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$	$\cdot$
	n	$X_{n1} \dots X_{nj} \dots X_{nn}$	$C_n$	$I_n$	$G_n$	$E_n$	$F_n$	$X_n$	$Em_n$	$W_n$	$En_n$
Primary Inputs	Employee Compensation	$EC_1 \dots EC_j \dots EC_n$									
	Profits	$PR_1 \dots PR_j \dots PR_n$									
	Interest	$IN_1 \dots IN_j \dots IN_n$									
	Indirect Business Taxes	$T_1 \dots T_j \dots T_n$									
	Depreciation	$D_1 \dots D_j \dots D_n$									
	$\Sigma$ = Value Added	$V_1 \dots V_j \dots V_n$									
	Imports	$M_1 \dots M_j \dots M_n$									
Gross Outlays		$X_1 \dots X_j \dots X_n$									



The relationships reflected in Figure 5 may be viewed as a double-entry accounting system. Rowwise, total sales for each selling sector ( $X_i$ ) result from either interindustry transactions ( $X_{ij}$ ) or output sold to the sectors of final demand ( $F_i$ ):

$$(1) \quad X_i = X_{i1} + \dots + X_{ij} + \dots + X_{in} + F_i \quad , i=1,n$$

Equation 1 may be more compactly represented by

$$(2) \quad X_i = \sum_j^n X_{ij} + F_i, \quad i=1,n$$

where the sum over  $j$  reflects interindustry sales for the products or services of industry  $i$ .

The final demand component of total sales can be further disaggregated into sales for personal consumption ( $C_i$ ), output sold for private fixed investment ( $I_i$ ), sales to government ( $G_i$ ), and export sales to markets outside the region under analysis ( $E_i$ ). Otherwise,

$$(3) \quad F_i = C_i + I_i + G_i + E_i \quad , i=1,n$$

where the consumption, investment, and governmental components comprise regional final demand. In this study, final demand by government was further disaggregated between sales to State and local government and sales to the Federal Government.

The double-entry nature of the input-output transactions table represented in Figure 5 results from a second, columnwise accounting. These accounting identities depict the purchase patterns of inputs in the production process. Gross outlays ( $X_j$ ) for each purchasing sector consist of purchases of intermediate inputs ( $X_{ij}$ ), primary inputs which are formally designated by the term value-added ( $V_j$ ), and inputs imported from outside the region ( $M_j$ ):

$$(4) \quad X_j = X_{1j} + \dots + X_{ij} + X_{nj} + V_j + M_j, \quad j=1,n$$

As in the case of the rowwise (sales) equations, the columnwise (purchases) equations can be more compactly presented as:

$$(5) \quad X_j = \sum_i^n X_{ij} + V_j + M_j \quad , j=1,n$$

In this study, the value-added component was disaggregated into five sources of primary inputs: employee compensation ( $EC_j$ ), profit income ( $PR_j$ ), interest income ( $IN_j$ ), indirect

business taxes ( $T_j$ ), and charges against the depreciation of capital equipment ( $D_j$ ).

Otherwise,

$$(6) \quad V_j = EC_j + PR_j = IN_j + T_j + D_j \quad ,j=1,n$$

The final accounting identity of the input-output transactions table is that for each industry total output (sales) must equal total input (purchases).

$$(7) \quad X_i = X_j \quad ,i=j$$

### Input-Output Model

As related above, the input-output transactions table defined the regional economy over some specified period of time, usually a calendar year. This section will develop the extensions of the input-output model which are necessary for forecasting economic impacts.

Under the assumption that inputs into the production process are used in direct proportion to the level of output, a set of structural production equations,

$$(8) \quad X_{ij} = a_{ij} X_j \quad i,j=1,n$$

can be defined where  $a_{ij}$  is the value of input  $i$  per unit value of good  $j$  produced. Substituting these relationships into equation set 1 results in

$$(9) \quad X_i = a_{i1}X_1 + \dots + a_{ij}X_j + \dots + a_{in}X_n = F_i \quad ,i=1,n$$

which may be more compactly written in matrix form as

$$(10) \quad X = aX + F$$

where  $X$  and  $F$  are  $n$ -dimensional vectors and  $a$  is the  $n$  by  $n$  array of regional technical coefficients. In matrix form, the general solution of this equation set for  $X$  in terms of the "a" matrix and  $F$  is

$$(11) \quad X = (I-a)^{-1} F = QF$$

where  $I$  is an  $n$ -dimension identity matrix and the "-1" superscript indicates the matrix inversion process. The inverted  $I-a$  (or  $Q$ ) matrix is generally known as the matrix of direct and indirect coefficients. Rowwise, the equation (11) implies that, given a vector of final demands,  $F$ , the resultant levels of regional production can be directly determined

$$(12) \quad X_i = q_{i1} F_1 + \dots + q_{ij} F_j + \dots + q_{in} F_n \quad , i=1, n$$

for each industry  $i$ . Differentiating the  $i^{\text{th}}$  equation with respect to final demand for sector  $j$ ,

$$(13) \quad \frac{\partial X_i}{\partial F_j} = q_{ij} \quad i, j=1, n$$

restates the interpretation of the  $q_{ij}$  elements as the change in output of industry  $i$  given a unit change in final demand for sector  $j$ . The  $q_{ij}$  elements may be summed columnwise over all industries  $i$  to provide a direct and indirect coefficient for gross output ( $\bar{q}_j$ )

$$(14) \quad \bar{q}_j = \sum_i^n q_{ij} \quad j=1, n$$

which indicates the change in total output over the entire economy for a unit change in final demand in sector  $j$ .

### Assumptions

Making the transition from the input-output accounting system to the input-output model which is used to forecast economic change requires certain simplifying assumptions. The two assumptions generally regarded as most critical relate to (1) the homogeneity of industrial sectors and (2) fixed production technology.

The assumption of homogeneity implies that each sector uses only one method of production and produces only one principal product. Clearly, the California economy involves numerous economic activities and thus the underlying issue is what biases are introduced in reducing the problem to manageable proportions.

With regard to the homogeneity assumption, empirical analyses have shown that extensive aggregation of sectors, for example, all commerce and services into one sector, may be made if an analysis is concerned with some other sector, the metal container industry (48) for instance.

The second major assumption of input-output models is that the technology of production is static and the coefficients of technical production ( $a_{ij}$ ) do not change. Once again, it is clear from the dynamic history of economic development that the issue is the degree of invalidity introduced by making this assumption.

With respect to this assumption, studies have shown that individual elements tend to be far less stable than aggregates of these elements. For example, comparison of the input-output multipliers for three studies of the economy of the State of Washington spanning ten years showed a range in variation of from 2 to 20 percent (8).

In the final analysis, the issue is not the validity or invalidity of input-output analysis. The input-output model is generally accepted as a legitimate tool for performing certain regional economic assessments, as it provides one of the few means of performing general analyses which consider the entire regional economy.

### Sector Plan

The final sectoring plan of 156 activity categories includes 38 sectors related to agriculture, 6 each for mining and construction, 68 for manufacturing, 12 for transportation and public utilities, 19 for trade and services, 4 for government, and 3 dummy categories. These sectors reflect either disaggregation as in agriculture and petroleum production, or aggregation of the sectors used in the 1967 Bureau of Economic Analysis United States input-output model (143).

A detailed listing of the final sectoring plan, the Federal Government's associated 1967 Standard Industrial Classification (SIC) codes, and a short expository statement are shown in Table 13.

### Conventions

Certain conventions are associated with input-output models. Those conventions considered most important to this study are:

- ° Producers' Prices. All transactions are presented in terms of prices received by producers.
- ° Transportation Margins. The costs associated with transporting goods from the producer to the purchaser are reflected in the transportation sectors, which are numbered 119 through 125 in Table 13.
- ° Wholesale and Retail Trade. These two sectors do not reflect total sales, but only the marginal contribution of these sectors in the distribution process. Accordingly, the value of goods and services flowing through the other producing sectors, net of trade margins, are allocated directly to the appropriate purchasing industries and final demand sectors.

TABLE 13  
CALIFORNIA INPUT-OUTPUT MODEL SECTORING PLAN

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
1. Dairies	Cow's milk and other dairy products.	0132, pt 0141
2. Broilers, Chickens, and Eggs	Broilers, chickens, and eggs.	0133, pt 0134, pt 014
3. Turkeys and other Poultry	Poultry and poultry products except broilers, chickens, and eggs.	pt 0134
4. Cattle and Calves	Beef cattle.	0135
5. Hogs		0136
6. Sheep, Lambs and Wool		pt 0139
7. Miscellaneous Livestock	Livestock and livestock products not elsewhere classified.	pt 0139 pt 0193
8. Apiary Products		pt 0193
9. Cotton		0112 pt 014
10. Wheat		pt 0113 pt 014
11. Rice		pt 0113, pt 014
12. Barley		pt 0113, pt 014
13. Corn		pt 0113, pt 014
14. Hay and Pasture		pt 0119, pt 014
15. Oats		pt 0113, pt 014
16. Sorghum Grain		pt 0113, pt 014
17. Grass Seed		pt 0119 pt 014

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
18. Food, Feed Grains, NEC	Food and feed grains, not elsewhere classified.	pt 0113, pt 0119, pt 014
19. Tobacco		0114, pt 014
20. Walnuts		pt 0122, pt 014
21. Almonds		pt 0122, pt 014
22. Noncitrus Fruits		pt 0122, pt 014
23. Citrus Fruit		pt 0122, pt 014
24. Fruit and Tree Nuts, NEC		pt 0122, pt 014
25. Vegetables		pt 0123, pt 014
26. Dried Beans		pt 0113, pt 014
27. Dried Peas		pt 0113, pt 014
28. Melons		pt 0123, pt 014
29. Sugar Beets		pt 0119, pt 014
30. Hops		pt 0119, pt 014
31. Potatoes		pt 0119, pt 014
32. Sweet Potatoes		pt 0119, pt 014
33. Vegetables and Sugar, NEC	Vegetables and sugar, not elsewhere classified.	pt 0119, pt 0123, pt 014
34. Safflower		pt 0119, pt 014

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
35. Oil Crops, NEC	Oil crops, not elsewhere classified.	pt 0113, pt 0119, pt 014
36. Greenhouse and Nursery Products	Greenhouse or outdoor grown horticultural specialty crops such as bulbs, herbs, and flower crops.	0192, pt 014
37. Forestry and Fishery Products	Commercial hunting, trapping and fishing, and the operation of timber tracts.	074, 081, 082, 084, 086, 091
38. Agriculture, Forestry, Fishery Services	Agricultural, animal husbandry and horticultural services performed for a fee or on a contract basis. Such activities may include contract picking, grading, sorting and other operations preparatory to packing and shipping.	071, 0723, 073, pt 0729, 085, 098
39. Metals Mining	Mining, developing mines, or exploring for metallic minerals.	10
40. Coal Mining	Anthracite or bituminous coal, including mining and dredging operations and preparation plants.	11, 12
41. Crude Petroleum	Operation of oil properties, including all activities needed to make oil marketable up to the point of shipment from the producing property.	pt 1311
42. Natural Gas and Natural Gas Liquids	Operation of gas field properties and producing of liquid hydrocarbons from oil and gas field gases.	pt 1311, 1321
43. Stone and Clay, Mining and Quarrying	Mining, quarrying, mine development and exploration for nonmetallic minerals (except fuels, chemicals, and fertilizers).	14 (except 147)
44. Chemical and Fertilizer Mineral Mining	Mining, milling, or otherwise preparing raw materials for chemicals and fertilizers.	147
45. New Construction, Residential		pt 15, pt 16, pt 17, pt 656
46. New Construction, Nonresidential	New industrial, commercial, public and other buildings.	pt 15, pt 17

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
47. New Construction, Public Utility	Construction of new public utilities.	pt 15, pt 16, pt 17
48. New Construction, Highways		pt 16, pt 17
49. New Construction, all others		pt 15, pt 16, pt 17, pt 138
50. Maintenance and Repair Construction	Maintenance and repair of buildings, roads, channels and all other structures.	pt 15, pt 16, pt 17, pt 138
51. Ordnance and Guided Missiles	Manufacturing of artillery, ammunition, tanks, and sighting and fire control equipment.	19
52. Meat Products	Slaughtering, dressing, freezing, and canning of meat and poultry products	201
53. Dairy Products	Processing and manufacturing of milk and other dairy products.	202
54. Canned and Frozen Foods	Canning and preserving of fruits, vegetables, and sea foods.	203
55. Grain Mill Products	Milling of flour or meal, preparing feeds for animals, cereal breakfast foods, and all other grain mill products.	204
56. Bakery Products	Manufacturing of bread, cakes, crackers and other bakery products.	205
57. Sugar	Manufacturing and refining of cane and beet sugar.	206
58. Confectionery Products	Shelling, roasting, and grinding of cocoa and manufacturing of candy and chewing gum.	207
59. Beverages and Flavorings	Manufacturing of beverages and flavorings.	208
60. Miscellaneous Food Products	Manufacturing of miscellaneous food products. Examples are cottonseed, soybean, and vegetable oil, coffee, and manufactured ice.	209
61. Tobacco Manufacturers	Manufacturing of cigarettes, cigars, tobacco and snuff.	21



TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
62. Textile Products	Manufacturing of textile product. Examples are fabric, dyeing textiles, rugs, and apparel.	22, 23
63. Logging Camps and Sawmills	Logging camps and logging contractors. Sawing of rough lumber, and manufacturing of hardwood dimension lumber.	241, 242
64. Millwork, Plywood and other Wood Products	Manufacturing of fabricated millwork, pre-fabricated wooden buildings, commercial veneer and plywood, and other wood products.	243, 249
65. Wooden Containers	Manufacturing of wooden containers. Examples are crates for fresh produce and ammunition boxes.	244
66. Household Furniture	Manufacturing of household furniture.	251
67. Office Furniture and Fixtures	Manufacturing of office furniture and fixtures including public building furniture, lockers, and store fixtures.	252, 253, 254, 259
68. Paper and Paperboard Product	Manufacturing of pulp, paper, and paperboard.	26
69. Newspaper	Publishing of newspapers. Included are news gathering and the preparation of editorials and advertisements, but printing may or may not be involved.	271
70. Other Printing and Publishing	Publishing and printing of periodicals and books. Also includes commercial printing.	27 (excluding 271)
71. Industrial Chemicals	Manufacturing of basic industrial inorganic and organic chemicals.	281(excluding 28195)
72. Agricultural Chemicals	Manufacturing of fertilizers, agricultural pesticides and other agricultural chemicals.	287
73. Wood and Gum Chemicals	Manufacturing of hardwood and softwood distillation products and miscellaneous chemical products.	2861, 289
74. Plastics Materials and Synthetic Fibers	Manufacturing of plastics materials and synthetic resins, and cellulosic and man-made organic fibers.	282
75. Drugs	Manufacturing, fabricating, or processing of medicinal chemicals and pharmaceutical products.	283

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
76. Cleaning and Toilet Preparations	Manufacturing of soap, detergents and other cleaning preparations, and perfumes, cosmetics and other toilet preparations.	284
77. Paints and Allied Products	Manufacturing of paints, varnishes, wood fillers, and allied paint products.	285
78. Petroleum Refining and Related Products	Petroleum refining, paving and roofing materials, and miscellaneous coal and petroleum products.	29
79. Rubber and Plastics Products	Manufacturing of tires and inner tubes, rubber footwear, reclaimed rubber, and other fabricated rubber products.	30
80. Leathering Tanning and Products	Tanning, currying, and finishing of hides and skins, and manufacturing of finished or artificial leather.	31
81. Glass	Manufacturing of flat glass and other glass products.	321, 322, 323
82. Cement and Concrete Products	Manufacturing of hydraulic cement and concrete, gypsum and plaster products.	324, 327
83. Structural Clay Products	Manufacturing of brick, ceramic wall and floor tile, and other structural clay products.	325
84. Pottery and Related Products	Manufacturing of pottery and related products. Examples are china plumbing fixtures, porcelain electrical supplies and earthenware table and kitchen articles.	326
85. Miscellaneous Stone and Clay Products	Cut stone, abrasive, asbestos, and miscellaneous nonmetallic mineral products.	328, 329
86. Blast Furnaces and Basic Steel Products	Blast furnaces, steel works, and rolling and finishing mills.	331
87. Iron and Steel Foundries and Forgings	Manufacturing of iron and steel castings.	332, 3391, 3399
88. Primary Nonferrous Metal Products		333, 334, 335, 336, 28195

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
89. Metal Containers	Manufacturing of metal containers from purchased materials.	341, 3491
90. Heating Apparatus and Plumbing	Manufacturing of heating apparatus (except electric) and plumbing fixtures.	343
91. Fabricated Structural Steel	Manufacturing of fabricated iron and steel or other metals. Examples are bridge sections, metal doors, and boilers.	344
92. Screw Machine Products	Manufacturing of bolts, nuts, rivets, and other industrial fasteners.	345
93. Metal Stampings	Manufacturing of metal stampings. Examples are garbage cans, mail boxes, and utensils.	346
94. Cutlery, Hand Tools and General Hardware	Manufacturing of cutlery, hand tools, and general hardware.	342
95. Other Fabricated Metal Products	Coating, engraving and allied services and miscellaneous fabricated wire and wood products.	347, 348, 349 (except 3491)
96. Engines, Turbines and Generators	Manufacturing of steam engines, and steam, gas, and hydraulic turbines and generators.	351
97. Farm Machinery		352
98. Construction and Material Handling Equipment	Manufacturing of construction, mining, and materials handling equipment. Included are bulldozers, conveyors, and drilling equipment.	353
99. Metal Working Machinery	Manufacturing of metal-working machinery. Included are machine tools, special dies, and measuring devices.	354
100. Special Industry Machinery	Manufacturing of food products, textiles, wood-working, paper and printing machinery.	355
101. General Industry Machinery	Manufacturing of general industrial machinery. Examples are pumping equipment, industrial furnaces, and exhaust fans.	356
102. Machine Shop Products	Manufacturing of machinery and parts, except electrical, not elsewhere classified.	359

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
103. Computers and Office Equipment	Manufacturing of typewriters, electronic computing equipment, accounting machines and other office equipment.	357
104. Service Industry Machines	Manufacturing of vending machines, laundry and air conditioning equipment and other service industry machines.	358
105. Electrical Transmission Equipment	Manufacturing of electric transmission and distribution equipment.	361
106. Electrical Industrial Apparatus	Manufacturing of electric motors and generators, industrial controls, welding apparatus and other electrical industrial apparatus.	362
107. Household Appliances	Manufacturing of household refrigerators, laundry, and cooking equipment, electric housewares and other household appliances.	363
108. Electric Lighting and Wiring	Manufacturing of electric lamps, lighting fixtures, and wiring devices.	364
109. Radio and TV Receiving Sets	Manufacturing of electronic equipment for home entertainment, except communication types.	365
110. Communication Equipment	Manufacturing of telephone and telegraph apparatus, and radio and television transmitting, signaling and detection equipment.	366
111. Electronic Components	Manufacturing electronic components and accessories.	367
112. Miscellaneous Electrical Products	Manufacturing of batteries, X-ray apparatus, electrical equipment for internal combustion engines, and other miscellaneous electrical products.	369
113. Motor Vehicles	Manufacturing or assembling of complete passenger automobiles, trucks, commercial cars and buses, and special purpose motor vehicles.	371
114. Aircraft	Manufacturing or assembling of complete aircraft.	372
115. Ship and Boat Building and Repairing	Building and repairing of ships, boats (except rubber) and barges and lighters.	373

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
116. Other Transportation Equipment	Manufacturing of railroad equipment, motorcycles, bicycles, and miscellaneous transportation equipment.	374, 375, 379
117. Clocks and Scientific equipment	Manufacturing of professional, scientific, and controlling instruments; photographic and optical goods, watches and clocks.	38
118. Jewelry, Sporting Goods, Etc.	Manufacturing of products not classified in any other manufacturing group. Included are jewelry, silverware, musical instruments, toys, sporting goods, writing utensils, and advertising displays.	39
119. Railroads	Railroad transportation.	40,474
120. Local Transit and Intercity Buses	Local and suburban passenger transportation.	41
121. Truck Transportation	Local or long-distance trucking and warehousing.	42,473
122. Water Transportation	Freight and passenger transportation on the open sea or inland water. Towing and canal operation services are included.	44
123. Air Transportation	Air transportation and facilities and services related to air transportation.	45
124. Pipeline Transportation	Pipeline transportation of petroleum and other commodities, except natural gas.	46
125. Transportation Services	Services incidental to transportation such as freight forwarding, arrangement of transportation, and packing and crating.	471, 472, 478
126. Communication Except Radio and TV	Telephone, telegraph and other forms of communications.	481, 482, 489
127. Radio and TV Broadcasting	Radio or TV broadcasting stations.	483
128. Electric Companies and Systems	Generation, transmission and distribution of electricity for sale.	491, pt 493

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Service</u>	<u>1967 SIC</u>
129. Gas Companies and systems	Transmission, distribution, and storage of natural gas for sale, or the manufacture of gas.	492, pt 493
130. Water and Sanitary Services	Distribution of water for sale; collection and disposal of wastes through sewer systems, production and distribution of steam; operation of water supply systems for the purpose of irrigation.	pt 493, 494 495, 496, 497
131. Wholesale Trade	Selling of merchandise to industrial, commercial and professional users or to retailers.	50
132. Retail Trade	Selling of merchandise for personal, household, or farm consumption. Services incidental to the sale of goods are also included.	7396 pt 8099 52, 53, 54, 55 56, 57, 58, 59
133. Banking and Financial Intermediaries	Banking and extending credit services. Security and commodity brokers and dealers, and exchanges and services are also included.	60, 61, 62, 67
134. Insurance	Insurance carriers, agents and brokers.	63, 64
135. Owner-Occupied Real Estate	This group includes all owner-occupied dwellings.	N.A.
136. Real Estate	Real estate operators as well as buyers, sellers, developers, agents and brokers.	65 (except pt 6561), 66
137. Hotels and Lodging Places	Hotels, boarding houses, trailer parks, and camps.	70
138. Personal and Repair Services	Services involving the care of a person or his apparel. Examples are laundries, photographers, and funeral services.	72 (except 723, 724), 76 (except 7692, 7694 and pt 7699)
139. Miscellaneous Business Services	Services not elsewhere classified. Examples are stenographers and exterminators.	73 (except 731, 7396), 7692, 7694, pt 7699
140. Advertising	Advertising services.	731
141. Miscellaneous Professional Services	Legal, engineering, accounting and other miscellaneous professional services.	81, 89 (excluding 8921)
142. Automobile Repair	Automobile repair, rental, and storage services.	75
143. Motion Pictures	Production and distribution of motion pictures, and motion picture theater operation.	78

TABLE 13 (Continued)

<u>Sector Title</u>	<u>Primary Product or Services</u>	<u>1967 SIC</u>
144. Amusement and Recreation Services	Entertainment or amusement that is provided for a fee. Examples are dance halls, theatrical productions, and sports events.	79
145. Doctors and Dentists	Licensed practitioners engaged in the practice of medicine or dentistry.	801, 802, 803, 804
146. Hospitals	Medicinal or surgical services. Included are hospitals, clinics, and dispensaries.	806
147. Other Medical Services	Health and allied services, not elsewhere classified. Included are medical and dental laboratories.	0722, 807, 809 (excl. pt 8099)
148. Educational Services	Formal educational courses from elementary through college level. Also included are vocational schools, correspondence schools and libraries.	82
149. Nonprofit Organizations	Organizations operating on a nonprofit basis. Examples are museums, business associations, labor unions, religious organizations, and scientific research agencies.	84, 86, 8921
150. Post Office	Postal services supplied by the Federal Government.	pt 91
151. Other Federal Enterprises	Activities of Federal Government agencies that receive over half of their operating cost by the sale of goods and services to the general public.	pt 91
152. State and Local Government Enterprises	Activities of State and local government agencies that receive over half of their operating cost by the sale of goods and services to the general public.	pt 92, pt 93
153. Noncompetitive Imports	California payments outside the State.	N.A.
154. Dummy Industries	Purchases of a variety of products that are commonly made by almost all industries. Included are office supplies; scrap, used, and second hand goods; business travel, entertainment and gifts.	N.A.
155. Government Industry	Income and products originating from Federal, State and local governments.	pt 91, pt 92, pt 93
156. Special Industries	This group has two distinct sections; Rest of World Industry - reflects income and product originating in the rest of the world. Households - measures income and product originating in households.	N.A.

- ° Final Demand Categories. The four nontrade-related final demand categories of the 1976 California model are: personal consumption expenditures; expenditures for fixed private capital, which include expenditures for new housing and net changes in net inventory; purchases by the State and local government of California; and purchases by the Federal Government of goods produced in California. The exports final demand category reflects sales outside of California both to other states and to foreign countries.

### Construction Methodology

Because of the extended nature of this research study and because almost all intermediate analysis was accomplished within the computer, it is not feasible to make a highly detailed presentation in the methods of construction used. The intent of this section is to provide a reasonably complete overview. For readers interested in a detailed explanation of the constructive methodology or specific data used in the study should contact the Department of Water Resources, Division of Planning.

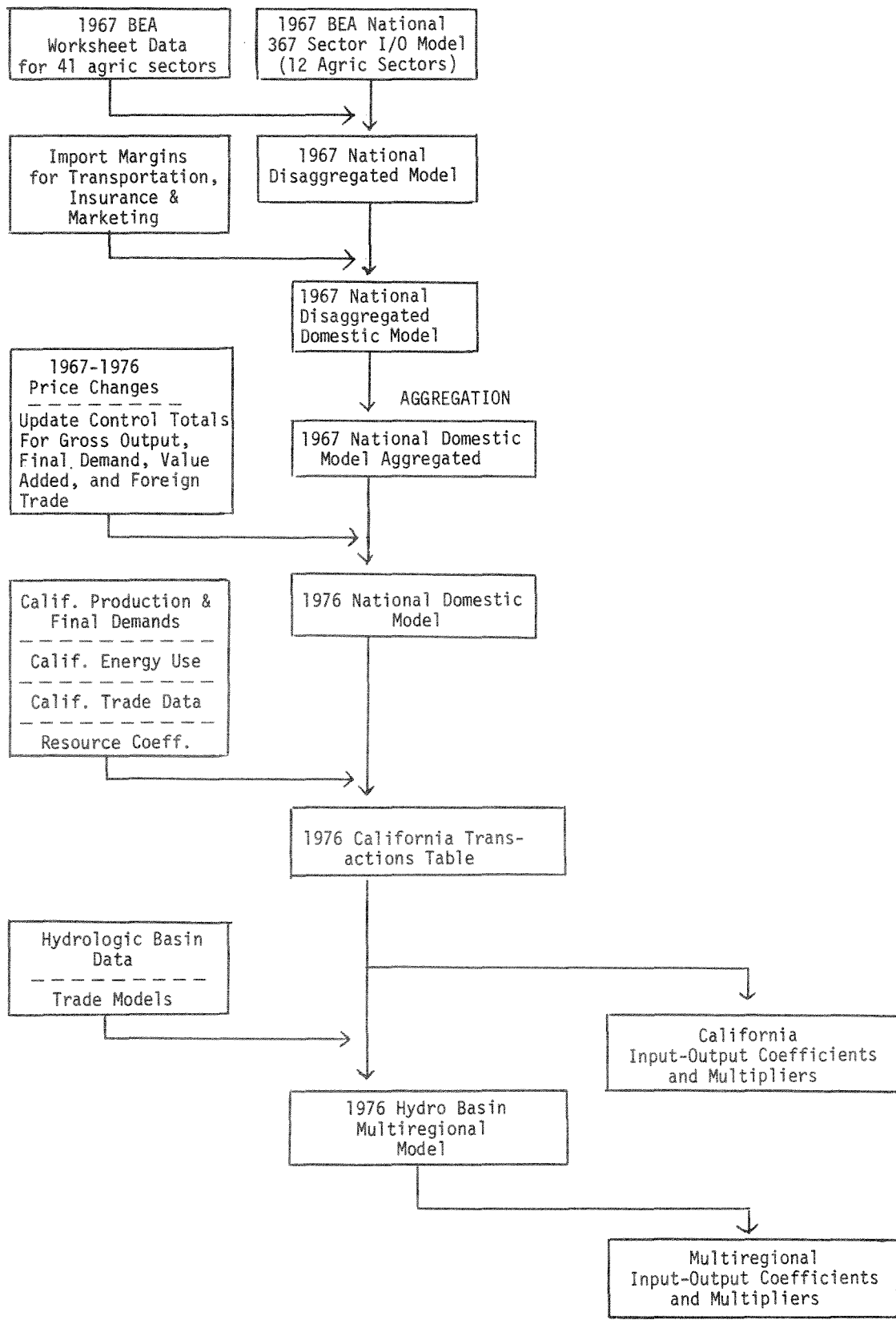
There are two common methods for constructing regional input-output models. The first entails using survey techniques to collect data on transactions and trade flows and then construct a "primary data" input-output model. The second method entails starting from a published input-output transactions table, such as the most recent table for the United States economy, and using secondary data to create the regional table. The method chosen on this project was the secondary data technique and it was chosen because it was considered the most cost-effective methodology.

A general flow diagram of the methods used for constructing the input-output models is shown in Figure 6. As indicated in the figure, the initial base was the 1967 U. S. Bureau of Economic Analysis (BEA) 367 sector input-output model (143). This model was then disaggregated using BEA worksheet data which provided greater detail for agriculture but was not balanced. The second step was to put the disaggregated model on a gross domestic basis, which was accomplished using data and computer programs available at the Lawrence Berkeley Laboratory. The third step was to update the 1967 model to 1976 using the "RAS" or biproportional matrix balancing technique developed by Stone, Bates, and Bacharach (131) in 1961. The fourth step was to create the California model which entailed using national technical coefficients except for the energy rows where independent coefficients were estimated. The final step, which is discussed in detail in Technical Appendix II, was to create the multiregional input-output model for the 12 California hydrologic basins.

The remainder of this section will deal with more detailed aspects of the construction methodology used in creating the California input-output model.



FIGURE 6  
CALIFORNIA INPUT-OUTPUT MODEL STUDY FLOW DIAGRAM



## Disaggregation

The input-output table (143) published by the U. S. Bureau of Economic Analysis (BEA) in 1967 distributes agriculture into 12 producing sectors. The BEA provided more detailed computer printouts (worksheets) than it did for its published transactions table, enabling the expansion of the number of agricultural sectors from 12 to 38. The data from the BEA worksheets had to be balanced so that total sales and purchases would aggregate to the BEA published totals.

Sales to certain sectors needed distribution. For example, the worksheet tapes had livestock sectors selling a portion of their output to "manure", which did not exist as a sector. Such sales were distributed to the crop sectors according to crop production shares of all crops. Sales to "Industry Unallocated" were distributed according to the existing sales distribution.

Interactions of sales and purchases distribution were made until the expanded transactions table balanced. The value of inputs for each sector of this balanced table equals the respective value of output.

## Imports

The BEA table identifies two classes of imports. The first class of imports is designated "directly allocated imports" and represent classes of goods and services which are not produced in the United States, such as coffee and bananas. The second class of imports, termed "transferred imports", reflects goods imported which are in direct competition with comparable goods produced in the United States.

In order to put the BEA transactions table on a gross domestic basis, the transferred imports were removed from the interior of the U. S. transactions table and entered as a column in the exogenous, final demand portion of the model. Total gross outputs were adjusted accordingly so that these values reflected U. S. production levels. This modification allows for the appropriate scaling of the U. S. model to the California model.

The process of placing the transactions table on a gross domestic output basis was accomplished using an existing program at the Lawrence Berkeley Laboratory.

## 1967 to 1976 Update

The technique used for updating the 1967 U. S. transactions table to 1976 was the biproportional matrix balancing, or "RAS" technique (131).

In overview, this technique requires independent estimation by sector of 1976 gross output levels, final demands, export and import trade levels, and the levels of value added. Given these data, control totals are computed for intermediate outlays and intermediate outputs which are then used in making the biproportional balance. In matrix equational form, the biproportional balancing technique may be stated as

$$(15) \quad X^{1976} = R X^{1967/76} S$$

where  $X^{1976}$  is the resultant matrix of interindustry transactions for 1976,  $X^{1967/76}$  is the 1967 interindustry transactions matrix which has been rowwise price-adjusted to 1976 prices, R is a diagonal matrix of "substitution effect" coefficients, and S is a diagonal matrix of "fabrication effect" coefficients.

The substitution effect reflects changes in technology wherein certain intermediate goods are substituted for others in the production process. The fabrication effect is interpreted as the measure of the degree to which sectors have increased or decreased their relative use of primary inputs as opposed to intermediate inputs.

The choice of the biproportional balancing technique was primarily due to the availability of existing computer programs at the Lawrence Berkeley Laboratory. Desirable characteristics of the method are that the resultant 1976 transactions matrix will be nonnegative, the transformation mechanism is of a relatively simple functional form, and the process exhibits optimal properties in that it minimizes the linear sum of the chi-squared function.

$$(16) \quad \sum_i^n \sum_j^n \frac{(X_{ij}^{1976} - X_{ij}^{1967/67 \cdot 2})^2}{X_{ij}^{1967/76}}$$

The data used for determining the 1976 control totals for the agricultural sectors 1-36 were drawn from published sources for production (137), consumption (137), imports (222) and exports (209). Gross output control totals for the nonagricultural sectors were computed using U. S. Bureau of Labor Statistics (BLS) time series data for 1967 to 1975 (229) which were extended to 1976 based upon price and employment changes. Final demands were updated using published data on purchases for consumption, investment, and government spending (144), subject to published national income accounting control totals. Imports and exports were updated according to detailed published trade data (220, 222). Given the initially estimated control totals for final demands, trade, and gross output, the resultant intermediate output levels were checked against the corresponding values as computed from BLS forecast levels (156). Where differences of greater than 10 percent were found between the two series of numbers, further analysis was

made in order to isolate the reason for the differences and, in selected instances, adjustments were made so that the intermediate output control totals were in closer accord with those forecasted by the BLS.

Value added was updated by sector according to changes in gross output subject to control totals at the two-digit SIC level provided by the BLS (223).

### California Model

As constructed, the 1976 U. S. transactions table was comprised so that total interindustry transactions ( $X_{ij}^{tot}$ ) reflected both domestic ( $X_{ij}^{dom}$ ) and foreign import ( $M_{ij}$ ) purchases,

$$(17) \quad X_{ij}^{tot} = X_{ij}^{dom} + M_{ij}, \quad i, j=1, n$$

As such, the underlying assumption used in constructing the California model was that the corresponding technical coefficients for the United States ( $a_{ij}^{tot/US}$ ) and for California ( $a_{ij}^{tot/Cal}$ ) are the same,

$$(18) \quad a_{ij}^{tot/Cal} = a_{ij}^{tot/US} \quad i, j=1, n$$

This assumption was assumed for all sectors, excepting the energy related sectors for coal, refined oil products, natural gas services, and electricity, where independent estimates of the technical coefficients specific to California energy use were made.

Given this assumption, the problem of constructing the California table was reduced to the need for estimates of California production, final demand, and trade.

Production estimates were either taken from published sources (173) or scaled from the national control totals based upon earnings or employment (186,225).

California control totals for the final demand sectors of consumption, capital expenditures, and government spending were apportioned from the associated U. S. values. Final demand column control totals were based upon share of personal income for consumption (144), share of total depreciation charges associated with gross output levels for expenditures for fixed private capital, and published data relating to Federal, State, and Local Government expenditures for these two categories (144). In order to capture differences between California and the rest of the United States, the biproportional balancing technique was used for each category based upon the differential spending patterns developed in the Harvard U. S. multiregional input-output study (117).

California imports and exports for the manufacturing sectors were developed from data provided by the California Department of Transportation (21). As is generally the convention in regional input-output studies, the new construction sectors were assumed to produce goods which were not traded. For all other sectors, trade was estimated as the corresponding input-output implied net trade balance ( $NTB_i$ ).

$$(19) \quad NTB_i = X_i - \sum_j^n a_{ij} X_j - F_i, \quad \text{all applicable } i$$

where  $X_i$  is the estimated gross output level for industry  $i$  in California,  $F_i$  is the sum of the above-discussed California internal final demands, and the  $a_{ij}$  coefficients are those of equation 18 as modified for the California energy sectors. Positive net trade balances imply exports and negative values imply imports.

As constructed, the elements of the California transactions table include both regional and import components. Under the assumption that California exports are in all cases derived from California production and under the Isard assumption (73) that imports are distributed proportionately across all regional purchasers, the table of regional technical coefficients ( $a_{ij}^{reg/Cal}$ ) was developed according to the relationship,

$$(20) \quad a_{ij}^{reg/Cal} = (a_{ij}^{tot/Cal}) \left( 1 - \left( \frac{M_i}{\sum_j^n a_{ij} X_j + F_i} \right) \right), \quad i, j = 1, n$$

where  $M_i$  is the above-discussed level of imports for industry  $i$  for California.

### Resource Use Levels

As reflected in Figure 5 at the beginning of this Technical Appendix, the research associated with the California input-output model was extended beyond the estimation of value flows to include the development of estimates of sectoral resource utilization levels for the three resource categories -- labor, water, and energy. As originally conceived, corresponding air pollution emissions levels were to be included in the research data base developed. However, because the California Air Resources Board has an independent research effort in progress for this purpose, the decision was made to forego the estimation of air pollution emissions by the Department of Water Resources staff.

The labor resource estimates developed were for employment as expressed in person-years and include components for wage and salary employment and for self-employed workers.

Employment for sectors not related to agriculture and construction were developed from wage and salary employment of data (186) published for 1976 by the California Employment Development Department (EDD) and from unpublished EDD data for 1970 on the ratios of self-employed workers to total employment (188).

Because the agricultural sectors of the input-output model do not conform closely with SIC categories, employment estimates for agriculture were derived from more detailed EDD data (187) and data on production (173) where further disaggregation was necessary. The resultant implied employment data for each sector were checked against published California crop budgets (192), and final adjustments were made where it was considered appropriate.

As with agriculture, the input-output construction sectors do not correspond with SIC coding practices. Construction employment by sector was apportioned from total construction employment according to U. S. employment to gross output shares (223) weighted by the California construction sector gross output defined sector "New Construction, All Other" includes workers engaged in the drilling of oil and gas wells.

As this research study's foremost purpose was to develop models and methodologies for use in water resource planning, considerable effort was expended in the estimation of water usage levels.

Estimates of water use in the livestock industries (sectors 1-8) were made by multiplying water use per head data (140) by the associated number of animals (173).

Since the evapotranspiration rates for crops (sectors 19-36) vary considerably across California, separate estimates of water use for these sectors were developed by hydrologic basin and totaled to estimate statewide water use. Hydrologic basin water use estimates were developed for 96 possible crop types and resulted from the combination of water use application rates in terms of cubic dekametres of water per hectare of land (29, 128) and estimated crop acreage (172). Water use for non-bearing tree crops was estimated under the assumption that non-bearing water application rates are distributed according to a triangular distribution with a minimum rate of 1.23 cubic dekametres per year and a maximum of the value corresponding to the mature crop. Water use estimates by crop and basin were summed and found to be consistent with published control totals for total agricultural water use (128).

Water use for sector 37, "Forest and Fishery Products," and for sector 38, "Agricultural Services," was estimated by updating the water use figures used in the previous Department of Water Resources input-output study (28). Water use for the mining industries (sectors 39-44) was updated from data in the 1972

Census of Mineral Industries (211). Construction water use (sectors 45-50) was based on the methodology developed by Lofting and McGauhey and reflects the amount of water required in the mixing, cleaning, and curing of cement (98).

Survey data for 1970 (32) formed the basis of water use by manufacturing industries (sectors 51-118). The 1970 to 1976 update was accomplished by ratioing the changes in employment over the interval and applying these factors to the base year estimates.

Water use levels in services (sectors 119-149 excluding 128 and 135) were calculated based on water use estimates per employee (32) and employment. For sector 128, "Electric Companies and Systems", water usage reflects the one-year update of U. S. Geological Survey data for California (148). Water used in the production of hydroelectric energy is not included in these estimates. Residential water use was included in sector 135, "Owner Occupied Real Estate", and was drawn from a Department of Water Resources publication (30). Total governmental water use (sectors 150-152 and 155) was proportioned from the published control total (30) according to the number of employees in each governmental sector.

As noted previously, energy use estimates were developed for ten types of energy. Energy categories included gasoline, kerosene, distillate oil, residual oil, coke, other refined oil products, natural gas, liquified petroleum gas, coal, and electricity. Of these ten categories, the first 9 constitute primary energy categories and electricity, since it is in large part derived from the combustion of primary energy, constitutes secondary energy.

As with water, energy usage levels were estimated using several sources of data. On-farm agriculture energy use, which includes energy used for irrigation, reflects data published by the California Department of Food and Agriculture (15) updated according to changes in acreage (173). The energy use estimates for mining, construction, manufacturing, and transportation were drawn from data published by the California Energy Commission (33). Energy use for the service industries was developed from data on energy use per employee and governmental energy use was taken from data published by the Western Oil and Gas Association (165).

Once baseline estimates in millions of megajoules were computed, these physical use levels were converted to millions of dollars using published price data (34). These values were then compared with the associated input-output totals, as reflected using the national energy coefficients. The baseline estimates were in selected instances readjusted in light of the differentials between the input-output values and the values developed from the physical use levels. Examples where adjustments were made include construction (to reflect the use

of tars and asphalts) and chemicals (to reflect the noncombustion uses of refined petroleum products).

The adjusted energy use levels were finally back-balanced to reflect published control total values (33, 34, 165). In all instances, these adjustments reflected changes of less than 5 percent and for the major energy categories of gasoline, distillate oil, residual oil, natural gas, coal, and electricity, the final adjustments were less than 2 percent.

The final energy use estimates were again converted from millions of megajoules to dollars, and these values were introduced into the California transactions table.

### Secondary Effects Analysis and Multipliers

The idea that specific changes in industrial activity will "ripple" through an economy is well understood. Regional input-output models, such as the one developed in this study for the State of California, are generally considered one of the more reliable means of estimating these ripple or secondary effects. This section will discuss definitions and conventions related to secondary effects analysis, give an overview of the methodology which forms the basis for these concepts, and present and discuss the relevant data developed for the California economy.

### Definitions and Conventions

Two sets of definitions will be noted in this subsection. A clear understanding of the stated distinctions is necessary for the appropriate application of the results of this section. The first set of definitions relates to the issue of whether the household income/consumption linkages are made endogenous to the interindustry model.

Type I Ratios -- One way of constructing an input-output technical coefficients table ("a" matrix) is to include only industrial sectors (for this study, sectors 1-156). A model constructed in this manner will reflect secondary effects resulting from inter-industry linkages. When evaluating impacts relating solely to interindustry linkages, the resultant factors are defined as reflecting the direct and indirect effects of Type I effects.

Type II Ratios -- An alternative method of constructing an input-output technical coefficients table is to augment the table used for developing Type I coefficients with an additional row and column. The row coefficients reflect unit increments in household income and the column coefficients are derived from the personal consumption expenditure column, which is part of the final demand. A model constructed in this manner will reflect not only the interindustry direct and indirect effects, but also



induced effects resulting as income is earned by households and in turn reinjected into the economy in the form of personal consumption expenditures. Ratios derived in this manner are defined to reflect the direct, indirect, and induced effects or, otherwise stated, the Type II effects.

In most instances, the Type II effects are those of interest to the regional analyst. Throughout the remainder of this section, the discussion will be made in terms of the Type II effects. Unless otherwise stated, the discussion can be generalized by the reader to include the Type I effects.

The second set of definitions reflect the distinction between the terms direct, indirect, and induced coefficients and input-output multipliers. The terminology reflected in this report follows the conventions presented in Miernyk (108); however, it should be noted that these conventions are not always followed in the technical literature.

Direct, Indirect, and Induced Coefficients -- Given some change in final demand, for example, the direct expenditures associated with the construction of facilities for the enhancement of water quality, an input-output model can be used to determine total change in the economy including direct and secondary effects. Total change might be for total sales (gross output), income (gross State product), employment, or some other parameter of interest such as total energy used. When the underlying direct impact is stated in terms of changes in final demand, this report will use the term direct, indirect, and induced coefficient to designate the appropriate ratio by which the direct effect is multiplied in order to determine the total effect.

Multipliers -- When the direct effect of some change and the total effect associated with that change reflect the same category, then the appropriate term to use is multiplier. For example, the ratio of total change in sales (gross output) to direct change in final demand is referred to as the "gross output multiplier", the ratio of total change in income (gross State product) to direct income change is referred to as the "income multiplier", and the ratio to total employment created to direct employment is referred to as the "employment multiplier."

The distinctions are necessary because for each category (gross output, income, employment, water use, and energy use), four sets of secondary effects ratios are presented, the four sets representing the possible combinations of the above two sets of definitions.

#### Secondary Effects Methodology

As discussed earlier in this Technical Appendix in the section outlining the input-output model, the matrix of direct,

indirect, and induced gross output coefficients (Q),

$$(21) \quad Q = \begin{bmatrix} q_{11} & \dots & q_{1j} & \dots & q_{1n} \\ \vdots & & \vdots & & \vdots \\ q_{i1} & \dots & q_{ij} & \dots & q_{in} \\ \vdots & & \vdots & & \vdots \\ q_{n1} & \dots & q_{nj} & \dots & q_{nn} \end{bmatrix}$$

reflects the change in gross output per unit change in final demand, or otherwise,

$$(22) \quad Q = \begin{bmatrix} \frac{\partial X_1}{\partial F_1} & \dots & \frac{\partial X_1}{\partial F_j} & \dots & \frac{\partial X_1}{\partial F_n} \\ \vdots & & \vdots & & \vdots \\ \frac{\partial X_i}{\partial F_1} & \dots & \frac{\partial X_i}{\partial F_j} & \dots & \frac{\partial X_i}{\partial F_n} \\ \vdots & & \vdots & & \vdots \\ \frac{\partial X_n}{\partial F_1} & \dots & \frac{\partial X_n}{\partial F_j} & \dots & \frac{\partial X_n}{\partial F_n} \end{bmatrix}$$

Thus, given a unit change in final demand for any particular sector, the column elements corresponding to that sector will indicate on an industry-by-industry basis the associated change in gross output. When all industries are considered, the total change in regional gross output that would result from a unit change in final demand for a particular sector is the column sum for that industry. This column sum is the previously defined direct, indirect, and induced gross output coefficient ( $q_j$ ), which for all industries may be expressed in vector form ( $q$ ) as

$$(23) \quad q = \begin{bmatrix} \sum_i^n q_{i1} & \dots & \sum_i^n q_{ij} & \dots & \sum_i^n q_{in} \end{bmatrix}$$

or,

$$(24) \quad q = \begin{bmatrix} q_1 & \dots & q_j & \dots & q_n \end{bmatrix}.$$

Changes in regional gross output are generally of secondary interest to economists because of the double counting embodied in the numbers. For example, the value of flour is double counted when considering changes in the gross output of bakery products and of grain mill products. Similarly, in the context of this example, the value of grain produced and sold in

the region to grain mills would be counted three times. In order to eliminate this multiple counting, a new matrix is created which reflects only the income accruing to primary inputs which in input-output analysis is designated as value added ( $V_i$ ). The direct value added or income coefficient for any sector ( $v_i$ ) is its ratio of value added to gross output,

$$(25) \quad v_i = \frac{V_i}{X_i}, \quad ,i=1,n$$

and the new matrix which reflects only changes in income is

$$(26) \quad \begin{bmatrix} v_1 q_{11} & \dots & v_1 q_{1j} & \dots & v_1 q_{1n} \\ \vdots & & \vdots & & \vdots \\ v_i q_{i1} & \dots & v_i q_{ij} & \dots & v_i q_{in} \\ \vdots & & \vdots & & \vdots \\ v_n q_{n1} & \dots & v_n q_{nj} & \dots & v_n q_{nn} \end{bmatrix}$$

From this new matrix, direct, indirect, and induced income coefficients ( $vq_j$ ) are computed as the column sums,

$$(27) \quad v'Q = \begin{bmatrix} \sum_i^n v_i q_{i1} & \dots & \sum_i^n v_i q_{ij} & \dots & \sum_i^n v_i q_{in} \end{bmatrix}$$

or alternatively,

$$(28) \quad v'Q = \begin{bmatrix} vq_1 & \dots & vq_j & \dots & vq_n \end{bmatrix} .$$

Income multipliers ( $k^V$ ) which reflect the total change in income associated with a unit change in income for any particular sector are the direct, indirect, and induced income coefficient divided by the corresponding direct income coefficient,

$$(29) \quad k^V = \begin{bmatrix} \frac{vq_1}{v_1} & \dots & \frac{vq_j}{v_j} & \dots & \frac{vq_n}{v_n} \end{bmatrix}$$

or,

$$(30) \quad k^V = \begin{bmatrix} k_1^V & \dots & k_j^V & \dots & k_n^V \end{bmatrix} .$$

Direct, indirect, and induced resource coefficients and resource multipliers were developed for employment, water use, and energy use in the same fashion as for income.

Using water as an example, direct water use coefficients ( $w_i$ ) were developed for each sector according to the estimated total sector water use ( $W_i$ ) and sector gross output ( $X_i$ ),

$$(31) \quad w_i = \frac{W_i}{X_i} \quad , i=1, n.$$

Combining the direct water coefficients with the inverse array for gross output results in a matrix showing changes in total water use by industry associated with unit changes in final demand,

$$(32) \quad \begin{bmatrix} w_1 q_{11} & \dots & w_1 q_{1j} & \dots & w_1 q_{1n} \\ \vdots & & \vdots & & \vdots \\ w_i q_{i1} & \dots & w_i q_{ij} & \dots & w_i q_{in} \\ \vdots & & \vdots & & \vdots \\ w_n q_{n1} & \dots & w_n q_{nj} & \dots & w_n q_{nn} \end{bmatrix}$$

Summing columnwise, the vector of direct, indirect, and induced water coefficients ( $w'Q$ ) is,

$$(33) \quad w'Q = \begin{bmatrix} \sum_i^n w_i q_{i1} & \dots & \sum_i^n w_i q_{ij} & \dots & \sum_i^n w_i q_{in} \end{bmatrix}$$

or,

$$(34) \quad w'Q = \begin{bmatrix} wq_1 & \dots & wq_j & \dots & wq_n \end{bmatrix}.$$

Water use multipliers ( $k^W$ ) showing the change in total water use by all industries associated with a unit change in direct water use by a particular industry are computed in the same fashion as for income multipliers,

$$(35) \quad k^W = \begin{bmatrix} \frac{wq_1}{w_1} & \dots & \frac{wq_j}{w_j} & \dots & \frac{wq_n}{w_n} \end{bmatrix}$$

or alternatively,

$$(36) \quad k^W = \begin{bmatrix} k_1^W & \dots & k_j^W & \dots & k_n^W \end{bmatrix} .$$

Water multipliers reflect the total per unit change in cubic dekametres of water.

### California Input-Output Coefficients and Multipliers

The estimates of the secondary effects coefficients and multipliers as developed in the study are shown in Tables 14 through 20.

Table 14, which presents the gross output coefficients and multipliers, is slightly different from the other tables. For gross output, the vectors of direct coefficients are all of unit value and consequently, the direct and indirect gross output coefficients are identical with the Type I gross output multipliers. Similarly, the direct, indirect, and induced gross output coefficients are identical with the Type II gross output multipliers.

Tables 15 through 20 all follow the same format and present seven columns of numbers. Columnwise, the data are presented as follows:

Column (1) -- The first column is identical in all of the tables and presents the levels of regional gross output for each industry as expressed in millions of 1976 dollars. For example, the first element in column (1) of Table 17 indicates the 1976 gross output for dairies in California was \$1,082 million or approximately \$1.1 billion.

Column (2) -- Either total income (Table 15) or total resource use by industry is shown in column (2). The name of the category of interest and the units for which the data are presented are shown in the second line of the title. Income is expressed in millions of 1976 dollars, employment is in terms of person-years, water is measured in cubic dekametres, and energy is expressed in petajoules. Following the above example, the first element of column (2) of Table 17 reflects an estimated 51 416 cubic dekametres of water used directly in the on-farm production of milk in 1976. Because these are computer-printed tables, data is presented to the same decimal place for all values in a column. When using a specific number, it should be adjusted to reflect two or three significant figures.

Column (3) -- The direct coefficients either for income (in millions of dollars of income per million dollars of regional gross output) or for resource use (in the

appropriate units for the resource per million dollars of regional gross output) are presented in Column (3). On a row by row basis, column (3) results from dividing the column (2) income or resource total by the column (1) gross output element. Continuing the example, the first element of column (3) in Table 17 states that dairies used approximately 48 cubic dekametres per million dollars of regional gross output.

Column (4) -- The first of the four measures of secondary effects is shown in column (4). Values in this column indicate the direct and indirect income or resource coefficients (or Type I coefficients) and reflect the total change in income or resource use associated with a unit change in final demand for the industry. These coefficients consider only the interindustry linkages in the economy. The first element in column (4) of Table 17 indicates the change in total water use by all industrial sectors of the economy associated with an increase in dairies' final demand of one million dollars to be 4 971 cubic dekametres of water. Thus, the embodied water in one million dollars of dairies is considerably larger than the direct use level since it considers the water required for the associated production of feed grains and irrigated pasture and the other inputs into dairy production.

Column (5) -- The Type I multipliers are shown in column (5) and result from the rowwise division of the direct and indirect coefficient of column (4) by the direct coefficient of column (3). Following the on-farm dairies example, the Type I water multiplier, in terms of the total increase in water use in cubic dekametres associated with a cubic dekametre direct increase by dairies, is 129 cubic dekametres per cubic dekametre.

Column (6) -- The most commonly used secondary effects estimator is presented in column (6), which shows the direct, indirect, and induced coefficients for income and resource use. These Type II coefficients reflect the interindustry linkages of the column (4) coefficients and, additionally, the effects of the household income and resultant personal consumption linkages. The first element of column (6) in Table 17 indicates the total water use increase expected to result from an increase in final demand for on-farm dairy products to be 5 045 cubic dekametres of water. As can be noted by comparing associated column (4) (Type I) and column (6) (Type II) coefficients, the ratio between these two values is not constant.

Column (7) -- The final column of data presented reflects the Type II income or resource multipliers and, in a similar manner as for the column (5) Type I multipliers, is derived by dividing the column (6) direct, indirect,

and induced coefficient by the column (3) direct coefficient.

Finishing the example, the first element of column (7) in Table 17 states an estimated 131 cubic dekametres of water will be required if direct dairies water use increases by one cubic dekametre, when both interindustry and household linkages are considered.

TABLE 14

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## GROSS OUTPUT MULTIPLIERS

UNITS -- MILLIONS OF DOLLARS

- (1) -- GROSS OUTPUT (MILLIONS OF \$)  
 (2) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$) -- (SAME AS TYPE I GROSS OUTPUT MULTIPLIER)  
 (3) -- DIRECT, INDIRECT AND INDUCED COEF. (UNITS PER MILLION \$) -- (SAME AS TYPE II GROSS OUTPUT MULTIPLIER)

INDUSTRY	(1)	(2)	(3)
1 DAIRIES	1082.	1.80	2.69
2 BROILERS, CHICKENS AND EGGS	580.	1.89	2.73
3 TURKEYS AND OTHER POULTRY	124.	1.81	2.70
4 CATTLE AND CALVES	779.	1.89	2.56
5 HOGS	42.	1.57	2.33
6 SHEEP, LAMBS, AND WOOL	64.	1.98	2.73
7 MISC. LIVESTOCK	9.	1.81	2.69
8 APIARY PRODUCTS	19.	1.93	2.80
9 COTTON	833.	2.03	3.39
10 WHEAT	229.	1.83	2.83
11 RICE	161.	1.80	2.80
12 BARLEY	157.	1.89	2.92
13 CORN	181.	1.80	2.77
14 HAY AND PASTURE	794.	1.85	2.87
15 OATS	14.	1.79	2.75
16 SORGHUM GRAIN	44.	1.83	2.84
17 GRASS SEED	35.	1.71	2.90
18 FOOD, FEED GRAINS, NEC	0.	1.89	2.83
19 TOBACCO	0.	0.00	0.00
20 WALNUTS	109.	1.60	3.24
21 ALMONDS	182.	1.58	3.23
22 NONCITRUS FRUITS	1344.	1.72	3.24
23 CITRUS FRUITS	430.	1.73	3.25
24 FRUIT AND TREE NUTS, NEC	1.	1.61	3.26
25 VEGETABLES	1388.	1.67	3.00
26 DRIED BEANS	69.	1.73	3.05
27 DRIED PEAS	0.	0.00	0.00
28 MELONS	116.	1.68	3.01
29 SUGAR BEETS	192.	1.56	2.90
30 HOPS	1.	1.61	3.06
31 POTATOES	94.	1.72	2.96
32 SWEET POTATOES	18.	1.55	2.83
33 VEGETABLES + SUGAR, NEC	0.	0.00	0.00
34 SAFFLOWER	37.	1.75	2.81
35 OIL CROPS, NEC	0.	0.00	0.00
36 GREENHOUSE AND NURSERY PRODUCTS	506.	1.53	3.09
37 FORESTRY AND FISHERY PRODUCTS	376.	1.63	2.64
38 AGRIC., FORESTRY, FISHERY SERV	1298.	1.56	3.24
39 METALS MINING	128.	1.55	3.79
40 COAL MINING	0.	0.00	0.00



TABLE 14 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## GROSS OUTPUT MULTIPLIERS

UNITS -- MILLIONS OF DOLLARS

- (1) -- GROSS OUTPUT (MILLIONS OF \$)  
 (2) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$) -- (SAME AS TYPE I GROSS OUTPUT MULTIPLIER)  
 (3) -- DIRECT, INDIRECT AND INDUCED COEF. (UNITS PER MILLION \$) -- (SAME AS TYPE II GROSS OUTPUT MULTIPLIER)

INDUSTRY	(1)	(2)	(3)
41 CRUDE PETROLEUM	2932.	1.51	2.68
42 NATURAL GAS + N.G. LIQUIDS	333.	1.74	2.76
43 STONE + CLAY MIN + QUARRY	411.	1.66	3.48
44 CHEM + FERT MINERAL MIN	145.	1.56	3.44
45 NEW CONSTRUCT, RESIDENT	8862.	1.73	3.80
46 NEW CONSTRUCT, NONRESIDENT	5834.	1.76	3.83
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	1.73	3.72
48 NEW CONSTRUCT, HIGHWAYS	1295.	1.73	3.95
49 NEW CONSTRUCT, ALL OTHER	2043.	1.61	3.86
50 MAIN. AND REPAIR CONSTRUCTION	4559.	1.49	3.87
51 ORDNANCE + GUIDED MISSILES	3663.	1.80	4.05
52 MEAT PRODUCTS	2761.	1.90	2.66
53 DAIRY PRODUCTS	2151.	2.45	3.66
54 CANNED AND FROZEN FOODS	6951.	2.12	3.64
55 GRAIN MILL PRODUCTS	1402.	1.99	3.06
56 BAKERY PRODUCTS	1139.	1.70	3.27
57 SUGAR	959.	2.21	3.60
58 CONFECTIONARY PRODUCTS	293.	1.89	3.31
59 BEVERAGES AND FLAVORINGS	2951.	1.77	3.57
60 MISC FOOD PRODUCTS	3853.	1.75	2.76
61 TOBACCO MANUFACTURERS	0.	0.00	0.00
62 TEXTILE PRODUCTS	4177.	1.68	3.37
63 LOGGING CAMPS + SAWMILLS	2046.	1.65	3.05
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	1.82	3.41
65 WOODEN CONTAINERS	206.	1.80	3.42
66 HOUSEHOLD FURNITURE	1212.	1.80	3.84
67 OFFICE FURNITURE AND FIXTURES	706.	1.77	3.84
68 PAPER + PAPERBOARD PRODUCTS	2848.	1.71	3.35
69 NEWSPAPERS	1045.	1.51	3.80
70 OTHER PRINTING AND PUBLISHING	2972.	1.73	3.92
71 INDUSTRIAL CHEMICALS	1892.	1.92	3.45
72 AGRICULTURAL CHEMICALS	881.	1.96	3.40
73 GUM AND WOOD CHEMICALS	725.	1.87	3.30
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	1.86	3.25
75 DRUGS	765.	1.83	3.67
76 CLEANING AND TOILET PREPARATIONS	1410.	2.13	3.70
77 PAINTS AND ALLIED PRODUCTS	831.	1.86	3.26
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	1.93	3.14
79 RUBBER AND PLASTICS PRODUCTS	2950.	1.62	3.34
80 LEATHER TANNING AND PRODUCTS	287.	1.68	3.55

TABLE 14 (CONTINUED)

DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

GROSS OUTPUT MULTIPLIERS

UNITS -- MILLIONS OF DOLLARS

- (1) -- GROSS OUTPUT (MILLIONS OF \$)
- (2) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$) -- (SAME AS TYPE I GROSS OUTPUT MULTIPLIER)
- (3) -- DIRECT, INDIRECT AND INDUCED COEF. (UNITS PER MILLION \$) -- (SAME AS TYPE II GROSS OUTPUT MULTIPLIER)

INDUSTRY	(1)	(2)	(3)
81 GLASS	809.	1.58	3.75
82 CEMENT AND CONCRETE PRODUCTS	1135.	1.76	3.86
83 STRUCTURAL CLAY PRODUCTS	126.	1.61	3.81
84 POTTERY AND RELATED PRODUCTS	120.	1.45	3.74
85 MISC STONE AND CLAY PRODUCTS	407.	1.70	3.69
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	1.70	3.49
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	1.73	3.63
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	1.87	3.30
89 METAL CONTAINERS	1106.	1.79	3.50
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	1.83	3.60
91 FABRICATED STRUCTURAL STEEL	2027.	1.79	3.53
92 SCREW MACHINE PRODUCTS	458.	1.60	3.62
93 METAL STAMPINGS	470.	1.62	3.44
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	1.64	3.73
95 OTHER FABRICATED METAL PRODUCTS	1892.	1.71	3.53
96 ENGINES, TURBINES AND GENERATORS	875.	1.89	3.84
97 FARM MACHINERY	364.	1.85	3.78
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	1.75	3.70
99 METAL WORKING MACHINERY	1027.	1.67	3.78
100 SPECIAL INDUSTRIAL MACHINERY	854.	1.79	3.79
101 GENERAL INDUSTRIAL MACHINERY	1149.	1.73	3.73
102 MACHINE SHOP PRODUCTS	1089.	1.63	3.83
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	2.01	4.26
104 SERVICE INDUSTRY MACHINES	512.	1.81	3.52
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	1.65	3.85
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	1.69	3.82
107 HOUSEHOLD APPLIANCES	352.	1.77	3.63
108 ELECTRIC LIGHTING AND WIRING	691.	1.59	3.71
109 RADIO AND TV RECEIVING SETS	654.	2.08	4.36
110 COMMUNICATION EQUIPMENT	4650.	1.70	4.22
111 ELECTRONIC COMPONENTS	3781.	1.78	4.11
112 MISC ELECTRICAL PRODUCTS	446.	1.63	3.64
113 MOTOR VEHICLES	4572.	1.79	3.24
114 AIRCRAFT	9081.	2.01	4.43
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	1.75	4.04
116 OTHER TRANSPORTATION EQUIPMENT	895.	1.88	3.71
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	1.71	3.87
118 JEWELRY, SPORTING GOODS, ETC.	1494.	1.66	3.56
119 RAILROADS	1524.	1.60	4.16
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	1.71	4.08

TABLE 14 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## GROSS OUTPUT MULTIPLIERS

UNITS -- MILLIONS OF DOLLARS

- (1) -- GROSS OUTPUT (MILLIONS OF \$)  
 (2) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$) -- (SAME AS TYPE I GROSS OUTPUT MULTIPLIER)  
 (3) -- DIRECT, INDIRECT AND INDUCED COEF. (UNITS PER MILLION \$) -- (SAME AS TYPE II GROSS OUTPUT MULTIPLIER)

INDUSTRY	(1)	(2)	(3)
121 TRUCK TRANSPORTATION	3790.	1.54	3.85
122 WATER TRANSPORTATION	1815.	2.00	3.94
123 AIR TRANSPORTATION	4480.	1.70	3.77
124 PIPELINE TRANSPORTATION	71.	1.53	2.94
125 TRANSPORTATION SERVICES	444.	1.32	3.74
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	1.22	3.10
127 RADIO AND TELEVISION BROADCASTING	845.	1.94	4.16
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	1.88	3.19
129 GAS COMPANIES AND SYSTEMS	3335.	1.32	2.37
130 WATER AND SANITARY SERVICES	1228.	2.38	4.58
131 WHOLESALE TRADE	12214.	1.40	3.38
132 RETAIL TRADE	24255.	1.26	3.48
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	1.82	4.86
134 INSURANCE	6340.	1.91	4.53
135 OWNER OCCUPIED REAL ESTATE	11956.	1.08	1.47
136 REAL ESTATE	13825.	1.41	2.18
137 HOTELS AND LODGING PLACES	1309.	1.78	3.81
138 PERSONAL AND REPAIR SERVICES	2770.	1.52	3.63
139 MISCELLANEOUS BUSINESS SERVICES	10840.	1.50	3.91
140 ADVERTISING	4649.	2.29	4.15
141 MISC PROFESSIONAL SERVICES	5909.	1.37	3.70
142 AUTOMOBILE REPAIR	3303.	1.61	3.37
143 MOTION PICTURES	4530.	2.46	4.69
144 AMUSEMENT AND RECREATION SERVICES	2290.	1.62	3.49
145 DOCTORS AND DENTISTS	5074.	1.33	3.98
146 HOSPITALS	4075.	1.52	3.92
147 OTHER MEDICAL SERVICES	2333.	1.50	3.91
148 EDUCATIONAL SERVICES	1881.	1.46	4.40
149 NONPROFIT ORGANIZATIONS	2139.	1.42	4.60
150 POST OFFICE	1153.	1.23	4.69
151 OTHER FEDERAL GOVT ENTERPRISES	381.	1.29	4.23
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	1.73	4.26
153 NONCOMPETITIVE IMPORTS	0.	0.00	0.00
154 DUMMY INDUSTRIES	3665.	2.42	4.06
155 GOVERNMENT INDUSTRY	20908.	1.00	4.71
156 SPECIAL INDUSTRIES	0.	0.00	0.00
157 HOUSEHOLD INCOME	116193.	0.00	3.71

TABLE 15

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

INCOME -- (GROSS STATE PRODUCT)

UNITS -- MILLIONS OF DOLLARS

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL INCOME (UNITS)

(3) -- DIRECT INCOME COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I INCOME MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II INCOME MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	399.0	.37	.73	1.97	1.01	2.74
2 BROILERS, CHICKENS AND EGGS	580.	53.7	.09	.45	4.83	.72	7.74
3 TURKEYS AND OTHER POULTRY	124.	18.9	.15	.48	3.15	.77	5.01
4 CATTLE AND CALVES	779.	137.9	.18	.53	2.99	.75	4.21
5 HOGS	42.	17.6	.42	.68	1.61	.92	2.19
6 SHEEP, LAMBS, AND WOOL	64.	9.7	.15	.57	3.75	.81	5.35
7 MISC. LIVESTOCK	9.	2.1	.24	.58	2.44	.86	3.62
8 APIARY PRODUCTS	19.	3.6	.19	.57	3.06	.85	4.55
9 COTTON	833.	253.1	.30	.82	2.69	1.25	4.11
10 WHEAT	229.	96.0	.42	.83	1.97	1.14	2.73
11 RICE	161.	69.8	.43	.83	1.91	1.15	2.64
12 BARLEY	157.	61.0	.39	.82	2.11	1.15	2.95
13 CORN	181.	73.4	.41	.79	1.95	1.10	2.71
14 HAY AND PASTURE	794.	318.6	.40	.82	2.04	1.15	2.85
15 OATS	14.	5.1	.37	.76	2.04	1.07	2.86
16 SORGHUM GRAIN	44.	17.9	.41	.82	1.99	1.14	2.77
17 GRASS SEED	35.	17.7	.50	.87	1.75	1.25	2.51
18 FOOD, FEED GRAINS, NEC	0.	.1	.21	.65	3.04	.94	4.44
19 TOBACCO	0.	0.0	0.00	0.00	0.00	0.00	0.00
20 WALNUTS	109.	65.7	.60	.90	1.49	1.42	2.36
21 ALMONDS	182.	112.3	.62	.90	1.46	1.43	2.31
22 NONCITRUS FRUITS	1344.	710.2	.53	.88	1.66	1.36	2.58
23 CITRUS FRUITS	430.	223.0	.52	.88	1.69	1.36	2.62
24 FRUIT AND TREE NUTS, NEC	1.	.7	.60	.90	1.50	1.43	2.37
25 VEGETABLES	1388.	767.3	.55	.89	1.61	1.31	2.38
26 DRIED BEANS	69.	36.3	.52	.89	1.70	1.31	2.51
27 DRIED PEAS	0.	0.0	0.00	0.00	0.00	0.00	0.00
28 MELONS	116.	63.5	.55	.89	1.62	1.32	2.40
29 SUGAR BEETS	192.	119.0	.62	.90	1.45	1.32	2.14
30 HOPS	1.	.8	.57	.86	1.51	1.32	2.32
31 POTATOES	94.	44.2	.47	.83	1.77	1.22	2.61
32 SWEET POTATOES	18.	11.3	.64	.94	1.47	1.35	2.11
33 VEGETABLES + SUGAR, NEC	0.	0.0	0.00	0.00	0.00	0.00	0.00
34 SAFFLOWER	37.	18.0	.48	.87	1.80	1.21	2.50
35 OIL CROPS, NEC	0.	0.0	0.00	0.00	0.00	0.00	0.00
36 GREENHOUSE AND NURSERY PRODUCTS	506.	318.4	.63	.91	1.44	1.41	2.23
37 FORESTRY AND FISHERY PRODUCTS	376.	194.4	.52	.79	1.52	1.11	2.15
38 AGRIC., FORESTRY, FISHERY SERV	1298.	681.6	.52	.76	1.45	1.30	2.47
39 METALS MINING	128.	68.7	.54	.81	1.52	1.52	2.85
40 COAL MINING	0.	0.0	0.00	0.00	0.00	0.00	0.00

TABLE 15 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

INCOME -- (GROSS STATE PRODUCT)

UNITS -- MILLIONS OF DOLLARS

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL INCOME (UNITS)

(3) -- DIRECT INCOME COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I INCOME MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II INCOME MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	1702.1	.58	.87	1.50	1.24	2.14
42 NATURAL GAS + N.G. LIQUIDS	333.	120.9	.36	.79	2.18	1.11	3.08
43 STONE + CLAY MIN + QUARRY	411.	222.2	.54	.86	1.59	1.44	2.66
44 CHEM + FERT MINERAL MIN	145.	88.5	.61	.90	1.48	1.50	2.46
45 NEW CONSTRUCT, RESIDENT	8862.	3730.4	.42	.78	1.85	1.44	3.41
46 NEW CONSTRUCT, NONRESIDENT	5834.	2404.8	.41	.77	1.88	1.44	3.48
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	1523.4	.41	.74	1.80	1.38	3.33
48 NEW CONSTRUCT, HIGHWAYS	1295.	641.3	.50	.85	1.71	1.55	3.14
49 NEW CONSTRUCT, ALL OTHER	2043.	1097.7	.54	.83	1.55	1.55	2.88
50 MAIN. AND REPAIR CONSTRUCTION	4559.	2919.4	.64	.87	1.36	1.63	2.54
51 ORDNANCE + GUIDED MISSILES	3663.	1629.1	.44	.81	1.81	1.52	3.43
52 MEAT PRODUCTS	2761.	302.2	.11	.40	3.61	.64	5.82
53 DAIRY PRODUCTS	2151.	348.1	.16	.72	4.45	1.11	6.85
54 CANNED AND FROZEN FOODS	6951.	1528.2	.22	.69	3.14	1.17	5.34
55 GRAIN MILL PRODUCTS	1402.	231.6	.17	.56	3.38	.90	5.43
56 BAKERY PRODUCTS	1139.	510.4	.45	.71	1.59	1.21	2.71
57 SUGAR	959.	202.6	.21	.66	3.12	1.10	5.22
58 CONFECTIONARY PRODUCTS	293.	86.3	.29	.63	2.15	1.09	3.69
59 BEVERAGES AND FLAVORINGS	2951.	1396.8	.47	.80	1.69	1.37	2.90
60 MISC FOOD PRODUCTS	3853.	660.5	.17	.45	2.63	.77	4.51
61 TOBACCO MANUFACTURERS	0.	0.0	0.00	0.00	0.00	0.00	0.00
62 TEXTILE PRODUCTS	4177.	1327.3	.32	.59	1.87	1.13	3.57
63 LOGGING CAMPS + SAWMILLS	2046.	704.1	.34	.63	1.82	1.07	3.12
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	598.6	.34	.68	2.02	1.19	3.53
65 WOODEN CONTAINERS	206.	73.3	.36	.69	1.94	1.21	3.38
66 HOUSEHOLD FURNITURE	1212.	457.5	.38	.72	1.90	1.37	3.62
67 OFFICE FURNITURE AND FIXTURES	706.	273.7	.39	.72	1.88	1.38	3.57
68 PAPER + PAPERBOARD PRODUCTS	2848.	1026.0	.36	.67	1.85	1.19	3.30
69 NEWSPAPERS	1045.	610.7	.58	.85	1.45	1.58	2.70
70 OTHER PRINTING AND PUBLISHING	2972.	1404.0	.47	.82	1.74	1.52	3.22
71 INDUSTRIAL CHEMICALS	1892.	613.1	.32	.72	2.22	1.21	3.73
72 AGRICULTURAL CHEMICALS	881.	207.9	.24	.65	2.74	1.10	4.68
73 GUM AND WOOD CHEMICALS	725.	207.3	.29	.64	2.24	1.10	3.84
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	102.8	.27	.63	2.32	1.07	3.96
75 DRUGS	765.	342.7	.45	.80	1.80	1.39	3.11
76 CLEANING AND TOILET PREPARATIONS	1410.	311.8	.22	.67	3.04	1.17	5.30
77 PAINTS AND ALLIED PRODUCTS	831.	225.0	.27	.62	2.28	1.07	3.93
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	2618.8	.24	.72	3.02	1.10	4.64
79 RUBBER AND PLASTICS PRODUCTS	2950.	1143.4	.39	.66	1.70	1.20	3.10
80 LEATHER TANNING AND PRODUCTS	287.	103.0	.36	.65	1.81	1.25	3.47

TABLE 15 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

INCOME -- (GROSS STATE PRODUCT)

UNITS -- MILLIONS OF DOLLARS

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL INCOME (UNITS)

(3) -- DIRECT INCOME COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I INCOME MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II INCOME MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
81 GLASS	809.	452.3	.56	.84	1.50	1.53	2.74
82 CEMENT AND CONCRETE PRODUCTS	1135.	491.6	.43	.82	1.89	1.49	3.43
83 STRUCTURAL CLAY PRODUCTS	126.	69.4	.55	.86	1.56	1.56	2.84
84 POTTERY AND RELATED PRODUCTS	120.	77.2	.64	.86	1.35	1.60	2.49
85 MISC STONE AND CLAY PRODUCTS	407.	179.9	.44	.77	1.75	1.41	3.18
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	626.7	.35	.67	1.93	1.24	3.56
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	167.5	.40	.72	1.78	1.33	3.29
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	710.5	.22	.55	2.42	1.00	4.45
89 METAL CONTAINERS	1106.	333.7	.30	.63	2.08	1.17	3.88
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	84.5	.30	.65	2.16	1.21	4.02
91 FABRICATED STRUCTURAL STEEL	2027.	621.3	.31	.64	2.09	1.19	3.89
92 SCREW MACHINE PRODUCTS	458.	212.2	.46	.73	1.57	1.37	2.96
93 METAL STAMPINGS	470.	185.0	.39	.66	1.67	1.24	3.14
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	299.3	.47	.75	1.60	1.41	3.02
95 OTHER FABRICATED METAL PRODUCTS	1892.	693.4	.37	.67	1.82	1.25	3.40
96 ENGINES, TURBINES AND GENERATORS	875.	285.1	.33	.71	2.18	1.33	4.08
97 FARM MACHINERY	364.	120.3	.33	.71	2.14	1.32	3.99
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	448.7	.37	.71	1.92	1.33	3.59
99 METAL WORKING MACHINERY	1027.	468.8	.46	.77	1.68	1.44	3.15
100 SPECIAL INDUSTRIAL MACHINERY	854.	327.5	.38	.75	1.95	1.38	3.61
101 GENERAL INDUSTRIAL MACHINERY	1149.	464.2	.40	.73	1.81	1.37	3.39
102 MACHINE SHOP PRODUCTS	1089.	554.9	.51	.81	1.58	1.50	2.95
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	1028.7	.37	.84	2.30	1.56	4.27
104 SERVICE INDUSTRY MACHINES	512.	143.6	.28	.63	2.25	1.18	4.19
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	460.4	.50	.81	1.61	1.51	3.00
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	286.7	.47	.78	1.66	1.46	3.10
107 HOUSEHOLD APPLIANCES	352.	127.2	.36	.69	1.90	1.28	3.54
108 ELECTRIC LIGHTING AND WIRING	691.	346.8	.50	.77	1.53	1.44	2.87
109 RADIO AND TV RECEIVING SETS	654.	217.6	.33	.83	2.49	1.56	4.68
110 COMMUNICATION EQUIPMENT	4650.	2578.8	.55	.90	1.62	1.70	3.06
111 ELECTRONIC COMPONENTS	3781.	1792.4	.47	.84	1.77	1.58	3.34
112 MISC ELECTRICAL PRODUCTS	446.	203.1	.46	.73	1.61	1.37	3.01
113 MOTOR VEHICLES	4572.	1169.3	.26	.58	2.29	1.05	4.09
114 AIRCRAFT	9081.	3246.6	.36	.81	2.28	1.58	4.43
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	456.2	.43	.76	1.74	1.48	3.41
116 OTHER TRANSPORTATION EQUIPMENT	895.	241.8	.27	.64	2.36	1.22	4.52
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	1247.5	.45	.77	1.72	1.45	3.27
118 JEWELRY, SPORTING GOODS, ETC.	1494.	611.6	.41	.70	1.71	1.30	3.18
119 RAILROADS	1524.	887.8	.58	.90	1.55	1.72	2.95
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	344.8	.56	.93	1.65	1.68	2.99

TABLE 15 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

INCOME -- (GROSS STATE PRODUCT)

UNITS -- MILLIONS OF DOLLARS

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	2406.4	.63	.93	1.47	1.67	2.63
122 WATER TRANSPORTATION	1815.	576.2	.32	.76	2.39	1.38	4.35
123 AIR TRANSPORTATION	4480.	2425.0	.54	.87	1.61	1.53	2.83
124 PIPELINE TRANSPORTATION	71.	44.3	.62	.89	1.44	1.34	2.16
125 TRANSPORTATION SERVICES	444.	351.2	.79	.98	1.24	1.75	2.21
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	5102.5	.86	.97	1.13	1.57	1.83
127 RADIO AND TELEVISION BROADCASTING	845.	420.5	.50	.93	1.87	1.64	3.29
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	1748.2	.46	.83	1.81	1.25	2.72
129 GAS COMPANIES AND SYSTEMS	3335.	1778.6	.53	.70	1.31	1.03	1.94
130 WATER AND SANITARY SERVICES	1228.	222.2	.18	.91	5.02	1.61	8.90
131 WHOLESALE TRADE	12214.	9075.3	.74	.94	1.26	1.57	2.11
132 RETAIL TRADE	24255.	20171.5	.83	.97	1.16	1.67	2.01
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	2599.7	.50	.94	1.88	1.90	3.83
134 INSURANCE	6340.	2976.9	.47	.94	1.99	1.77	3.77
135 OWNER OCCUPIED REAL ESTATE	11956.	11277.2	.94	.98	1.04	1.11	1.18
136 REAL ESTATE	13825.	10070.3	.73	.96	1.31	1.20	1.65
137 HOTELS AND LODGING PLACES	1309.	639.8	.49	.90	1.84	1.55	3.16
138 PERSONAL AND REPAIR SERVICES	2770.	1742.8	.63	.89	1.41	1.56	2.48
139 MISCELLANEOUS BUSINESS SERVICES	10840.	7015.3	.65	.92	1.42	1.68	2.60
140 ADVERTISING	4649.	441.8	.10	.76	7.96	1.35	14.22
141 MISC PROFESSIONAL SERVICES	5909.	4527.3	.77	.97	1.26	1.71	2.23
142 AUTOMOBILE REPAIR	3303.	1728.9	.52	.84	1.60	1.40	2.67
143 MOTION PICTURES	4530.	1421.1	.31	.89	2.84	1.60	5.10
144 AMUSEMENT AND RECREATION SERVICES	2290.	1354.4	.59	.91	1.54	1.51	2.55
145 DOCTORS AND DENTISTS	5074.	3924.4	.77	.96	1.24	1.80	2.33
146 HOSPITALS	4075.	2622.6	.64	.90	1.39	1.66	2.58
147 OTHER MEDICAL SERVICES	2333.	1515.1	.65	.90	1.39	1.67	2.57
148 EDUCATIONAL SERVICES	1881.	1323.8	.70	.95	1.35	1.89	2.68
149 NONPROFIT ORGANIZATIONS	2139.	1569.1	.73	.95	1.30	1.97	2.68
150 POST OFFICE	1153.	975.8	.85	.97	1.15	2.07	2.45
151 OTHER FEDERAL GOVT ENTERPRISES	381.	260.9	.69	.84	1.23	1.78	2.60
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	1042.8	.51	.91	1.78	1.72	3.35
153 NONCOMPETITIVE IMPORTS	0.	0.0	0.00	0.00	0.00	0.00	0.00
154 DUMMY INDUSTRIES	3665.	0.0	0.00	.69	0.00	1.21	0.00
155 GOVERNMENT INDUSTRY	20908.	20908.1	1.00	1.00	1.00	2.18	2.18
156 SPECIAL INDUSTRIES	0.	0.0	0.00	0.00	0.00	0.00	0.00
157 HOUSEHOLD INCOME	116193.	0.0	0.00	0.00	0.00	1.18	0.00

TABLE 16

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- LABOR

## UNITS -- PERSON-YEARS

- (1) -- TOTAL PRODUCTION (MILLIONS OF \$)  
 (2) -- TOTAL RESOURCE USE (UNITS)  
 (3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)  
 (4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)  
 (5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)  
 (6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)  
 (7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	14516.0	13.41	27.46	2.05	41.09	3.06
2 BROILERS, CHICKENS AND EGGS	580.	9992.0	17.24	38.95	2.26	51.89	3.01
3 TURKEYS AND OTHER POULTRY	124.	1402.0	11.33	32.17	2.84	45.82	4.04
4 CATTLE AND CALVES	779.	8250.0	10.59	24.78	2.34	35.12	3.31
5 HOGS	42.	912.0	21.70	31.63	1.46	43.28	1.99
6 SHEEP, LAMBS, AND WOOL	64.	1390.0	21.67	38.94	1.80	50.56	2.33
7 MISC. LIVESTOCK	9.	195.9	21.68	34.85	1.61	48.37	2.23
8 APIARY PRODUCTS	19.	299.0	15.50	31.34	2.02	44.69	2.88
9 COTTON	833.	10187.0	12.24	43.72	3.57	64.45	5.27
10 WHEAT	229.	2818.0	12.30	30.89	2.51	46.08	3.75
11 RICE	161.	2848.0	17.71	35.77	2.02	50.97	2.88
12 BARLEY	157.	2424.0	15.47	34.01	2.20	49.75	3.22
13 CORN	181.	2744.0	15.18	31.49	2.07	46.31	3.05
14 HAY AND PASTURE	794.	7891.0	9.94	27.23	2.74	42.85	4.31
15 OATS	14.	159.0	11.56	28.26	2.44	42.91	3.71
16 SORGHUM GRAIN	44.	606.0	13.88	31.06	2.24	46.44	3.35
17 GRASS SEED	35.	281.0	7.92	25.59	3.23	43.78	5.53
18 FOOD, FEED GRAINS, NEC	0.	4.9	12.30	32.35	2.63	46.64	3.79
19 TOBACCO	0.	0.	0.	0.	0.	0.	0.
20 WALNUTS	109.	4006.0	36.71	55.77	1.52	80.87	2.20
21 ALMONDS	182.	5531.0	30.38	48.97	1.61	74.14	2.44
22 NONCITRUS FRUITS	1344.	114408.0	85.11	112.83	1.33	136.06	1.60
23 CITRUS FRUITS	430.	16302.0	37.89	65.98	1.74	89.20	2.35
24 FRUIT AND TREE NUTS, NEC	1.	94.0	85.11	104.72	1.23	130.00	1.53
25 VEGETABLES	1388.	59183.0	42.64	68.56	1.61	88.89	2.08
26 DRIED BEANS	69.	1084.0	15.62	41.83	2.68	62.12	3.98
27 DRIED PEAS	0.	0.	0.	0.	0.	0.	0.
28 MELONS	116.	5203.0	44.97	71.46	1.59	91.86	2.04
29 SUGAR BEETS	192.	2935.0	15.27	29.03	1.90	49.60	3.25
30 HOPS	1.	13.0	8.92	22.03	2.47	44.18	4.95
31 POTATOES	94.	1002.0	10.66	35.55	3.34	54.50	5.11
32 SWEET POTATOES	18.	650.0	36.90	63.45	1.72	83.01	2.25
33 VEGETABLES + SUGAR, NEC	0.	0.	0.	0.	0.	0.	0.
34 SAFFLOWER	37.	223.0	6.00	22.59	3.77	38.82	6.47
35 OIL CROPS, NEC	0.	0.	0.	0.	0.	0.	0.
36 GREENHOUSE AND NURSERY PRODUCTS	506.	40196.0	79.40	95.07	1.20	118.99	1.50
37 FORESTRY AND FISHERY PRODUCTS	376.	4053.0	10.79	27.79	2.58	43.26	4.01
38 AGRIC., FORESTRY, FISHERY SERV	1298.	129562.0	99.79	112.52	1.13	138.18	1.38
39 METALS MINING	128.	2292.0	17.86	27.31	1.53	61.47	3.44
40 COAL MINING	0.	0.	0.	0.	0.	0.	0.



TABLE 16 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- LABOR

## UNITS -- PERSON-YEARS

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	11876.0	4.05	12.76	3.15	30.65	7.57
42 NATURAL GAS + N.G. LIQUIDS	333.	2094.0	6.28	16.67	2.65	32.27	5.14
43 STONE + CLAY MIN + QUARRY	411.	6586.0	16.04	27.39	1.71	55.19	3.44
44 CHEM + FERT MINERAL MIN	145.	1430.0	9.88	19.33	1.96	48.13	4.87
45 NEW CONSTRUCT, RESIDENT	8862.	163060.0	18.40	35.75	1.94	67.40	3.66
46 NEW CONSTRUCT, NONRESIDENT	5834.	77733.0	13.32	30.07	2.26	61.79	4.64
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	38200.0	10.35	25.23	2.44	55.74	5.39
48 NEW CONSTRUCT, HIGHWAYS	1295.	19100.0	14.75	29.50	2.00	63.58	4.31
49 NEW CONSTRUCT, ALL OTHER	2043.	27723.0	13.57	26.96	1.99	61.29	4.52
50 MAIN. AND REPAIR CONSTRUCTION	4559.	76719.0	16.83	27.60	1.64	63.94	3.80
51 ORDNANCE + GUIDED MISSILES	3663.	38751.0	10.58	25.35	2.40	59.78	5.65
52 MEAT PRODUCTS	2761.	19865.0	7.19	22.10	3.07	33.68	4.68
53 DAIRY PRODUCTS	2151.	13389.0	6.22	28.27	4.54	46.89	7.53
54 CANNED AND FROZEN FOODS	6951.	56453.0	8.12	33.16	4.08	56.37	6.94
55 GRAIN MILL PRODUCTS	1402.	7776.0	5.55	21.63	3.90	37.90	6.83
56 BAKERY PRODUCTS	1139.	18678.0	16.40	27.55	1.68	51.66	3.15
57 SUGAR	959.	5260.0	5.49	20.30	3.70	41.54	7.57
58 CONFECTIONARY PRODUCTS	293.	5081.0	17.36	31.87	1.84	53.65	3.09
59 BEVERAGES AND FLAVORINGS	2951.	21134.0	7.16	20.12	2.81	47.74	6.67
60 MISC FOOD PRODUCTS	3853.	30005.0	7.79	20.21	2.59	35.62	4.57
61 TOBACCO MANUFACTURERS	0.	0.	0.	0.	0.	0.	0.
62 TEXTILE PRODUCTS	4177.	118085.0	28.27	44.83	1.59	70.67	2.50
63 LOGGING CAMPS + SAWMILLS	2046.	27286.0	13.34	25.42	1.91	46.82	3.51
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	22353.0	12.56	26.72	2.13	51.09	4.07
65 WOODEN CONTAINERS	206.	4748.0	23.06	37.27	1.62	62.05	2.69
66 HOUSEHOLD FURNITURE	1212.	32856.0	27.10	43.01	1.59	74.19	2.74
67 OFFICE FURNITURE AND FIXTURES	706.	16196.0	22.95	38.05	1.66	69.80	3.04
68 PAPER + PAPERBOARD PRODUCTS	2848.	36982.0	12.98	25.09	1.93	50.19	3.87
69 NEWSPAPERS	1045.	37790.0	36.15	47.39	1.31	82.41	2.28
70 OTHER PRINTING AND PUBLISHING	2972.	68540.0	23.06	38.26	1.66	71.81	3.11
71 INDUSTRIAL CHEMICALS	1892.	9176.0	4.85	15.79	3.26	39.28	8.10
72 AGRICULTURAL CHEMICALS	881.	6467.0	7.34	19.77	2.69	41.79	5.69
73 GUM AND WOOD CHEMICALS	725.	6646.0	9.16	21.36	2.33	43.32	4.73
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	3389.0	8.90	20.03	2.25	41.33	4.64
75 DRUGS	765.	12090.0	15.80	30.81	1.95	59.04	3.74
76 CLEANING AND TOILET PREPARATIONS	1410.	12500.0	8.86	27.12	3.06	51.08	5.76
77 PAINTS AND ALLIED PRODUCTS	831.	7736.0	9.31	22.01	2.36	43.47	4.67
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	25559.0	2.32	14.42	6.22	32.89	14.19
79 RUBBER AND PLASTICS PRODUCTS	2950.	53044.0	17.98	29.41	1.64	55.60	3.09
80 LEATHER TANNING AND PRODUCTS	287.	10451.0	36.47	51.59	1.41	80.27	2.20

TABLE 16 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- LABOR

## UNITS -- PERSON-YEARS

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) -- TOTAL PRODUCTION (MILLIONS OF \$)							
(2) -- TOTAL RESOURCE USE (UNITS)							
(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)							
(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)							
(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)							
(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)							
(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)							
81 GLASS	809.	15947.0	19.71	29.72	1.51	63.03	3.20
82 CEMENT AND CONCRETE PRODUCTS	1135.	16355.0	14.41	28.32	1.97	60.39	4.19
83 STRUCTURAL CLAY PRODUCTS	126.	3868.0	30.60	41.54	1.36	75.20	2.46
84 POTTERY AND RELATED PRODUCTS	120.	7035.0	58.45	67.09	1.15	102.17	1.75
85 MISC STONE AND CLAY PRODUCTS	407.	10131.0	24.91	37.65	1.51	68.11	2.73
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	20948.0	11.66	24.62	2.11	51.99	4.46
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	8695.0	20.97	33.93	1.62	63.11	3.01
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	23546.0	7.45	20.57	2.76	42.48	5.70
89 METAL CONTAINERS	1106.	13216.0	11.95	25.59	2.14	51.71	4.33
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	6109.0	21.78	37.85	1.74	64.88	2.98
91 FABRICATED STRUCTURAL STEEL	2027.	35596.0	17.56	32.02	1.82	58.63	3.34
92 SCREW MACHINE PRODUCTS	458.	8739.0	19.09	29.94	1.57	60.88	3.19
93 METAL STAMPINGS	470.	12059.0	25.68	36.39	1.42	64.22	2.50
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	16188.0	25.37	37.55	1.48	69.44	2.74
95 OTHER FABRICATED METAL PRODUCTS	1892.	30703.0	16.23	28.61	1.76	56.47	3.48
96 ENGINES, TURBINES AND GENERATORS	875.	6129.0	7.00	23.20	3.31	52.93	7.56
97 FARM MACHINERY	364.	4116.0	11.30	27.44	2.43	56.85	5.03
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	21745.0	17.98	32.80	1.82	62.52	3.48
99 METAL WORKING MACHINERY	1027.	17715.0	17.25	30.82	1.79	63.05	3.66
100 SPECIAL INDUSTRIAL MACHINERY	854.	10367.0	12.14	27.67	2.28	58.21	4.79
101 GENERAL INDUSTRIAL MACHINERY	1149.	17808.0	15.50	29.79	1.92	60.36	3.89
102 MACHINE SHOP PRODUCTS	1089.	29432.0	27.03	39.57	1.46	73.07	2.70
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	63224.0	22.45	44.09	1.96	78.61	3.50
104 SERVICE INDUSTRY MACHINES	512.	5414.0	10.58	26.57	2.51	52.72	4.98
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	8471.0	9.24	22.39	2.42	56.09	6.07
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	17199.0	28.28	41.50	1.47	74.17	2.62
107 HOUSEHOLD APPLIANCES	352.	5451.0	15.49	29.89	1.93	58.40	3.77
108 ELECTRIC LIGHTING AND WIRING	691.	17463.0	25.28	36.38	1.44	68.78	2.72
109 RADIO AND TV RECEIVING SETS	654.	16155.0	24.71	47.02	1.90	82.03	3.32
110 COMMUNICATION EQUIPMENT	4650.	101492.0	21.83	36.24	1.66	74.72	3.42
111 ELECTRONIC COMPONENTS	3781.	74584.0	19.72	35.53	1.80	71.17	3.61
112 MISC ELECTRICAL PRODUCTS	446.	6104.0	13.69	25.24	1.84	55.99	4.09
113 MOTOR VEHICLES	4572.	40384.0	8.83	23.39	2.65	45.59	5.16
114 AIRCRAFT	9081.	119930.0	13.21	32.48	2.46	69.45	5.26
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	22194.0	21.13	34.88	1.65	69.79	3.30
116 OTHER TRANSPORTATION EQUIPMENT	895.	24296.0	27.14	43.80	1.61	71.84	2.65
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	68465.0	24.43	38.57	1.58	71.63	2.93
118 JEWELRY, SPORTING GOODS, ETC.	1494.	40632.0	27.20	40.34	1.48	69.37	2.55
119 RAILROADS	1524.	32716.0	21.46	32.58	1.52	71.66	3.34
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	25248.0	41.21	58.04	1.41	94.23	2.29

TABLE 16 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- LABOR

## UNITS -- PERSON-YEARS

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	116005.0	30.61	44.07	1.44	79.37	2.59
122 WATER TRANSPORTATION	1815.	19328.0	10.65	26.95	2.53	56.72	5.33
123 AIR TRANSPORTATION	4480.	67597.0	15.09	28.24	1.87	59.88	3.97
124 PIPELINE TRANSPORTATION	71.	438.0	6.15	15.04	2.45	36.47	5.93
125 TRANSPORTATION SERVICES	444.	23228.0	52.34	61.68	1.18	98.77	1.89
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	121452.0	20.44	24.93	1.22	53.76	2.63
127 RADIO AND TELEVISION BROADCASTING	845.	19269.0	22.81	42.00	1.84	75.89	3.33
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	22220.0	5.84	14.98	2.56	34.98	5.99
129 GAS COMPANIES AND SYSTEMS	3335.	18720.0	5.61	11.81	2.10	27.99	4.99
130 WATER AND SANITARY SERVICES	1228.	22928.0	18.67	52.17	2.79	85.87	4.60
131 WHOLESALE TRADE	12214.	525674.0	43.04	51.82	1.20	82.12	1.91
132 RETAIL TRADE	24255.	1602181.0	66.06	71.16	1.08	105.12	1.59
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	235547.0	45.02	66.75	1.48	113.24	2.52
134 INSURANCE	6340.	151162.0	23.84	46.13	1.94	86.23	3.62
135 OWNER OCCUPIED REAL ESTATE	11956.	0.	0.	1.55	0.	7.56	0.
136 REAL ESTATE	13825.	129660.0	9.38	19.85	2.12	31.55	3.36
137 HOTELS AND LODGING PLACES	1309.	137725.0	105.21	123.05	1.17	154.02	1.46
138 PERSONAL AND REPAIR SERVICES	2770.	182110.0	65.75	77.12	1.17	109.37	1.66
139 MISCELLANEOUS BUSINESS SERVICES	10840.	338461.0	31.22	42.93	1.37	79.70	2.55
140 ADVERTISING	4649.	16973.0	3.65	35.13	9.62	63.69	17.45
141 MISC PROFESSIONAL SERVICES	5909.	175234.0	29.65	38.55	1.30	74.20	2.50
142 AUTOMOBILE REPAIR	3303.	86277.0	26.12	41.17	1.58	68.09	2.61
143 MOTION PICTURES	4530.	66929.0	14.78	39.72	2.69	73.70	4.99
144 AMUSEMENT AND RECREATION SERVICES	2290.	82738.0	36.13	50.01	1.38	78.57	2.17
145 DOCTORS AND DENTISTS	5074.	164801.0	32.48	42.91	1.32	83.42	2.57
146 HOSPITALS	4075.	206787.0	50.74	61.26	1.21	97.90	1.93
147 OTHER MEDICAL SERVICES	2333.	142920.0	61.25	71.88	1.17	108.75	1.78
148 EDUCATIONAL SERVICES	1881.	106288.0	56.51	65.42	1.16	110.39	1.95
149 NONPROFIT ORGANIZATIONS	2139.	133343.0	62.33	70.93	1.14	119.62	1.92
150 POST OFFICE	1153.	68925.0	59.78	64.37	1.08	117.32	1.96
151 OTHER FEDERAL GOVT ENTERPRISES	381.	2590.0	6.80	13.85	2.04	58.88	8.65
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	59959.0	29.51	43.56	1.48	82.24	2.79
153 NONCOMPETITIVE IMPORTS	0.	0.	0.	0.	0.	0.	0.
154 DUMMY INDUSTRIES	3665.	0.	0.	39.28	0.	64.38	0.
155 GOVERNMENT INDUSTRY	20908.	1532855.2	73.31	73.31	1.00	130.05	1.77
156 SPECIAL INDUSTRIES	0.	0.	0.	0.	0.	0.	0.
157 HOUSEHOLD INCOME	116193.	0.	0.	0.	0.	56.73	0.

TABLE 17

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS FOR DIRECT CHANGES IN GROSS OUTPUT

RESOURCE -- WATER

UNITS -- ACRE-FEET

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	51416.2	47.50	4970.55	104.64	5044.52	106.20
2 BROILERS, CHICKENS AND EGGS	580.	3730.1	6.44	1663.82	258.51	1734.05	269.42
3 TURKEYS AND OTHER POULTRY	124.	273.8	2.21	1602.00	724.02	1676.04	757.49
4 CATTLE AND CALVES	779.	74729.0	95.95	4646.98	48.43	4703.09	49.01
5 HOGS	42.	563.7	13.41	3622.64	270.10	3685.88	274.82
6 SHEEP, LAMBS, AND WOOL	64.	2484.3	38.73	5794.50	149.63	5857.53	151.26
7 MISC. LIVESTOCK	9.	1122.1	124.16	3990.52	32.14	4063.93	32.73
8 APIARY PRODUCTS	19.	0.0	0.00	4693.86	0.00	4766.33	0.00
9 COTTON	833.	5769284.8	6929.75	7349.21	1.06	7461.71	1.08
10 WHEAT	229.	1665762.1	7273.22	8222.91	1.13	8305.37	1.14
11 RICE	161.	4343933.6	27008.77	28628.71	1.06	28711.18	1.06
12 BARLEY	157.	1294546.6	8263.25	9006.73	1.09	9092.14	1.10
13 CORN	181.	2086264.3	11540.01	11888.92	1.03	11969.38	1.04
14 HAY AND PASTURE	794.	14000426.8	17642.04	17996.97	1.02	18081.74	1.02
15 OATS	14.	142781.7	10381.77	10800.54	1.04	10880.05	1.05
16 SORGHUM GRAIN	44.	624005.9	14291.68	14746.05	1.03	14829.49	1.04
17 GRASS SEED	35.	241228.4	6801.61	7126.32	1.05	7225.05	1.06
18 FOOD, FEED GRAINS, NEC	0.	3775.4	9556.54	10124.90	1.06	10202.48	1.07
19 TOBACCO	0.	0.0	0.00	0.00	0.00	0.00	0.00
20 WALNUTS	109.	796992.1	7303.55	7460.84	1.02	7597.05	1.04
21 ALMONDS	182.	1161618.0	6380.59	6534.01	1.02	6670.57	1.05
22 NONCITRUS FRUITS	1344.	4257247.9	3167.02	3463.40	1.09	3589.50	1.13
23 CITRUS FRUITS	430.	1012522.1	2353.10	2654.04	1.13	2780.01	1.18
24 FRUIT AND TREE NUTS, NEC	1.	1982.9	1795.30	1956.78	1.09	2093.94	1.17
25 VEGETABLES	1388.	2433034.3	1752.83	2014.58	1.15	2124.88	1.21
26 DRIED BEANS	69.	363807.3	5242.83	5702.13	1.09	5812.23	1.11
27 DRIED PEAS	0.	0.0	0.00	0.00	0.00	0.00	0.00
28 MELONS	116.	246658.3	2132.10	2399.81	1.13	2510.54	1.18
29 SUGAR BEETS	192.	1369522.5	7125.77	7245.12	1.02	7356.74	1.03
30 HOPS	1.	5909.1	4055.34	4173.84	1.03	4294.02	1.06
31 POTATOES	94.	274061.1	2914.72	3375.34	1.16	3478.20	1.19
32 SWEET POTATOES	18.	32238.5	1830.02	2216.25	1.21	2322.43	1.27
33 VEGETABLES + SUGAR, NEC	0.	0.0	0.00	0.00	0.00	0.00	0.00
34 SAFFLOWER	37.	104969.2	2823.48	3195.39	1.13	3283.44	1.16
35 OIL CROPS, NEC	0.	0.0	0.00	0.00	0.00	0.00	0.00
36 GREENHOUSE AND NURSERY PRODUCTS	506.	79233.3	156.51	283.87	1.81	413.64	2.64
37 FORESTRY AND FISHERY PRODUCTS	376.	997.9	2.65	263.40	99.18	347.37	130.79
38 AGRIC., FORESTRY, FISHERY SERV	1298.	58644.2	45.17	1808.51	40.04	1947.76	43.12
39 METALS MINING	128.	30836.8	240.29	262.87	1.09	448.19	1.87
40 COAL MINING	0.	0.0	0.00	0.00	0.00	0.00	0.00

TABLE 17 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS FOR DIRECT CHANGES IN GROSS OUTPUT

RESOURCE -- WATER

UNITS -- ACRE-FEET

- (1) -- TOTAL PRODUCTION (MILLIONS OF \$)  
 (2) -- TOTAL RESOURCE USE (UNITS)  
 (3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)  
 (4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)  
 (5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)  
 (6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)  
 (7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	229020.5	.78.12	93.61	1.20	190.67	2.44
42 NATURAL GAS + N.G. LIQUIDS	333.	74959.5	224.85	260.18	1.16	344.84	1.53
43 STONE + CLAY MIN + QUARRY	411.	33232.8	80.92	97.56	1.21	248.39	3.07
44 CHEM + FERT MINERAL MIN	145.	23701.2	163.78	186.10	1.14	342.41	2.09
45 NEW CONSTRUCT, RESIDENT	8862.	2673.0	0.30	18.23	60.42	189.96	629.80
46 NEW CONSTRUCT, NONRESIDENT	5834.	2574.3	0.44	14.38	32.60	186.55	422.79
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	1089.2	0.30	14.16	48.00	179.72	609.05
48 NEW CONSTRUCT, HIGHWAYS	1295.	791.9	0.62	25.90	42.35	210.83	344.74
49 NEW CONSTRUCT, ALL OTHER	2043.	693.2	0.35	17.74	52.25	204.03	601.19
50 MAIN. AND REPAIR CONSTRUCTION	4559.	1981.0	0.43	11.27	25.96	208.45	479.72
51 ORDNANCE + GUIDED MISSILES	3663.	9494.2	2.59	14.67	5.66	201.50	77.74
52 MEAT PRODUCTS	2761.	21451.8	7.77	1296.11	166.82	1358.97	174.91
53 DAIRY PRODUCTS	2151.	18768.9	8.72	2743.61	314.48	2844.69	326.07
54 CANNED AND FROZEN FOODS	6951.	139674.0	20.09	442.57	22.02	568.52	28.29
55 GRAIN MILL PRODUCTS	1402.	5587.8	3.98	3359.51	843.02	3447.81	865.17
56 BAKERY PRODUCTS	1139.	3764.6	3.31	484.89	146.71	615.73	186.29
57 SUGAR	959.	51720.8	53.94	912.09	16.91	1027.35	19.05
58 CONFECTIONARY PRODUCTS	293.	18210.3	62.21	382.34	6.15	500.57	8.05
59 BEVERAGES AND FLAVORINGS	2951.	51346.9	17.40	374.82	21.54	524.69	30.15
60 MISC FOOD PRODUCTS	3853.	37029.7	9.61	385.68	40.13	469.30	48.83
61 TOBACCO MANUFACTURERS	0.	0.0	0.00	0.00	0.00	0.00	0.00
62 TEXTILE PRODUCTS	4177.	7677.3	1.84	288.53	156.99	428.75	233.28
63 LOGGING CAMPS + SAWMILLS	2046.	78170.5	38.20	80.49	2.11	196.61	5.15
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	7688.4	4.32	27.99	6.48	160.24	37.11
65 WOODEN CONTAINERS	206.	1424.7	6.92	31.44	4.54	165.89	23.97
66 HOUSEHOLD FURNITURE	1212.	4635.5	3.82	28.95	7.57	198.15	51.82
67 OFFICE FURNITURE AND FIXTURES	706.	1106.4	1.57	18.54	11.83	190.80	121.71
68 PAPER + PAPERBOARD PRODUCTS	2848.	210648.9	73.96	116.96	1.58	253.16	3.42
69 NEWSPAPERS	1045.	2294.3	2.20	18.53	8.44	208.61	95.04
70 OTHER PRINTING AND PUBLISHING	2972.	4750.2	1.60	20.14	12.61	202.20	126.52
71 INDUSTRIAL CHEMICALS	1892.	46536.3	24.60	51.86	2.11	179.33	7.29
72 AGRICULTURAL CHEMICALS	881.	20447.7	23.20	65.17	2.81	184.68	7.96
73 GUM AND WOOD CHEMICALS	725.	4879.7	6.72	59.15	8.79	178.33	26.50
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	6731.2	17.68	41.91	2.37	157.51	8.91
75 DRUGS	765.	3620.3	4.74	43.05	9.10	196.26	41.47
76 CLEANING AND TOILET PREPARATIONS	1410.	9391.9	6.66	64.20	9.64	194.21	29.16
77 PAINTS AND ALLIED PRODUCTS	831.	1858.9	2.23	32.77	14.64	149.24	66.68
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	175026.2	15.88	54.22	3.42	154.45	9.73
79 RUBBER AND PLASTICS PRODUCTS	2950.	10626.6	3.60	23.09	6.41	165.23	45.86
80 LEATHER TANNING AND PRODUCTS	287.	5314.0	18.54	88.48	4.77	244.08	13.16

TABLE 17 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS FOR DIRECT CHANGES IN GROSS OUTPUT

RESOURCE -- WATER

UNITS -- ACRE-FEET

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL RESOURCE USE (UNITS)

(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
81 GLASS	809.	10720.5	13.25	26.75	2.02	207.51	15.66
82 CEMENT AND CONCRETE PRODUCTS	1135.	28369.3	24.99	46.85	1.87	220.91	8.84
83 STRUCTURAL CLAY PRODUCTS	126.	701.9	5.55	23.25	4.19	205.93	37.09
84 POTTERY AND RELATED PRODUCTS	120.	1015.2	8.44	21.13	2.51	211.47	25.07
85 MISC STONE AND CLAY PRODUCTS	407.	12016.8	29.54	53.29	1.80	218.55	7.40
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	20645.1	11.48	31.45	2.74	179.99	15.67
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	3754.8	9.05	24.90	2.75	183.25	20.23
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	11157.0	3.53	27.75	7.86	146.65	41.55
89 METAL CONTAINERS	1106.	3629.0	3.28	20.85	6.35	162.58	49.54
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	535.3	1.91	15.51	8.12	162.19	84.97
91 FABRICATED STRUCTURAL STEEL	2027.	4662.6	2.31	15.64	6.80	160.05	69.56
92 SCREW MACHINE PRODUCTS	458.	1555.4	3.40	13.72	4.04	181.57	53.43
93 METAL STAMPINGS	470.	1522.1	3.24	14.09	4.34	165.13	50.93
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	1951.4	3.06	14.35	4.69	187.43	61.28
95 OTHER FABRICATED METAL PRODUCTS	1892.	23159.0	12.24	26.13	2.13	177.30	14.48
96 ENGINES, TURBINES AND GENERATORS	875.	1102.7	1.26	13.58	10.79	174.87	138.84
97 FARM MACHINERY	364.	192.4	0.53	12.74	24.11	172.33	326.12
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	619.2	0.52	11.46	22.37	172.71	337.27
99 METAL WORKING MACHINERY	1027.	3640.1	3.54	14.44	4.07	189.34	53.42
100 SPECIAL INDUSTRIAL MACHINERY	854.	1206.4	1.42	16.18	11.46	181.89	128.75
101 GENERAL INDUSTRIAL MACHINERY	1149.	3424.2	2.99	15.31	5.14	181.20	60.80
102 MACHINE SHOP PRODUCTS	1089.	1237.2	1.13	13.41	11.80	195.24	171.84
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	6843.5	2.43	18.48	7.60	205.82	84.71
104 SERVICE INDUSTRY MACHINES	512.	822.7	1.60	14.07	8.75	155.95	96.96
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	1376.6	1.50	12.59	8.38	195.42	130.12
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	1961.3	3.22	14.93	4.63	192.20	59.61
107 HOUSEHOLD APPLIANCES	352.	1226.1	3.48	16.58	4.76	171.31	49.17
108 ELECTRIC LIGHTING AND WIRING	691.	1734.3	2.52	13.25	5.28	189.08	75.32
109 RADIO AND TV RECEIVING SETS	654.	2312.8	3.54	16.33	4.62	206.33	58.33
110 COMMUNICATION EQUIPMENT	4650.	6078.7	1.31	9.70	7.42	218.51	167.14
111 ELECTRONIC COMPONENTS	3781.	9911.2	2.62	14.12	5.39	207.51	79.17
112 MISC ELECTRICAL PRODUCTS	446.	1319.8	2.96	13.43	4.54	180.29	60.92
113 MOTOR VEHICLES	4572.	5675.3	1.25	14.52	11.70	134.99	108.75
114 AIRCRAFT	9081.	18022.7	1.99	14.93	7.52	215.57	108.62
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	9104.5	8.67	20.04	2.31	209.49	24.16
116 OTHER TRANSPORTATION EQUIPMENT	895.	511.9	0.57	15.67	27.39	167.82	293.43
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	3927.5	1.41	27.85	19.87	207.27	147.87
118 JEWELRY, SPORTING GOODS, ETC.	1494.	4552.8	3.05	21.39	7.02	178.96	58.72
119 RAILROADS	1524.	907.9	0.59	11.39	19.12	223.45	375.21
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	692.0	1.13	9.78	8.66	206.12	182.49

TABLE 17 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS FOR DIRECT CHANGES IN GROSS OUTPUT

RESOURCE -- WATER

UNITS -- ACRE-FEET

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL RESOURCE USE (UNITS)

(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	3176.3	0.84	41.62	49.65	233.17	278.20
122 WATER TRANSPORTATION	1815.	530.4	0.30	19.82	67.86	181.36	620.70
123 AIR TRANSPORTATION	4480.	1860.1	0.42	29.81	71.80	201.52	485.31
124 PIPELINE TRANSPORTATION	71.	11.1	0.16	11.67	74.91	127.98	821.23
125 TRANSPORTATION SERVICES	444.	656.2	1.48	7.25	4.90	208.55	141.03
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	3346.5	0.57	4.42	7.83	160.85	285.59
127 RADIO AND TELEVISION BROADCASTING	845.	535.3	0.63	96.06	151.61	279.98	441.86
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	44234.5	11.63	32.50	2.79	141.01	12.12
129 GAS COMPANIES AND SYSTEMS	3335.	962.1	0.28	15.92	55.19	103.74	359.54
130 WATER AND SANITARY SERVICES	1228.	336.7	0.27	12.22	44.55	195.09	711.32
131 WHOLESALE TRADE	12214.	14440.6	1.18	23.30	19.71	187.70	158.76
132 RETAIL TRADE	24255.	442562.4	18.24	25.19	1.38	209.47	11.48
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	2865.4	0.54	11.74	21.44	264.03	482.15
134 INSURANCE	6340.	4149.5	0.45	14.80	22.61	232.35	355.04
135 OWNER OCCUPIED REAL ESTATE	11954.	4481097.5	374.79	471.02	1.26	503.68	1.34
136 REAL ESTATE	13825.	3640.1	0.26	53.89	204.66	117.37	445.76
137 HOTELS AND LODGING PLACES	1309.	3725.2	2.85	21.77	7.65	189.82	66.71
138 PERSONAL AND REPAIR SERVICES	2770.	6098.4	2.21	14.57	6.62	189.56	86.09
139 MISCELLANEOUS BUSINESS SERVICES	10840.	8920.7	0.83	10.50	12.75	210.03	255.21
140 ADVERTISING	4649.	468.7	0.10	28.27	280.38	183.27	1817.91
141 MISC PROFESSIONAL SERVICES	5909.	4314.8	0.73	10.25	14.03	203.69	278.96
142 AUTOMOBILE REPAIR	3303.	2423.8	0.73	10.98	14.97	157.04	214.01
143 MOTION PICTURES	4530.	1856.4	0.41	17.07	41.65	201.44	491.53
144 AMUSEMENT AND RECREATION SERVICES	2290.	2306.6	1.01	912.42	905.74	1067.40	1059.58
145 DOCTORS AND DENTISTS	5074.	4686.1	0.93	11.43	12.38	231.26	250.41
146 HOSPITALS	4075.	5642.0	1.38	47.87	34.58	246.70	178.19
147 OTHER MEDICAL SERVICES	2333.	3858.4	1.65	61.50	37.19	261.59	158.20
148 EDUCATIONAL SERVICES	1881.	2917.2	1.55	11.63	7.50	255.64	164.82
149 NONPROFIT ORGANIZATIONS	2139.	3668.4	1.71	10.67	6.22	274.92	160.32
150 POST OFFICE	1153.	1899.6	1.65	6.14	3.73	293.45	178.10
151 OTHER FEDERAL GOVT ENTERPRISES	381.	632.8	1.67	6.19	3.72	250.54	150.71
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	2045.1	1.01	12.84	12.75	222.76	221.32
153 NONCOMPETITIVE IMPORTS	0.	0.0	0.00	0.00	0.00	0.00	0.00
154 DUMMY INDUSTRIES	3665.	0.0	0.00	144.13	0.00	280.36	0.00
155 GOVERNMENT INDUSTRY	20908.	279617.2	13.37	13.37	1.00	321.23	24.02
156 SPECIAL INDUSTRIES	0.	0.0	0.00	0.00	0.00	0.00	0.00
157 HOUSEHOLD INCOME	116193.	0.0	0.00	0.00	0.00	307.86	0.00

TABLE 18

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

RESOURCE -- PRIMARY ENERGY

UNITS -- PETAJOULES

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL RESOURCE USE (UNITS)

(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	5987.8	5.53	21.12	3.82	32.79	5.93
2 BROILERS, CHICKENS AND EGGS	580.	2489.0	4.29	15.31	3.56	26.39	6.15
3 TURKEYS AND OTHER POULTRY	124.	205.8	1.66	9.74	5.86	21.43	12.88
4 CATTLE AND CALVES	779.	2510.0	3.22	17.73	5.50	26.59	8.25
5 HOGS	42.	38.6	.92	11.60	12.64	21.58	23.50
6 SHEEP, LAMBS, AND WOOL	64.	252.0	3.93	19.70	5.02	29.65	7.55
7 MISC. LIVESTOCK	9.	100.6	11.13	32.43	2.91	44.01	3.95
8 APIARY PRODUCTS	19.	24.0	1.24	14.41	11.60	25.85	20.80
9 COTTON	833.	5148.6	6.18	29.74	4.81	47.49	7.68
10 WHEAT	229.	1167.8	5.10	19.97	3.92	32.98	6.47
11 RICE	161.	1373.8	8.54	26.55	3.11	39.56	4.63
12 BARLEY	157.	1146.8	7.32	26.80	3.66	40.28	5.50
13 CORN	181.	3377.6	18.68	35.77	1.91	48.46	2.59
14 HAY AND PASTURE	794.	3172.2	4.00	35.03	8.76	48.40	12.11
15 OATS	14.	133.6	9.72	25.98	2.67	38.53	3.97
16 SORGHUM GRAIN	44.	538.3	12.33	32.58	2.64	45.75	3.71
17 GRASS SEED	35.	112.2	3.16	26.13	8.26	41.71	13.18
18 FOOD, FEED GRAINS, NEC	0.	9.8	24.81	38.20	1.54	50.43	2.03
19 TOBACCO	0.	0.	0.	0.	0.	0.	0.
20 WALNUTS	109.	693.8	6.36	20.73	3.26	42.22	6.64
21 ALMONDS	182.	1010.8	5.55	18.51	3.33	40.06	7.21
22 NONCITRUS FRUITS	1344.	3556.0	2.65	15.32	5.79	35.22	13.31
23 CITRUS FRUITS	430.	767.4	1.78	16.75	9.39	36.63	20.54
24 FRUIT AND TREE NUTS, NEC	1.	6.7	6.07	18.72	3.09	40.36	6.65
25 VEGETABLES	1388.	5162.3	3.72	13.75	3.70	31.15	8.38
26 DRIED BEANS	69.	115.5	1.66	18.12	10.89	35.49	21.33
27 DRIED PEAS	0.	0.	0.	0.	0.	0.	0.
28 MELONS	116.	318.7	2.75	11.92	4.33	29.39	10.67
29 SUGAR BEETS	192.	1220.0	6.35	20.82	3.28	38.43	6.05
30 HOPS	1.	.3	.22	9.98	46.01	28.94	133.41
31 POTATOES	94.	336.1	3.57	19.21	5.38	35.44	9.91
32 SWEET POTATOES	18.	17.0	.96	8.90	9.23	25.65	26.59
33 VEGETABLES + SUGAR, NEC	0.	0.	0.	0.	0.	0.	0.
34 SAFFLOWER	37.	79.9	2.15	14.51	6.75	28.40	13.22
35 OIL CROPS, NEC	0.	0.	0.	0.	0.	0.	0.
36 GREENHOUSE AND NURSERY PRODUCTS	506.	11268.4	22.26	29.57	1.33	50.05	2.25
37 FORESTRY AND FISHERY PRODUCTS	376.	9354.3	24.90	35.14	1.41	48.39	1.94
38 AGRIC., FORESTRY, FISHERY SERV	1298.	1339.7	1.03	8.10	7.85	30.07	29.14
39 METALS MINING	128.	2284.7	17.80	35.17	1.98	64.41	3.62
40 COAL MINING	0.	0.	0.	0.	0.	0.	0.



TABLE 18 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- PRIMARY ENERGY

## UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	10924.6	3.73	11.86	3.18	27.17	7.29
42 NATURAL GAS + N.G. LIQUIDS	333.	1213.0	3.64	11.41	3.14	24.77	6.81
43 STONE + CLAY MIN + QUARRY	411.	12271.8	29.88	52.30	1.75	76.10	2.55
44 CHEM + FERT MINERAL MIN	145.	2986.7	20.64	37.63	1.82	62.30	3.02
45 NEW CONSTRUCT, RESIDENT	8862.	12383.3	1.40	10.22	7.32	37.32	26.71
46 NEW CONSTRUCT, NONRESIDENT	5834.	14514.1	2.49	12.75	5.12	39.92	16.04
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	19102.1	5.18	15.56	3.01	41.68	8.05
48 NEW CONSTRUCT, HIGHWAYS	1295.	19655.5	15.18	30.18	1.99	59.36	3.91
49 NEW CONSTRUCT, ALL OTHER	2043.	17122.4	8.38	18.05	2.15	47.44	5.66
50 MAIN. AND REPAIR CONSTRUCTION	4559.	13462.6	2.95	10.21	3.46	41.32	13.99
51 ORDNANCE + GUIDED MISSILES	3663.	9558.8	2.61	12.53	4.80	42.01	16.10
52 MEAT PRODUCTS	2761.	4741.4	1.72	10.93	6.37	20.85	12.14
53 DAIRY PRODUCTS	2151.	3543.7	1.65	17.45	10.59	33.40	20.28
54 CANNED AND FROZEN FOODS	6951.	21013.6	3.02	16.30	5.39	36.17	11.96
55 GRAIN MILL PRODUCTS	1402.	3209.8	2.29	14.97	6.54	28.90	12.62
56 BAKERY PRODUCTS	1139.	2907.1	2.55	10.68	4.19	31.33	12.27
57 SUGAR	959.	22698.9	23.67	47.70	2.02	65.89	2.78
58 CONFECTIONARY PRODUCTS	293.	944.1	3.22	16.31	5.06	34.96	10.84
59 BEVERAGES AND FLAVORINGS	2951.	7750.0	2.63	12.86	4.89	36.50	13.90
60 MISC FOOD PRODUCTS	3853.	19692.3	5.11	14.73	2.88	27.92	5.46
61 TOBACCO MANUFACTURERS	0.	0.	0.	0.	0.	0.	0.
62 TEXTILE PRODUCTS	4177.	7029.7	1.68	8.90	5.29	31.03	18.44
63 LOGGING CAMPS + SAWMILLS	2046.	6026.1	2.95	12.14	4.12	30.46	10.34
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	4565.8	2.56	11.26	4.39	32.13	12.53
65 WOODEN CONTAINERS	206.	268.8	1.31	9.04	6.92	30.26	23.17
66 HOUSEHOLD FURNITURE	1212.	1297.5	1.07	9.23	8.63	35.93	33.57
67 OFFICE FURNITURE AND FIXTURES	706.	1615.6	2.29	12.02	5.25	39.20	17.12
68 PAPER + PAPERBOARD PRODUCTS	2848.	32886.7	11.55	24.13	2.09	45.62	3.95
69 NEWSPAPERS	1045.	1235.8	1.18	7.70	6.52	37.69	31.88
70 OTHER PRINTING AND PUBLISHING	2972.	3605.2	1.21	8.75	7.21	37.47	30.90
71 INDUSTRIAL CHEMICALS	1892.	62961.4	33.28	63.76	1.92	83.88	2.52
72 AGRICULTURAL CHEMICALS	881.	4483.9	5.09	28.74	5.65	47.60	9.36
73 GUM AND WOOD CHEMICALS	725.	8935.1	12.32	30.49	2.48	49.30	4.00
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	5158.6	13.55	39.30	2.90	57.54	4.25
75 DRUGS	765.	3420.2	4.47	15.87	3.55	40.04	8.96
76 CLEANING AND TOILET PREPARATIONS	1410.	4448.4	3.15	17.59	5.58	38.10	12.08
77 PAINTS AND ALLIED PRODUCTS	831.	1155.4	1.39	18.57	13.35	36.95	26.56
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	487992.4	44.26	60.66	1.37	76.47	1.73
79 RUBBER AND PLASTICS PRODUCTS	2950.	11650.0	3.95	16.05	4.06	38.48	9.74
80 LEATHER TANNING AND PRODUCTS	287.	879.3	3.07	10.43	3.40	34.98	11.40

TABLE 18 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

RESOURCE -- PRIMARY ENERGY

UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
81 GLASS	809.	30872.6	38.15	53.23	1.40	81.75	2.14
82 CEMENT AND CONCRETE PRODUCTS	1135.	44707.5	39.39	62.77	1.59	90.24	2.29
83 STRUCTURAL CLAY PRODUCTS	126.	6428.1	50.86	64.97	1.28	93.80	1.84
84 POTTERY AND RELATED PRODUCTS	120.	2227.4	18.51	29.01	1.57	59.04	3.19
85 MISC STONE AND CLAY PRODUCTS	407.	7834.4	19.26	37.43	1.94	63.51	3.30
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	88426.1	49.21	67.93	1.38	91.37	1.86
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	7860.6	18.96	38.15	2.01	63.13	3.33
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	15942.7	5.04	16.77	3.32	35.53	7.04
89 METAL CONTAINERS	1106.	4484.7	4.06	21.55	5.31	43.92	10.83
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	882.1	3.15	13.62	4.33	36.77	11.69
91 FABRICATED STRUCTURAL STEEL	2027.	4840.3	2.39	17.07	7.15	39.85	16.68
92 SCREW MACHINE PRODUCTS	458.	1342.6	2.93	15.06	5.13	41.54	14.16
93 METAL STAMPINGS	470.	1125.8	2.40	17.01	7.10	40.85	17.03
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	1861.0	2.92	13.66	4.68	40.97	14.05
95 OTHER FABRICATED METAL PRODUCTS	1892.	6246.9	3.30	17.08	5.17	40.93	12.40
96 ENGINES, TURBINES AND GENERATORS	875.	1661.1	1.90	11.86	6.25	37.31	19.66
97 FARM MACHINERY	364.	588.6	1.62	12.26	7.58	37.44	23.16
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	2411.4	1.99	12.36	6.20	37.80	18.96
99 METAL WORKING MACHINERY	1027.	1417.5	1.38	10.09	7.31	37.69	27.31
100 SPECIAL INDUSTRIAL MACHINERY	854.	1137.3	1.33	10.95	8.23	37.10	27.86
101 GENERAL INDUSTRIAL MACHINERY	1149.	2659.8	2.32	12.62	5.45	38.79	16.76
102 MACHINE SHOP PRODUCTS	1089.	1936.7	1.78	12.25	6.89	40.94	23.02
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	2432.9	.86	9.91	11.48	39.47	45.70
104 SERVICE INDUSTRY MACHINES	512.	1288.2	2.52	12.01	4.77	34.40	13.66
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	414.0	.45	7.67	16.98	36.51	80.84
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	1430.4	2.35	11.87	5.05	39.84	16.94
107 HOUSEHOLD APPLIANCES	352.	642.4	1.83	10.98	6.02	35.39	19.39
108 ELECTRIC LIGHTING AND WIRING	691.	1271.0	1.84	10.70	5.82	38.44	20.90
109 RADIO AND TV RECEIVING SETS	654.	1151.3	1.76	10.46	5.94	40.44	22.96
110 COMMUNICATION EQUIPMENT	4650.	4734.5	1.02	7.54	7.40	40.49	39.76
111 ELECTRONIC COMPONENTS	3781.	5756.3	1.52	11.17	7.34	41.68	27.38
112 MISC ELECTRICAL PRODUCTS	446.	991.5	2.22	11.23	5.05	37.56	16.89
113 MOTOR VEHICLES	4572.	8136.4	1.78	11.60	6.52	30.61	17.20
114 AIRCRAFT	9081.	8021.1	.88	9.29	10.52	40.95	46.36
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	1244.5	1.19	10.37	8.75	40.26	33.97
116 OTHER TRANSPORTATION EQUIPMENT	895.	1076.6	1.20	12.03	10.00	36.03	29.96
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	4702.2	1.68	10.16	6.06	38.47	22.93
118 JEWELRY, SPORTING GOODS, ETC.	1494.	2926.8	1.96	10.23	5.22	35.09	17.91
119 RAILROADS	1524.	37076.6	24.32	39.40	1.62	72.85	3.00
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	10947.4	17.87	52.32	2.93	83.30	4.66

TABLE 18 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- PRIMARY ENERGY

## UNITS -- PETAJOULES

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(2) -- TOTAL RESOURCE USE (UNITS)

(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)

(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	86173.5	22.74	32.51	1.43	62.73	2.76
122 WATER TRANSPORTATION	1815.	197400.7	108.74	143.96	1.32	169.45	1.56
123 AIR TRANSPORTATION	4480.	236458.9	52.78	68.70	1.30	95.79	1.81
124 PIPELINE TRANSPORTATION	71.	1629.6	22.88	51.17	2.24	69.51	3.04
125 TRANSPORTATION SERVICES	444.	146.7	.33	3.90	11.81	35.66	107.91
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	8103.6	1.36	9.90	7.26	34.58	25.35
127 RADIO AND TELEVISION BROADCASTING	845.	1153.8	1.37	14.18	10.38	43.20	31.63
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	128496.7	337.87	360.53	1.07	377.65	1.12
129 GAS COMPANIES AND SYSTEMS	3335.	19753.8	5.92	14.99	2.53	28.85	4.87
130 WATER AND SANITARY SERVICES	1228.	8210.9	6.69	98.09	14.67	126.94	18.98
131 WHOLESALE TRADE	12214.	36161.3	2.96	8.23	2.78	34.17	11.54
132 RETAIL TRADE	24255.	81607.8	3.36	14.36	4.27	43.43	12.91
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	12102.9	2.31	21.71	9.39	61.52	26.60
134 INSURANCE	6340.	5449.6	.86	7.70	8.96	42.03	48.90
135 OWNER OCCUPIED REAL ESTATE	11956.	0.	0.	1.69	0.	6.85	0.
136 REAL ESTATE	13825.	46922.9	3.39	10.55	3.11	20.57	6.06
137 HOTELS AND LODGING PLACES	1309.	12459.0	9.52	29.56	3.11	56.08	5.89
138 PERSONAL AND REPAIR SERVICES	2770.	13559.5	4.90	12.78	2.61	40.39	8.25
139 MISCELLANEOUS BUSINESS SERVICES	10840.	19958.6	1.84	7.56	4.11	39.05	21.21
140 ADVERTISING	4649.	746.5	.16	8.09	50.41	32.55	202.73
141 MISC PROFESSIONAL SERVICES	5909.	15170.6	2.57	6.26	2.44	36.78	14.33
142 AUTOMOBILE REPAIR	3303.	17373.0	5.26	15.57	2.96	38.62	7.34
143 MOTION PICTURES	4530.	10442.5	2.31	21.87	9.49	50.96	22.11
144 AMUSEMENT AND RECREATION SERVICES	2290.	3135.7	1.37	9.78	7.14	34.23	25.00
145 DOCTORS AND DENTISTS	5074.	6509.4	1.28	5.11	3.98	39.79	31.02
146 HOSPITALS	4075.	18650.4	4.58	22.55	4.93	53.92	11.78
147 OTHER MEDICAL SERVICES	2333.	14994.2	6.43	19.05	2.97	50.62	7.88
148 EDUCATIONAL SERVICES	1881.	9462.7	5.03	18.51	3.68	57.01	11.33
149 NONPROFIT ORGANIZATIONS	2139.	8028.8	3.75	18.41	4.91	60.11	16.01
150 POST OFFICE	1153.	2267.7	1.97	8.85	4.50	54.18	27.55
151 OTHER FEDERAL GOVT ENTERPRISES	381.	212846.2	559.15	564.22	1.01	602.77	1.08
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	221015.3	108.77	123.33	1.13	156.45	1.44
153 NONCOMPETITIVE IMPORTS	0.	0.	0.	0.	0.	0.	0.
154 DUMMY INDUSTRIES	3665.	0.	0.	28.94	0.	50.43	0.
155 GOVERNMENT INDUSTRY	20908.	0.	0.	0.	0.	48.57	0.
156 SPECIAL INDUSTRIES	0.	0.	0.	0.	0.	0.	0.
157 HOUSEHOLD INCOME	116193.	1511724.0	13.01	0.	0.	48.57	3.73

TABLE 19

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- ELECTRICITY

## UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	1410.4	1.30	4.65	3.57	5.89	4.52
2 BROILERS, CHICKENS AND EGGS	580.	746.9	1.29	2.49	1.93	3.67	2.85
3 TURKEYS AND OTHER POULTRY	124.	19.9	.16	1.28	7.94	2.52	15.65
4 CATTLE AND CALVES	779.	747.6	.96	4.07	4.24	5.01	5.22
5 HOGS	42.	32.5	.77	3.11	4.02	4.17	5.39
6 SHEEP, LAMBS, AND WOOL	64.	22.5	.35	4.10	11.70	5.16	14.72
7 MISC. LIVESTOCK	9.	42.1	4.66	7.34	1.58	8.57	1.84
8 APIARY PRODUCTS	19.	3.0	.16	3.27	20.71	4.48	28.42
9 COTTON	833.	5073.1	6.09	7.65	1.26	9.54	1.57
10 WHEAT	229.	539.5	2.36	3.87	1.64	5.26	2.23
11 RICE	161.	615.2	3.83	5.32	1.39	6.70	1.75
12 BARLEY	157.	599.5	3.83	5.50	1.44	6.94	1.81
13 CORN	181.	476.8	2.64	4.05	1.54	5.40	2.05
14 HAY AND PASTURE	794.	8152.6	10.27	11.77	1.15	13.20	1.28
15 OATS	14.	37.4	2.72	4.14	1.52	5.47	2.01
16 SORGHUM GRAIN	44.	189.7	4.34	5.83	1.34	7.23	1.66
17 GRASS SEED	35.	267.3	7.54	8.79	1.17	10.44	1.39
18 FOOD, FEED GRAINS, NEC	0.	0.	0.	1.58	0.	2.88	0.
19 TOBACCO	0.	0.	0.	0.	0.	0.	0.
20 WALNUTS	109.	395.9	3.63	4.55	1.25	6.84	1.88
21 ALMONDS	182.	564.8	3.10	3.99	1.29	6.28	2.02
22 NONCITRUS FRUITS	1344.	3518.1	2.62	3.64	1.39	5.76	2.20
23 CITRUS FRUITS	430.	1614.7	3.75	4.79	1.28	6.90	1.84
24 FRUIT AND TREE NUTS, NEC	1.	3.2	2.86	3.78	1.32	6.08	2.13
25 VEGETABLES	1388.	1584.6	1.14	2.24	1.96	4.09	3.58
26 DRIED BEANS	69.	293.1	4.22	5.48	1.30	7.32	1.73
27 DRIED PEAS	0.	0.	0.	0.	0.	0.	0.
28 MELONS	116.	80.9	.70	1.82	2.60	3.67	5.25
29 SUGAR BEETS	192.	671.9	3.50	4.53	1.30	6.40	1.83
30 HOPS	1.	.2	.14	1.55	11.27	3.56	25.94
31 POTATOES	94.	353.2	3.76	5.07	1.35	6.80	1.81
32 SWEET POTATOES	18.	20.6	1.17	2.14	1.83	3.92	3.35
33 VEGETABLES + SUGAR, NEC	0.	0.	0.	0.	0.	0.	0.
34 SAFFLOWER	37.	87.6	2.36	3.32	1.41	4.79	2.04
35 OIL CROPS, NEC	0.	0.	0.	0.	0.	0.	0.
36 GREENHOUSE AND NURSERY PRODUCTS	506.	290.6	.57	1.26	2.19	3.43	5.98
37 FORESTRY AND FISHERY PRODUCTS	376.	8.8	.02	.81	34.30	2.21	94.16
38 AGRIC., FORESTRY, FISHERY SERV	1298.	69.7	.05	1.41	26.35	3.75	69.84
39 METALS MINING	128.	638.8	4.98	5.89	1.18	9.00	1.81
40 COAL MINING	0.	0.	0.	0.	0.	0.	0.

TABLE 19 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- ELECTRICITY

## UNITS -- PETAJOULES

- (1) -- TOTAL PRODUCTION (MILLIONS OF \$)  
 (2) -- TOTAL RESOURCE USE (UNITS)  
 (3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)  
 (4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)  
 (5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)  
 (6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)  
 (7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	4663.4	1.59	2.17	1.36	3.80	2.39
42 NATURAL GAS + N.G. LIQUIDS	333.	209.1	.63	1.52	2.42	2.94	4.69
43 STONE + CLAY MIN + QUARRY	411.	2243.6	5.46	6.56	1.20	9.09	1.66
44 CHEM + FERT MINERAL MIN	145.	577.5	3.99	4.99	1.25	7.61	1.91
45 NEW CONSTRUCT, RESIDENT	8862.	433.9	.05	.91	18.67	3.79	77.48
46 NEW CONSTRUCT, NONRESIDENT	5834.	425.1	.07	1.00	13.66	3.88	53.29
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	241.5	.07	.99	15.21	3.77	57.64
48 NEW CONSTRUCT, HIGHWAYS	1295.	89.3	.07	1.23	17.86	4.33	62.81
49 NEW CONSTRUCT, ALL OTHER	2043.	117.8	.06	.86	14.94	3.99	69.11
50 MAIN. AND REPAIR CONSTRUCTION	4559.	139.4	.03	.68	22.25	3.99	130.38
51 ORDNANCE + GUIDED MISSILES	3663.	3235.9	.88	1.87	2.11	5.00	5.66
52 MEAT PRODUCTS	2761.	1175.1	.43	1.90	4.47	2.96	6.95
53 DAIRY PRODUCTS	2151.	1048.1	.49	3.43	7.03	5.12	10.51
54 CANNED AND FROZEN FOODS	6951.	2805.1	.40	1.73	4.29	3.85	9.53
55 GRAIN MILL PRODUCTS	1402.	869.7	.62	2.30	3.72	3.79	6.10
56 BAKERY PRODUCTS	1139.	684.2	.60	1.39	2.31	3.58	5.97
57 SUGAR	959.	235.2	.25	1.46	5.95	3.39	13.83
58 CONFECTIONARY PRODUCTS	293.	359.2	1.23	2.16	1.76	4.14	3.38
59 BEVERAGES AND FLAVORINGS	2951.	1388.6	.47	1.38	2.93	3.89	8.27
60 MISC FOOD PRODUCTS	3853.	3042.2	.79	1.74	2.20	3.14	3.98
61 TOBACCO MANUFACTURERS	0.	0.	0.	0.	0.	0.	0.
62 TEXTILE PRODUCTS	4177.	2461.3	.59	1.52	2.57	3.87	6.56
63 LOGGING CAMPS + SAWMILLS	2046.	1810.2	.88	1.46	1.65	3.41	3.86
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	1366.7	.77	1.61	2.09	3.82	4.98
65 WOODEN CONTAINERS	206.	122.1	.59	1.35	2.28	3.61	6.08
66 HOUSEHOLD FURNITURE	1212.	721.7	.60	1.46	2.46	4.30	7.23
67 OFFICE FURNITURE AND FIXTURES	706.	469.6	.67	1.56	2.35	4.45	6.69
68 PAPER + PAPERBOARD PRODUCTS	2848.	4414.9	1.55	2.62	1.69	4.91	3.17
69 NEWSPAPERS	1045.	814.8	.78	1.37	1.76	4.56	5.85
70 OTHER PRINTING AND PUBLISHING	2972.	1916.3	.64	1.44	2.23	4.49	6.97
71 INDUSTRIAL CHEMICALS	1892.	9504.0	5.02	6.91	1.38	9.05	1.80
72 AGRICULTURAL CHEMICALS	881.	703.9	.80	3.14	3.93	5.14	6.44
73 GUM AND WOOD CHEMICALS	725.	741.2	1.02	2.74	2.69	4.74	4.64
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	1189.2	3.12	5.25	1.68	7.19	2.30
75 DRUGS	765.	839.4	1.10	2.18	1.98	4.74	4.32
76 CLEANING AND TOILET PREPARATIONS	1410.	643.5	.46	2.04	4.47	4.22	9.25
77 PAINTS AND ALLIED PRODUCTS	831.	330.1	.40	2.09	5.26	4.04	10.18
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	18747.9	1.70	3.15	1.85	4.83	2.84
79 RUBBER AND PLASTICS PRODUCTS	2950.	5478.4	1.86	2.90	1.56	5.28	2.85
80 LEATHER TANNING AND PRODUCTS	287.	210.9	.74	1.55	2.10	4.16	5.65

TABLE 19 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- ELECTRICITY

## UNITS -- PETAJOULES

(1) -- TOTAL PRODUCTION (MILLIONS OF \$)

(2) -- TOTAL RESOURCE USE (UNITS)

(3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)

(4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)

(5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)

(6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)

(7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
81 GLASS	909.	2578.0	3.19	4.18	1.31	7.21	2.26
82 CEMENT AND CONCRETE PRODUCTS	1135.	2865.2	2.52	4.12	1.63	7.04	2.79
83 STRUCTURAL CLAY PRODUCTS	126.	257.4	2.04	3.24	1.59	6.30	3.09
84 POTTERY AND RELATED PRODUCTS	120.	201.4	1.67	2.48	1.48	5.67	3.39
85 MISC STONE AND CLAY PRODUCTS	407.	1222.1	3.00	4.36	1.45	7.13	2.37
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	3910.9	2.18	3.34	1.54	5.84	2.68
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	1555.1	3.75	4.76	1.27	7.42	1.98
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	3471.9	1.10	2.28	2.08	4.27	3.89
89 METAL CONTAINERS	1106.	903.2	.82	1.91	2.34	4.29	5.25
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	219.0	.78	1.73	2.21	4.19	5.36
91 FABRICATED STRUCTURAL STEEL	2027.	1380.1	.68	1.71	2.52	4.13	6.07
92 SCREW MACHINE PRODUCTS	458.	418.1	.91	1.73	1.90	4.55	4.98
93 METAL STAMPINGS	470.	566.9	1.21	2.10	1.74	4.64	3.84
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	746.5	1.17	2.02	1.73	4.92	4.21
95 OTHER FABRICATED METAL PRODUCTS	1892.	2055.9	1.09	2.10	1.93	4.64	4.27
96 ENGINES, TURBINES AND GENERATORS	875.	534.4	.61	1.64	2.69	4.35	7.13
97 FARM MACHINERY	364.	125.6	.34	1.39	4.03	4.07	11.79
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	773.5	.64	1.57	2.46	4.28	6.69
99 METAL WORKING MACHINERY	1027.	562.8	.55	1.36	2.49	4.30	7.84
100 SPECIAL INDUSTRIAL MACHINERY	854.	373.9	.44	1.35	3.08	4.13	9.42
101 GENERAL INDUSTRIAL MACHINERY	1149.	913.5	.80	1.68	2.12	4.47	5.62
102 MACHINE SHOP PRODUCTS	1089.	1287.4	1.18	2.00	1.69	5.05	4.27
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	2090.2	.74	1.86	2.51	5.00	6.74
104 SERVICE INDUSTRY MACHINES	512.	366.1	.72	1.63	2.28	4.01	5.60
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	267.5	.29	1.06	3.64	4.13	14.15
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	645.2	1.06	1.91	1.80	4.88	4.60
107 HOUSEHOLD APPLIANCES	352.	194.1	.55	1.48	2.68	4.07	7.39
108 ELECTRIC LIGHTING AND WIRING	691.	510.5	.74	1.52	2.05	4.47	6.05
109 RADIO AND TV RECEIVING SETS	654.	421.1	.64	1.87	2.90	5.06	7.85
110 COMMUNICATION EQUIPMENT	4650.	3298.6	.71	1.52	2.14	5.02	7.08
111 ELECTRONIC COMPONENTS	3781.	4357.5	1.15	2.18	1.89	5.42	4.70
112 MISC ELECTRICAL PRODUCTS	446.	512.0	1.15	2.00	1.74	4.80	4.18
113 MOTOR VEHICLES	4572.	2962.9	.65	1.62	2.50	3.64	5.61
114 AIRCRAFT	9081.	4424.2	.49	1.50	3.09	4.87	10.00
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	606.6	.58	1.42	2.45	4.59	7.95
116 OTHER TRANSPORTATION EQUIPMENT	895.	319.4	.36	1.37	3.84	3.92	10.99
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	2059.0	.73	1.62	2.20	4.62	6.29
118 JEWELRY, SPORTING GOODS, ETC.	1494.	1030.5	.69	1.50	2.18	4.15	6.01
119 RAILROADS	1524.	4103.8	2.69	3.51	1.30	7.06	2.62
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	404.5	.66	10.93	16.56	14.22	21.55

TABLE 19 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- ELECTRICITY

## UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	295.5	.08	.88	11.23	4.09	52.42
122 WATER TRANSPORTATION	1815.	632.3	.35	3.41	9.78	6.11	17.56
123 AIR TRANSPORTATION	4480.	1309.7	.29	2.08	7.11	4.96	16.96
124 PIPELINE TRANSPORTATION	71.	808.9	11.36	11.91	1.05	13.86	1.22
125 TRANSPORTATION SERVICES	444.	210.1	.47	.82	1.74	4.20	8.87
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	14876.8	2.50	2.75	1.10	5.37	2.14
127 RADIO AND TELEVISION BROADCASTING	845.	1580.6	1.87	3.08	1.65	6.17	3.30
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	272.9	.07	1.51	20.99	3.33	46.35
129 GAS COMPANIES AND SYSTEMS	3335.	2620.4	.79	2.94	3.74	4.41	5.62
130 WATER AND SANITARY SERVICES	1228.	3218.2	2.62	32.08	12.24	35.14	13.41
131 WHOLESALE TRADE	12214.	5287.8	.43	.91	2.11	3.67	8.48
132 RETAIL TRADE	24255.	39908.1	1.65	2.10	1.28	5.19	3.15
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	8887.0	1.70	2.61	1.54	6.84	4.03
134 INSURANCE	6340.	1335.2	.21	1.21	5.76	4.86	23.09
135 OWNER OCCUPIED REAL ESTATE	11956.	0.	0.	.09	0.	.64	0.
136 REAL ESTATE	13825.	4684.0	.34	1.38	4.06	2.44	7.20
137 HOTELS AND LODGING PLACES	1309.	5805.2	4.43	5.64	1.27	8.46	1.91
138 PERSONAL AND REPAIR SERVICES	2770.	2726.4	.98	1.63	1.65	4.56	4.64
139 MISCELLANEOUS BUSINESS SERVICES	10840.	3686.6	.34	.92	2.71	4.27	12.55
140 ADVERTISING	4649.	276.9	.06	1.48	24.89	4.08	68.55
141 MISC PROFESSIONAL SERVICES	5909.	822.7	.14	.53	3.77	3.77	27.08
142 AUTOMOBILE REPAIR	3303.	3017.0	.91	2.22	2.43	4.67	5.11
143 MOTION PICTURES	4530.	5812.1	1.28	3.03	2.36	6.12	4.77
144 AMUSEMENT AND RECREATION SERVICES	2290.	1851.6	.81	1.94	2.40	4.54	5.61
145 DOCTORS AND DENTISTS	5074.	286.7	.06	.64	11.32	4.33	76.57
146 HOSPITALS	4075.	18823.5	4.62	5.62	1.22	8.95	1.94
147 OTHER MEDICAL SERVICES	2333.	7242.5	3.10	3.77	1.21	7.12	2.29
148 EDUCATIONAL SERVICES	1881.	5848.4	3.11	3.97	1.28	8.07	2.59
149 NONPROFIT ORGANIZATIONS	2139.	8706.4	4.07	4.69	1.15	9.12	2.24
150 POST OFFICE	1153.	555.7	.48	.80	1.66	5.62	11.66
151 OTHER FEDERAL GOVT ENTERPRISES	381.	-2188.4	-5.75	-5.38	.94	-1.28	.22
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	85325.0	41.99	42.89	1.02	46.41	1.11
153 NONCOMPETITIVE IMPORTS	0.	0.	0.	0.	0.	0.	0.
154 DUMMY INDUSTRIES	3665.	0.	0.	2.40	0.	4.69	0.
155 GOVERNMENT INDUSTRY	20908.	0.	0.	0.	0.	5.16	0.
156 SPECIAL INDUSTRIES	0.	0.	0.	0.	0.	0.	0.
157 HOUSEHOLD INCOME	116193.	151291.1	1.30	0.	0.	5.16	3.97

TABLE 20

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

RESOURCE -- TOTAL ENERGY USE

UNITS -- PETAJOULES

- (1) -- TOTAL PRODUCTION (MILLIONS OF \$)  
 (2) -- TOTAL RESOURCE USE (UNITS)  
 (3) -- DIRECT RESOURCE COEFF. (UNITS PER MILLION \$)  
 (4) -- DIRECT AND INDIRECT COEFF. (UNITS PER MILLION \$)  
 (5) -- TYPE I RESOURCE MULTIPLIER (4)/(3)  
 (6) -- DIRECT, INDIRECT AND INDUCED COEFF. (UNITS PER MILLION \$)  
 (7) -- TYPE II RESOURCE MULTIPLIER (6)/(3)

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 DAIRIES	1082.	7398.2	6.83	16.93	2.48	27.17	3.98
2 BROILERS, CHICKENS AND EGGS	580.	3235.9	5.58	13.06	2.34	22.79	4.08
3 TURKEYS AND OTHER POULTRY	124.	225.7	1.82	8.62	4.72	18.87	10.34
4 CATTLE AND CALVES	779.	3257.6	4.18	14.09	3.37	21.86	5.23
5 HOGS	42.	71.1	1.69	8.82	5.21	17.57	10.39
6 SHEEP, LAMBS, AND WOOL	64.	274.5	4.28	16.06	3.75	24.79	5.79
7 MISC. LIVESTOCK	9.	142.7	15.79	25.67	1.63	35.83	2.27
8 APIARY PRODUCTS	19.	27.0	1.40	11.48	8.20	21.51	15.36
9 COTTON	833.	10221.7	12.28	23.10	1.88	38.68	3.15
10 WHEAT	229.	1707.2	7.45	16.88	2.26	28.30	3.80
11 RICE	161.	1989.0	12.37	22.09	1.79	33.51	2.71
12 BARLEY	157.	1746.3	11.15	22.19	1.99	34.01	3.05
13 CORN	181.	3854.4	21.32	32.47	1.52	43.61	2.05
14 HAY AND PASTURE	794.	11324.8	14.27	24.51	1.72	36.25	2.54
15 OATS	14.	171.0	12.44	22.61	1.82	33.62	2.70
16 SORGHUM GRAIN	44.	728.0	16.67	27.63	1.66	39.19	2.35
17 GRASS SEED	35.	379.5	10.70	18.50	1.73	32.18	3.01
18 FOOD, FEED GRAINS, NEC	0.	9.8	24.81	37.37	1.51	48.11	1.94
19 TOBACCO	0.	0.	0.	0.	0.	0.	0.
20 WALNUTS	109.	1089.7	9.99	16.91	1.69	35.77	3.58
21 ALMONDS	182.	1575.6	8.65	15.20	1.76	34.11	3.94
22 NONCITRUS FRUITS	1344.	7074.1	5.26	12.34	2.34	29.80	5.66
23 CITRUS FRUITS	430.	2382.1	5.54	12.69	2.29	30.13	5.44
24 FRUIT AND TREE NUTS, NEC	1.	9.9	8.93	15.75	1.76	34.74	3.89
25 VEGETABLES	1388.	6746.9	4.86	12.31	2.53	27.59	5.68
26 DRIED BEANS	69.	408.5	5.89	13.63	2.32	28.88	4.91
27 DRIED PEAS	0.	0.	0.	0.	0.	0.	0.
28 MELONS	116.	399.6	3.45	10.90	3.16	26.24	7.60
29 SUGAR BEETS	192.	1891.9	9.84	17.16	1.74	32.62	3.31
30 HOPS	1.	.5	.35	9.44	26.64	26.08	73.60
31 POTATOES	94.	689.3	7.33	15.07	2.06	29.31	4.00
32 SWEET POTATOES	18.	37.6	2.14	7.66	3.59	22.36	10.47
33 VEGETABLES + SUGAR, NEC	0.	0.	0.	0.	0.	0.	0.
34 SAFFLOWER	37.	167.4	4.50	11.48	2.55	23.68	5.26
35 OIL CROPS, NEC	0.	0.	0.	0.	0.	0.	0.
36 GREENHOUSE AND NURSERY PRODUCTS	506.	11559.0	22.83	28.60	1.25	46.57	2.04
37 FORESTRY AND FISHERY PRODUCTS	376.	9363.1	24.92	34.44	1.38	46.06	1.85
38 AGRIC., FORESTRY, FISHERY SERV	1298.	1409.4	1.09	6.86	6.32	26.14	24.08
39 METALS MINING	128.	2923.6	22.78	29.85	1.31	55.51	2.44
40 COAL MINING	0.	0.	0.	0.	0.	0.	0.



TABLE 20 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

RESOURCE -- TOTAL ENERGY USE

UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
41 CRUDE PETROLEUM	2932.	15588.1	5.32	10.06	1.89	23.50	4.42
42 NATURAL GAS + N.G. LIQUIDS	333.	1422.1	4.27	10.22	2.40	21.94	5.14
43 STONE + CLAY MIN + QUARRY	411.	14515.5	35.35	46.45	1.31	67.33	1.91
44 CHEM + FERT MINERAL MIN	145.	3564.2	24.63	33.12	1.34	54.77	2.22
45 NEW CONSTRUCT, RESIDENT	8862.	12817.2	1.45	9.37	6.48	33.15	22.92
46 NEW CONSTRUCT, NONRESIDENT	5834.	14939.2	2.56	11.84	4.63	35.69	13.94
47 NEW CONSTRUCT, PUBLIC UTILITY	3691.	19343.6	5.24	14.67	2.80	37.59	7.17
48 NEW CONSTRUCT, HIGHWAYS	1295.	19744.9	15.25	29.10	1.91	54.71	3.59
49 NEW CONSTRUCT, ALL OTHER	2043.	17240.2	8.44	17.27	2.05	43.07	5.10
50 MAIN. AND REPAIR CONSTRUCTION	4559.	13602.1	2.98	9.59	3.21	36.89	12.36
51 ORDNANCE + GUIDED MISSILES	3663.	12794.7	3.49	10.87	3.11	36.75	10.52
52 MEAT PRODUCTS	2761.	5916.6	2.14	9.28	4.33	17.99	8.39
53 DAIRY PRODUCTS	2151.	4591.8	2.13	14.40	6.75	28.40	13.31
54 CANNED AND FROZEN FOODS	6951.	23818.7	3.43	14.92	4.35	32.36	9.44
55 GRAIN MILL PRODUCTS	1402.	4079.5	2.91	13.00	4.47	25.23	8.67
56 BAKERY PRODUCTS	1139.	3591.3	3.15	9.48	3.01	27.60	8.76
57 SUGAR	959.	22934.1	23.92	46.74	1.95	62.70	2.62
58 CONFECTIONARY PRODUCTS	293.	1303.3	4.45	14.40	3.23	30.77	6.91
59 BEVERAGES AND FLAVORINGS	2951.	9138.6	3.10	11.70	3.78	32.46	10.48
60 MISC FOOD PRODUCTS	3853.	22734.6	5.90	13.23	2.24	24.81	4.21
61 TOBACCO MANUFACTURERS	0.	0.	0.	0.	0.	0.	0.
62 TEXTILE PRODUCTS	4177.	9491.0	2.27	7.59	3.34	27.01	11.89
63 LOGGING CAMPS + SAWMILLS	2046.	7836.4	3.83	10.84	2.83	26.92	7.03
64 MILLWORK, PLYWOOD + OTHER WOOD PRODUCTS	1780.	5932.4	3.33	9.81	2.94	28.13	8.44
65 WOODEN CONTAINERS	206.	390.9	1.90	7.82	4.12	26.44	13.92
66 HOUSEHOLD FURNITURE	1212.	2019.3	1.67	7.92	4.76	31.35	18.82
67 OFFICE FURNITURE AND FIXTURES	706.	2085.2	2.95	10.61	3.59	34.47	11.67
68 PAPER + PAPERBOARD PRODUCTS	2848.	37301.5	13.10	21.97	1.68	40.84	3.12
69 NEWSPAPERS	1045.	2050.7	1.96	6.47	3.30	32.79	16.72
70 OTHER PRINTING AND PUBLISHING	2972.	5521.5	1.86	7.50	4.04	32.71	17.61
71 INDUSTRIAL CHEMICALS	1892.	72465.3	38.30	57.77	1.51	75.42	1.97
72 AGRICULTURAL CHEMICALS	881.	5187.7	5.89	26.02	4.42	42.57	7.23
73 GUM AND WOOD CHEMICALS	725.	9676.3	13.34	28.21	2.11	44.72	3.35
74 PLASTICS MATERIALS AND SYNTHETIC FIBERS	381.	6347.7	16.67	34.65	2.08	50.66	3.04
75 DRUGS	765.	4259.6	5.57	13.93	2.50	35.14	6.31
76 CLEANING AND TOILET PREPARATIONS	1410.	5091.9	3.61	15.76	4.37	33.77	9.35
77 PAINTS AND ALLIED PRODUCTS	831.	1485.5	1.79	16.80	9.39	32.93	18.41
78 PETROLEUM REFINING AND RELATED PRODUCTS	11026.	506740.4	45.96	58.10	1.26	71.98	1.57
79 RUBBER AND PLASTICS PRODUCTS	2950.	17128.5	5.81	13.46	2.32	33.15	5.71
80 LEATHER TANNING AND PRODUCTS	287.	1090.2	3.80	9.08	2.39	30.62	8.05

TABLE 20 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

RESOURCE -- TOTAL ENERGY USE

UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
81 GLASS	809.	33450.6	41.33	49.64	1.20	74.67	1.81
82 CEMENT AND CONCRETE PRODUCTS	1135.	47572.8	41.92	59.25	1.41	83.35	1.99
83 STRUCTURAL CLAY PRODUCTS	126.	6685.5	52.89	62.32	1.18	87.62	1.66
84 POTTERY AND RELATED PRODUCTS	120.	2428.8	20.18	26.84	1.33	53.20	2.64
85 MISC STONE AND CLAY PRODUCTS	407.	9056.5	22.27	33.58	1.51	56.47	2.54
86 BLAST FURNACES AND BASIC STEEL PRODUCTS	1797.	92337.0	51.38	65.08	1.27	85.65	1.67
87 IRON AND STEEL FOUNDRIES AND FORGINGS	415.	9415.6	22.71	33.96	1.50	55.88	2.46
88 PRIMARY NONFERROUS METAL PRODUCTS	3161.	19414.6	6.14	14.84	2.42	31.30	5.10
89 METAL CONTAINERS	1106.	5387.9	4.87	19.93	4.09	39.55	8.12
90 HEATING APPARATUS AND PLUMBING FIXTURES	280.	1101.1	3.93	12.10	3.08	32.41	8.26
91 FABRICATED STRUCTURAL STEEL	2027.	6220.4	3.07	15.56	5.07	35.56	11.58
92 SCREW MACHINE PRODUCTS	458.	1760.7	3.85	13.54	3.52	36.78	9.56
93 METAL STAMPINGS	470.	1692.7	3.61	15.18	4.21	36.10	10.01
94 CUTLERY, HAND TOOLS AND GENERAL HARDWARE	638.	2607.5	4.09	11.89	2.91	35.86	8.77
95 OTHER FABRICATED METAL PRODUCTS	1892.	8302.9	4.39	15.22	3.47	36.16	8.24
96 ENGINES, TURBINES AND GENERATORS	875.	2195.5	2.51	10.44	4.16	32.77	13.07
97 FARM MACHINERY	364.	714.1	1.96	11.07	5.64	33.17	16.91
98 CONSTRUCTION + MATERIAL HANDLING EQUIP	1209.	3184.9	2.63	10.97	4.16	33.30	12.64
99 METAL WORKING MACHINERY	1027.	1980.3	1.93	8.91	4.62	33.13	17.18
100 SPECIAL INDUSTRIAL MACHINERY	854.	1511.3	1.77	9.77	5.52	32.71	18.49
101 GENERAL INDUSTRIAL MACHINERY	1149.	3573.3	3.11	11.12	3.58	34.09	10.96
102 MACHINE SHOP PRODUCTS	1089.	3224.1	2.96	10.50	3.55	35.68	12.05
103 COMPUTERS AND OFFICE EQUIPMENT	2817.	4523.0	1.61	8.25	5.13	34.19	21.29
104 SERVICE INDUSTRY MACHINES	512.	1654.3	3.23	10.57	3.27	30.22	9.34
105 ELECTRIC TRANSMISSION EQUIPMENT	917.	681.5	.74	6.75	9.08	32.07	43.14
106 ELECTRICAL INDUSTRIAL APPARATUS	608.	2075.6	3.41	10.19	2.99	34.74	10.18
107 HOUSEHOLD APPLIANCES	352.	836.5	2.38	9.70	4.08	31.13	13.10
108 ELECTRIC LIGHTING AND WIRING	691.	1781.5	2.58	9.37	3.63	33.72	13.08
109 RADIO AND TV RECEIVING SETS	654.	1572.5	2.41	8.79	3.65	35.10	14.59
110 COMMUNICATION EQUIPMENT	4650.	8033.1	1.73	6.19	3.58	35.11	20.32
111 ELECTRONIC COMPONENTS	3781.	10113.8	2.67	9.23	3.45	36.01	13.46
112 MISC ELECTRICAL PRODUCTS	446.	1503.4	3.37	9.49	2.82	32.60	9.67
113 MOTOR VEHICLES	4572.	11099.3	2.43	10.23	4.21	26.91	11.08
114 AIRCRAFT	9081.	12445.4	1.37	8.02	5.85	35.81	26.13
115 SHIP AND BOAT BUILDING AND REPAIRING	1050.	1851.1	1.76	9.13	5.18	35.37	20.06
116 OTHER TRANSPORTATION EQUIPMENT	895.	1395.9	1.56	10.83	6.94	31.90	20.45
117 CLOCKS AND SCIENTIFIC EQUIPMENT	2802.	6761.2	2.41	8.72	3.61	33.57	13.91
118 JEWELRY, SPORTING GOODS, ETC.	1494.	3957.2	2.65	8.87	3.35	30.69	11.59
119 RAILROADS	1524.	41180.4	27.01	36.41	1.35	65.78	2.43
120 LOCAL TRANSIT AND INTERCITY BUSES	613.	11351.9	18.53	59.36	3.20	86.54	4.67

TABLE 20 (CONTINUED)

## DEPARTMENT OF WATER RESOURCES -- CALIFORNIA INPUT-OUTPUT MULTIPLIERS

## RESOURCE -- TOTAL ENERGY USE

## UNITS -- PETAJOULES

INDUSTRY	(1)	(2)	(3)	(4)	(5)	(6)	(7)
121 TRUCK TRANSPORTATION	3790.	86469.0	22.82	32.17	1.41	58.69	2.57
122 WATER TRANSPORTATION	1815.	198033.0	109.09	144.32	1.32	166.69	1.53
123 AIR TRANSPORTATION	4480.	237768.6	53.08	68.59	1.29	92.36	1.74
124 PIPELINE TRANSPORTATION	71.	2438.5	34.23	40.10	1.17	56.21	1.64
125 TRANSPORTATION SERVICES	444.	356.8	.80	2.86	3.56	30.74	38.23
126 COMMUNICATION EXCEPT RADIO AND TV	5942.	22980.4	3.87	5.80	1.50	27.47	7.10
127 RADIO AND TELEVISION BROADCASTING	845.	2734.4	3.24	9.93	3.07	35.40	10.94
128 ELECTRIC COMPANIES AND SYSTEMS	3803.	272.9	.07	21.77	303.34	36.79	512.73
129 GAS COMPANIES AND SYSTEMS	3335.	22374.2	6.71	15.64	2.33	27.80	4.14
130 WATER AND SANITARY SERVICES	1228.	11429.1	9.31	119.13	12.80	144.46	15.52
131 WHOLESALE TRADE	12214.	41449.1	3.39	7.24	2.13	30.00	8.84
132 RETAIL TRADE	24255.	121515.9	5.01	11.69	2.33	37.21	7.43
133 BANKING AND FINANCIAL INTERMEDIARIES	5233.	20989.9	4.01	18.08	4.51	53.02	13.22
134 INSURANCE	6340.	6784.8	1.07	6.94	6.49	37.07	34.64
135 OWNER OCCUPIED REAL ESTATE	11956.	0.	0.	1.59	0.	6.11	0.
136 REAL ESTATE	13825.	51607.0	3.73	10.07	2.70	18.87	5.05
137 HOTELS AND LODGING PLACES	1309.	18264.2	13.95	22.19	1.59	45.46	3.26
138 PERSONAL AND REPAIR SERVICES	2770.	16285.9	5.88	10.79	1.84	35.03	5.96
139 MISCELLANEOUS BUSINESS SERVICES	10840.	23645.2	2.18	6.56	3.01	34.19	15.67
140 ADVERTISING	4649.	1023.4	.22	6.40	29.09	27.87	126.62
141 MISC PROFESSIONAL SERVICES	5909.	15993.4	2.71	5.80	2.14	32.59	12.04
142 AUTOMOBILE REPAIR	3303.	20390.0	6.17	14.02	2.27	34.25	5.55
143 MOTION PICTURES	4530.	16254.6	3.59	17.74	4.94	43.27	12.06
144 AMUSEMENT AND RECREATION SERVICES	2290.	4987.4	2.18	7.63	3.50	29.09	13.36
145 DOCTORS AND DENTISTS	5074.	6796.1	1.34	4.47	3.33	34.91	26.06
146 HOSPITALS	4075.	37473.9	9.20	15.22	1.65	42.75	4.65
147 OTHER MEDICAL SERVICES	2333.	22236.7	9.53	13.80	1.45	41.51	4.36
148 EDUCATIONAL SERVICES	1881.	15311.1	8.14	13.53	1.66	47.32	5.81
149 NONPROFIT ORGANIZATIONS	2139.	16735.2	7.82	11.90	1.52	48.49	6.20
150 POST OFFICE	1153.	2823.4	2.45	8.29	3.38	48.07	19.63
151 OTHER FEDERAL GOVT ENTERPRISES	381.	210657.8	553.40	555.88	1.00	589.72	1.07
152 STATE AND LOCAL GOVT ENTERPRISES	2032.	306340.3	150.76	157.98	1.05	187.05	1.24
153 NONCOMPETITIVE IMPORTS	0.	0.	0.	0.	0.	0.	0.
154 DUMMY INDUSTRIES	3665.	0.	0.	27.68	0.	46.54	0.
155 GOVERNMENT INDUSTRY	20908.	0.	0.	0.	0.	42.63	0.
156 SPECIAL INDUSTRIES	0.	0.	0.	0.	0.	0.	0.
157 HOUSEHOLD INCOME	116193.	1663015.2	14.31	0.	0.	42.63	2.98



## TECHNICAL APPENDIX II

### THE HYDROLOGIC BASIN MULTIREGIONAL MODEL

The California statewide input-output model can only be used in terms of statewide impacts. As such, it is unable to discriminate between economic changes in predominantly urban and predominantly rural areas. Similarly, it is not able to forecast whether impacts will be localized or distributed in a much broader fashion. Thus, where detailed sub-State regional impact assessments are needed, the statewide model is inadequate.

In order to overcome the potential shortcomings of the statewide model and in order to fulfill the research requirements of the Office of Water Research and Technology grant, a second input-output model was constructed. The second model was multiregional in character, followed the boundaries of the California hydrologic basins, and was designed to provide the ability to forecast secondary effects by hydrologic basin as well as for the entire State.

This Technical Appendix relating to the multiregional model developed contains three sections. The first section presents the multiregional model in an analytical framework, the second details how the model was constructed, and the third presents some of the more useful results derived from the model.

#### Multiregional Model

The multiregional model in an analytical context is only slightly different from the regional model developed in Technical Appendix I.<sup>1/</sup> In its simplest form, the multiregional transactions table, the model not only reflects the transactions within each region, but also shows trading transactions between regions.

A multiregional input-output transactions table for  $z$  regions each with  $n$  industries consists of  $z^2$  blocks showing interindustry sales and purchases ( $x_{ij}^{rs}$ )

$$(37) \quad X = \begin{bmatrix} \begin{bmatrix} x_{ij}^{11} \\ \vdots \\ x_{ij}^{r1} \\ \vdots \\ x_{ij}^{z1} \end{bmatrix} & \cdots & \begin{bmatrix} x_{ij}^{1s} \\ \vdots \\ x_{ij}^{rs} \\ \vdots \\ x_{ij}^{zs} \end{bmatrix} & \cdots & \begin{bmatrix} x_{ij}^{1z} \\ \vdots \\ x_{ij}^{rz} \\ \vdots \\ x_{ij}^{zz} \end{bmatrix} \end{bmatrix}$$

<sup>1/</sup> For a more detailed discussion of multiregional input-output models, see Richardson (120)

where the on-diagonal block (where r equals s) reflects intra-regional interindustry transactions and the off-diagonal blocks (where r does not equal s) reflect interregional interindustry transactions.

Comparable accounting equations for a multiregional model can be constructed. Rowwise, the multiregional sales relationships may be expressed as,

$$(38) \quad X_i^r = \sum_j^n \sum_s^z X_{ij}^{rs} + \sum_s^z F_i^{rs} + E_i^r \quad i=1,n; r=1,z$$

where the total sales in region r of good i ( $X_i^r$ ) result from interindustry sales within the region and to other regions ( $X_{ij}^{rs}$ ), sales of good i to the final demands across all regions ( $F_i^{rs}$ ), and exports sales to areas outside the total area considered by the multiregional model ( $E_i^r$ ).

The multiregional purchasing patterns are similarly defined,

$$(39) \quad X_j^s = \sum_i^n \sum_r^z X_{ij}^{rs} + \sum_r^n V_j^{rs} + M_j^s \quad j=1,n; s=1,z$$

where  $X_{ij}^{rs}$  is as previously defined,  $V_j^{rs}$  reflects purchases of primary inputs in region s by industry j from the z regions considered in the model and  $M_j^s$  represents import purchases in region s by industry j of goods from outside the area considered by the multiregional model.

Multiregional technical coefficients are derived by dividing the transactions cells ( $X_{ij}^{rs}$ ) by regional production ( $X_j^s$ ),

$$(40) \quad a_{ij}^{rs} = \frac{X_{ij}^{rs}}{X_j^s} \quad i,j=1,n; r,s=1,n$$

To derive the multiregional matrix of direct, indirect, and induced gross output coefficients (Q), the technical coefficients matrix is subtracted from an nz by nz identity matrix (I) and inverted,

$$(41) \quad Q = (I-a)^{-1}$$

The elements of this matrix ( $q_{ij}^{rs}$ ) indicate the change in regional

gross output of good  $i$  in region  $r$  resulting from a unit change in final demand for good  $j$  in region  $s$ ,

$$(42) \quad q_{ij}^{rs} = \frac{\partial X_i^r}{\partial F_j^s} \quad i, j=1, n; r, s=1, z$$

Summing column wise over all goods in any region, results in the direct, indirect, and induced gross output coefficient ( $q_j^{rs}$ )

$$(43) \quad q_j^{rs} = \sum_i^n q_{ij}^{rs} \quad j=1, n; r, s=1, z$$

which shows the total change in gross output in region  $r$  over all industries resulting from a unit change in final demand for good  $j$  in region  $s$ . Where  $r$  equals  $s$ , the impact is intraregional and where  $r$  does not equal  $s$ , the impact is interregional.

The multiregional impact on gross output over all goods and all regions (in this study all hydrologic basins in California) which results from a unit change in final demand for good  $j$  in region  $s$  is the sum of the corresponding regional coefficients ( $q_j^{rs}$ ) over all regions

$$(44) \quad q_j^s = \sum_r^z q_j^{rs} \quad j=1, n; s=1, z$$

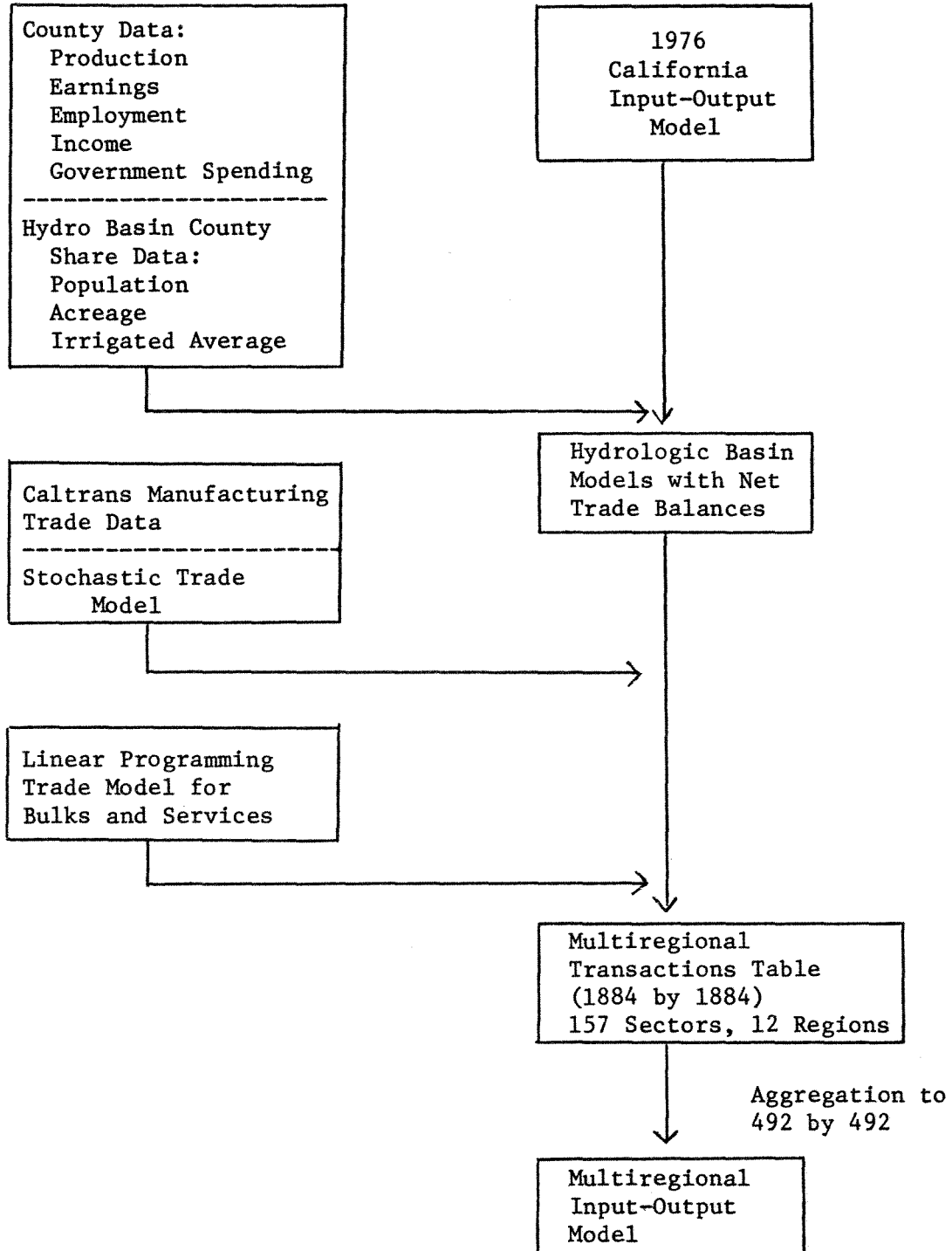
Income and resource matrices and the resultant Type I and Type II impact coefficients and multipliers are developed in an analogous manner as for the single region model and will not be detailed in this report.

### Construction Methodology

An overview of the methodology used in constructing the multiregional input-output model for California's 12 hydrologic basins is shown in Figure 7. The first step was to construct regional models for 16 regions, the North Coastal, Central Coastal, North Lahontan, and South Lahontan hydrologic basins each being split due to their elongated geographical structure. This first step was accomplished in a manner similar to the method used for constructing the California table. The second step was to estimate the trading patterns for each good and service among all of the 16 regions. Two-way trade was estimated for the manufacturing sectors, using data provided by Caltrans (17) and a logarithmic statistical model. For bulks and services, trade was estimated using a linear programming model. As the resultant multiregional transactions table was too large to

FIGURE 7

Multiregional Input-Output Model  
Flow Diagram





invert economically, the final step was to aggregate industries so that the resultant technical coefficients matrix was 492 by 492. This model was inverted and multiregional direct, indirect, and induced coefficients were computed.

### Regional Input-Output Models

As noted, the first step in constructing the multi-regional model was to construct 16 regional models. Eight regional models followed the hydrologic basin geographic boundaries. These eight areas are the San Francisco Bay, Los Angeles, San Joaquin, Sacramento, Tulare Lake, Santa Ana, San Diego, and Colorado River hydrologic basins. The other eight regional models were created by splitting the remaining four hydrologic basins: the North Coast hydrologic basin was split along Mendocino County's northern border; the Central Coast hydrologic basin was divided at the southern border of Monterey County; the North Lahontan hydrologic basin was split at Sierra County's northern border; and the South Lahontan hydrologic basin was split along the southern border of Inyo County.

For each of these 16 regions, estimates were developed for gross output and for the final demand categories. Gross output levels were estimated using county data on production (192), earnings (186, 214), employment (186, 214), and income (173). Where counties were split into two or more hydrologic basins, the county totals were scaled according to total land area (164) for the livestock sectors (1-8), according to irrigated acreage (164) for the other agriculture (sectors 9-38), and according to population for all other sectors (63).

Regional final demand vectors were scaled from the corresponding data developed for the State of California model. Control totals were developed for each final demand category: for personal consumption expenditures they were based on share of income (108), for fixed private capital expenditures they reflected the gross output implied share of charges against depreciation, and for the governmental sectors they were developed by government spending data (214).

Using the California technical coefficients and the above controls resulted in 16 regional tables, each comparable to the California table.

### Interregional Trade Models

As developed and outlined above, the 16 separate sub-state regional models did not consider interregional trade linkages. Trade in these models reflected the implied input-output net trade balances which do not provide for cross-hauling and do not identify the regions of origin for imports and the regions of destination for exports.

In order to estimate trade flows, two transportation models were constructed. Trade flows for bulks and services were estimated using a linear programming trade model of the form,

$$\begin{aligned}
 (45) \quad & \text{Minimize} && \sum_r \sum_s T_i^{rs} X_i^{rs} \\
 & \text{subject to} && \sum_s X_i^{rs} = S_i^r, \quad r=1, z \\
 & && \sum_r X_i^{rs} = D_i^s, \quad s=1, z \\
 & && X_i^{rs} \geq 0, \quad r, s=1, z
 \end{aligned}$$

where the objective function minimizes total transportation costs, the total cost components being the per unit distance cost,  $T_i^{rs}$ , and the quantity transported,  $X_i^{rs}$ . Constraints upon the objective function are for regional exports for each region  $r, X_i^{rs}$ , to sum to the amount available for export  $S_i^r$ , for regional imports for each region  $s, X_i^{rs}$ , to sum to the required import level,  $D_i^s$ , and for all trade flows to be nonnegative.

This model was adopted after examination of the existing data base for California intrastate trade (195). In general, the data base for bulks is extremely meager and for commerce and services nonexistent.

The second trade model developed was based upon a study prepared for the California Department of Transportation (Caltrans) (17) which estimated trade flows for manufactured goods at the four-digit SIC code level between all Standard Metropolitan Statistical Areas (SMSAs) in California, Oregon, and Washington. Also included in the Caltrans study were estimates of trade flows from the West Coast SMSAs to the rest of the world. Preliminary trade flow estimates for manufacturing were based upon an unconstrained log-linear regression model of the form,

$$(46) \quad X_i^{rs} = \beta_0 (X_i^r)^{\beta_1} (TR_i^s)^{\beta_2} (T_i^{rs})^{\beta_3} U_i$$

where  $X_i^{rs}$  is the trade flow of good  $i$  from region  $r$  to region  $s$ ,  $X_i^r$  is the regional production level of good  $i$  in region  $r$ ,  $TR_i^s$  is the total regional requirements for good  $i$  in region  $s$ ,  $T_i^{rs}$  is the transportation distance between regions  $r$  and  $s$ , and  $U_i$  is a disturbance term with an expected mean of zero and constant expected variance. The California SMSA data were used to estimate the regression coefficients  $\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2$ , and  $\hat{\beta}_3$ . As expected,

the signs of  $\hat{\beta}_1$  and  $\hat{\beta}_2$  were in all instances positive. Where the sign of  $\hat{\beta}_3$  was negative, as expected, the resultant coefficients were used as estimated above. Where the sign of  $\hat{\beta}_3$  was negative, the regression was rerun without the transportation cost term. In most instances the coefficients of multiple determination,  $R^2$ , were greater than 0.8 and in all instances were above 0.4.

Final trade estimates for the manufacturing sectors were developed using the biproportional balancing techniques discussed earlier.

### Multiregional Model

The 16 regional transactions tables and the balanced trade flow estimates were combined to form a multiregional transactions table. This table was 1884 by 1884 in size and reflected the transaction flows for 157 sectors (including household sectors) for the 12 hydrologic basins.

Because of the high cost of inverting an 1884 by 1884 matrix (estimated to be several thousand dollars), and because the intended demonstration application of the multiregional model did not require a highly disaggregated model, the model was aggregated to 41 sectors as shown in Table 21.

### Secondary Effects Coefficients

A consequence of developing a multiregional input-output model is that the number of secondary effects coefficients and multipliers increases by the square of the number of regions. Thus, one type II income coefficient in the statewide model has 144 counterparts in the multiregional model. Because the resulting data is of such an extensive nature, only the direct, indirect, and induced coefficients for gross output and for income are presented. These data are shown in Tables 22 and 23.

Tables 22 and 23 are read horizontally. For example, Table 22-1 shows the Type II gross output coefficients associated with changes in final demand in the North Coast hydrologic basin. Gross output impacts resulting from a \$1 million change in final demand for the first sector, livestock and dairies, are indicated to cause gross output in that basin to increase by \$1.85 million, in the San Francisco Bay Basin by \$.31 million, in the Central Coast Basin by \$.03 million, in the Los Angeles Basin by \$.25 million, etc., and finally, summing rowwise, the statewide impact would be \$2.63 million.

TABLE 21  
Comparison of 41 and 157 Sector Industries

<u>41 SECTOR INDUSTRY</u>	<u>157 SECTOR INDUSTRY*</u>
1. Livestock and Dairies	1-8
2. Food and Feed Crops	9-36
3. Forestry and Fishery Products	37
4. Agricultural Services	38
5. Metals Mining	39
6. Coal Mining	40
7. Crude Petroleum and Natural Gas	41, 42
8. Stone and Clay Mining	43
9. Chemical and Fertilizer	44
10. New Construction	45-49
11. Repair Construction	50
12. Ordnance	51
13. Food Processing	52-61
14. Textile Products	62
15. Lumber and Wood Products	63-65
16. Furniture	66-67
17. Paper Products	68
18. Printing and Publishing	69, 70
19. Chemicals, Drugs, Plastics, and Paints	71-77, 79, 80
20. Petroleum Refining	78
21. Glass, Stone, and Clay Products	81-85
22. Primary Metals Processing	86-88
23. Fabricated Metals Products	89-95
24. Farm, Construction, and Mining Equipment	96-98
25. Industrial Machinery	99-102
26. Light Duty Equipment	103-112
27. Motor Vehicles	113
28. Other Transportation Equipment	114-116
29. Scientific and Other Equipment	117, 118
30. Transportation and Warehousing	119-125
31. Communications	126, 127
32. Public Utilities	128-130
33. Wholesale and Retail Trade	131, 132
34. Finance, Insurance, and Real Estate	133-136
35. Hotels, Personal and Repair Services	137-142
36. Amusements	143, 144
37. Medical, Education, and Nonprofit Organization	145-149
38. Federal Government Enterprise	150, 151
39. State and Local Enterprise	152
40. Government Industry	155
41. Households	157

\* Sectors 153, 154, 156 not included in MRIO

TABLE 22-1

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- NORTH COAST

SECTOR	REGION OF IMPACT												
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	STATEWIDE
1	1.8462	.3140	.0311	.2509	.0360	.0768	.0348	.0007	.0088	.0151	.0086	.0042	2.6271
2	1.7727	.5487	.0331	.3031	.0392	.0367	.0521	.0011	.0117	.0171	.0120	.0029	2.8306
3	1.5375	.3929	.0262	.3374	.0290	.0202	.0497	.0008	.0153	.0235	.0226	.0032	2.4584
4	2.1188	.4001	.0392	.3425	.0640	.0816	.0562	.0009	.0115	.0210	.0117	.0037	3.1511
5	2.2980	.5973	.0559	.4667	.0306	.0323	.0488	.0012	.0156	.0270	.0150	.0040	3.5923
6	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	1.4539	.5198	.3740	.2142	.0158	.0143	.0204	.0005	.0071	.0197	.0097	.0020	2.6513
8	1.9937	.6016	.0842	.4534	.0327	.0287	.0562	.0012	.0178	.0275	.0163	.0048	3.3179
9	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	2.2441	.7160	.0556	.4757	.0361	.0410	.0534	.0019	.0183	.0330	.0188	.0059	3.6998
11	2.2998	.6590	.0491	.4776	.0356	.0340	.0516	.0013	.0215	.0323	.0182	.0050	3.6851
12	1.9904	.4794	.0925	.8878	.0300	.0343	.0460	.0015	.0195	.0975	.0224	.0067	3.7081
13	1.9373	.5473	.0993	.4172	.0633	.0703	.0680	.0010	.0144	.0333	.0153	.0064	3.2731
14	1.7504	.3507	.0325	.7192	.0792	.0646	.0513	.0010	.0129	.0252	.0162	.0044	3.1077
15	2.2162	.3858	.0448	.4113	.0356	.0933	.0394	.0057	.0119	.0216	.0173	.0042	3.2869
16	2.2647	.5247	.0910	.5913	.0365	.0609	.0695	.0033	.0165	.0369	.0184	.0050	3.7187
17	2.0809	.5278	.0714	.5431	.0486	.0615	.0535	.0028	.0151	.0393	.0162	.0047	3.4649
18	2.2819	.7814	.0523	.4688	.0415	.0363	.0409	.0013	.0136	.0313	.0161	.0043	3.7698
19	1.7726	.5552	.0826	.5092	.0353	.0708	.0832	.0015	.0184	.0334	.0168	.0047	3.1837
20	1.4727	.4971	.5052	.3567	.0246	.0315	.0435	.0050	.0143	.0205	.0137	.0028	2.9877
21	2.3115	.6363	.1041	.5094	.0399	.0344	.0599	.0012	.0190	.0326	.0204	.0074	3.7762
22	1.6485	.3337	.0277	.6104	.0200	.0252	.0299	.0013	.0165	.0353	.0114	.0075	2.7674
23	1.8916	.5476	.0425	.5219	.0261	.0259	.0391	.0011	.0208	.0544	.0156	.0059	3.1924
24	1.7884	.8059	.0585	.5166	.0281	.0287	.0498	.0011	.0187	.0538	.0176	.0055	3.3728
25	1.9661	.6158	.0407	.5719	.0291	.0278	.0415	.0012	.0169	.0652	.0179	.0057	3.3996
26	1.9298	.4899	.1339	.5793	.0283	.0293	.0435	.0011	.0422	.0682	.0163	.0055	3.3673
27	1.6269	.4335	.0502	.5009	.0217	.0197	.0399	.0009	.0133	.0491	.0128	.0043	2.7732
28	1.9645	.6162	.0553	.5591	.0292	.0790	.0479	.0018	.0211	.0521	.0278	.0060	3.4599
29	2.0338	.5555	.1043	.5621	.0337	.0373	.0527	.0012	.0160	.0689	.0173	.0052	3.4879
30	2.4192	.6596	.0454	.4881	.0399	.0338	.0664	.0012	.0215	.0277	.0227	.0042	3.8299
31	2.0907	.4266	.0344	.3992	.0247	.0232	.0325	.0008	.0109	.0271	.0112	.0032	3.0845
32	1.6989	.4621	.0436	.6650	.0496	.0239	.1165	.0014	.0385	.0277	.0219	.0037	3.1527
33	2.2266	.5259	.0384	.3680	.0290	.0270	.0381	.0009	.0124	.0192	.0127	.0033	3.3015
34	1.6464	.3672	.0206	.1805	.0152	.0155	.0190	.0006	.0062	.0101	.0070	.0017	2.2900
35	2.1788	.5794	.0544	.4206	.0289	.0270	.0430	.0010	.0141	.0268	.0137	.0036	3.3914
36	2.0635	.5508	.0303	.7404	.0287	.0315	.0373	.0010	.0119	.0206	.0138	.0043	3.5343
37	2.4755	.5798	.0593	.4881	.0357	.0353	.0465	.0012	.0151	.0287	.0157	.0044	3.7853
38	2.8676	.7468	.0504	.5250	.0419	.0391	.0543	.0013	.0179	.0269	.0187	.0049	4.3949
39	2.5883	.6753	.0455	.5219	.0360	.0376	.0531	.0014	.0183	.0265	.0170	.0044	4.0253
40	3.1103	.6090	.0532	.5577	.0438	.0404	.0531	.0013	.0182	.0276	.0181	.0053	4.5378
41	2.1103	.6090	.0532	.5577	.0438	.0404	.0531	.0013	.0182	.0276	.0181	.0053	3.5378

TABLE 22-2

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN FRANCISCO BAY

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.1388	1.7801	.0763	.2053	.2602	.1115	.0411	.0010	.0090	.0216	.0183	.0047	2.6681
2	.0139	2.5885	.0280	.1989	.0602	.0370	.0403	.0008	.0155	.0196	.0586	.0030	3.0644
3	.0119	2.0830	.0392	.2061	.0677	.0250	.0576	.0006	.0366	.0220	.0215	.0034	2.5747
4	.0510	2.3660	.0506	.2511	.2043	.1142	.1117	.0012	.0128	.0290	.0237	.0054	3.2211
5	.0247	3.1434	.0339	.2664	.0458	.0440	.0476	.0011	.0329	.0325	.0754	.0042	3.7517
6	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	.0076	2.0694	.0785	.1803	.0388	.0209	.2767	.0016	.0075	.0265	.0232	.0021	2.7332
8	.0137	2.8128	.0714	.2567	.0368	.0348	.0547	.0014	.0261	.0268	.0683	.0038	3.4072
9	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	.0439	3.0759	.0383	.3046	.0439	.0615	.0476	.0019	.0174	.0347	.0329	.0045	3.7071
11	.0217	3.2165	.0441	.3003	.0449	.0467	.0546	.0012	.0182	.0329	.0340	.0042	3.8194
12	.0194	3.1040	.0260	.5052	.0398	.0454	.0439	.0011	.0178	.0613	.0372	.0056	3.9066
13	.0225	2.3893	.0660	.2945	.1823	.0685	.0919	.0012	.0298	.0348	.0334	.0112	3.2254
14	.0113	2.5280	.0196	.4302	.0430	.0390	.0913	.0009	.0176	.0248	.0280	.0039	3.2377
15	.2292	2.4128	.0277	.2653	.0645	.1937	.0436	.0091	.0468	.0263	.0371	.0040	3.3601
16	.0876	2.9277	.0292	.4312	.0506	.0938	.0451	.0036	.0188	.0425	.0363	.0051	3.7715
17	.0723	2.5277	.0277	.3670	.0573	.0841	.0430	.0032	.0177	.0362	.0445	.0043	3.2850
18	.0196	3.2172	.0253	.3174	.0487	.0430	.0408	.0010	.0127	.0338	.0323	.0040	3.7958
19	.0166	2.7051	.0317	.3356	.0399	.0574	.0683	.0013	.0540	.0320	.0638	.0044	3.4101
20	.0091	2.0885	.1193	.2583	.0452	.0259	.4252	.0026	.0168	.0313	.0583	.0029	3.0835
21	.0241	2.9541	.1021	.3126	.0462	.0510	.0515	.0020	.0349	.0306	.0999	.0049	3.7140
22	.0232	2.5948	.0233	.3220	.0320	.0466	.0364	.0010	.0253	.0475	.0482	.0057	3.2061
23	.0160	2.7610	.0215	.3125	.0328	.0379	.0368	.0009	.0238	.0718	.0353	.0064	3.3565
24	.0134	3.0344	.0244	.4046	.0352	.0360	.0400	.0009	.0171	.0585	.0346	.0055	3.7045
25	.0151	3.0618	.0257	.3547	.0370	.0376	.0423	.0009	.0168	.0533	.0340	.0052	3.6845
26	.0128	3.3649	.0282	.3523	.0420	.0380	.0424	.0008	.0148	.0542	.0347	.0045	3.9896
27	.0146	2.6505	.0201	.3941	.0295	.0360	.0335	.0008	.0145	.0447	.0282	.0045	3.2709
28	.0238	3.1855	.0268	.5314	.0419	.0475	.0442	.0013	.0185	.0709	.0401	.0060	4.0379
29	.0169	3.0109	.0269	.4026	.0408	.0410	.0436	.0010	.0158	.0505	.0343	.0049	3.6892
30	.0165	3.1423	.0349	.3112	.0471	.0469	.0849	.0009	.0170	.0301	.0357	.0037	3.7713
31	.0091	2.7131	.0213	.2042	.0326	.0281	.0348	.0005	.0093	.0226	.0263	.0028	3.1047
32	.0378	2.6352	.0381	.2932	.0478	.0936	.1189	.0014	.0271	.0251	.1216	.0034	3.4433
33	.0107	2.9477	.0243	.2243	.0379	.0326	.0405	.0006	.0108	.0234	.0305	.0032	3.3866
34	.0093	2.3515	.0165	.1382	.0267	.0255	.0264	.0004	.0069	.0145	.0181	.0019	2.6361
35	.0138	3.1509	.0303	.2860	.0409	.0413	.0465	.0009	.0128	.0295	.0314	.0036	3.6879
36	.0328	2.9102	.0285	.4785	.0649	.0438	.0400	.0008	.0108	.0243	.0281	.0038	3.6665
37	.0131	3.4567	.0321	.3019	.0494	.0413	.0510	.0008	.0144	.0322	.0430	.0043	4.0402
38	.0226	3.8903	.0358	.3271	.0563	.0629	.0595	.0009	.0157	.0344	.0439	.0047	4.5542
39	.0152	3.5601	.0332	.2889	.0452	.0432	.0567	.0011	.0201	.0297	.0790	.0042	4.1764
40	.0145	4.0592	.0378	.3400	.0608	.0481	.0589	.0009	.0159	.0366	.0433	.0051	4.7212
41	.0145	3.0592	.0378	.3400	.0608	.0481	.0589	.0009	.0159	.0366	.0433	.0051	3.7212

TABLE 22-3

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- CENTRAL COAST

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0378	.1913	1.8777	.2559	.0356	.0641	.0344	.0005	.0091	.0278	.0077	.0050	2.5467
2	.0078	.2741	2.0849	.3349	.0345	.0272	.0407	.0007	.0135	.0543	.0110	.0041	2.8878
3	.0050	.2372	1.7012	.3476	.0274	.0151	.0470	.0006	.0340	.0381	.0222	.0037	2.4792
4	.0188	.2709	2.1581	.3747	.0800	.0462	.1119	.0009	.0134	.0314	.0133	.0045	3.1242
5	.0093	.4074	2.5097	.4724	.0317	.0223	.0415	.0009	.0203	.0347	.0216	.0046	3.5763
6	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	.0039	.3633	1.8475	.2575	.0175	.0122	.0229	.0004	.0080	.0191	.0142	.0024	2.5690
8	.0066	.4000	2.2555	.4524	.0341	.0183	.0545	.0008	.0216	.0355	.0295	.0063	3.3150
9	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	.0410	.3906	2.2788	.6539	.0421	.0428	.0519	.0022	.0194	.0459	.0194	.0080	3.5960
11	.0139	.4133	2.4474	.5948	.0381	.0252	.0501	.0012	.0191	.0395	.0179	.0061	3.6667
12	.0122	.3345	2.3762	.7784	.0321	.0266	.0398	.0012	.0183	.0649	.0223	.0066	3.7131
13	.0099	.4154	2.0348	.4898	.0746	.0299	.0933	.0010	.0347	.0444	.0163	.0074	3.2516
14	.0052	.2448	1.8683	.7264	.0256	.0176	.1010	.0010	.0167	.0655	.0164	.0051	3.0936
15	.1768	.2518	1.8678	.3704	.0543	.1342	.0422	.0083	.0825	.0281	.0206	.0047	3.0416
16	.0617	.3787	2.2062	.6247	.0426	.0569	.0412	.0030	.0202	.0567	.0189	.0058	3.5168
17	.0575	.4012	1.9975	.5713	.0566	.0551	.0409	.0032	.0180	.0528	.0167	.0052	3.2761
18	.0143	.4912	2.4801	.5302	.0440	.0251	.0381	.0011	.0130	.0401	.0153	.0049	3.6975
19	.0094	.3629	1.9811	.4828	.0315	.0312	.0455	.0010	.0464	.1063	.0160	.0048	3.1189
20	.0067	.3793	2.0904	.3703	.0239	.0172	.0403	.0006	.0141	.0224	.0133	.0030	2.9816
21	.0105	.4386	2.4575	.5331	.0422	.0236	.0657	.0010	.0285	.0488	.0217	.0096	3.6807
22	.0071	.2367	2.0707	.6065	.0219	.0172	.0289	.0011	.0161	.0416	.0120	.0073	3.0671
23	.0100	.3998	2.0833	.5548	.0290	.0208	.0345	.0010	.0229	.0783	.0171	.0069	3.2584
24	.0072	.4304	2.1412	.6160	.0282	.0198	.0349	.0009	.0189	.0672	.0615	.0068	3.4332
25	.0083	.3830	2.2594	.6420	.0300	.0198	.0377	.0010	.0181	.0630	.0264	.0065	3.4953
26	.0071	.3684	2.7091	.5698	.0354	.0200	.0390	.0009	.0152	.0591	.0171	.0053	3.8463
27	.0055	.3088	1.7695	.5573	.0230	.0147	.0275	.0008	.0144	.0708	.0222	.0050	2.8194
28	.0241	.3849	2.1543	.8373	.0343	.0443	.0382	.0016	.0204	.0959	.0612	.0078	3.7043
29	.0134	.3767	2.2774	.5924	.0339	.0250	.0389	.0011	.0161	.0629	.0162	.0055	3.4596
30	.0080	.4522	2.5056	.5914	.0395	.0210	.0606	.0009	.0202	.0340	.0227	.0049	3.7609
31	.0044	.2670	2.2325	.3867	.0251	.0136	.0310	.0005	.0096	.0215	.0107	.0034	3.0060
32	.0044	.3026	2.0396	.4571	.0366	.0145	.0760	.0008	.0258	.0239	.0159	.0032	3.0005
33	.0055	.3490	2.3704	.4143	.0300	.0162	.0362	.0006	.0113	.0243	.0126	.0039	3.2743
34	.0033	.2217	1.6879	.2143	.0145	.0092	.0188	.0003	.0056	.0121	.0064	.0019	2.1960
35	.0059	.4027	2.4514	.4790	.0308	.0179	.0381	.0007	.0129	.0352	.0159	.0043	3.4948
36	.0126	.3765	2.2349	.6197	.0282	.0207	.0373	.0007	.0109	.0256	.0126	.0042	3.3839
37	.0064	.3969	2.7086	.5103	.0376	.0198	.0449	.0007	.0140	.0344	.0157	.0050	3.7943
38	.0076	.5061	3.0686	.5767	.0436	.0232	.0536	.0008	.0163	.0345	.0187	.0056	4.3553
39	.0078	.4127	2.8542	.5425	.0366	.0222	.0492	.0009	.0177	.0323	.0177	.0050	3.9987
40	.0074	.4052	3.2824	.6013	.0464	.0235	.0541	.0008	.0164	.0361	.0184	.0060	4.4980
41	.0074	.4052	2.2824	.6013	.0464	.0235	.0541	.0008	.0164	.0361	.0184	.0060	3.4980

TABLE 22-4

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- LOS ANGELES

SECTOR	NC	SFB	CC	REGION OF IMPACT										STATEWIDE
				LA	SJ	SR	TL	NL	SI	SA	SD	CD		
1	.0064	.1314	.0203	2.0208	.1077	.1088	.2183	.0032	.0220	.0332	.0157	.0336	2.7213	
2	.0060	.0989	.0151	2.7424	.0340	.0367	.0613	.0026	.0193	.0350	.0293	.0221	3.1024	
3	.0030	.1061	.0123	2.1956	.0244	.0280	.0690	.0026	.0298	.0439	.0461	.0330	2.5938	
4	.0071	.1239	.0231	2.5403	.0807	.0706	.2416	.0029	.0209	.0375	.0293	.0588	3.2368	
5	.0082	.1321	.0214	3.2153	.0343	.0412	.0448	.0034	.0936	.0517	.0393	.0554	3.7407	
6	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	
7	.0028	.0760	.0143	2.4062	.0221	.0315	.0233	.0014	.0214	.0403	.0238	.0081	2.6713	
8	.0047	.1305	.0192	2.9852	.0308	.0351	.0441	.0027	.0581	.0549	.0425	.0164	3.4241	
9	.0049	.1239	.0191	2.9293	.0309	.0369	.0416	.0039	.0494	.0424	.0260	.0846	3.3929	
10	.0260	.1488	.0206	3.2934	.0362	.0440	.0486	.0045	.0323	.0700	.0267	.0182	3.7693	
11	.0118	.1383	.0200	3.4426	.0349	.0356	.0467	.0034	.0366	.0513	.0229	.0160	3.8581	
12	.0104	.1915	.0200	3.4548	.0329	.0386	.0437	.0034	.0249	.0820	.0317	.0164	3.9502	
13	.0074	.1851	.0419	2.3658	.0702	.0667	.1801	.0049	.0487	.0478	.0249	.1118	3.1551	
14	.0050	.1512	.0162	2.9613	.0314	.0296	.1219	.0026	.0211	.0457	.0303	.0120	3.4283	
15	.1900	.1421	.0231	2.5251	.0573	.1482	.0535	.0140	.0157	.0394	.0241	.0124	3.2448	
16	.0694	.1552	.0217	3.2511	.0439	.0742	.0521	.0074	.0224	.0699	.0254	.0157	3.8085	
17	.0526	.1883	.0189	2.6440	.0508	.0633	.0452	.0073	.0203	.0570	.0194	.0166	3.1817	
18	.0107	.1759	.0195	3.3387	.0401	.0405	.0428	.0034	.0173	.0522	.0254	.0138	3.7803	
19	.0070	.1695	.0186	2.9278	.0326	.0416	.0480	.0038	.0257	.0458	.0206	.0188	3.3598	
20	.0035	.1135	.0237	2.4701	.0317	.0394	.0352	.0020	.2184	.0941	.0352	.0095	3.0785	
21	.0089	.1554	.0232	3.2349	.0410	.0417	.0531	.0052	.0674	.0609	.0259	.0221	3.7397	
22	.0062	.1561	.0208	2.6641	.0292	.0322	.0444	.0053	.0605	.1083	.0226	.0423	3.1918	
23	.0070	.1629	.0179	2.9785	.0292	.0306	.0392	.0036	.0326	.1303	.0241	.0187	3.4745	
24	.0061	.1666	.0184	3.1388	.0293	.0300	.0385	.0031	.0263	.0951	.0976	.0164	3.6662	
25	.0066	.1604	.0193	3.2545	.0304	.0313	.0403	.0029	.0260	.0858	.0320	.0163	3.7060	
26	.0065	.2832	.0202	3.4564	.0327	.0331	.0416	.0027	.0214	.0661	.0265	.0152	4.0056	
27	.0056	.2051	.0157	2.8603	.0280	.0280	.0387	.0042	.0215	.0816	.0352	.0139	3.3379	
28	.0083	.1780	.0215	3.7507	.0337	.0376	.0442	.0030	.0292	.1077	.0592	.0180	4.2910	
29	.0106	.1806	.0194	3.2095	.0326	.0352	.0437	.0030	.0218	.0809	.0248	.0152	3.6774	
30	.0044	.1400	.0219	3.3596	.0358	.0327	.0502	.0029	.0358	.0451	.0256	.0144	3.7683	
31	.0036	.1055	.0164	2.9948	.0263	.0299	.0335	.0017	.0145	.0317	.0182	.0109	3.2872	
32	.0031	.0977	.0257	2.5309	.0311	.0480	.0426	.0027	.0373	.0424	.0198	.0088	2.8901	
33	.0044	.1116	.0170	3.0691	.0288	.0310	.0371	.0020	.0168	.0324	.0209	.0123	3.3833	
34	.0028	.0732	.0118	2.3782	.0212	.0225	.0285	.0018	.0116	.0265	.0170	.0096	2.6048	
35	.0065	.1459	.0224	3.3156	.0337	.0406	.0431	.0025	.0177	.0507	.0301	.0135	3.7224	
36	.0045	.1217	.0185	3.7588	.0327	.0420	.0584	.0023	.0180	.0421	.0247	.0136	4.1374	
37	.0052	.1427	.0226	3.6064	.0385	.0409	.0471	.0025	.0204	.0446	.0257	.0122	4.0139	
38	.0058	.1560	.0260	4.0985	.0484	.0446	.0634	.0071	.0253	.0454	.0272	.0215	4.5693	
39	.0064	.1417	.0245	3.6898	.0519	.0401	.0467	.0028	.0254	.0941	.0368	.0166	4.1767	
40	.0060	.1594	.0250	4.2877	.0437	.0392	.0566	.0029	.0238	.0460	.0281	.0197	4.7380	
41	.0060	.1594	.0250	3.2877	.0437	.0392	.0566	.0029	.0238	.0460	.0281	.0197	3.7380	



TABLE 22-5

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN JOAQUIN

SECTOR	NC	SFB	CC	REGION OF IMPACT									STATEWIDE
				LA	SJ	SB	TL	NL	SI	SA	SD	CD	
1	.0102	.2284	.0175	.3403	2.0248	.0236	.0453	.0007	.0069	.0523	.0170	.0056	2.7728
2	.0108	.3578	.0258	.4228	2.0197	.0261	.0431	.0008	.0077	.0702	.0203	.0041	3.0092
3	.0053	.2218	.0559	.3542	1.7317	.0137	.0335	.0006	.0089	.0473	.0569	.0037	2.5335
4	.0131	.2485	.0228	.4465	2.3029	.0277	.0443	.0009	.0074	.0595	.0279	.0042	3.2057
5	.0229	.3552	.0248	.6542	2.4220	.0259	.0402	.0011	.0105	.0406	.0381	.0048	3.6603
6	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	.0054	.2031	.1322	.5129	1.5764	.0118	.0195	.0006	.0069	.0350	.1429	.0039	2.6504
8	.0254	.4011	.0310	.5659	2.1724	.0225	.0436	.0009	.0115	.0522	.0563	.0053	3.3880
9	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	.0360	.4161	.0301	.7326	2.2823	.0423	.0431	.0023	.0124	.0751	.0323	.0067	3.7112
11	.0148	.3435	.0300	.7213	2.4391	.0257	.0390	.0013	.0114	.0794	.0297	.0059	3.7414
12	.0158	.3657	.1020	.9204	2.1428	.0277	.0369	.0013	.0139	.1282	.0321	.0068	3.7938
13	.0126	.3577	.0280	.5688	2.2010	.0366	.0455	.0011	.0107	.0634	.0475	.0068	3.3998
14	.0070	.2398	.0175	.7453	1.9237	.0178	.0438	.0009	.0089	.0684	.0240	.0045	3.1015
15	.1934	.2684	.0288	.4535	1.9824	.1617	.0397	.0097	.0090	.0434	.0957	.0044	3.2902
16	.0573	.3396	.0239	.8103	2.1986	.0586	.0403	.0033	.0127	.0744	.0291	.0062	3.6543
17	.0729	.3895	.0244	.6203	2.0291	.0625	.0542	.0034	.0104	.0623	.0253	.0050	3.3594
18	.0218	.4418	.0238	.6166	2.3244	.0257	.1843	.0014	.0095	.0664	.0240	.0048	3.7447
19	.0173	.3788	.0247	.5891	1.9367	.0416	.1520	.0015	.0140	.0686	.0276	.0045	3.2565
20	.0090	.3211	.2422	.4855	1.6176	.0185	.0333	.0008	.0112	.0330	.2555	.0047	3.0323
21	.0177	.3817	.0287	.7127	2.4188	.0290	.0461	.0012	.0120	.0609	.0280	.0059	3.7428
22	.0107	.3313	.0187	.5976	1.9922	.0193	.0295	.0010	.0134	.0627	.0208	.0063	3.1036
23	.0130	.4010	.0193	.6140	1.9599	.0199	.0751	.0011	.0160	.0821	.0229	.0065	3.2306
24	.0088	.3828	.0212	.7099	1.9935	.0201	.0319	.0011	.0138	.0852	.2061	.0075	3.4820
25	.0105	.3698	.0248	.7425	2.1683	.0208	.0339	.0011	.0125	.0931	.0384	.0062	3.5219
26	.0095	.3644	.2322	.6841	2.1401	.0199	.0382	.0010	.0114	.1187	.0255	.0056	3.6505
27	.0076	.2833	.0195	.6298	1.7706	.0155	.0268	.0009	.0104	.0752	.0367	.0050	2.8812
28	.0229	.3567	.0317	.8705	2.1695	.0324	.0347	.0017	.0146	.1169	.1233	.0077	3.7828
29	.0203	.3224	.0453	.7469	2.1069	.0272	.0412	.0014	.0108	.0807	.0232	.0057	3.4319
30	.0084	.3972	.0362	.6403	2.6088	.0238	.0451	.0009	.0113	.0641	.0404	.0047	3.8813
31	.0066	.2480	.0244	.4901	2.1835	.0154	.0278	.0006	.0064	.0577	.0185	.0035	3.0825
32	.0074	.3191	.0530	.5785	2.3237	.0849	.0523	.0009	.0156	.0443	.0536	.0039	3.5373
33	.0073	.2865	.0232	.5469	2.3206	.0180	.0322	.0007	.0074	.0545	.0217	.0040	3.3227
34	.0036	.2274	.0120	.2537	1.6209	.0097	.0190	.0003	.0036	.0248	.0104	.0018	2.1874
35	.0076	.3502	.0355	.5977	2.3024	.0190	.0657	.0008	.0086	.0667	.0262	.0043	3.4847
36	.0073	.2820	.0202	.8617	2.1641	.0197	.0375	.0009	.0081	.0516	.0198	.0048	3.4778
37	.0090	.3644	.0276	.6633	2.6462	.0222	.0491	.0009	.0095	.0712	.0266	.0050	3.8949
38	.0096	.5175	.0331	.6721	3.0151	.0240	.0482	.0009	.0105	.0795	.0314	.0053	4.4472
39	.0110	.4380	.0298	.6687	2.7564	.0257	.0451	.0010	.0109	.0665	.0317	.0050	4.0897
40	.0094	.3797	.0337	.7028	3.2660	.0234	.0426	.0009	.0103	.0888	.0314	.0057	4.5944
41	.0094	.3797	.0337	.7028	2.2660	.0234	.0426	.0009	.0103	.0888	.0314	.0057	3.5944

TABLE 22-6

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SACRAMENTO

SECTOR	REGION OF IMPACT												
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	STATEWIDE
1	.0134	.2222	.0114	.2522	.0413	2.0235	.0257	.0004	.0085	.0234	.0104	.0055	2.6381
2	.0183	.3922	.0177	.3329	.0559	1.9159	.0358	.0006	.0153	.0288	.0135	.0042	2.8310
3	.0066	.2819	.0329	.3319	.0338	1.6260	.0463	.0006	.0143	.0317	.0498	.0042	2.4601
4	.0461	.2605	.0149	.3574	.0858	2.2448	.0299	.0006	.0095	.0367	.0170	.0209	3.1242
5	.0164	.3552	.0170	.5075	.0517	2.5185	.0388	.0009	.0207	.0581	.0319	.0057	3.6225
6	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	.0037	.2118	.3664	.3582	.0195	1.6033	.0186	.0004	.0069	.0300	.0108	.0029	2.6326
8	.0085	.3856	.0205	.4667	.0476	2.1719	.0493	.0008	.0464	.0572	.0468	.0062	3.3074
9	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	.0374	.3870	.0204	.6399	.0453	2.3312	.0439	.0023	.0315	.0576	.0284	.0075	3.6324
11	.0155	.3663	.0193	.6136	.0436	2.4367	.0449	.0013	.0284	.0607	.0213	.0069	3.6585
12	.0152	.4514	.0164	.6596	.0391	2.2148	.0362	.0012	.0164	.2495	.0735	.0076	3.7809
13	.0483	.3695	.0212	.4829	.0702	2.1536	.0416	.0009	.0130	.0615	.0424	.0304	3.3356
14	.0065	.2303	.0120	.6687	.0842	1.9012	.0415	.0008	.0111	.0382	.0203	.0050	3.0196
15	.1730	.2501	.0207	.3779	.0542	2.1227	.0352	.0093	.0104	.0420	.1225	.0050	3.2231
16	.0705	.3174	.0178	.7196	.0486	2.2733	.0378	.0040	.0148	.0626	.0298	.0068	3.6032
17	.0589	.3691	.0175	.5587	.0633	2.1430	.0386	.0034	.0178	.0775	.0214	.0058	3.3750
18	.0168	.4078	.0160	.5272	.0513	2.4274	.0365	.0016	.0115	.1772	.0183	.0061	3.6976
19	.0092	.3846	.0245	.6477	.0542	2.1986	.0748	.0011	.0521	.0602	.0217	.0059	3.5347
20	.0055	.3741	.4910	.4019	.0444	1.6371	.0412	.0007	.0182	.0319	.0149	.0035	3.0645
21	.0125	.4405	.0250	.5075	.0583	2.4241	.0542	.0010	.0838	.0534	.0278	.0083	3.6963
22	.0096	.2520	.0120	.5706	.0299	1.9816	.0266	.0011	.0159	.0487	.0148	.0074	2.9702
23	.0093	.4024	.0128	.5117	.0308	1.8949	.0296	.0011	.0187	.1314	.0181	.0070	3.0681
24	.0102	.3838	.0153	.6237	.0343	1.9762	.0308	.0010	.0165	.0751	.1488	.0077	3.3235
25	.0145	.3942	.0167	.6417	.0380	2.1454	.0349	.0010	.0167	.0813	.0319	.0069	3.4233
26	.0103	.7873	.0187	.5766	.0402	2.1037	.0349	.0009	.0138	.1401	.0252	.0063	3.7580
27	.0079	.2929	.0111	.5709	.0280	1.6871	.0249	.0008	.0120	.0703	.0334	.0053	2.7445
28	.0235	.4063	.0169	.8269	.0397	2.1991	.0355	.0016	.0185	.1432	.0768	.0083	3.7963
29	.0149	.3818	.0159	.6499	.0422	2.1896	.0342	.0012	.0144	.0851	.0206	.0065	3.4562
30	.0092	.4137	.0218	.5481	.0892	2.5869	.0549	.0009	.0176	.0535	.0266	.0059	3.8284
31	.0065	.2447	.0124	.3841	.0432	2.2117	.0275	.0005	.0086	.0588	.0133	.0044	3.0157
32	.0056	.3483	.0337	.5150	.0878	1.8953	.0951	.0010	.0301	.0366	.0209	.0039	3.0733
33	.0079	.2682	.0143	.4401	.0381	2.3926	.0320	.0006	.0100	.0463	.0154	.0050	3.2707
34	.0052	.2015	.0089	.2340	.0359	1.6872	.0162	.0004	.0054	.0255	.0080	.0025	2.2307
35	.0086	.3220	.0149	.5068	.0406	2.3755	.0343	.0009	.0112	.0910	.0192	.0053	3.4303
36	.0077	.2595	.0138	.7032	.0423	2.2309	.0315	.0008	.0100	.1100	.0151	.0056	3.4305
37	.0099	.3375	.0176	.5586	.0510	2.6697	.0390	.0008	.0124	.0638	.0192	.0070	3.7864
38	.0115	.5102	.0213	.5409	.0541	3.0723	.0470	.0008	.0139	.0648	.0231	.0071	4.3672
39	.0105	.4337	.0204	.5491	.1966	2.6805	.0454	.0009	.0179	.0575	.0234	.0060	4.0420
40	.0121	.3804	.0213	.5600	.0544	3.3213	.0456	.0008	.0136	.0657	.0233	.0078	4.5063
41	.0121	.3804	.0213	.5600	.0544	2.3213	.0456	.0008	.0136	.0657	.0233	.0078	3.5063

TABLE 22-7

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- TULARE LAKE

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0082	.1214	.0167	.3127	.0397	.0205	2.0417	.0038	.0362	.0465	.0243	.0084	2.6802
2	.0118	.1764	.0386	.4981	.0466	.0248	2.0390	.0073	.0847	.0858	.0380	.0149	3.0659
3	.0043	.1591	.1086	.3258	.0249	.0125	1.7552	.0029	.0562	.0582	.0343	.0067	2.5487
4	.0094	.1734	.0244	.4032	.0366	.0215	2.3964	.0059	.0265	.0595	.0351	.0061	3.1979
5	.0161	.2208	.0230	.5506	.0526	.0241	2.5515	.0077	.0700	.0845	.0576	.0057	3.6641
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	.0060	.1684	.0129	.3894	.0622	.0121	1.8208	.0091	.0100	.0728	.0331	.0033	2.6002
8	.0136	.2154	.0257	.5126	.0449	.0207	2.3457	.0063	.0189	.0805	.0835	.0065	3.3744
9	.0119	.1935	.0237	.4988	.0425	.0196	2.3942	.0066	.0185	.0755	.0468	.0045	3.3361
10	.0333	.2228	.0252	.7348	.0426	.0361	2.4532	.0068	.0252	.0719	.0532	.0081	3.7133
11	.0142	.2464	.0237	.6620	.0395	.0229	2.5871	.0066	.0230	.0691	.0547	.0066	3.7556
12	.0135	.2667	.0232	1.0030	.0375	.0259	2.2896	.0055	.0234	.0932	.0514	.0077	3.8406
13	.0098	.2260	.0272	.4948	.0597	.0266	2.3145	.0042	.0323	.0584	.0309	.0080	3.2925
14	.0072	.1667	.0170	.6698	.0315	.0169	2.2973	.0049	.0245	.0590	.0349	.0052	3.3349
15	.1632	.1802	.0348	.4076	.0577	.1248	2.0717	.0114	.0840	.0551	.0359	.0050	3.2313
16	.0639	.2319	.0235	.6818	.0484	.0575	2.4334	.0078	.0251	.0751	.0420	.0062	3.6966
17	.0545	.2585	.0210	.5804	.0615	.0509	2.1784	.0072	.0177	.0803	.0354	.0054	3.3513
18	.0155	.2504	.0242	.6216	.0483	.0234	2.6382	.0071	.0178	.0836	.0452	.0056	3.7809
19	.0119	.2455	.0202	.5264	.0439	.0301	2.3564	.0053	.0227	.0751	.0365	.0047	3.3788
20	.0077	.2105	.0191	.4494	.0566	.0163	2.1921	.0065	.0122	.0576	.0298	.0035	3.0613
21	.0145	.2584	.0273	.5485	.0567	.0231	2.6375	.0061	.0215	.0730	.0891	.0089	3.7647
22	.0096	.1767	.0179	.5842	.0336	.0174	2.1731	.0044	.0462	.0643	.0319	.0072	3.1665
23	.0099	.2509	.0191	.6255	.0334	.0187	2.2156	.0049	.0266	.1000	.0392	.0073	3.3513
24	.0088	.2344	.0215	.6831	.0341	.0182	2.1773	.0050	.0225	.0919	.2065	.0080	3.5115
25	.0109	.2430	.0215	.7297	.0366	.0193	2.2882	.0061	.0220	.0936	.0623	.0071	3.5403
26	.0094	.4105	.0228	.6753	.0372	.0198	2.3474	.0057	.0202	.0948	.0467	.0061	3.6960
27	.0071	.2045	.0154	.6028	.0285	.0147	1.9726	.0037	.0169	.0896	.0477	.0054	3.0090
28	.0294	.2348	.0213	.8133	.0392	.0336	2.2513	.0059	.0262	.1150	.1100	.0081	3.6882
29	.0146	.2476	.0213	.6729	.0391	.0231	2.3604	.0057	.0204	.0849	.0418	.0060	3.5378
30	.0101	.2512	.0220	.5820	.0873	.0192	2.7241	.0075	.0201	.0700	.0539	.0053	3.8528
31	.0093	.1596	.0172	.4689	.0440	.0159	2.2587	.0054	.0141	.0646	.0379	.0041	3.0997
32	.0065	.1585	.0165	.3657	.0837	.0124	2.2421	.0043	.0147	.0406	.0285	.0031	2.9767
33	.0086	.1861	.0178	.4792	.0352	.0162	2.4329	.0068	.0163	.0606	.0416	.0045	3.3058
34	.0041	.1298	.0129	.2988	.0391	.0088	1.7265	.0039	.0093	.0312	.0223	.0025	2.2891
35	.0083	.2107	.0209	.5566	.0393	.0168	2.5168	.0071	.0169	.0735	.0501	.0049	3.5218
36	.0080	.1842	.0192	.7346	.0410	.0199	2.2579	.0082	.0202	.1310	.0381	.0060	3.4683
37	.0117	.2339	.0235	.5847	.0488	.0211	2.7693	.0089	.0199	.0771	.0515	.0057	3.8562
38	.0105	.3607	.0291	.6311	.0502	.0224	3.1642	.0087	.0241	.0799	.0581	.0063	4.4454
39	.0135	.2486	.0296	.6293	.2375	.0232	2.7536	.0078	.0197	.0694	.0502	.0056	4.0881
40	.0101	.2694	.0259	.6209	.0500	.0218	3.4092	.0090	.0261	.0844	.0629	.0067	4.5964
41	.0101	.2694	.0259	.6209	.0500	.0218	2.4092	.0090	.0261	.0844	.0629	.0067	3.5964

TABLE 22-8

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- NORTH LAHONTAN

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0355	.3335	.0177	.2041	.0490	.1126	.0307	1.6122	.0252	.0141	.0086	.0053	2.4484
2	.0580	.6359	.0277	.2614	.0643	.0463	.0524	1.5291	.0391	.0181	.0131	.0046	2.7501
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
5	.0427	.6504	.0516	.4788	.0637	.0484	.0445	2.0890	.0433	.0320	.0180	.0051	3.5674
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
8	.0349	.6654	.0713	.4352	.0591	.0462	.0571	1.8303	.0252	.0340	.0182	.0071	3.2842
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
10	.0675	.7130	.0388	.4878	.0548	.0499	.0575	1.9319	.1456	.0424	.0323	.0091	3.6305
11	.0540	.6902	.0334	.4929	.0525	.0385	.0499	2.0572	.0935	.0400	.0230	.0066	3.6317
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
13	.6515	.4661	.0296	.3318	.0788	.0647	.0622	1.5201	.0146	.0264	.0142	.0060	3.2660
14	.0279	.4277	.0211	.8300	.0377	.0304	.1068	1.5689	.0586	.0294	.0243	.0058	3.1686
15	.1211	.4171	.0597	.3488	.0499	.1015	.0335	1.8780	.0150	.0247	.1611	.0048	3.2153
16	.0604	.6166	.0299	.6443	.0512	.0535	.0392	1.8705	.0297	.0581	.0304	.0062	3.4901
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
18	.0467	.8329	.0427	.5336	.0658	.0418	.0377	2.0159	.0187	.0418	.0179	.0054	3.7010
19	.0327	.5804	.0583	.5219	.0565	.0533	.0947	1.7460	.0831	.0347	.0199	.0050	3.2865
20	.0543	.5528	.5065	.3202	.0502	.0298	.0387	1.4077	.0168	.0217	.0140	.0030	3.0158
21	.0587	.7004	.0486	.5202	.0692	.0553	.0682	2.0156	.0273	.0401	.0214	.0096	3.6346
22	.0289	.4042	.0195	.6073	.0330	.0277	.0276	1.6477	.0370	.0345	.0134	.0082	2.8890
23	.0308	.5901	.0391	.5536	.0404	.0310	.0358	1.6821	.0426	.0663	.0178	.0073	3.1368
24	.0308	.7519	.0224	.5686	.0408	.0296	.0334	1.6526	.0392	.0618	.0201	.0066	3.2578
25	.0346	.6545	.0258	.6212	.0442	.0312	.0361	1.7512	.0592	.0730	.0208	.0070	3.3588
26	.0332	1.1274	.0282	.5271	.0492	.0356	.0392	1.8534	.0216	.1912	.0228	.0058	3.9346
27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000
28	.0493	.6509	.0246	.6600	.0431	.0426	.0355	1.7211	.0724	.0708	.0399	.0075	3.4177
29	.0392	.6557	.0320	.5941	.0482	.0370	.0377	1.7894	.0352	.0525	.0198	.0059	3.3466
30	.0474	.7102	.0383	.5618	.1336	.0530	.0540	2.2180	.0274	.0326	.0200	.0054	3.9018
31	.0299	.5063	.0213	.4472	.0530	.0322	.0311	1.8938	.0473	.0294	.0143	.0045	3.1104
32	.0424	.4641	.0453	.4318	.1187	.3129	.0593	1.7672	.0255	.0270	.0165	.0037	3.3144
33	.0361	.5831	.0271	.3986	.0485	.0380	.0344	2.0338	.0147	.0226	.0142	.0042	3.2572
34	.0164	.3417	.0136	.1735	.0484	.0232	.0165	1.3762	.0104	.0114	.0070	.0018	2.0402
35	.0354	.6987	.0284	.4740	.0557	.0391	.0371	1.9347	.0185	.0285	.0157	.0044	3.3703
36	.0371	.6385	.0231	.3949	.0513	.0369	.0326	1.9354	.0188	.0197	.0134	.0040	3.2058
37	.0430	.6704	.0300	.5261	.0651	.0466	.0421	2.2088	.0268	.0327	.0180	.0056	3.7153
38	.0646	.8410	.0349	.5697	.0681	.0458	.0511	2.5477	.0240	.0318	.0210	.0061	4.3059
39	.0445	.7591	.0330	.5222	.2434	.0509	.0477	2.2169	.0310	.0335	.0198	.0053	4.0075
40	.0576	.7005	.0357	.6085	.0702	.0461	.0511	2.7728	.0248	.0333	.0207	.0067	4.4281
41	.0576	.7005	.0357	.6085	.0702	.0461	.0511	1.7728	.0248	.0333	.0207	.0067	3.4281

TABLE 22-9

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- SOUTH LAHONTAN

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TI	NI	SL	SA	SD	CD	
1	.0043	.1178	.0198	.2766	.0497	.0904	.0764	.0009	1.5685	.0243	.0489	.3022	2.5797
2	.0042	.1307	.0520	.2772	.0477	.0305	.0796	.0010	2.2195	.0543	.0753	.0262	2.9982
3	.0029	.1323	.0209	.3001	.0290	.0185	.0667	.0007	1.8327	.0708	.0557	.0258	2.5560
4	.0072	.1452	.0345	.3370	.0468	.0675	.2253	.0015	2.0955	.0385	.0768	.1222	3.1981
5	.0083	.1845	.0531	.3588	.0648	.0406	.1050	.0016	2.6555	.0592	.1274	.0238	3.6825
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000
7	.0031	.1307	.0303	.2123	.0780	.0179	.0518	.0008	1.8615	.0319	.1779	.0125	2.6088
8	.0054	.2047	.0635	.3616	.0541	.0371	.1009	.0014	2.3947	.0504	.1160	.0227	3.4125
9	.0050	.1720	.0618	.3082	.0525	.0334	.0911	.0013	2.4598	.0413	.1046	.0197	3.3506
10	.0317	.2207	.0491	.4481	.0499	.0428	.1117	.0023	2.6541	.0625	.0811	.0263	3.7805
11	.0120	.2021	.0512	.4287	.0484	.0312	.1192	.0015	2.7554	.0524	.0816	.0267	3.8104
12	.0107	.2410	.0556	.5397	.0458	.0325	.0970	.0015	2.5524	.1336	.1760	.0235	3.9093
13	.0078	.2040	.0462	.4276	.1056	.0506	.1505	.0013	2.0476	.0481	.0556	.0601	3.2049
14	.0049	.1452	.0341	.6820	.0377	.0243	.1521	.0014	2.2094	.0359	.0664	.0188	3.4120
15	.1844	.1766	.0410	.3498	.0653	.1408	.0822	.0094	2.0917	.0384	.0615	.0151	3.2561
16	.0704	.1933	.0453	.5189	.0562	.0692	.1000	.0042	2.5548	.0619	.0811	.0216	3.7769
17	.0561	.2480	.0437	.5419	.0668	.0615	.0824	.0037	2.1901	.0558	.0655	.0176	3.4331
18	.0132	.2727	.0577	.4699	.0558	.0330	.1023	.0016	2.6676	.0499	.1033	.0234	3.8504
19	.0069	.2194	.0486	.4374	.0502	.0383	.0905	.0014	2.3839	.0443	.0761	.0172	3.4143
20	.0039	.1789	.0522	.2927	.0700	.0236	.0628	.0009	2.2348	.0291	.1077	.0123	3.0688
21	.0088	.2287	.0560	.4386	.0650	.0369	.1278	.0015	2.6746	.0684	.0936	.0309	3.8307
22	.0062	.1871	.0496	.4340	.0498	.0285	.0791	.0013	2.3390	.0896	.0620	.0202	3.3466
23	.0071	.2138	.0430	.4702	.0423	.0264	.0820	.0013	2.4074	.1218	.0788	.0218	3.5160
24	.0062	.2148	.0470	.5264	.0436	.0254	.0843	.0013	2.3907	.0971	.1626	.0217	3.6211
25	.0067	.2005	.0473	.5064	.0457	.0269	.0948	.0013	2.5058	.1085	.1028	.0230	3.6698
26	.0068	.3916	.0571	.4791	.0458	.0286	.0943	.0013	2.5250	.1087	.0922	.0220	3.8525
27	.0051	.1842	.0333	.5051	.0349	.0209	.0641	.0011	2.1182	.1115	.0709	.0156	3.1648
28	.0107	.2151	.0588	.7497	.0481	.0315	.0967	.0016	2.6070	.1567	.1367	.0240	4.1366
29	.0117	.2210	.0487	.5219	.0469	.0311	.0948	.0015	2.4719	.0759	.0839	.0216	3.6310
30	.0053	.2197	.0452	.4536	.1058	.0324	.1174	.0013	2.6907	.0409	.1121	.0246	3.8489
31	.0036	.1225	.0375	.2762	.0556	.0276	.0892	.0010	2.3624	.0350	.0771	.0211	3.1139
32	.0031	.1257	.0381	.2615	.0904	.0282	.0697	.0008	2.0202	.0236	.0537	.0121	2.7270
33	.0045	.1483	.0372	.3235	.0439	.0271	.1014	.0011	2.4912	.0326	.0977	.0230	3.3315
34	.0027	.1108	.0320	.2011	.0519	.0153	.0516	.0006	1.8343	.0185	.0595	.0141	2.3923
35	.0050	.1973	.0479	.3661	.0495	.0262	.0996	.0011	2.6279	.0492	.1135	.0226	3.6059
36	.0044	.1628	.0394	.3670	.0580	.0321	.0959	.0012	2.9143	.0335	.1396	.0528	3.9010
37	.0054	.1913	.0517	.3957	.0666	.0376	.1262	.0014	2.8653	.0437	.1237	.0290	3.9356
38	.0061	.2518	.0639	.4428	.0631	.0349	.1578	.0014	3.2488	.0467	.1141	.0353	4.4666
39	.0068	.2066	.0679	.4316	.3023	.0375	.1125	.0015	2.7655	.0452	.0972	.0245	4.0990
40	.0062	.2012	.0524	.4516	.0626	.0353	.1766	.0015	3.4348	.0498	.1102	.0401	4.6223
41	.0062	.2012	.0524	.4516	.0626	.0353	.1766	.0015	2.4348	.0498	.1102	.0401	3.6223

TABLE 22-10

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SANTA ANA

SECTOR	NC	SFR	CC	REGION OF IMPACT									STATEWIDE
				LA	SJ	SB	TI	NI	SI	SA	SD	CD	
1	.0057	.1261	.0121	.3561	.0941	.1493	.0835	.0012	.0115	1.7486	.0150	.0201	2.6432
2	.0063	.1143	.0112	.4294	.0319	.0265	.0483	.0018	.0132	2.2804	.0192	.0201	3.0026
3	.0034	.1339	.0111	.4115	.0249	.0189	.0883	.0010	.0207	1.7630	.0382	.0107	2.5256
4	.0096	.1347	.0154	.4357	.0725	.0874	.0795	.0063	.0221	2.1904	.0234	.0743	3.1514
5	.0081	.1499	.0155	.5530	.0292	.0218	.0425	.0014	.1163	2.6290	.0418	.0167	3.6252
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	1.0000
7	.0028	.0887	.0216	.3074	.0148	.0105	.0218	.0006	.0090	2.0560	.0246	.0071	2.5649
8	.0052	.1599	.0159	.5561	.0280	.0184	.0488	.0012	.0294	2.3799	.0530	.0520	3.3478
9	.0049	.1398	.0130	.4939	.0251	.0179	.0387	.0011	.0223	2.4572	.0293	.0510	3.2941
10	.0415	.1651	.0158	.6587	.0350	.0405	.0476	.0025	.0221	2.6019	.0309	.0228	3.6844
11	.0126	.1614	.0150	.6372	.0324	.0227	.0477	.0014	.0221	2.7254	.0282	.0244	3.7304
12	.0116	.2119	.0137	.7027	.0291	.0240	.0397	.0014	.0217	2.7458	.0374	.0126	3.8516
13	.0093	.1891	.0286	.5911	.0920	.0390	.1663	.0024	.0178	1.9580	.0352	.0442	3.1728
14	.0044	.1203	.0110	.7302	.0231	.0166	.0756	.0011	.0156	2.1555	.0269	.0318	3.2121
15	.2000	.1481	.0179	.4940	.0513	.1399	.0433	.0096	.0125	2.0218	.0309	.0089	3.1781
16	.0675	.1623	.0151	.7273	.0370	.0576	.0422	.0038	.0199	2.5017	.0293	.0126	3.6763
17	.0546	.1893	.0145	.6583	.0422	.0501	.0396	.0035	.0149	2.1926	.0233	.0132	3.2962
18	.0115	.1820	.0131	.6498	.0345	.0223	.0376	.0014	.0135	2.7489	.0290	.0113	3.7549
19	.0072	.1717	.0131	.5994	.0270	.0259	.0459	.0013	.0188	2.2839	.0240	.0140	3.2323
20	.0037	.1639	.0291	.4612	.0206	.0153	.0370	.0008	.0174	2.2323	.0204	.0117	3.0135
21	.0092	.1830	.0192	.6548	.0332	.0230	.0549	.0013	.0359	2.5637	.0388	.0974	3.7144
22	.0063	.1579	.0124	.6108	.0227	.0176	.0337	.0012	.0772	2.2362	.0247	.0153	3.2160
23	.0072	.1861	.0123	.6373	.0248	.0181	.0344	.0012	.0360	2.4204	.0316	.0150	3.4244
24	.0062	.1748	.0132	.6902	.0256	.0177	.0353	.0012	.0259	2.4642	.1280	.0135	3.5959
25	.0069	.1732	.0136	.6575	.0270	.0181	.0381	.0012	.0246	2.6080	.0434	.0130	3.6245
26	.0062	.3688	.0148	.6256	.0298	.0195	.0391	.0011	.0176	2.7726	.0340	.0118	3.9409
27	.0050	.1690	.0114	.6672	.0204	.0147	.0287	.0011	.0215	2.0803	.0406	.0100	3.0699
28	.0185	.1819	.0144	.8384	.0303	.0272	.0397	.0017	.0243	2.7010	.0800	.0137	3.9710
29	.0105	.1918	.0134	.7048	.0290	.0221	.0391	.0014	.0183	2.5603	.0290	.0130	3.6326
30	.0049	.1773	.0158	.7151	.0334	.0191	.0537	.0012	.0230	2.6843	.0349	.0121	3.7748
31	.0034	.1085	.0102	.4323	.0220	.0135	.0302	.0008	.0105	2.3231	.0218	.0088	2.9852
32	.0035	.1593	.0366	.5346	.0290	.0140	.0615	.0009	.0312	2.1057	.0220	.0075	3.0057
33	.0044	.1341	.0119	.5140	.0262	.0155	.0357	.0009	.0125	2.4979	.0249	.0101	3.2881
34	.0023	.0784	.0060	.2893	.0137	.0099	.0200	.0005	.0066	1.7553	.0133	.0068	2.2023
35	.0046	.1519	.0125	.5877	.0266	.0163	.0368	.0010	.0142	2.6271	.0333	.0106	3.5225
36	.0041	.1221	.0110	.5886	.0309	.0588	.0340	.0010	.0113	2.4402	.0232	.0133	3.3382
37	.0051	.1597	.0152	.6190	.0330	.0196	.0447	.0012	.0153	2.8825	.0323	.0134	3.8410
38	.0058	.2070	.0173	.7630	.0385	.0218	.0527	.0013	.0181	3.2149	.0328	.0151	4.3882
39	.0064	.1570	.0157	.6479	.0318	.0209	.0471	.0013	.0186	3.0471	.0323	.0151	4.0413
40	.0060	.1836	.0178	.7030	.0412	.0221	.0546	.0013	.0174	3.4399	.0339	.0165	4.5375
41	.0060	.1836	.0178	.7030	.0412	.0221	.0546	.0013	.0174	2.4399	.0339	.0165	3.5375

TABLE 22-11

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN DIEGO

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0413	.1377	.0148	.3269	.0470	.1257	.0362	.0686	.0170	.0270	1.5807	.0675	2.4904
2	.0119	.1106	.0117	.3885	.0346	.0323	.0301	.0054	.0156	.0376	2.1880	.0346	2.9008
3	.0198	.1293	.0113	.3718	.0244	.0429	.0383	.0032	.0188	.0380	1.7616	.0175	2.4770
4	.0234	.1274	.0154	.3955	.0386	.0748	.0362	.0373	.0163	.0354	2.1637	.1179	3.0818
5	.0096	.1120	.0120	.4996	.0275	.0194	.0343	.0020	.0236	.0729	2.7035	.0260	3.5424
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	1.0000
7	.0040	.0683	.0072	.2950	.0154	.0106	.0279	.0012	.0213	.0373	2.0303	.0149	2.5337
8	.0061	.1261	.0133	.4891	.0270	.0162	.0425	.0016	.0250	.0846	2.3814	.0281	3.2410
9	.0063	.1087	.0118	.4503	.0250	.0170	.0341	.0016	.0252	.0680	2.4035	.0799	3.2314
10	.0425	.1431	.0152	.6871	.0346	.0399	.0406	.0031	.0254	.0862	2.3690	.0378	3.5245
11	.0141	.1455	.0145	.6346	.0326	.0227	.0410	.0023	.0243	.0963	2.5676	.0302	3.6255
12	.0127	.1382	.0205	.6647	.0288	.0232	.0336	.0021	.0237	.1123	2.6327	.0272	3.7197
13	.0662	.1919	.0244	.5136	.0966	.0578	.0537	.0057	.0207	.0688	1.9671	.0606	3.1272
14	.0056	.1010	.0106	.6750	.0235	.0170	.0379	.0015	.0156	.0628	2.1663	.0772	3.1939
15	.1866	.1276	.0163	.4185	.0486	.1295	.0371	.0090	.0238	.0682	1.9084	.0185	2.9221
16	.0781	.1399	.0147	.6467	.0383	.0625	.0370	.0047	.0259	.1557	2.2808	.0236	3.5079
17	.0531	.1833	.0142	.6001	.0441	.0483	.0359	.0037	.0273	.1046	2.0555	.0248	3.1949
18	.0134	.1726	.0178	.5832	.0362	.0222	.0442	.0022	.0197	.0733	2.6599	.0227	3.6672
19	.0082	.1700	.0131	.5334	.0298	.0259	.0470	.0017	.0285	.1275	2.1667	.0265	3.1784
20	.0047	.1285	.0103	.4129	.0212	.0151	.0461	.0013	.0333	.0472	2.2269	.0168	2.9642
21	.0089	.1544	.0168	.5769	.0326	.0196	.0514	.0018	.0381	.0903	2.5784	.0440	3.6133
22	.0067	.1135	.0102	.5837	.0205	.0159	.0267	.0016	.0344	.0878	1.9986	.0258	2.9253
23	.0090	.1461	.0115	.5934	.0249	.0182	.0295	.0017	.0295	.1612	2.1730	.0254	3.2234
24	.0062	.1393	.0136	.7147	.0246	.0166	.0299	.0017	.0232	.1032	2.3585	.0243	3.4560
25	.0073	.1380	.0132	.6336	.0268	.0173	.0328	.0018	.0235	.1273	2.4105	.0238	3.4559
26	.0073	.1595	.0484	.5847	.0296	.0183	.0329	.0019	.0192	.1051	2.7891	.0377	3.8336
27	.0055	.1381	.0100	.5810	.0196	.0137	.0242	.0013	.0228	.1353	1.8703	.0184	2.8402
28	.0129	.1397	.0163	.8596	.0302	.0234	.0345	.0022	.0248	.1089	2.6109	.0312	3.8945
29	.0111	.1390	.0177	.6328	.0290	.0210	.0323	.0020	.0202	.1299	2.4374	.0263	3.4988
30	.0066	.1595	.0169	.6781	.0351	.0200	.0537	.0022	.0326	.0521	2.5435	.0290	3.6294
31	.0051	.0779	.0099	.3763	.0221	.0128	.0252	.0016	.0132	.0344	2.3526	.0188	2.9498
32	.0039	.0879	.0097	.3135	.0215	.0100	.0626	.0011	.0520	.0270	1.8711	.0129	2.4731
33	.0062	.0946	.0112	.4319	.0264	.0153	.0298	.0018	.0154	.0418	2.5489	.0218	3.2451
34	.0046	.0540	.0062	.2717	.0136	.0109	.0161	.0020	.0098	.0221	1.8318	.0146	2.2574
35	.0064	.1156	.0139	.5161	.0266	.0164	.0342	.0018	.0173	.0655	2.6251	.0268	3.4657
36	.0157	.1066	.0120	.6544	.0262	.0323	.0302	.0254	.0169	.0354	2.4202	.0320	3.4075
37	.0076	.1236	.0147	.5464	.0333	.0205	.0373	.0021	.0192	.0557	2.8915	.0309	3.7828
38	.0085	.1366	.0167	.6869	.0393	.0223	.0440	.0026	.0360	.0559	3.2436	.0373	4.3296
39	.0085	.1281	.0146	.5902	.0322	.0217	.0410	.0021	.0231	.0617	3.0043	.0324	3.9601
40	.0093	.1380	.0169	.6216	.0418	.0227	.0439	.0028	.0220	.0570	3.4692	.0328	4.4780
41	.0093	.1380	.0169	.6216	.0418	.0227	.0439	.0028	.0220	.0570	2.4692	.0328	3.4780

TABLE 22-12

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED GROSS OUTPUT COEFFICIENTS  
 REGION OF DIRECT CHANGE IN FINAL DEMAND -- COLORADO DESERT

SECTOR	REGION OF IMPACT												
	NC	SFR	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	STATEWIDE
1	.0044	.1250	.0219	.3619	.0956	.0307	.0312	.0007	.0109	.0288	.0538	1.8375	2.6024
2	.0056	.1762	.0279	.4935	.0348	.0458	.0339	.0008	.0144	.0376	.1070	1.8810	2.8587
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000
4	.0068	.1612	.0281	.4636	.0684	.0393	.0339	.0008	.0146	.0354	.0876	2.1759	3.1158
5	.0120	.2105	.0431	.6332	.0309	.0576	.0354	.0011	.0211	.0844	.1401	2.3323	3.6016
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000
7	.0205	.2005	.0398	.3281	.0162	.0233	.0195	.0006	.0109	.0372	.1542	1.7083	2.5590
8	.0104	.2110	.0418	.6283	.0310	.0522	.0446	.0009	.0235	.0912	.1314	2.0912	3.5574
9	.0090	.1935	.0381	.5699	.0278	.0466	.0359	.0008	.0207	.0754	.1097	2.1421	3.2697
10	.0345	.2661	.0404	.6660	.0352	.0498	.0429	.0021	.0228	.0753	.0835	2.3497	3.6683
11	.0122	.2366	.0416	.6771	.0344	.0374	.0434	.0012	.0245	.0631	.0873	2.4210	3.6797
12	.0117	.2033	.0337	.7700	.0301	.0383	.0356	.0013	.0238	.1555	.2845	2.1972	3.7850
13	.0078	.2064	.0315	.5838	.0653	.0620	.0433	.0009	.0163	.0592	.0667	1.9608	3.1042
14	.0050	.1554	.0241	.8358	.0247	.0284	.0433	.0010	.0162	.0650	.0693	1.8910	3.1592
15	.1833	.1848	.0317	.4931	.0478	.1392	.0386	.0089	.0149	.0692	.0659	1.8620	3.1394
16	.0744	.2102	.0318	.7549	.0381	.0740	.0388	.0042	.0201	.1430	.0796	2.0944	3.5634
17	.0591	.2494	.0334	.6881	.0470	.0701	.0371	.0034	.0184	.1140	.0701	1.9255	3.3156
18	.0153	.2814	.0358	.7272	.0388	.0394	.0336	.0013	.0205	.0732	.0967	2.3615	3.7245
19	.0096	.2910	.0286	.6085	.0322	.0579	.0527	.0013	.0217	.0990	.0679	1.8088	3.0790
20	.0254	.2524	.2452	.5141	.0232	.0380	.0378	.0008	.0181	.0472	.0857	1.7091	2.9968
21	.0108	.2319	.0455	.7119	.0358	.0600	.0492	.0011	.0261	.0888	.1083	2.4084	3.7778
22	.0075	.1732	.0285	.6637	.0237	.0385	.0289	.0010	.0211	.0778	.0708	2.2290	3.3637
23	.0079	.2180	.0292	.6589	.0261	.0327	.0300	.0010	.0267	.1218	.0858	2.2082	3.4462
24	.0072	.2281	.0285	.7514	.0273	.0312	.0316	.0011	.0232	.1405	.2465	2.0486	3.5650
25	.0083	.2275	.0328	.7240	.0283	.0329	.0333	.0011	.0233	.1319	.1081	2.2197	3.5713
26	.0071	.2193	.0354	.7020	.0319	.0352	.0336	.0010	.0212	.1643	.0887	2.3852	3.7250
27	.0053	.1812	.0205	.6525	.0206	.0239	.0249	.0009	.0165	.1307	.0694	1.7329	2.8794
28	.0233	.2185	.0311	.8579	.0307	.0425	.0341	.0018	.0242	.1572	.1525	2.2174	3.7914
29	.0107	.2220	.0333	.7611	.0308	.0361	.0343	.0012	.0208	.1514	.0883	2.1861	3.5761
30	.0063	.2400	.0441	.7486	.0378	.0494	.0506	.0010	.0317	.0517	.1457	2.4629	3.8697
31	.0041	.1424	.0306	.4893	.0241	.0320	.0261	.0006	.0170	.0427	.0873	2.0964	2.9925
32	.0179	.2457	.1991	.5527	.0625	.5100	.0538	.0009	.0413	.0944	.1356	1.7442	3.6580
33	.0051	.1869	.0352	.5584	.0286	.0373	.0310	.0007	.0188	.0409	.0995	2.2132	3.2556
34	.0025	.1049	.0167	.3273	.0143	.0198	.0148	.0004	.0090	.0191	.0585	1.5560	2.1433
35	.0054	.2334	.0362	.6194	.0287	.0376	.0330	.0008	.0220	.0695	.1108	2.2195	3.4164
36	.0047	.2047	.0308	.7045	.0325	.0320	.0299	.0009	.0167	.0344	.1166	2.3050	3.4126
37	.0061	.2278	.0439	.6870	.0358	.0473	.0380	.0009	.0237	.0538	.1257	2.5224	3.8126
38	.0066	.2253	.0487	.8748	.0410	.0441	.0447	.0011	.0265	.0529	.1250	2.8457	4.3366
39	.0077	.2205	.0463	.7574	.0356	.0602	.0426	.0011	.0249	.0566	.1836	2.5819	4.0184
40	.0068	.2272	.0530	.7456	.0437	.0436	.0453	.0010	.0266	.0529	.1284	3.0924	4.4665
41	.0068	.2272	.0530	.7456	.0437	.0436	.0453	.0010	.0266	.0529	.1284	2.0924	3.4665



TABLE 23-1

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- NORTH COAST

SECTOR	REGION OF IMPACT													STATEWIDE
	NC	SFB	CC	LA	SJ	SR	TL	NI	SI	SA	SD	CD		
1	.5847	.1324	.0115	.0962	.0113	.0321	.0128	.0003	.0034	.0055	.0037	.0014	.8973	
2	.7503	.2355	.0130	.1184	.0125	.0143	.0198	.0005	.0049	.0065	.0052	.0010	1.1819	
3	.4983	.1597	.0104	.1266	.0092	.0081	.0189	.0004	.0045	.0087	.0091	.0011	1.0570	
4	.8660	.1725	.0159	.1319	.0235	.0342	.0216	.0004	.0047	.0079	.0049	.0013	1.2846	
5	.9364	.2593	.0210	.1815	.0097	.0123	.0185	.0005	.0064	.0100	.0063	.0014	1.4634	
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
7	.5348	.2473	.1797	.0828	.0050	.0057	.0077	.0002	.0029	.0074	.0040	.0007	1.0784	
8	.8598	.2530	.0327	.1749	.0106	.0112	.0213	.0005	.0075	.0104	.0070	.0017	1.3907	
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
10	.8491	.2882	.0217	.1837	.0117	.0155	.0200	.0007	.0075	.0122	.0080	.0021	1.4205	
11	1.0269	.2645	.0194	.1841	.0114	.0131	.0194	.0006	.0088	.0121	.0078	.0017	1.5696	
12	.7424	.1999	.0354	.3300	.0097	.0130	.0167	.0006	.0078	.0369	.0090	.0023	1.4038	
13	.5635	.2207	.0336	.1606	.0204	.0282	.0250	.0004	.0057	.0119	.0064	.0021	1.0787	
14	.5412	.1478	.0124	.2569	.0311	.0223	.0189	.0004	.0052	.0094	.0064	.0015	1.0536	
15	.7319	.1641	.0165	.1647	.0115	.0322	.0143	.0019	.0049	.0080	.0074	.0014	1.1589	
16	.7699	.2182	.0324	.2249	.0119	.0218	.0244	.0012	.0067	.0134	.0078	.0017	1.3342	
17	.7029	.2157	.0259	.2065	.0159	.0220	.0196	.0010	.0063	.0144	.0069	.0016	1.2386	
18	.9474	.3304	.0204	.1798	.0134	.0139	.0153	.0005	.0056	.0115	.0068	.0015	1.5465	
19	.5503	.2251	.0296	.1918	.0113	.0246	.0309	.0006	.0076	.0123	.0071	.0016	1.0928	
20	.4089	.2140	.2424	.1373	.0079	.0125	.0165	.0021	.0061	.0078	.0058	.0010	1.0621	
21	.8719	.2676	.0431	.1989	.0133	.0133	.0227	.0005	.0079	.0124	.0087	.0027	1.4631	
22	.4719	.1380	.0106	.2164	.0065	.0095	.0111	.0005	.0067	.0126	.0048	.0027	.8912	
23	.6644	.2209	.0160	.1949	.0084	.0100	.0144	.0005	.0081	.0192	.0066	.0020	1.1654	
24	.5807	.3135	.0215	.1962	.0091	.0112	.0180	.0005	.0074	.0193	.0074	.0019	1.1866	
25	.7184	.2538	.0156	.2168	.0094	.0108	.0154	.0005	.0068	.0243	.0074	.0020	1.2811	
26	.6814	.2046	.0514	.2189	.0092	.0111	.0158	.0005	.0161	.0257	.0069	.0019	1.2436	
27	.4564	.1723	.0183	.1825	.0072	.0077	.0143	.0004	.0053	.0176	.0053	.0015	.8888	
28	.5868	.2421	.0202	.2117	.0095	.0276	.0172	.0007	.0083	.0186	.0111	.0021	1.1557	
29	.7520	.2342	.0389	.2125	.0112	.0138	.0189	.0005	.0065	.0260	.0072	.0018	1.3235	
30	1.0202	.2790	.0182	.1860	.0125	.0130	.0253	.0006	.0091	.0106	.0095	.0014	1.5853	
31	1.1307	.1854	.0136	.1528	.0078	.0090	.0122	.0004	.0045	.0104	.0047	.0011	1.5326	
32	.6741	.1746	.0190	.2480	.0154	.0093	.0452	.0006	.0169	.0117	.0099	.0013	1.2262	
33	1.1683	.2306	.0150	.1426	.0092	.0105	.0142	.0004	.0051	.0072	.0053	.0011	1.6095	
34	1.0009	.1643	.0083	.0706	.0049	.0062	.0072	.0003	.0025	.0038	.0030	.0006	1.2726	
35	.9883	.2526	.0211	.1639	.0092	.0105	.0159	.0004	.0058	.0099	.0058	.0012	1.4848	
36	.8720	.2459	.0120	.2779	.0093	.0127	.0141	.0005	.0049	.0078	.0058	.0015	1.4643	
37	1.1477	.2531	.0239	.1901	.0112	.0137	.0172	.0005	.0062	.0106	.0065	.0015	1.6824	
38	1.3199	.3213	.0196	.2031	.0132	.0151	.0203	.0006	.0073	.0100	.0078	.0017	1.9400	
39	1.0627	.2880	.0179	.2030	.0114	.0146	.0200	.0006	.0076	.0100	.0072	.0015	1.6445	
40	1.5491	.2639	.0205	.2164	.0137	.0155	.0196	.0006	.0074	.0102	.0075	.0018	2.1262	
41	.5491	.2639	.0205	.2164	.0137	.0155	.0196	.0006	.0074	.0102	.0075	.0018	1.1262	

TABLE 23-2

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS  
 REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN FRANCISCO BAY

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SI	SA	SD	CD	
1	.0578	.5456	.0302	.0776	.0994	.0474	.0159	.0004	.0037	.0085	.0080	.0014	.8961
2	.0054	1.1823	.0118	.0732	.0192	.0155	.0163	.0003	.0066	.0073	.0258	.0011	1.3648
3	.0045	.9113	.0147	.0741	.0213	.0103	.0242	.0003	.0156	.0083	.0094	.0012	1.0952
4	.0210	.9712	.0227	.0945	.0706	.0488	.0450	.0005	.0053	.0112	.0104	.0020	1.3031
5	.0096	1.2750	.0147	.0974	.0152	.0184	.0192	.0005	.0137	.0117	.0332	.0014	1.5100
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0030	.8241	.0374	.0702	.0143	.0090	.1307	.0009	.0031	.0113	.0101	.0007	1.1150
8	.0054	1.1814	.0311	.0937	.0120	.0148	.0227	.0006	.0110	.0099	.0301	.0014	1.4140
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	.0155	1.1599	.0167	.1110	.0143	.0246	.0193	.0007	.0072	.0125	.0144	.0016	1.3976
11	.0080	1.3774	.0194	.1100	.0144	.0196	.0224	.0005	.0076	.0120	.0149	.0015	1.6076
12	.0072	1.1706	.0113	.1812	.0128	.0188	.0174	.0005	.0072	.0223	.0159	.0019	1.4669
13	.0086	.7244	.0258	.1066	.0574	.0279	.0358	.0005	.0123	.0127	.0145	.0042	1.0307
14	.0043	.8327	.0085	.1498	.0151	.0153	.0365	.0004	.0073	.0093	.0120	.0014	1.0925
15	.0767	.8299	.0112	.0989	.0210	.0682	.0166	.0030	.0204	.0097	.0164	.0014	1.1734
16	.0299	1.0407	.0121	.1547	.0165	.0351	.0177	.0012	.0077	.0151	.0158	.0018	1.3484
17	.0250	.8880	.0117	.1325	.0188	.0319	.0171	.0011	.0075	.0131	.0195	.0015	1.1677
18	.0073	1.2878	.0110	.1151	.0158	.0180	.0163	.0004	.0053	.0122	.0141	.0014	1.5046
19	.0064	.9108	.0138	.1204	.0130	.0224	.0277	.0005	.0236	.0117	.0282	.0015	1.1801
20	.0035	.6549	.0567	.0997	.0166	.0106	.2002	.0015	.0071	.0140	.0256	.0010	1.0916
21	.0094	1.1633	.0442	.1149	.0153	.0214	.0208	.0008	.0148	.0113	.0440	.0017	1.4620
22	.0092	.8498	.0101	.1120	.0106	.0197	.0146	.0004	.0102	.0165	.0212	.0020	1.0763
23	.0062	.9381	.0093	.1109	.0106	.0160	.0146	.0004	.0092	.0244	.0154	.0021	1.1573
24	.0052	1.0591	.0105	.1442	.0114	.0153	.0161	.0004	.0068	.0209	.0149	.0019	1.3067
25	.0058	1.1446	.0112	.1277	.0119	.0160	.0171	.0004	.0067	.0191	.0148	.0018	1.3769
26	.0049	1.2932	.0122	.1279	.0136	.0162	.0170	.0004	.0061	.0202	.0151	.0016	1.5284
27	.0057	.8259	.0086	.1372	.0097	.0153	.0134	.0004	.0058	.0160	.0122	.0015	1.0518
28	.0087	1.1439	.0116	.1898	.0136	.0196	.0176	.0005	.0074	.0253	.0169	.0021	1.4570
29	.0063	1.1334	.0115	.1450	.0133	.0170	.0174	.0004	.0065	.0185	.0148	.0017	1.3858
30	.0066	1.2781	.0156	.1126	.0152	.0199	.0361	.0004	.0072	.0113	.0156	.0013	1.5199
31	.0036	1.4078	.0094	.0749	.0104	.0122	.0141	.0002	.0039	.0083	.0115	.0010	1.5573
32	.0153	.9882	.0175	.1070	.0161	.0389	.0515	.0006	.0117	.0100	.0538	.0012	1.3120
33	.0042	1.4544	.0107	.0820	.0121	.0140	.0164	.0003	.0045	.0085	.0133	.0011	1.6216
34	.0037	1.2283	.0073	.0508	.0087	.0110	.0108	.0002	.0029	.0053	.0079	.0007	1.3376
35	.0057	1.3418	.0138	.1058	.0137	.0185	.0195	.0004	.0054	.0108	.0137	.0012	1.5503
36	.0136	1.2059	.0126	.1759	.0238	.0188	.0161	.0003	.0045	.0090	.0123	.0013	1.4943
37	.0051	1.5394	.0140	.1110	.0157	.0177	.0206	.0003	.0060	.0117	.0188	.0015	1.7618
38	.0091	1.7284	.0157	.1198	.0179	.0272	.0240	.0004	.0065	.0125	.0191	.0016	1.9823
39	.0059	1.4489	.0146	.1059	.0145	.0184	.0232	.0005	.0085	.0109	.0347	.0015	1.6873
40	.0056	1.9252	.0165	.1245	.0192	.0208	.0235	.0004	.0066	.0133	.0188	.0018	2.1762
41	.0056	.9252	.0165	.1245	.0192	.0208	.0235	.0004	.0066	.0133	.0188	.0018	1.1762

TABLE 23-3

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- CENTRAL COAST

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0156	.0797	.5414	.0988	.0111	.0267	.0127	.0002	.0038	.0108	.0032	.0016	.8056
2	.0029	.1181	.9594	.1332	.0109	.0100	.0154	.0003	.0058	.0216	.0046	.0015	1.2836
3	.0019	.0922	.7667	.1309	.0086	.0059	.0178	.0003	.0148	.0147	.0088	.0013	1.0638
4	.0074	.1156	.8981	.1455	.0255	.0189	.0443	.0004	.0056	.0120	.0055	.0016	1.2802
5	.0033	.1753	1.0335	.1850	.0100	.0082	.0154	.0004	.0086	.0125	.0084	.0016	1.4622
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0014	.1692	.8950	.0999	.0056	.0047	.0086	.0002	.0033	.0070	.0055	.0009	1.2011
8	.0024	.1662	.9755	.1754	.0111	.0070	.0206	.0003	.0092	.0132	.0113	.0022	1.3944
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	.0137	.1617	.8728	.2481	.0138	.0153	.0194	.0008	.0080	.0167	.0080	.0028	1.3813
11	.0048	.1656	1.0960	.2280	.0122	.0093	.0187	.0005	.0080	.0144	.0074	.0021	1.5671
12	.0042	.1374	.8997	.2914	.0103	.0098	.0146	.0005	.0073	.0232	.0088	.0023	1.4094
13	.0036	.1631	.5705	.1899	.0250	.0111	.0357	.0004	.0147	.0160	.0067	.0025	1.0392
14	.0019	.1017	.5921	.2613	.0083	.0066	.0394	.0005	.0069	.0235	.0065	.0018	1.0503
15	.0585	.1044	.6283	.1461	.0176	.0455	.0151	.0027	.0361	.0105	.0090	.0017	1.0755
16	.0206	.1535	.7722	.2374	.0139	.0199	.0151	.0011	.0083	.0200	.0078	.0020	1.2717
17	.0192	.1585	.6907	.2160	.0185	.0194	.0151	.0011	.0077	.0190	.0071	.0018	1.1742
18	.0050	.2047	1.0209	.2044	.0142	.0094	.0142	.0004	.0054	.0145	.0063	.0017	1.5009
19	.0033	.1455	.6655	.1843	.0101	.0111	.0166	.0004	.0203	.0375	.0068	.0017	1.1031
20	.0026	.1626	.7050	.1435	.0076	.0064	.0152	.0003	.0060	.0084	.0055	.0010	1.0641
21	.0038	.1817	.9483	.2088	.0141	.0089	.0249	.0004	.0120	.0182	.0090	.0035	1.4336
22	.0025	.0982	.5711	.2184	.0071	.0065	.0107	.0005	.0066	.0148	.0049	.0026	.9437
23	.0035	.1573	.7430	.2083	.0093	.0079	.0128	.0004	.0089	.0269	.0070	.0023	1.1876
24	.0026	.1713	.7472	.2339	.0090	.0075	.0130	.0004	.0075	.0236	.0221	.0023	1.2404
25	.0029	.1577	.8480	.2434	.0096	.0075	.0140	.0004	.0072	.0224	.0101	.0022	1.3255
26	.0025	.1558	1.0581	.2201	.0115	.0075	.0144	.0004	.0062	.0216	.0069	.0018	1.5069
27	.0020	.1198	.5174	.2051	.0076	.0057	.0102	.0003	.0057	.0250	.0084	.0017	.9089
28	.0082	.1548	.7164	.3107	.0111	.0157	.0141	.0006	.0081	.0337	.0223	.0027	1.2984
29	.0046	.1564	.8438	.2268	.0110	.0092	.0144	.0004	.0066	.0225	.0066	.0019	1.3043
30	.0030	.1896	1.0770	.2310	.0124	.0080	.0228	.0004	.0087	.0127	.0092	.0017	1.5764
31	.0016	.1155	1.2163	.1508	.0079	.0051	.0115	.0002	.0041	.0079	.0043	.0012	1.5264
32	.0016	.1182	.8284	.1709	.0114	.0055	.0289	.0004	.0113	.0096	.0070	.0011	1.1942
33	.0020	.1526	1.2366	.1631	.0095	.0061	.0134	.0003	.0048	.0089	.0051	.0013	1.6038
34	.0012	.0999	1.0352	.0868	.0046	.0036	.0071	.0001	.0024	.0045	.0027	.0006	1.2486
35	.0021	.1759	1.1100	.1884	.0098	.0068	.0142	.0003	.0054	.0128	.0064	.0015	1.5335
36	.0051	.1690	.9911	.2380	.0090	.0081	.0141	.0003	.0046	.0096	.0052	.0015	1.4555
37	.0023	.1726	1.2490	.2002	.0118	.0074	.0166	.0003	.0059	.0125	.0064	.0017	1.6867
38	.0028	.2159	1.4146	.2261	.0137	.0088	.0199	.0004	.0068	.0126	.0076	.0019	1.9310
39	.0028	.1759	1.1817	.2131	.0115	.0083	.0183	.0004	.0075	.0119	.0072	.0017	1.6403
40	.0027	.1739	1.6305	.2360	.0145	.0087	.0199	.0004	.0068	.0132	.0074	.0020	2.1161
41	.0027	.1739	.6305	.2360	.0145	.0087	.0199	.0004	.0068	.0132	.0074	.0020	1.1161

TABLE 23-4

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- LOS ANGELES

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0022	.0485	.0078	.5906	.0395	.0446	.0853	.0013	.0085	.0128	.0068	.0113	.8592
2	.0020	.0372	.0061	1.2018	.0118	.0146	.0231	.0011	.0080	.0139	.0128	.0075	1.3401
3	.0011	.0379	.0049	.9508	.0083	.0104	.0241	.0009	.0126	.0175	.0204	.0103	1.0991
4	.0025	.0472	.0096	1.0362	.0285	.0298	.0943	.0013	.0086	.0148	.0116	.0202	1.3046
5	.0028	.0494	.0087	1.3013	.0119	.0164	.0166	.0014	.0381	.0193	.0163	.0217	1.5038
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0010	.0287	.0060	1.1201	.0080	.0124	.0086	.0006	.0095	.0162	.0096	.0028	1.2235
8	.0016	.0484	.0078	1.2506	.0107	.0141	.0165	.0011	.0247	.0212	.0164	.0060	1.4191
9	.0017	.0466	.0078	1.2913	.0108	.0149	.0156	.0016	.0214	.0160	.0112	.0374	1.4764
10	.0087	.0561	.0082	1.2381	.0125	.0169	.0181	.0018	.0134	.0258	.0110	.0064	1.4170
11	.0040	.0516	.0080	1.4627	.0119	.0140	.0173	.0014	.0147	.0192	.0096	.0056	1.6200
12	.0035	.0722	.0080	1.2927	.0112	.0153	.0161	.0014	.0100	.0292	.0127	.0056	1.4780
13	.0025	.0659	.0146	.7176	.0234	.0246	.0634	.0018	.0168	.0172	.0103	.0357	.9939
14	.0017	.0550	.0065	.9806	.0106	.0116	.0467	.0011	.0083	.0169	.0116	.0042	1.1548
15	.0628	.0555	.0089	.8711	.0197	.0515	.0196	.0050	.0065	.0147	.0104	.0045	1.1303
16	.0230	.0586	.0086	1.1537	.0151	.0271	.0193	.0028	.0091	.0251	.0105	.0056	1.3585
17	.0175	.0693	.0075	.9318	.0176	.0234	.0170	.0029	.0086	.0210	.0083	.0054	1.1301
18	.0037	.0660	.0079	1.3211	.0138	.0165	.0160	.0014	.0072	.0194	.0108	.0048	1.4885
19	.0024	.0615	.0074	1.0112	.0113	.0160	.0176	.0016	.0109	.0171	.0087	.0072	1.1729
20	.0012	.0427	.0105	.8243	.0118	.0154	.0132	.0009	.1027	.0438	.0176	.0034	1.0875
21	.0030	.0587	.0094	1.2913	.0146	.0167	.0201	.0022	.0284	.0234	.0110	.0083	1.4870
22	.0021	.0563	.0079	.8382	.0105	.0129	.0164	.0022	.0242	.0371	.0097	.0155	1.0332
23	.0024	.0593	.0071	1.0372	.0101	.0123	.0145	.0015	.0127	.0444	.0098	.0065	1.2179
24	.0021	.0616	.0074	1.1126	.0101	.0122	.0142	.0013	.0105	.0336	.0348	.0057	1.3061
25	.0023	.0598	.0077	1.2339	.0104	.0127	.0149	.0012	.0106	.0306	.0126	.0056	1.4022
26	.0022	.1079	.0081	1.3204	.0111	.0134	.0153	.0011	.0088	.0241	.0108	.0052	1.5285
27	.0019	.0715	.0063	.9014	.0099	.0114	.0145	.0018	.0086	.0291	.0134	.0050	1.0748
28	.0028	.0676	.0086	1.3191	.0115	.0151	.0163	.0012	.0117	.0384	.0224	.0061	1.5209
29	.0036	.0677	.0077	1.1972	.0112	.0140	.0162	.0013	.0089	.0295	.0102	.0053	1.3728
30	.0015	.0529	.0090	1.3938	.0122	.0133	.0187	.0012	.0159	.0178	.0108	.0050	1.5523
31	.0012	.0411	.0067	1.4457	.0090	.0123	.0124	.0007	.0061	.0123	.0077	.0037	1.5589
32	.0011	.0363	.0112	1.0234	.0113	.0190	.0162	.0012	.0169	.0178	.0088	.0031	1.1663
33	.0015	.0426	.0068	1.4931	.0097	.0127	.0137	.0008	.0071	.0123	.0088	.0042	1.6134
34	.0010	.0287	.0049	1.2365	.0075	.0094	.0107	.0008	.0049	.0105	.0073	.0033	1.3255
35	.0023	.0568	.0092	1.3782	.0117	.0169	.0161	.0011	.0074	.0194	.0125	.0047	1.5366
36	.0015	.0473	.0076	1.3740	.0115	.0176	.0224	.0010	.0076	.0164	.0105	.0047	1.5222
37	.0018	.0544	.0091	1.5876	.0130	.0167	.0173	.0011	.0085	.0170	.0108	.0058	1.7430
38	.0020	.0586	.0103	1.8050	.0168	.0182	.0238	.0030	.0107	.0173	.0113	.0076	1.9846
39	.0022	.0535	.0100	1.4936	.0192	.0161	.0172	.0012	.0109	.0391	.0156	.0058	1.6844
40	.0021	.0594	.0097	2.0081	.0145	.0157	.0206	.0012	.0099	.0173	.0116	.0066	2.1768
41	.0021	.0594	.0097	1.0081	.0145	.0157	.0206	.0012	.0099	.0173	.0116	.0066	1.1768

TABLE 23-5

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN JOAQUIN

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0038	.0927	.0073	.1393	.6099	.0087	.0172	.0003	.0028	.0226	.0075	.0019	.9140
2	.0040	.1493	.0114	.1812	.8536	.0102	.0170	.0003	.0032	.0304	.0091	.0015	1.2712
3	.0019	.0873	.0255	.1417	.7558	.0053	.0127	.0003	.0037	.0199	.0255	.0013	1.0808
4	.0049	.1027	.0098	.1868	.9277	.0110	.0172	.0004	.0030	.0263	.0122	.0015	1.3036
5	.0077	.1480	.0106	.2766	.9683	.0100	.0156	.0004	.0043	.0266	.0153	.0016	1.4851
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0019	.0857	.0634	.2382	.6308	.0047	.0075	.0003	.0029	.0149	.0692	.0013	1.1205
8	.0085	.1651	.0135	.2354	.9147	.0089	.0169	.0004	.0048	.0227	.0223	.0019	1.4150
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	.0121	.1727	.0128	.2862	.8483	.0155	.0164	.0008	.0050	.0325	.0141	.0024	1.4187
11	.0051	.1425	.0130	.2843	1.0650	.0098	.0147	.0005	.0047	.0352	.0132	.0021	1.5901
12	.0054	.1496	.0406	.3535	.7866	.0105	.0139	.0005	.0055	.0520	.0133	.0023	1.4338
13	.0045	.1394	.0110	.2298	.6433	.0142	.0248	.0005	.0042	.0262	.0212	.0023	1.1215
14	.0025	.0982	.0074	.2786	.5986	.0068	.0165	.0004	.0036	.0274	.0101	.0016	1.0514
15	.0639	.1110	.0116	.1839	.6482	.0548	.0144	.0032	.0037	.0185	.0433	.0015	1.1581
16	.0191	.1380	.0099	.3140	.7481	.0208	.0152	.0012	.0051	.0304	.0126	.0022	1.3164
17	.0241	.1533	.0102	.2447	.6802	.0221	.0209	.0012	.0043	.0254	.0112	.0017	1.1993
18	.0074	.1825	.0101	.2535	.9441	.0099	.0726	.0006	.0039	.0288	.0106	.0017	1.5256
19	.0058	.1468	.0108	.2356	.5650	.0148	.0642	.0006	.0057	.0273	.0124	.0016	1.0905
20	.0031	.1337	.1166	.2025	.4533	.0071	.0128	.0003	.0048	.0136	.1251	.0016	1.0746
21	.0061	.1576	.0123	.2903	.9628	.0111	.0178	.0005	.0050	.0266	.0122	.0021	1.5044
22	.0037	.1327	.0080	.2295	.6193	.0075	.0113	.0004	.0053	.0251	.0090	.0022	1.0542
23	.0045	.1544	.0082	.2380	.6253	.0078	.0293	.0005	.0062	.0320	.0098	.0022	1.1181
24	.0031	.1529	.0089	.2801	.6493	.0079	.0121	.0004	.0055	.0338	.0720	.0026	1.2285
25	.0037	.1499	.0105	.2967	.7871	.0081	.0129	.0004	.0050	.0381	.0153	.0022	1.3299
26	.0034	.1498	.0914	.2742	.8146	.0078	.0145	.0004	.0046	.0488	.0109	.0020	1.4224
27	.0027	.1099	.0081	.2374	.5032	.0061	.0102	.0004	.0041	.0291	.0140	.0017	.9268
28	.0078	.1443	.0131	.3353	.7156	.0121	.0131	.0007	.0058	.0462	.0444	.0027	1.3410
29	.0068	.1317	.0184	.2949	.7512	.0102	.0158	.0005	.0044	.0330	.0101	.0020	1.2789
30	.0030	.1669	.0161	.2673	1.1017	.0094	.0173	.0004	.0048	.0286	.0178	.0016	1.6350
31	.0024	.1057	.0103	.2021	1.1482	.0061	.0106	.0002	.0027	.0256	.0081	.0012	1.5432
32	.0027	.1300	.0247	.2334	.8382	.0345	.0201	.0004	.0068	.0196	.0254	.0014	1.3371
33	.0026	.1221	.0099	.2313	1.1858	.0071	.0122	.0003	.0031	.0246	.0095	.0014	1.6098
34	.0013	.1029	.0052	.1081	1.0048	.0039	.0073	.0001	.0015	.0111	.0046	.0006	1.2515
35	.0028	.1487	.0148	.2505	1.0066	.0075	.0256	.0004	.0036	.0291	.0112	.0015	1.5021
36	.0027	.1206	.0087	.3535	.9260	.0079	.0144	.0004	.0034	.0231	.0087	.0017	1.4709
37	.0033	.1543	.0117	.2802	1.1951	.0087	.0188	.0004	.0039	.0317	.0117	.0017	1.7214
38	.0035	.2178	.0142	.2803	1.3581	.0095	.0184	.0004	.0043	.0361	.0137	.0018	1.9582
39	.0040	.1871	.0130	.2754	1.1087	.0100	.0173	.0004	.0045	.0297	.0138	.0017	1.6657
40	.0034	.1610	.0143	.2921	1.5884	.0091	.0160	.0004	.0042	.0406	.0137	.0020	2.1451
41	.0034	.1610	.0143	.2921	.5884	.0091	.0160	.0004	.0042	.0406	.0137	.0020	1.1451

TABLE 23-6

MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

REGION OF DIRECT CHANGE IN FINAL DEMAND -- SACRAMENTO

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0046	.0885	.0047	.1005	.0142	.6155	.0095	.0002	.0035	.0091	.0045	.0020	.8567
2	.0062	.1588	.0076	.1351	.0195	.8450	.0136	.0003	.0065	.0115	.0058	.0015	1.2114
3	.0023	.1078	.0147	.1252	.0111	.7355	.0176	.0003	.0061	.0123	.0212	.0015	1.0557
4	.0153	.1041	.0062	.1424	.0302	.9334	.0111	.0003	.0040	.0146	.0070	.0086	1.2770
5	.0058	.1428	.0071	.2048	.0188	1.0357	.0146	.0004	.0088	.0226	.0122	.0021	1.4757
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0013	.0901	.1770	.1567	.0068	.6157	.0070	.0002	.0028	.0117	.0043	.0010	1.0747
8	.0030	.1539	.0088	.1845	.0169	.9400	.0189	.0003	.0196	.0221	.0176	.0023	1.3879
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	.0125	.1519	.0085	.2456	.0155	.8897	.0165	.0008	.0123	.0224	.0120	.0027	1.3904
11	.0052	.1445	.0081	.2335	.0147	1.0916	.0169	.0005	.0115	.0240	.0089	.0025	1.5620
12	.0052	.1770	.0068	.2491	.0133	.8312	.0135	.0005	.0067	.0958	.0288	.0027	1.4307
13	.0158	.1406	.0080	.1886	.0236	.6216	.0149	.0004	.0052	.0235	.0187	.0123	1.0732
14	.0022	.0914	.0050	.2429	.0332	.6047	.0154	.0003	.0045	.0150	.0083	.0018	1.0248
15	.0572	.1012	.0083	.1488	.0183	.7100	.0128	.0030	.0044	.0162	.0554	.0018	1.1374
16	.0234	.1255	.0072	.2710	.0167	.7925	.0139	.0014	.0060	.0239	.0127	.0025	1.2967
17	.0196	.1424	.0072	.2136	.0218	.7386	.0145	.0012	.0075	.0297	.0092	.0021	1.2073
18	.0057	.1637	.0066	.2082	.0176	1.0179	.0137	.0006	.0048	.0713	.0077	.0022	1.5200
19	.0032	.1463	.0108	.2487	.0185	.7104	.0290	.0005	.0229	.0233	.0095	.0021	1.2253
20	.0020	.1550	.2373	.1592	.0163	.4752	.0158	.0003	.0078	.0125	.0063	.0013	1.0890
21	.0044	.1763	.0105	.2009	.0212	.9475	.0207	.0004	.0354	.0211	.0117	.0031	1.4532
22	.0034	.0993	.0050	.2065	.0106	.5668	.0100	.0004	.0065	.0184	.0061	.0027	.9357
23	.0033	.1493	.0053	.1920	.0106	.6160	.0111	.0005	.0073	.0502	.0075	.0025	1.0555
24	.0036	.1480	.0063	.2383	.0119	.6785	.0115	.0004	.0065	.0281	.0519	.0027	1.1877
25	.0051	.1530	.0069	.2476	.0131	.8230	.0131	.0004	.0067	.0311	.0123	.0025	1.3149
26	.0036	.3066	.0078	.2228	.0138	.8039	.0132	.0004	.0056	.0551	.0105	.0023	1.4455
27	.0028	.1104	.0046	.2089	.0099	.4886	.0093	.0004	.0048	.0259	.0123	.0019	.8797
28	.0080	.1590	.0070	.3086	.0136	.7240	.0132	.0006	.0073	.0549	.0284	.0029	1.3275
29	.0051	.1504	.0066	.2491	.0147	.8117	.0128	.0005	.0059	.0329	.0085	.0024	1.3005
30	.0032	.1648	.0094	.2170	.0341	1.1270	.0209	.0004	.0075	.0217	.0107	.0022	1.6188
31	.0022	.0994	.0052	.1525	.0158	1.2056	.0103	.0002	.0036	.0242	.0055	.0016	1.5262
32	.0020	.1275	.0155	.1928	.0326	.7619	.0369	.0004	.0132	.0154	.0093	.0014	1.2090
33	.0027	.1089	.0060	.1780	.0130	1.2463	.0119	.0003	.0042	.0188	.0063	.0018	1.5983
34	.0018	.0873	.0038	.0957	.0140	1.0233	.0061	.0001	.0023	.0103	.0033	.0009	1.2489
35	.0030	.1300	.0063	.2034	.0142	1.0660	.0128	.0004	.0047	.0365	.0078	.0019	1.4870
36	.0026	.1063	.0058	.2782	.0152	.9713	.0118	.0003	.0042	.0476	.0063	.0020	1.4516
37	.0033	.1362	.0073	.2259	.0178	1.2375	.0145	.0003	.0052	.0255	.0079	.0026	1.6840
38	.0039	.2078	.0089	.2152	.0183	1.4170	.0176	.0004	.0058	.0262	.0095	.0026	1.9334
39	.0036	.1779	.0087	.2169	.0816	1.1029	.0172	.0004	.0075	.0233	.0096	.0022	1.6519
40	.0041	.1541	.0087	.2225	.0181	1.6479	.0168	.0004	.0057	.0266	.0095	.0029	2.1173
41	.0041	.1541	.0087	.2225	.0181	.6479	.0168	.0004	.0057	.0266	.0095	.0029	1.1173

TABLE 23-7

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- TULARE LAKE

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0031	.0491	.0070	.1252	.0140	.0077	.6485	.0021	.0148	.0209	.0117	.0031	.9072
2	.0044	.0730	.0170	.2051	.0172	.0097	.8289	.0039	.0345	.0393	.0180	.0058	1.2568
3	.0016	.0623	.0494	.1267	.0086	.0048	.7670	.0016	.0238	.0251	.0148	.0025	1.0883
4	.0034	.0714	.0104	.1621	.0127	.0084	.9682	.0032	.0111	.0276	.0166	.0022	1.2972
5	.0060	.0925	.0096	.2243	.0200	.0092	1.0273	.0043	.0286	.0381	.0260	.0020	1.4877
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0023	.0747	.0054	.1656	.0256	.0047	.8695	.0056	.0043	.0379	.0143	.0012	1.2110
8	.0052	.0888	.0109	.2074	.0168	.0080	.9895	.0035	.0080	.0351	.0353	.0023	1.4108
9	.0045	.0805	.0101	.2029	.0159	.0075	1.0755	.0037	.0079	.0339	.0220	.0016	1.4660
10	.0113	.0901	.0104	.2842	.0150	.0131	.9202	.0034	.0107	.0308	.0252	.0029	1.4173
11	.0050	.0979	.0098	.2574	.0138	.0086	1.1290	.0035	.0099	.0305	.0262	.0023	1.5939
12	.0048	.1053	.0097	.3811	.0132	.0098	.8458	.0028	.0097	.0378	.0239	.0026	1.4464
13	.0035	.0857	.0105	.1943	.0202	.0099	.6706	.0022	.0135	.0245	.0145	.0028	1.0523
14	.0026	.0675	.0071	.2493	.0112	.0064	.7295	.0026	.0101	.0255	.0164	.0018	1.1301
15	.0541	.0736	.0145	.1617	.0199	.0424	.6891	.0044	.0368	.0234	.0171	.0018	1.1389
16	.0214	.0923	.0096	.2629	.0171	.0201	.8360	.0036	.0105	.0315	.0200	.0021	1.3272
17	.0184	.1002	.0086	.2241	.0217	.0180	.7443	.0033	.0075	.0327	.0168	.0019	1.1976
18	.0055	.1010	.0101	.2481	.0170	.0088	1.0459	.0039	.0077	.0368	.0221	.0019	1.5087
19	.0044	.0949	.0085	.2070	.0160	.0109	.7624	.0028	.0093	.0316	.0173	.0017	1.1669
20	.0029	.0877	.0082	.1848	.0227	.0062	.7250	.0037	.0052	.0279	.0136	.0012	1.0893
21	.0053	.1053	.0113	.2208	.0213	.0089	1.0214	.0033	.0091	.0323	.0405	.0032	1.4830
22	.0035	.0701	.0075	.2178	.0125	.0067	.6457	.0023	.0187	.0262	.0152	.0025	1.0286
23	.0036	.0960	.0080	.2386	.0120	.0072	.7290	.0026	.0106	.0391	.0183	.0025	1.1674
24	.0032	.0918	.0089	.2647	.0122	.0070	.7255	.0026	.0092	.0369	.0752	.0028	1.2400
25	.0039	.0970	.0089	.2831	.0132	.0074	.8340	.0033	.0091	.0394	.0271	.0024	1.3289
26	.0035	.1620	.0095	.2639	.0133	.0077	.8502	.0031	.0085	.0400	.0220	.0021	1.3857
27	.0026	.0775	.0064	.2255	.0104	.0057	.5748	.0019	.0069	.0347	.0198	.0019	.9681
28	.0100	.0922	.0088	.3076	.0139	.0122	.7047	.0030	.0107	.0450	.0429	.0028	1.2536
29	.0051	.0988	.0088	.2631	.0139	.0087	.8574	.0030	.0085	.0356	.0200	.0021	1.3251
30	.0038	.1046	.0092	.2362	.0348	.0074	1.1674	.0041	.0088	.0328	.0256	.0018	1.6364
31	.0035	.0667	.0071	.1880	.0168	.0062	1.1930	.0029	.0061	.0298	.0187	.0014	1.5403
32	.0024	.0642	.0071	.1460	.0343	.0048	.8934	.0023	.0064	.0190	.0137	.0011	1.1946
33	.0032	.0786	.0073	.1960	.0125	.0062	1.2357	.0037	.0071	.0287	.0204	.0015	1.6009
34	.0015	.0585	.0055	.1248	.0157	.0034	1.0226	.0021	.0040	.0148	.0110	.0009	1.2647
35	.0031	.0881	.0087	.2260	.0143	.0065	1.1000	.0039	.0073	.0336	.0242	.0017	1.5174
36	.0030	.0793	.0081	.2925	.0152	.0080	.9649	.0046	.0086	.0617	.0186	.0021	1.4665
37	.0044	.0975	.0096	.2383	.0177	.0081	1.2562	.0048	.0086	.0359	.0252	.0020	1.7083
38	.0039	.1498	.0121	.2557	.0176	.0086	1.4267	.0047	.0105	.0370	.0282	.0022	1.9571
39	.0050	.1040	.0126	.2549	.1006	.0089	1.1096	.0041	.0085	.0320	.0239	.0019	1.6659
40	.0037	.1123	.0105	.2507	.0172	.0083	1.6538	.0048	.0114	.0389	.0307	.0023	2.1445
41	.0037	.1123	.0105	.2507	.0172	.0083	.6538	.0048	.0114	.0389	.0307	.0023	1.1445

TABLE 23-8

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- NORTH LAHONTAN

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0142	.1446	.0070	.0753	.0165	.0479	.0113	.3897	.0101	.0052	.0037	.0018	.7273
2	.0220	.2768	.0118	.0978	.0225	.0186	.0203	.6145	.0157	.0069	.0058	.0017	1.1143
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	.0189	.2876	.0194	.1826	.0231	.0191	.0169	.8493	.0172	.0117	.0077	.0018	1.4553
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	.0154	.2859	.0269	.1647	.0213	.0184	.0218	.7912	.0099	.0128	.0078	.0026	1.3787
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	.0283	.3077	.0160	.1829	.0188	.0189	.0217	.7188	.0496	.0157	.0144	.0033	1.3960
11	.0242	.2926	.0140	.1857	.0175	.0149	.0186	.9248	.0326	.0148	.0101	.0023	1.5522
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	.2088	.1986	.0108	.1230	.0248	.0261	.0208	.2969	.0057	.0094	.0058	.0020	.9328
14	.0123	.1858	.0085	.2882	.0128	.0117	.0415	.4688	.0204	.0110	.0100	.0021	1.0731
15	.0430	.1830	.0239	.1330	.0170	.0353	.0122	.5985	.0060	.0091	.0731	.0017	1.1357
16	.0237	.2643	.0119	.2354	.0176	.0198	.0145	.6259	.0111	.0210	.0132	.0022	1.2606
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	.0199	.3579	.0161	.1993	.0223	.0162	.0140	.8172	.0074	.0152	.0076	.0019	1.4949
19	.0142	.2434	.0236	.1919	.0196	.0204	.0378	.5616	.0295	.0131	.0088	.0018	1.1658
20	.0221	.2408	.2434	.1210	.0188	.0117	.0147	.3776	.0068	.0082	.0059	.0011	1.0720
21	.0253	.3026	.0190	.1982	.0250	.0219	.0263	.7815	.0107	.0151	.0092	.0035	1.4383
22	.0124	.1778	.0078	.2079	.0117	.0109	.0103	.4074	.0143	.0124	.0058	.0029	.8816
23	.0135	.2450	.0148	.2005	.0138	.0122	.0134	.5506	.0154	.0231	.0075	.0025	1.1123
24	.0136	.3115	.0093	.2088	.0140	.0117	.0125	.5427	.0141	.0222	.0084	.0023	1.1711
25	.0153	.2799	.0106	.2304	.0152	.0123	.0134	.6254	.0208	.0268	.0088	.0024	1.2612
26	.0150	.4639	.0115	.1979	.0165	.0142	.0146	.7698	.0084	.0748	.0096	.0020	1.5981
27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	.0198	.2702	.0101	.2387	.0147	.0160	.0132	.4882	.0252	.0253	.0166	.0026	1.1405
29	.0168	.2822	.0125	.2177	.0164	.0142	.0141	.6350	.0128	.0194	.0085	.0021	1.2516
30	.0213	.3128	.0164	.2136	.0525	.0211	.0202	.9394	.0109	.0124	.0085	.0019	1.6310
31	.0137	.2260	.0088	.1695	.0192	.0128	.0115	1.0206	.0178	.0113	.0062	.0016	1.5189
32	.0173	.1965	.0206	.1627	.0473	.1284	.0225	.6452	.0105	.0108	.0072	.0013	1.2704
33	.0165	.2610	.0113	.1527	.0165	.0150	.0127	1.0937	.0066	.0084	.0059	.0014	1.6016
34	.0072	.1529	.0059	.0677	.0194	.0094	.0063	.9109	.0040	.0044	.0030	.0006	1.1917
35	.0161	.3135	.0120	.1811	.0199	.0156	.0138	.8632	.0073	.0106	.0066	.0015	1.4614
36	.0166	.2890	.0096	.1501	.0181	.0150	.0122	.8918	.0075	.0074	.0057	.0014	1.4242
37	.0195	.3003	.0122	.2023	.0225	.0183	.0154	1.0282	.0110	.0120	.0075	.0019	1.6511
38	.0292	.3694	.0142	.2179	.0228	.0179	.0189	1.1879	.0095	.0118	.0087	.0021	1.9104
39	.0199	.3366	.0138	.2002	.1011	.0202	.0179	.8925	.0118	.0130	.0085	.0018	1.6372
40	.0267	.3125	.0143	.2331	.0230	.0178	.0184	1.4110	.0098	.0123	.0085	.0023	2.0899
41	.0267	.3125	.0143	.2331	.0230	.0178	.0184	.4110	.0098	.0123	.0085	.0023	1.0899



TABLE 23-9

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SOUTH LAHONTAN

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0015	.0456	.0084	.1053	.0169	.0380	.0297	.0004	.4832	.0092	.0260	.1277	.8919
2	.0015	.0518	.0231	.1085	.0180	.0120	.0313	.0004	1.0077	.0230	.0419	.0108	1.3300
3	.0010	.0491	.0089	.1103	.0101	.0074	.0258	.0003	.8078	.0298	.0281	.0106	1.0893
4	.0025	.0571	.0151	.1289	.0165	.0283	.0905	.0007	.8467	.0155	.0417	.0514	1.2949
5	.0028	.0725	.0230	.1378	.0248	.0159	.0413	.0006	1.0680	.0226	.0687	.0096	1.4877
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0011	.0542	.0134	.0822	.0323	.0070	.0203	.0003	.8832	.0123	.1007	.0050	1.2121
8	.0019	.0794	.0276	.1375	.0204	.0147	.0395	.0006	1.0113	.0195	.0592	.0091	1.4207
9	.0017	.0672	.0270	.1168	.0198	.0131	.0358	.0005	1.1022	.0159	.0578	.0080	1.4659
10	.0106	.0867	.0213	.1703	.0178	.0158	.0438	.0009	.9892	.0238	.0431	.0105	1.4338
11	.0041	.0773	.0224	.1630	.0171	.0120	.0469	.0006	1.1856	.0202	.0440	.0108	1.6040
12	.0036	.0925	.0241	.1997	.0164	.0125	.0380	.0006	.9413	.0505	.0791	.0094	1.4677
13	.0026	.0751	.0190	.1598	.0338	.0201	.0585	.0006	.5899	.0177	.0291	.0247	1.0310
14	.0017	.0560	.0148	.2413	.0135	.0095	.0602	.0006	.6962	.0139	.0352	.0075	1.1505
15	.0610	.0693	.0169	.1342	.0229	.0482	.0312	.0031	.6954	.0147	.0325	.0060	1.1354
16	.0233	.0746	.0194	.1941	.0200	.0247	.0389	.0015	.8771	.0228	.0434	.0086	1.3485
17	.0187	.0930	.0185	.2003	.0238	.0222	.0320	.0013	.7490	.0207	.0352	.0070	1.2217
18	.0045	.1059	.0251	.1766	.0199	.0127	.0403	.0006	1.0568	.0190	.0571	.0095	1.5278
19	.0024	.0816	.0211	.1637	.0183	.0145	.0349	.0006	.7879	.0168	.0415	.0069	1.1902
20	.0014	.0709	.0233	.1117	.0282	.0092	.0244	.0004	.7444	.0113	.0606	.0049	1.0907
21	.0031	.0895	.0243	.1690	.0245	.0145	.0501	.0006	1.0303	.0267	.0500	.0123	1.4949
22	.0021	.0710	.0218	.1593	.0190	.0111	.0310	.0005	.7749	.0316	.0332	.0079	1.1637
23	.0025	.0798	.0188	.1726	.0155	.0103	.0321	.0005	.7943	.0425	.0413	.0085	1.2186
24	.0021	.0816	.0205	.1960	.0159	.0100	.0330	.0005	.8205	.0353	.0710	.0085	1.2951
25	.0023	.0773	.0207	.1891	.0166	.0105	.0372	.0006	.9413	.0401	.0540	.0092	1.3989
26	.0024	.1513	.0244	.1805	.0165	.0113	.0371	.0005	.9310	.0415	.0489	.0088	1.4540
27	.0018	.0680	.0144	.1829	.0128	.0082	.0250	.0005	.6267	.0401	.0343	.0061	1.0209
28	.0036	.0834	.0257	.2738	.0174	.0122	.0379	.0007	.8726	.0594	.0657	.0095	1.4618
29	.0039	.0851	.0211	.1955	.0169	.0119	.0372	.0006	.9011	.0286	.0452	.0087	1.3559
30	.0018	.0863	.0198	.1736	.0421	.0128	.0461	.0006	1.1324	.0163	.0609	.0100	1.6026
31	.0013	.0508	.0164	.1063	.0214	.0109	.0352	.0004	1.2272	.0139	.0425	.0086	1.5351
32	.0011	.0483	.0172	.0975	.0371	.0113	.0272	.0003	.8405	.0095	.0293	.0049	1.1241
33	.0016	.0593	.0162	.1248	.0158	.0107	.0400	.0005	1.2596	.0129	.0543	.0094	1.6049
34	.0009	.0468	.0142	.0810	.0210	.0061	.0204	.0002	1.0455	.0073	.0331	.0058	1.2823
35	.0017	.0788	.0210	.1406	.0182	.0103	.0393	.0005	1.1331	.0189	.0625	.0092	1.5341
36	.0015	.0664	.0172	.1432	.0222	.0129	.0379	.0005	1.0718	.0132	.0789	.0220	1.4878
37	.0019	.0757	.0225	.1514	.0239	.0148	.0498	.0006	1.2815	.0171	.0687	.0118	1.7196
38	.0021	.1003	.0280	.1697	.0225	.0137	.0624	.0006	1.4548	.0185	.0624	.0144	1.9496
39	.0023	.0824	.0300	.1677	.1284	.0147	.0442	.0006	1.1111	.0182	.0527	.0099	1.6622
40	.0021	.0792	.0226	.1727	.0219	.0139	.0699	.0007	1.6557	.0198	.0598	.0164	2.1347
41	.0021	.0792	.0226	.1727	.0219	.0139	.0699	.0007	.6557	.0198	.0598	.0164	1.1347

TABLE 23-10

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SANTA ANA

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TI	NI	SI	SA	SD	CD	
1	.0020	.0478	.0046	.1361	.0356	.0731	.0292	.0005	.0046	.5199	.0068	.0074	.8678
2	.0022	.0434	.0044	.1713	.0104	.0103	.0172	.0007	.0054	1.0291	.0089	.0079	1.3112
3	.0012	.0486	.0045	.1533	.0081	.0073	.0302	.0004	.0088	.7989	.0168	.0040	1.0820
4	.0035	.0519	.0063	.1697	.0263	.0373	.0305	.0019	.0081	.9150	.0106	.0291	1.2902
5	.0028	.0572	.0062	.2173	.0094	.0082	.0152	.0005	.0469	1.0941	.0181	.0065	1.4824
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0010	.0346	.0098	.1214	.0047	.0040	.0077	.0002	.0037	1.0098	.0100	.0027	1.2097
8	.0018	.0607	.0065	.2161	.0090	.0071	.0178	.0005	.0123	1.0345	.0211	.0215	1.4089
9	.0017	.0532	.0052	.1921	.0079	.0068	.0139	.0004	.0093	1.1335	.0134	.0222	1.4595
10	.0138	.0630	.0061	.2568	.0113	.0144	.0172	.0009	.0090	1.0009	.0139	.0089	1.4161
11	.0042	.0607	.0059	.2475	.0103	.0084	.0171	.0005	.0092	1.2083	.0129	.0097	1.5948
12	.0039	.0798	.0053	.2670	.0093	.0089	.0141	.0006	.0086	1.0443	.0167	.0046	1.4631
13	.0033	.0681	.0099	.2257	.0290	.0149	.0551	.0009	.0069	.5578	.0155	.0173	1.0045
14	.0015	.0456	.0043	.2679	.0075	.0063	.0289	.0005	.0061	.7007	.0120	.0126	1.0939
15	.0661	.0583	.0067	.1923	.0167	.0474	.0151	.0031	.0051	.6884	.0141	.0033	1.1166
16	.0224	.0616	.0058	.2778	.0120	.0201	.0150	.0013	.0078	.8886	.0133	.0046	1.3303
17	.0182	.0703	.0057	.2498	.0137	.0176	.0141	.0012	.0062	.7716	.0107	.0051	1.1842
18	.0039	.0694	.0050	.2521	.0111	.0083	.0133	.0005	.0056	1.1230	.0137	.0042	1.5102
19	.0024	.0628	.0052	.2312	.0086	.0094	.0163	.0005	.0078	.7952	.0110	.0055	1.1560
20	.0013	.0631	.0134	.1792	.0065	.0058	.0135	.0003	.0074	.7754	.0090	.0046	1.0798
21	.0032	.0701	.0078	.2578	.0109	.0088	.0201	.0005	.0149	1.0155	.0174	.0406	1.4675
22	.0021	.0584	.0049	.2281	.0074	.0067	.0122	.0005	.0306	.7275	.0114	.0057	1.0954
23	.0025	.0677	.0048	.2398	.0080	.0069	.0123	.0005	.0135	.8455	.0138	.0053	1.2206
24	.0021	.0651	.0051	.2636	.0082	.0068	.0126	.0005	.0101	.8717	.0468	.0049	1.2974
25	.0024	.0649	.0053	.2515	.0086	.0069	.0136	.0005	.0097	.9999	.0183	.0047	1.3861
26	.0022	.1412	.0058	.2424	.0095	.0075	.0140	.0005	.0071	1.1090	.0154	.0044	1.5590
27	.0017	.0608	.0045	.2469	.0066	.0057	.0103	.0004	.0082	.6346	.0160	.0037	.9995
28	.0062	.0685	.0056	.3154	.0097	.0101	.0141	.0007	.0095	.9297	.0310	.0050	1.4055
29	.0035	.0726	.0052	.2718	.0093	.0083	.0140	.0005	.0074	.9680	.0133	.0049	1.3787
30	.0017	.0668	.0063	.2801	.0106	.0074	.0194	.0005	.0099	1.1900	.0159	.0045	1.6132
31	.0012	.0418	.0040	.1703	.0069	.0052	.0107	.0003	.0044	1.2753	.0102	.0033	1.5337
32	.0012	.0576	.0169	.1982	.0091	.0054	.0228	.0004	.0138	.8607	.0103	.0028	1.1992
33	.0015	.0523	.0046	.2032	.0082	.0059	.0126	.0004	.0052	1.3003	.0117	.0038	1.6097
34	.0008	.0323	.0023	.1189	.0044	.0039	.0071	.0002	.0028	1.0586	.0064	.0027	1.2405
35	.0016	.0589	.0048	.2326	.0084	.0063	.0131	.0004	.0059	1.1940	.0154	.0040	1.5453
36	.0014	.0477	.0043	.2319	.0105	.0251	.0122	.0004	.0047	1.1015	.0109	.0051	1.4558
37	.0017	.0609	.0058	.2436	.0104	.0075	.0157	.0005	.0064	1.3360	.0152	.0050	1.7088
38	.0020	.0802	.0066	.3016	.0121	.0083	.0186	.0005	.0076	1.4888	.0151	.0056	1.9470
39	.0022	.0593	.0062	.2562	.0100	.0079	.0168	.0005	.0078	1.2713	.0147	.0058	1.6588
40	.0021	.0702	.0067	.2756	.0129	.0084	.0191	.0005	.0072	1.7086	.0155	.0062	2.1331
41	.0021	.0702	.0067	.2756	.0129	.0084	.0191	.0005	.0072	.7086	.0155	.0062	1.1331

TABLE 23-11

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- SAN DIEGO

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SI	SA	SD	CD	
1	.0161	.0520	.0058	.1226	.0146	.0517	.0128	.0276	.0070	.0096	.4253	.0269	.7720
2	.0041	.0392	.0046	.1565	.0108	.0120	.0110	.0022	.0066	.0136	1.0156	.0127	1.2887
3	.0065	.0445	.0045	.1401	.0076	.0144	.0142	.0013	.0080	.0138	.8036	.0062	1.0649
4	.0091	.0473	.0062	.1547	.0128	.0314	.0134	.0150	.0068	.0129	.9072	.0456	1.2624
5	.0032	.0394	.0046	.1983	.0086	.0072	.0126	.0008	.0098	.0258	1.1345	.0094	1.4541
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0014	.0244	.0028	.1171	.0050	.0040	.0113	.0005	.0095	.0134	1.0016	.0052	1.1960
8	.0021	.0449	.0053	.1921	.0086	.0061	.0159	.0007	.0106	.0307	1.0425	.0101	1.3696
9	.0021	.0383	.0047	.1769	.0079	.0064	.0126	.0007	.0106	.0242	1.1178	.0344	1.4364
10	.0141	.0523	.0059	.2641	.0112	.0142	.0149	.0012	.0105	.0311	.9228	.0132	1.3554
11	.0047	.0510	.0056	.2458	.0103	.0084	.0149	.0009	.0101	.0346	1.1565	.0104	1.5534
12	.0042	.0491	.0079	.2536	.0091	.0086	.0121	.0008	.0096	.0400	1.0124	.0096	1.4171
13	.0214	.0676	.0089	.1972	.0297	.0205	.0184	.0023	.0083	.0239	.5910	.0206	1.0099
14	.0019	.0359	.0041	.2492	.0075	.0064	.0139	.0006	.0064	.0224	.7071	.0307	1.0861
15	.0617	.0483	.0061	.1648	.0158	.0439	.0131	.0030	.0099	.0243	.6540	.0068	1.0517
16	.0259	.0506	.0056	.2486	.0124	.0217	.0133	.0016	.0106	.0546	.8124	.0085	1.2658
17	.0176	.0657	.0055	.2287	.0144	.0170	.0131	.0013	.0114	.0372	.7258	.0091	1.1469
18	.0045	.0623	.0069	.2277	.0116	.0083	.0164	.0009	.0082	.0262	1.1043	.0080	1.4853
19	.0028	.0590	.0052	.2043	.0094	.0093	.0172	.0007	.0121	.0451	.7492	.0101	1.1244
20	.0016	.0463	.0042	.1620	.0068	.0057	.0184	.0005	.0149	.0175	.7772	.0060	1.0612
21	.0031	.0564	.0066	.2299	.0107	.0074	.0193	.0008	.0159	.0337	1.0129	.0164	1.4131
22	.0023	.0401	.0040	.2157	.0066	.0060	.0098	.0007	.0140	.0304	.6448	.0094	.9837
23	.0030	.0509	.0044	.2240	.0080	.0069	.0107	.0007	.0116	.0555	.7933	.0088	1.1778
24	.0021	.0496	.0053	.2698	.0079	.0064	.0109	.0007	.0094	.0370	.8024	.0084	1.2098
25	.0025	.0488	.0051	.2433	.0085	.0066	.0119	.0008	.0095	.0457	.9576	.0082	1.3485
26	.0025	.0581	.0188	.2284	.0094	.0069	.0119	.0008	.0079	.0381	1.1209	.0135	1.5172
27	.0019	.0475	.0039	.2152	.0064	.0052	.0088	.0006	.0092	.0476	.5656	.0067	.9186
28	.0043	.0500	.0063	.3237	.0096	.0088	.0125	.0009	.0100	.0389	.9446	.0107	1.4203
29	.0037	.0496	.0068	.2440	.0093	.0078	.0117	.0008	.0083	.0462	.9341	.0094	1.3316
30	.0022	.0562	.0068	.2665	.0110	.0077	.0199	.0009	.0139	.0193	1.1001	.0102	1.5148
31	.0017	.0273	.0037	.1493	.0069	.0048	.0092	.0007	.0055	.0125	1.2899	.0065	1.5181
32	.0013	.0305	.0040	.1200	.0070	.0038	.0263	.0005	.0238	.0103	.8268	.0046	1.0590
33	.0021	.0332	.0042	.1721	.0082	.0058	.0108	.0007	.0065	.0151	1.3288	.0075	1.5951
34	.0016	.0194	.0024	.1130	.0043	.0042	.0059	.0008	.0041	.0081	1.0802	.0053	1.2492
35	.0022	.0415	.0054	.2063	.0084	.0062	.0125	.0007	.0072	.0235	1.1732	.0101	1.4972
36	.0061	.0393	.0047	.2538	.0083	.0133	.0111	.0103	.0071	.0130	1.0653	.0121	1.4444
37	.0026	.0434	.0056	.2172	.0104	.0077	.0135	.0009	.0080	.0201	1.3516	.0106	1.6915
38	.0029	.0480	.0064	.2743	.0123	.0084	.0159	.0011	.0151	.0203	1.5058	.0133	1.9236
39	.0029	.0450	.0057	.2357	.0101	.0082	.0151	.0009	.0098	.0223	1.2618	.0113	1.6286
40	.0031	.0481	.0063	.2465	.0130	.0085	.0157	.0011	.0091	.0206	1.7273	.0112	2.1104
41	.0031	.0481	.0063	.2465	.0130	.0085	.0157	.0011	.0091	.0206	.7273	.0112	1.1104

TABLE 23-12

## MULTIREGIONAL DIRECT, INDIRECT, AND INDUCED INCOME COEFFICIENTS

## REGION OF DIRECT CHANGE IN FINAL DEMAND -- COLORADO DESERT

SECTOR	REGION OF IMPACT												STATEWIDE
	NC	SFB	CC	LA	SJ	SB	TL	NL	SL	SA	SD	CD	
1	.0015	.0491	.0096	.1444	.0371	.0116	.0113	.0003	.0046	.0105	.0269	.5427	.8497
2	.0020	.0713	.0125	.2024	.0117	.0177	.0125	.0003	.0062	.0138	.0544	.7982	1.2030
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	.0023	.0649	.0128	.1858	.0258	.0155	.0124	.0003	.0063	.0130	.0443	.8868	1.2701
5	.0040	.0863	.0190	.2578	.0102	.0229	.0128	.0004	.0090	.0306	.0690	.9412	1.4633
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	.0075	.0896	.0186	.1334	.0053	.0092	.0071	.0002	.0046	.0136	.0820	.8180	1.1892
8	.0035	.0842	.0182	.2528	.0103	.0210	.0165	.0004	.0101	.0332	.0614	.8902	1.4020
9	.0030	.0784	.0168	.2296	.0091	.0185	.0131	.0003	.0089	.0272	.0553	.9804	1.4409
10	.0115	.1070	.0185	.2680	.0116	.0187	.0157	.0008	.0097	.0273	.0409	.8734	1.4031
11	.0041	.0909	.0192	.2724	.0112	.0145	.0158	.0005	.0105	.0231	.0432	1.0600	1.5654
12	.0039	.0796	.0151	.3012	.0098	.0148	.0128	.0005	.0100	.0576	.1171	.8046	1.4271
13	.0026	.0777	.0127	.2316	.0227	.0250	.0152	.0004	.0067	.0208	.0321	.5198	.9672
14	.0017	.0610	.0108	.3092	.0081	.0111	.0158	.0004	.0068	.0232	.0337	.5878	1.0697
15	.0606	.0740	.0132	.1993	.0157	.0480	.0136	.0029	.0064	.0248	.0322	.6065	1.0972
16	.0246	.0826	.0139	.2963	.0126	.0265	.0139	.0014	.0085	.0504	.0389	.7070	1.2768
17	.0196	.0956	.0143	.2678	.0156	.0258	.0134	.0012	.0079	.0406	.0345	.6483	1.1844
18	.0051	.1128	.0160	.2913	.0127	.0153	.0122	.0005	.0089	.0263	.0492	.9603	1.5107
19	.0033	.1081	.0124	.2385	.0104	.0212	.0187	.0005	.0091	.0353	.0337	.5465	1.0375
20	.0093	.1044	.1177	.2054	.0076	.0150	.0140	.0003	.0078	.0179	.0440	.5185	1.0619
21	.0037	.0925	.0200	.2887	.0121	.0240	.0182	.0004	.0111	.0328	.0526	.9115	1.4677
22	.0026	.0680	.0126	.2585	.0078	.0153	.0105	.0004	.0087	.0278	.0346	.6375	1.0843
23	.0027	.0839	.0131	.2595	.0086	.0129	.0109	.0004	.0108	.0426	.0410	.6894	1.1757
24	.0025	.0884	.0127	.2982	.0089	.0123	.0114	.0005	.0096	.0500	.0952	.6643	1.2538
25	.0028	.0905	.0148	.2869	.0093	.0130	.0121	.0004	.0098	.0483	.0513	.7983	1.3374
26	.0024	.0873	.0160	.2810	.0106	.0139	.0121	.0004	.0091	.0407	.0438	.8874	1.4247
27	.0018	.0675	.0091	.2489	.0069	.0095	.0091	.0004	.0068	.0465	.0310	.4861	.9235
28	.0078	.0859	.0139	.3323	.0101	.0162	.0123	.0007	.0100	.0574	.0655	.6799	1.2919
29	.0036	.0879	.0149	.3023	.0101	.0141	.0124	.0005	.0088	.0550	.0434	.7976	1.3505
30	.0022	.0962	.0200	.3019	.0123	.0198	.0186	.0004	.0139	.0193	.0718	1.0555	1.6317
31	.0014	.0580	.0139	.1991	.0079	.0128	.0094	.0003	.0074	.0161	.0432	1.1501	1.5196
32	.0065	.0966	.0835	.2170	.0235	.2095	.0201	.0004	.0175	.0383	.0613	.5845	1.3587
33	.0018	.0771	.0160	.2284	.0093	.0149	.0112	.0003	.0082	.0150	.0507	1.1577	1.5906
34	.0009	.0437	.0075	.1399	.0048	.0080	.0054	.0002	.0039	.0071	.0298	.9819	1.2331
35	.0019	.0971	.0165	.2527	.0094	.0151	.0120	.0003	.0096	.0252	.0566	1.0007	1.4970
36	.0016	.0873	.0140	.2829	.0112	.0128	.0109	.0004	.0073	.0127	.0614	.9438	1.4463
37	.0021	.0934	.0199	.2810	.0117	.0189	.0137	.0004	.0103	.0196	.0636	1.1587	1.6932
38	.0023	.0907	.0223	.3576	.0133	.0175	.0161	.0005	.0115	.0194	.0626	1.3061	1.9198
39	.0027	.0878	.0208	.3117	.0117	.0241	.0155	.0004	.0108	.0209	.0874	1.0443	1.6379
40	.0023	.0909	.0244	.3036	.0141	.0172	.0161	.0004	.0115	.0193	.0638	1.5359	2.0996
41	.0023	.0909	.0244	.3036	.0141	.0172	.0161	.0004	.0115	.0193	.0638	.5359	1.0996

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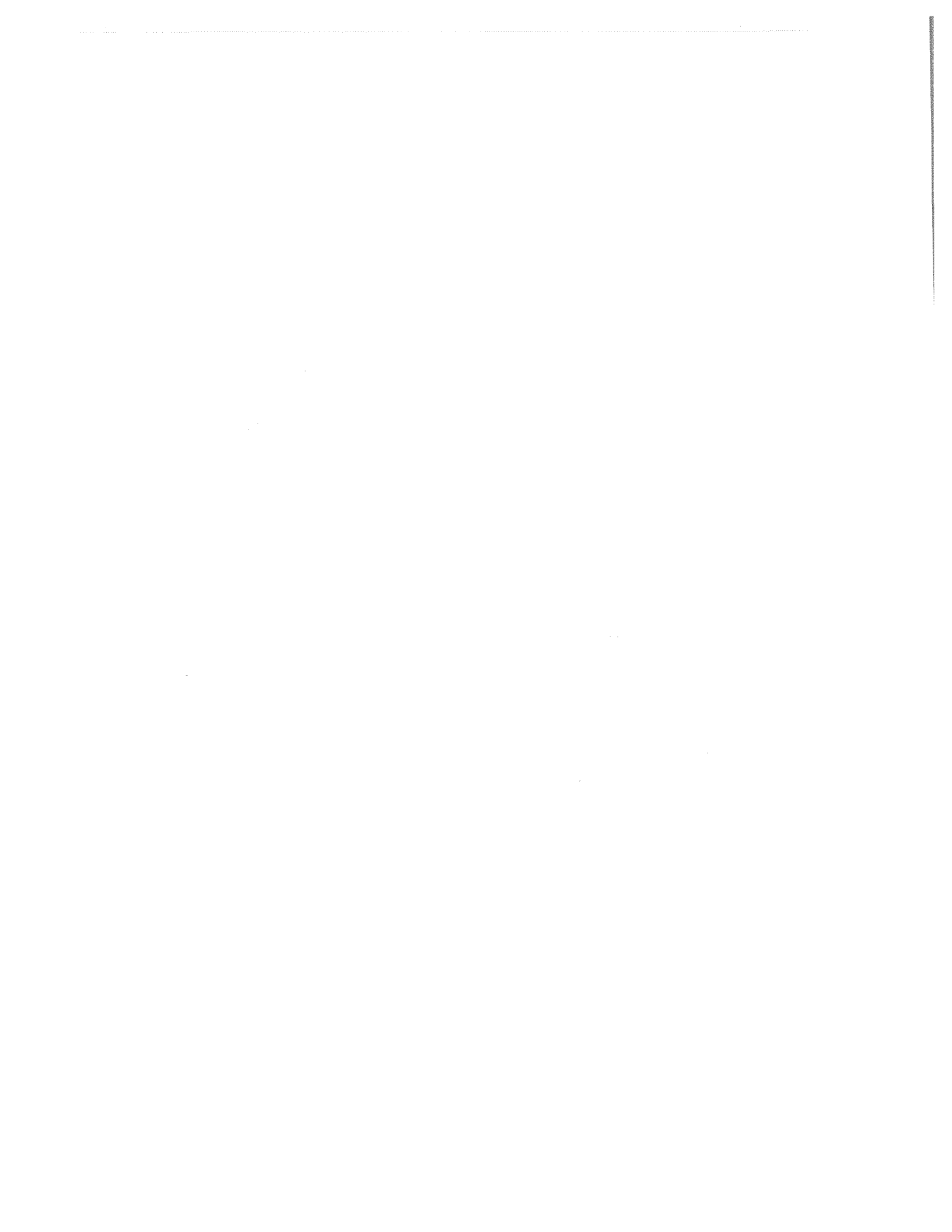
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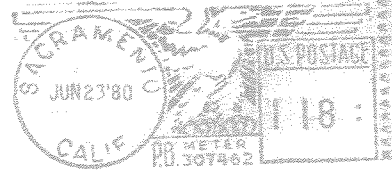
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