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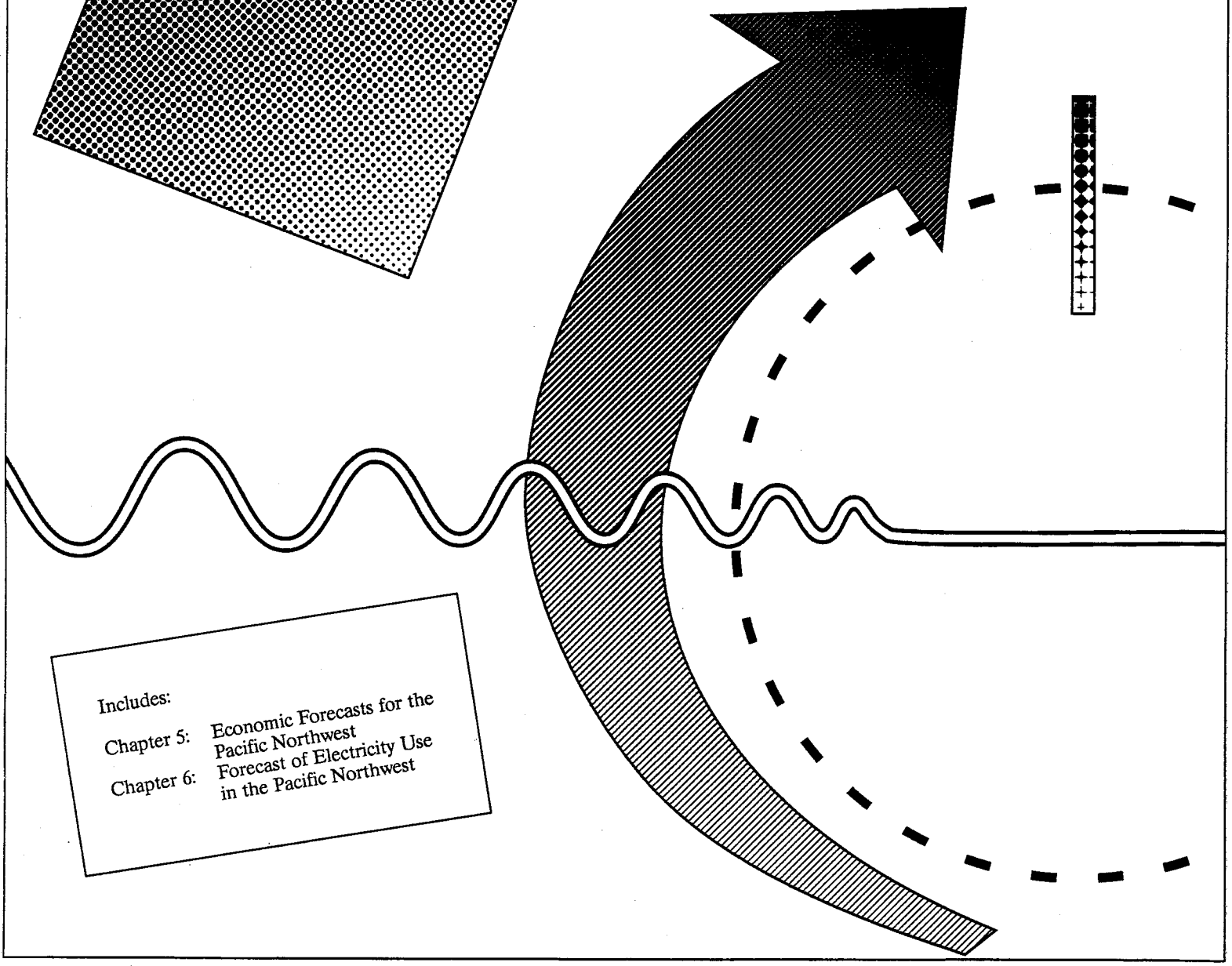
1991 NORTHWEST CONSERVATION and ELECTRIC POWER PLAN

VOLUME II

Group 3



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CHAPTER 5

ECONOMIC FORECASTS FOR THE PACIFIC NORTHWEST

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Introduction

Under the Pacific Northwest Electric Power Planning and Conservation Act of 1980, Congress charged the Northwest Power Planning Council (Council) with forecasting electrical power requirements as the basis for a plan to meet regional electricity needs. The Bonneville Power Administration (Bonneville) has prepared regional electricity demand forecasts since 1981 to use as a basis for its planning. The current draft forecasts were developed with Bonneville and will be used as a common basis for resource planning and analysis. This chapter describes draft economic and demographic assumptions used in developing forecasts of electricity use for the Council's Draft 1990 Power Plan.

Economic and demographic assumptions are the dominant factors influencing the forecasts of demand for electricity. A good rule of thumb is that demand for electricity will parallel economic activity in the absence of other changes. This relationship is modified by shifts in relative energy prices, including the price of electricity and other fuels; by changes in the composition of economic activity; and by the gradual depreciation and replacement of buildings and energy-using equipment in the region.

Recognizing that the future is highly uncertain, the Council and Bonneville have adopted planning strategies that incorporate flexibility and risk management. Economic and demographic assumptions are both extremely important determinants of future electricity needs and are, at the same time, highly uncertain. The objective of the range of planning assumptions discussed in this chapter is to help define the extent of uncertainty. Planning must address a range of future electricity needs that reflects, among other factors, this underlying economic uncertainty.

In order to recognize uncertainty explicitly, the Council and Bonneville have prepared forecasts that bracket the highest and lowest plausible economic scenarios for the next 20 years. The purpose of this approach is to develop a flexible resource strategy that provides an adequate supply of electricity at the lowest cost. The risks are twofold: the risk of not having an adequate supply of electricity, and the risk of being saddled with expensive investments in unnecessary resources.

The Council and Bonneville have developed a range of forecasts for each state in the Northwest. The forecasts are built from analysis of individual sectors of the economy. The forecasts are influenced by results produced by Bonneville's Regional Economic Model, as well as studies and expertise provided by groups and individuals throughout the Northwest. Detailed review was also provided by the Council's Economic Forecasting Advisory Committee and other interested parties.

Since future economic conditions are highly uncertain, the forecasts encompass a wide range of possibilities for future economic growth. The high forecast assures that the Council's plan will accommodate record regional economic growth

should it occur. In the high forecast, total regional employment grows more than twice the rate of a high national growth in employment. The high forecast represents a case in which the region grows faster relative to the nation than in any historical 20-year period. The low case also implies a relative performance below any historical 20-year period in the region. Table 5-1 shows a comparison of the forecast range to a range of national forecasts prepared by the WEFA Group. Detailed tables showing employment, population and household forecasts by state are in Appendix 5-D.

A more likely range of outcomes is bound by the medium-high and medium-low forecasts. This smaller, more probable range shows growth higher than the nation for most of the range. This is consistent with historical patterns, since the Pacific Northwest has grown faster than the nation over the long term. The medium range of forecasts assumes this will continue to some extent.

Table 5-1
Comparison of Forecasts
Average Annual Rate of Growth (%)
1989-2010

Region	High	Medium-High	Medium	Medium-Low	Low
Total Employment	2.8	2.0	1.4	0.8	0.0
Manufacturing	1.5	0.7	0.1	-0.9	-1.7
Non-manufacturing	3.0	2.2	1.6	1.1	0.3
Total Population	2.1	1.5	1.1	0.8	0.3
Households	2.8	2.0	1.6	1.3	0.3

WHARTON NATIONAL OUTLOOK	High	Medium	Low
Total Employment	1.3	1.2	1.0
Manufacturing	0.1	-0.2	-0.6
Non-manufacturing	1.6	1.5	1.3
Total Population	1.0	0.8	0.5
Households	1.4	1.3	1.1

The economic and demographic forecasts in this report are similar in many respects to the forecasts for the Council's 1989 Supplement to the 1986 Northwest Conservation and Electric Power Plan. The forecasts encompass a range of employment growth between the years 1989 and 2010 comparable to the range in the 1989 supplement.

Forecasts of employment growth in a number of manufacturing industries are higher in these forecasts than in the 1989 Supplement forecasts. These higher growth rates are only partially offset by lower forecasts of productivity growth in many manufacturing industries. As a result, forecasts of manufacturing output are higher in all scenarios except the high case.

Table 5-2
Comparison of Forecasts
Average Annual Rate of Growth (%)
1987-2010[a]

	High	Medium-High	Medium	Medium-Low	Low
1989 Supplement					
Total Employment	2.8	2.1	1.6	1.1	0.4
Manufacturing	1.3	0.5	0.0	-0.5	-1.3
Non-manufacturing	3.1	2.4	1.8	1.3	0.6
Manufacturing Output	4.9	3.5	2.9	2.3	1.1
Population	2.0	1.5	1.2	0.9	0.4
Households	2.7	2.0	1.6	1.3	0.3
1990 Draft Power Plan					
Total Employment	2.9	2.2	1.6	1.1	0.4
Manufacturing	1.8	1.0	0.5	-0.4	-1.2
Non-manufacturing	3.1	2.4	1.8	1.3	0.6
Manufacturing Output	4.9	3.9	3.3	2.4	1.4
Population	2.1	1.6	1.2	0.9	0.5
Households	2.8	2.1	1.7	1.4	0.5

[a] Growth rates differ from those shown in previous tables because they cover different time periods.

Forecasts for Utility Service Areas

The economic and demographic assumptions are divided into public and investor-owned utility service areas to provide inputs into the demand forecasting system, which forecasts electricity consumption by utility type. Industrial production at the detailed industry level, employment in the commercial sector, and housing units are divided into public and investor-owned utility areas for each state. The splits between public and investor-owned utility areas are provided by Bonneville. According to these estimates, approximately 40 percent of regional manufacturing production, commercial employment and households are located in public utility service areas. In the case of major manufacturing industries, the shares of production allocated to public or investor-owned utilities were developed by detailed industry analysis of plant location or county employment patterns. Housing stock shares were allocated on the basis of customer counts in the residential sector at the utility and state level. The commercial sector shares incorporated data provided by Seattle City Light, which showed a decrease in the public utility share of King County's employment in Washington state. This historical shift was assumed to continue for King County. For the rest of Washington state and for the other states and counties, the shares of commercial sector employment were based on residential customer counts by utility and state. They were assumed to remain constant over the forecast period.

Forecast Overview

Overview of the Regional Economy

The Pacific Northwest is blessed with rich natural resources of minerals, agricultural lands, fisheries and forests. The abundance of natural resources has provided the region's inhabitants with jobs and income, as well as a desirable environment for recreation and a high quality of life.

The development of the vast Columbia/Snake River system for navigation, electricity production, irrigation and recreation has contributed to economic growth in the region. Low electricity rates, relative to those found elsewhere in the nation, have attracted electricity-intensive industries, such as the aluminum industry, to the Pacific Northwest.

More recently, industries such as electronics have grown in the region, attracted primarily by the quality of the labor force and quality of life. The development of port facilities and growing trade with Alaska and the Pacific Rim countries have provided a source of new jobs for the region. Growth in the non-manufacturing sectors, in general, has been rapid. These developments have provided diversity to a region dependent on resource-based industries.

During the 1960s and 1970s, total employment grew faster in the region than in the nation. Table 5-3 compares growth patterns between the region and the nation for the last three decades. During the 1980s, the region grew at about the same rate as the nation on average. However, this average growth rate masks divergent patterns of growth. In the first half of the decade, the region suffered from a severe recession that hit the region much harder than the nation. The recovery from the recession was slower and more gradual than previous experiences. In the late 1980s, however, the region once again moved into the position of growing faster than the nation. In the last few years, Northwest states have shown up in the list of the 10 fastest growing states in the country.

The region's stronger performance in the late 1980s was fueled by high operating levels in key manufacturing industries, such as forest products, aerospace and aluminum. After enduring a severe depression in the early 1980s, the region's wood products industry set new production records in the late 1980s. During this period, however, productivity gains were so high that employment in 1989 was 20 percent lower than in 1979.

The lumber and wood products category includes logging activities, some of which are related to pulp and paper production. In addition, many companies manufacture both wood and paper products. Including pulp and paper products, the forest products industry accounted for 25 percent of the region's manufacturing employment in 1989.

Table 5-3
Comparison of U.S. and Pacific Northwest Employment Trends
Average Annual Rate of Growth (%)

	1960 - 1979		1979 - 1989	
	PNW	U.S.	PNW	U.S.
Total Employment	3.0	2.2	1.7	1.8
Manufacturing Employment	2.2	1.2	0.6	-0.7
SIC[a] 20 - Food and Kindred Products	1.3	-0.2	-0.1	-0.4
SIC 24 - Lumber and Wood Products	1.0	0.8	-2.2	0.0
SIC 26 - Pulp and Paper Products	0.3	0.9	0.5	-0.1
SIC 28 - Chemicals and Allied Products[b]	-0.1	1.6	1.7	-0.2
SIC 33 - Primary Metals	2.9	0.3	-2.4	-4.6
SIC 35 - Non-electric Machinery	6.3	2.8	1.8	-1.4
SIC 36, 38 - Electrical Equipment and Instruments	9.0	2.2	3.0	0.0
SIC 37 - Transportation Equipment	2.3	1.1	2.8	-0.1
Other Manufacturing	3.4	1.0	1.4	-0.1
Non-manufacturing Employment	3.2	2.5	1.9	2.5
Mining	1.2	1.6	-1.5	-2.8
Construction	4.2	2.2	-0.8	1.7
Transportation, Communication and Utilities	1.8	1.5	1.0	1.1
Wholesale and Retail Trade	4.2	3.1	2.2	2.5
Finance, Insurance and Real Estate	5.4	3.4	1.4	3.2
Services	5.7	4.5	4.3	4.6
Government	3.7	3.5	1.3	1.2

[a] Standard Industrial Classification (SIC) code is the classification of industries used in federal statistics. See Table 5-B-1 in Appendix 5-B for list.

[b] Change in classification of a facility in the region to chemicals has artificially raised the rate of growth from 1979-1989. Excluding this facility in the 1989 data would yield a growth rate of 0.8 percent.

The second largest regional manufacturing industry is transportation equipment, composed primarily of aerospace. It accounted for 22 percent of manufacturing employment in 1989. After employment declined more than 20 percent in the early 1980s, the industry has recovered, increasing employment more than 70 percent since 1983.

Primary metals is the largest industrial consumer of electricity in the region, accounting for nearly half of all industrial electricity consumption. Most of the electricity consumption is concentrated in the primary aluminum industry, which operates 10 plants in the Northwest. This industry has experienced dramatic swings in prices of aluminum, increasing electricity prices, and increasing competition from lower-cost producing areas. Recently, aluminum smelters have increased their operating rates in response to higher worldwide aluminum prices and more attractive electricity rates.

Pulp and paper is the second largest industrial consumer of electricity, followed by chemicals, lumber and wood products and food processing. In 1989, the top five industrial consumers of electricity accounted for almost 90 percent of the electricity used by industrial customers in the region.

Growth in regional non-manufacturing industries has lagged behind national trends throughout the 1980s and is largely responsible for the somewhat slower growth in the region's economy. Mining and government were the only non-manufacturing categories to perform better than the nation in the 1980s.

Major Trends

There are a number of basic trends common to the range of forecasts. While the extent of change resulting from these trends varies somewhat in each forecast, it nevertheless forms a context for the future. Many of the trends relate to demographic patterns in the existing population.

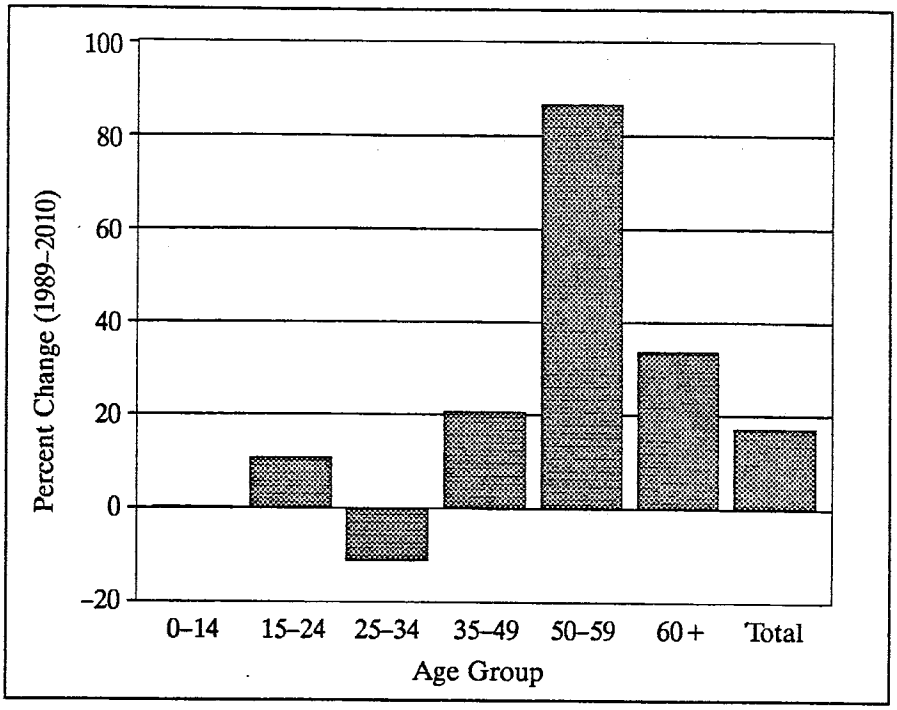
One of the primary demographic changes that continues to occur is the aging of the population. From 1989 to 2010, the national population between 50 and 59 years of age is projected to increase more than 85 percent, while the population between the ages of 25 and 34 is projected to decline by more than 10 percent. The population over the age of 60 is projected to increase by 34 percent during this period. Figure 5-1 shows the percentage change in population by age group for the nation from 1987 to 2010. Although the age composition of the population in the region will vary among scenarios because of migration, the general patterns of demographic change will persist.

This aging of the population is expected to affect consumption patterns, the labor force, and labor productivity. Consumption patterns are expected to emphasize personal services, clothing, travel and health services, as the older population increases in size. Over the next 20 years, the number of young people entering the labor force will increase at a slower rate than historically. From 1989 to 2010, the population aged 15 to 24 is projected to increase at an average annual rate of only 0.5 percent, compared to the period from 1970 to 1980 when the population in this age group increased at an average annual rate of 1.8 percent. This is the primary reason that the labor force is projected to increase at a slower rate over the next 20 years. The tightening labor supply will put upward pressure on wages. Producers will seek to substitute capital for labor, which tends to increase productivity or output per employee. In addition, the rapid pace of technological change and continuing pressure of international competition will stimulate capital investment as well.

A second major trend is the increase in the proportion of women in the labor force. From 1960 to 1989, the female labor force participation rate increased from 37 percent to 57 percent. This trend is expected to continue to varying extents over most of the forecast range. This is reflected in the increase in the proportion of the population that is employed. The employment to population ratios are shown in Table 5-4.

Population Change

Figure 5-1
Percent Population Change by Age Group U.S. 1989–2010



Growth in the importance of non-manufacturing industries is projected in each of the forecasts. Traditionally, studies of regional economic growth have focused on the manufacturing industries. Recently, the non-manufacturing industries have attracted more attention because of their size and rapid growth. In 1989, non-manufacturing industries accounted for 83.7 percent of total employment in the region. Non-manufacturing employment increased at a rate nearly 70 percent higher than manufacturing employment from 1960 to 1979.

The outlook is strong for industries such as communications and machinery that will play a key role in growing technological changes and productivity-enhancing investments. The foreign trade sector is expected to continue to increase in importance. The Pacific Northwest is well positioned to participate in trade to the Pacific Rim countries, and that possibility is assumed to be an important component of the higher-growth forecasts.

Slower growth of the region's large resource-based industries characterizes all of the forecast range. Lumber, paper and food products are not expected to be important sources of economic growth for the region, even in the high forecasts. As shown in Table 5-4, these industries account for a smaller proportion of manufacturing employment in all scenarios than in 1989.

Table 5-4
Comparison of 1989 and 2010

	1989	2010				
		High	Medium-High	Medium	Medium-Low	Low
Persons per Household	2.56	2.20	2.32	2.32	2.32	2.59
Employment/Population Ratio	0.45	0.51	0.49	0.47	0.45	0.42
Percent of Total Employment	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing	16.3	12.6	12.4	12.4	11.5	11.2
Non-manufacturing	83.7	87.4	87.6	87.6	88.5	88.8
Percent of Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0
Lumber and Wood Products	20.2	13.8	14.9	15.6	16.8	18.3
Transportation Equipment	21.6	20.4	19.8	18.5	17.2	16.6
Food and Kindred Products	11.6	9.9	10.3	10.8	11.9	12.2
Electronics (SIC 35,36,38)	16.1	22.4	21.6	21.2	21.0	20.0
Pulp and Paper Products	4.5	3.1	3.4	3.7	4.5	5.0
Other	26.0	30.5	30.0	30.3	28.6	27.8
Percent of Non-manufacturing	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture	8.6	4.9	5.3	5.7	6.1	6.8
Mining	0.3	0.3	0.3	0.3	0.2	0.2
Construction	5.0	4.5	4.7	4.3	4.2	4.5
Transportation, Communication and Public Utilities	5.9	4.6	4.7	4.9	4.8	4.9
Wholesale and Retail Trade	27.6	29.8	30.1	30.3	30.2	29.5
Finance, Insurance and Real Estate	6.4	7.1	7.0	6.8	6.8	6.6
Services	25.3	29.9	28.7	28.6	28.7	27.6
Government	20.9	18.9	19.2	19.1	19.1	19.8

Description of the Scenarios

The economic assumptions rely on basic policy assumptions, many of which operate at the national level. Each of the five regional economic forecasts was made within the context of a corresponding view of the national economy. Forecasts developed by the WEFA Group[1] were the primary source of national economic variables used in developing regional projections.

Certain results of the national forecasts are included directly in the regional forecasts. These include inflation rates, interest rates, industry-specific productivity growth, and basic demographic patterns. Other assumptions create a greater variation in the regional forecasts than in the national forecasts, however. These include wider fuel price ranges, regional shares of national employment growth by industry, and specific assumptions about the viability of the regional aluminum industry.

1./ The WEFA Group, *U.S. Long-Term Economic Outlook*, Volumes 1 and 2, Third Quarter 1989 and First Quarter 1990.

In developing the scenarios, it is important to recognize the wide range of possible outcomes for the regional economy. A short-term view of the future was rejected in favor of developing scenarios that would encompass a wide range of uncertainty about the region's economy in the long run. The high case presents quite a different future for the regional economy than the low case. For example, there are 75 percent more jobs in the region in the high case than in the low case by the year 2010.

In addition to an underlying high-growth scenario on the national level, the regional outlook for the high-growth case implies that the region's economy fares better, relative to the nation, than it has in the past. The large resource-based industries, such as forest products, aluminum, agriculture and basic chemicals, maintain a vital presence in the region's economy but are not expected to contribute to new jobs. In the high case, employment in lumber and wood products is projected to decline 6 percent from 1989 to 2010. Other resource-based industries show no increase in jobs. On the other hand, industries such as electronics, trade and services expand rapidly, nearly doubling their employment in 20 years. As shown in Table 5-1, total employment is projected to increase 2.8 percent per year, which is similar to the rate of growth sustained by the region from 1960 through 1980. Population is projected to grow 2.1 percent per year, while households grow 2.8 percent per year. The following conditions are assumed for the high case. The region will continue to be a favorable location for growth, because of: 1) the richness and diversity of its natural resources; 2) the quality of the environment and labor force; 3) the quality of the educational system; 4) relatively lower electricity prices; and 5) proximity to expanding markets in Japan and other Pacific Rim nations.

In the medium-high scenario, rapid growth in high-technology and commercial industries is coupled with moderate levels of activity in forest products, agriculture and basic chemicals. Employment in non-manufacturing industries increases nearly 60 percent. These changes result in employment growth of 2.0 percent per year, and population and household growth of 1.5 and 2.0 percent per year, respectively. Although the overall level of employment growth in the medium-high scenario is slower than the region experienced in the 1960s and 1970s, it still represents a case in which employment growth is 40 percent faster than national growth in the high case.

In the medium-low growth forecast, traditional industries experience low levels of economic activity, while other manufacturing and commercial industries experience moderate growth levels. Employment in lumber and wood products is projected to decrease by 30 percent. The region continues to increase its share of employment in electronics and non-manufacturing industries, however. Total employment is projected to increase 0.8 percent per year, with population and households increasing 0.8 percent and 1.3 percent per year, as shown in Table 5-1. In the medium-low scenario, employment growth is slightly slower than national growth in the low case.

The regional outlook for the low case shows no net increase in total employment over the 20-year forecast horizon. In this scenario, the region plunges into a deep recession in the early 1990s, which is followed by a slow recovery. Manufacturing continues to decline throughout the forecast period. Growth in non-manufacturing is offset by declines in many of the larger, traditional industries. Employment in aerospace is projected to decline by more

than a third. Total population and households are projected to increase 0.4 percent and 0.3 percent per year, respectively. This slow level of growth implies net outmigration of population throughout the forecast period.

Employment and Production

Lumber and Wood Products

In 1988, the regional wood products industry accounted for 43 percent of U.S. softwood lumber production and 39 percent of U.S. softwood plywood production. The bulk of production in the region--more than half of lumber production and nearly 70 percent of the softwood plywood production--occurred in Oregon. Furthermore, a large proportion of production in both Oregon and Washington is west of the Cascades. The lumber and wood products industry is the second largest manufacturing industry in the Pacific Northwest, accounting for 20 percent of manufacturing jobs in 1989.

In recent years, the industry has experienced wide swings in production and employment levels. A major factor contributing to volatility in this industry is new housing. New housing accounts for 40 percent of the market for lumber and wood products. Figure 5-2 is a graph showing U.S. housing starts, Pacific Northwest lumber production and plywood production for 1960 to 1988. The graph shows that regional lumber and plywood production follows a cyclical pattern similar to U.S. housing starts.

Lumber & Plywood Production

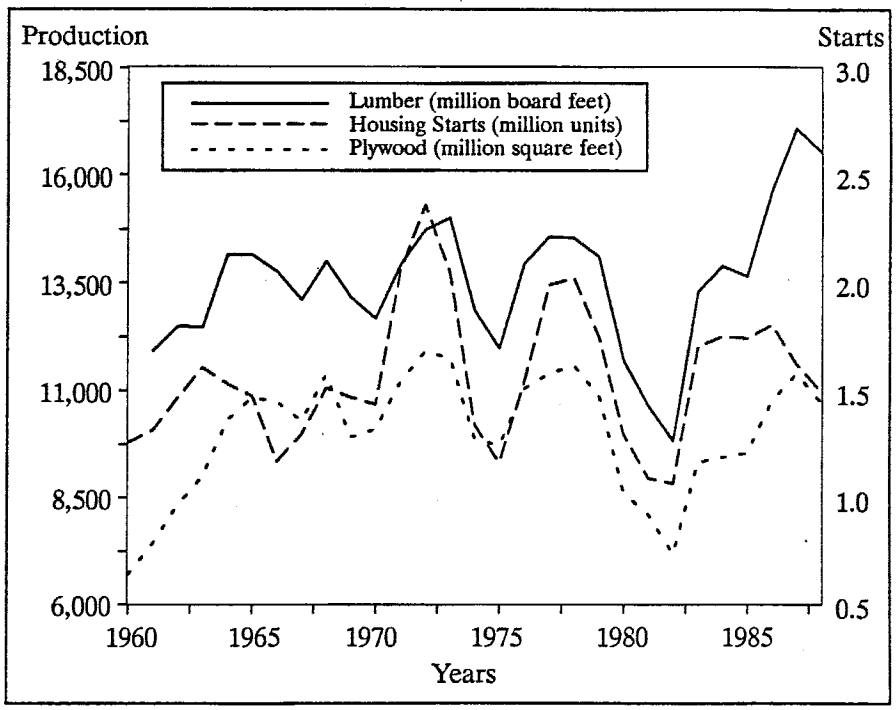


Figure 5-2
Comparison of Pacific Northwest Lumber and Plywood Production with U.S. Housing Starts 1960–1986

Other factors affecting lumber and plywood demand include housing types, average housing unit size, growth in other end uses for lumber and plywood, and international demand. An average-sized single-family unit uses approximately three times as much lumber and wood products as a multifamily unit. From 1970 to 1974, the average share of single-family units to total units was 58 percent. This share increased to 73 percent for the years 1975 to 1979. The share of single-family units is affected by the cost of housing and demographic factors. An area of growing demand for lumber and plywood in the last few years has been in repair and remodeling use. Currently, repair and remodeling account for close to 40 percent of U.S. lumber consumption. The value of the dollar compared to other currencies has an impact on exports of lumber and wood products. Dramatic increases in exports through Northwest ports have occurred over the last few years. Industry and government groups have escalated their efforts to increase exports through marketing programs in recent years as well.

The region's lumber industry has experienced increasing competition from lumber-producing areas in the southeastern United States over the last several decades. Higher transportation, labor and stumpage costs have made it difficult for the Northwest to retain its historical market shares. Northwest lumber mills have responded by seeking lower wage rates and taking steps to improve labor productivity. Although production levels in the late 1980s broke previous records established in the 1970s, employment was nearly 20 percent lower in 1989 than in 1979. In spite of cost cutting, Northwest production costs remain higher than costs faced by Southeastern competitors.

In the Southeast region, timber resources are owned primarily by the forest products industry and other private parties. The timber harvest can respond to fluctuations in demand, relieving pressure on stumpage prices. In addition, the tree growth cycle is faster in the Southeast--approximately 35 years compared to 50 years in the Northwest. In the Northwest, the federal government owns more than half of the commercial timberlands. Timber resources under the management of the U.S. Forest Service are governed by laws limiting the level of cuttings to a level that may be maintained over the long term.

In the Northwest region, controversy over the future of old-growth forests and survival of species such as the northern spotted owl contribute to the uncertainty about future timber availability from federal lands. Other factors that add to the uncertainty of future timber resources include natural disasters, improvement of timber management techniques, and changes in wilderness or recreational designations, to name a few.

Southeast timber resources are also subject to several uncertain factors. Recent studies show that more privately held timberlands in the Southeast are being lost to other uses, such as agriculture or urban development, than previously thought. New studies indicate that southern timber inventories will soon begin to decline. In addition, the intensity of management applied by non-industry private timber owners is subject to uncertainty.

The Northwest wood products industry also faces competition from Canadian producers. Canadian producers increased their share of the U.S. market rapidly in the late 1970s and early 1980s. U.S. producers prevailed in a dispute

involving Canadian government subsidies to private companies, which resulted in a 15-percent export tax on Canadian lumber destined for the United States.

Competition to the region's plywood industry is provided by the introduction of low-cost substitute products. The substitutes include products such as waferboard and oriented strandboard. These products are fabricated from faster-growing trees and waste chips. Their main cost advantage is the use of lower-cost materials. Although there are mills currently in the region or under consideration that produce these products, most of the plants producing waferboard and oriented strandboard are expected to be located in other regions of the country.

As the region enters the 1990s, a number of timber supply issues are unresolved. The region is faced with a declining private timber supply, a legacy of harvesting practices of 50 and 60 years ago. In addition, the supply of public timber is declining because of competing uses of public forests and concerns regarding old-growth timber.

The U.S. Fish and Wildlife Service determined in June of 1990 that the northern spotted owl was a threatened species. A federal interagency team of scientists developed a proposal, known as the Jack Ward Thomas report, to prevent the extinction of the spotted owl. Congressional and administrative committees are exploring other alternatives as well. These issues will not be resolved in the near future, as timber interests and environmental interests are sure to carry on the disputes for years to come.

The reductions in lumber processing from spotted owl set-asides may be partially offset by recently enacted federal legislation which allows states to restrict the export of logs from state-owned lands. This issue also remains unresolved.

The production forecasts presented in this paper are based on recent U.S. Forest Service forecasts. The Forest Service projects demand and supply from the timber-producing regions in the United States to the year 2030. The medium-high case takes into account recently adopted Forest Service management plans but includes no additional set-asides for spotted owl protection. The medium case is also based on new Forest Service management plans, with some preliminary adjustments to reflect old-growth set-asides to protect the spotted owl on federal lands. The medium-low case shows a production level similar to preliminary estimates of the impacts of implementing the Jack Ward Thomas report.

Changes in output per employee are used to convert production forecasts into employment. Production, employment and output per employee forecasts for the lumber and wood products industry are shown in Table 5-5.

Table 5-5
Forecasts of Production, Employment and Output per Employee
Lumber and Wood Products
Pacific Northwest (1989-2010)

	Production			Average Annual Rate of Growth (%) 1988-2010
	1988	1995	2010	
Lumber (SIC 2421) (Billion board feet)				
High		17.2	19.3	0.7
Medium-high		15.7	17.6	0.3
Medium	16.5	15.0	16.8	0.1
Medium-low		12.7	14.3	-0.7
Low		11.2	12.6	-1.2
Plywood (SIC 2436) (Billion square feet)				
High		9.6	9.2	-0.7
Medium-high		8.5	8.4	-1.1
Medium	10.7	8.2	8.0	-1.3
Medium-low		6.9	6.8	-2.0
Low		6.1	6.0	-2.6

	Employment (in thousands)					
		2010				
	1989	High	Medium-High	Medium	Medium-Low	Low
Lumber (SIC 2421)	46.0	46.7	44.5	42.4	36.0	31.8
Plywood (SIC 2436)	21.6	13.0	12.4	11.8	10.1	9.3
Other SIC 24	62.8	62.4	54.1	48.2	45.0	41.0
Total SIC 24	130.4	122.1	111.0	102.4	91.1	82.1

	Output per Employee Average Annual Rate of Growth (%) 1989-2010				
	High	Medium-High	Medium	Medium-Low	Low
Lumber (SIC 2421)	0.8	0.6	0.6	0.6	0.6
Plywood (SIC 2436)	1.8	1.5	1.5	1.5	1.3
Other SIC 24	1.6	1.4	1.0	1.0	1.0

Pulp and Paper

The pulp and paper industry is the second largest industrial consumer of electricity in the region. In 1989, firms producing pulp and paper products accounted for 20 percent of the electricity consumed by industry as a whole. The pulp and paper industry employed 29,000 people in 1989.

In the Northwest, most of the raw material used in the pulp-making process is wood chips, a byproduct from lumber and plywood plants. Availability and cost of wood chips in the future will operate as a deterrent on capacity expansion in this region. Restrictions on timber supply may lead to lower levels of lumber and plywood production. In addition, lumber and plywood mills have improved the yield from each log. These trends lead to less available log residue for use in pulp and paper production. Another factor has been the growth of the export market for chips.

The long-term outlook for the Pacific Northwest industry is favorable with regard to proximity to markets in the West and in the Pacific Rim. Other factors, however, including fiber availability and comparative production costs (such as the cost of labor), compare less favorably to the Southeastern producing areas. The Northwest's advantage in electricity costs has decreased to some extent as a result of large increases in electricity rates since 1979. Not only are electricity costs a major portion of direct operating costs, but electricity prices also affect the costs of chemicals used in the bleaching process. Chlorine and caustic soda are produced through an electrolytic process, which is highly electricity intensive.

Nationally, the demand for paper products is expected to be strong, with paper holding its own against petroleum-based plastic products. In addition, the Northwest has the largest inventory of preferred long-fiber softwoods, and access to ports to serve world markets.

The production forecasts for the primary production categories of pulp (SIC 2611), paper (SIC 2621) and paperboard (SIC 2631) were based on work performed by Ekono, Inc., for Bonneville. Ekono supplied Bonneville with a range of projections by industry for the region, based on surveys collected from most of the region's companies and its own analysis of fiber availability and cost.[2]

The Northwest Pulp and Paper Association conducted a survey of regional pulp and paper producers in early 1982,[3] requesting information on raw material use in 1980, pulp and paper production and capacity in 1980, and projections of production increases for the next 20 years. Ekono estimated that participating companies represented approximately 75 percent of the installed capacity of pulp,

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2./ Aho, William O., *Review of Pulp and Paper Industry Forecasting Model*, November 11, 1985.

3./ Northwest Pulp and Paper Association, *Results of NWPPA/Ekono Survey*, Heidi Schultz, April 2, 1982.

paper and paperboard products in the region. The survey was compiled through Arthur Andersen Company to ensure the privacy of individual companies.

In developing the projections, Ekono relied on the survey results, along with estimates of capacity and production for 1980 and 1981 by product, trends in fiber availability, production costs, and regional market share in domestic and foreign markets. These projections were updated by Ekono in 1985 to reflect data on capacity and production provided by a 1985 Northwest Pulp and Paper Association survey for the years 1982 through 1984. The Ekono forecasts were used to develop the production and employment forecasts shown in this chapter. They were updated by a 1988 survey provided by the Northwest Pulp and Paper Association for the years 1985 through 1987. Ekono has updated their study,[4] but the results were not available in time to incorporate in the draft forecasts presented here. Bonneville and Council staff will consider results of the report for possible inclusion in the final forecasts. Forecasts for regional production, employment and productivity growth in the pulp and paper industry are shown in Table 5-6.

In addition to primary products, the pulp and paper industry includes the production of miscellaneous converted paper products (SIC 264), paperboard containers and boxes (SIC 265), and building paper and board mills (SIC 266). These categories include the manufacture of bags, boxes and containers, writing paper, tissue paper and building board at sites where primary products are not produced. Industries within these categories locate close to population centers. The employment forecasts are shown in Table 5-6.

Chemicals

The manufacture of chemicals consumes approximately 11 percent of the electricity purchased by the industrial sector in the region. Elemental phosphorus production accounts for approximately half of the electricity consumed by the chemicals industry, followed by chlorine and caustic soda, which accounts for approximately 20 percent. In the Council's forecasting models, the consumption of electricity by these two industries is modeled on a plant-by-plant basis. Two of the chlorine and caustic soda plants are direct services industries (DSIs) of Bonneville.

The remainder of the chemicals industry in the region is dominated by nuclear fuels processing and agricultural chemicals (such as fertilizers). The nuclear fuels processing component has exhibited large swings in employment, as policies of the federal government have changed over the last 20 years. The agricultural chemicals component increased at a steady rate in the 1970s, but it has experienced little growth recently.

4./ Ekono, Inc., *A Study to Review and Update Production and Energy Consumption Data for the Pacific Northwest Pulp and Paper Industry*, submitted to Bonneville Power Administration, Report No. 02340, August 20, 1990.

Table 5-6
Forecasts of Production, Employment and Output per Employee
Pulp and Paper Products (SIC 26)
Pacific Northwest
1989-2010

Industry	Production Average Annual Rate of Growth (%) 1989-2010 High	Medium-High	Medium[a]	Low
Pulp (SIC 2611)	1.9	1.6	0.6	0.3
Paper (SIC 2621)	2.6	2.1	1.5	1.3
Paperboard (SIC 2631)	2.0	1.3	1.2	0.4

		Employment (in thousands) 2010			
	1989	High	Medium-High	Medium[a]	Low
Pulp (SIC 2611	2.1	1.8	1.7	1.4	1.4
Paper (SIC 2621)	13.1	12.0	11.4	10.8	10.8
Paperboard (SIC 2631)	5.0	4.1	3.6	3.8	3.4
Other Paper (SIC 26XX)	8.9	9.7	8.7	8.1	7.1
Total SIC 26	29.1	27.5	25.4	24.2	22.7

	Output per Employee Average Annual Rate of Growth (%) 1989-2010 High	Medium-High	Medium[a]	Low
Pulp (SIC 2611)	2.7	2.6	2.4	2.2
Paper (SIC 2621)	3.0	2.8	2.4	2.2
Paperboard (SIC 2631)	3.0	2.8	2.4	2.2

[a] Medium case used in the medium and medium-low scenarios.

Chlorine and caustic soda are produced at five plants in the region, four located in Washington and one in Oregon. Nationally, over half of the chlorine produced is used within the chemicals industry to manufacture a variety of organic and inorganic chemicals. An additional 13 percent is used by the pulp and paper industry as a bleaching agent in the production of paper. In the Pacific Northwest, a much larger portion of production goes to the pulp and paper industry varying from 32 percent to 80 percent, depending on the plant and temporary shifts in market conditions. Two of the five plants in the region are owned by pulp and paper companies.

The manufacture of chlorine and caustic soda involves the electrolytic separation of salt into two co-products: chlorine and sodium as sodium hydroxide (caustic soda). Approximately 1.12 pounds of caustic soda are produced per pound of chlorine.

The market outlook for the two products differs substantially. In the past, chlorine has held the stronger market and higher price. Expansion plans were based on growth in chlorine demand. As little as 10 years ago, caustic soda was considered an undesirable "byproduct," and for years producers sought to develop a commercial process to produce chlorine without producing caustic soda. In the last few years, the price of caustic soda has risen and supplies have tightened, while chlorine demand has dropped and prices have remained stable.

Industry experts have predicted growth rates for national chlorine demand to range from an average of 1 percent to 3 percent per year, whereas demand for caustic soda could increase at rates ranging from 2.5 percent to 5 percent. This is slower than the rate of growth in production from 1960 to 1980, which averaged 4.1 percent per year. From 1970 to 1980, however, production increased at an annual rate of only 1.6 percent. The outlook for chlorine has been affected by environmental regulations on effluent standards. Pulp and paper producers may substitute other chemicals in pulp bleaching to reduce dioxins. The outlook for caustic soda is much more favorable because it has a broader base of end uses. One of the fastest growing end uses is in the neutralization of waste acids. Tougher environmental standards would enhance the outlook for caustic soda. Soda ash can be substituted for caustic soda, and although the initial investments required to handle soda ash are high, projections of relative price increases for caustic soda and soda ash favor some conversion to soda ash. Production of chlorine and caustic soda is likely to be constrained by the price of chlorine, since chlorine is more difficult to store.

Although not all of the chlorine produced in the region is sold to pulp and paper producers, growth in the production of paper (SIC 2621) was chosen as a reasonable indicator of chlorine and caustic soda production growth. The projections presented here are within the range of projections for national production cited in the preceding paragraphs. Comparison of the production growth rates for chlorine and caustic soda and paper (SIC 2621) shows that the projection for chlorine and caustic soda is 0.5 percent per year higher in the high case to allow for higher rates of growth in other end uses. The medium-case growth rate is similar to the medium rate of growth in paper, and the low case is 0.4 percent per year lower than the low case paper projection to reflect lower rates of growth in other end uses or market penetration by British Columbia producers. Table 5-7 shows projections of production for chlorine and caustic soda, SIC 2812.

Table 5-7
Forecasts of Chemicals Industry Production
Pacific Northwest
Average Annual Rate of Growth (%)
1989-2010

Industry	Production				
	High	Medium-High	Medium	Medium-Low	Low
Chlorine and Caustic Soda (SIC 2812)	3.1	2.3	1.6	1.6	0.9
Elemental Phosphorus (SIC 2819)	1.4	0.8	0.3	-0.2	-0.2
Other Chemicals (SIC 28XX)	3.0	1.9	0.9	0.4	-0.7

Industry	Output Per Employee				
	High	Medium-High	Medium	Medium-Low	Low
Chlorine and Caustic Soda (SIC 2812)	3.0	2.2	1.5	1.5	1.5
Elemental Phosphorus (SIC 2819)	1.5	1.0	1.0	1.0	1.0
Other Chemicals (SIC 28XX)	2.5	2.0	1.3	1.0	0.3

Elemental phosphorus production is located in only four states (Idaho, Florida, Montana and Tennessee), near deposits of phosphate rock. Elemental phosphorus is extracted from phosphate rock in electric furnaces, and frequently converted nearby to phosphoric acid and other compounds.

Elemental phosphorus plants are classified under industrial inorganic chemicals, not elsewhere classified (SIC 2819). In the Northwest, firms producing elemental phosphorus, nuclear fuel, corn starch, chemical catalysts and a variety of other products are classified under SIC 2819. About half of the nation's total elemental phosphorus production capacity is located in the Northwest. Of this, 85 percent of capacity is located in Idaho, with the remainder in Montana.

The major end-use markets for elemental phosphorus are cleansers and detergents (45 percent), food and beverages (15 percent), metal treating (10 percent) and other chemicals and cleansers (30 percent). The outlook for elemental phosphorus production in the Northwest depends, in part, on the demand for these products.

The detergent market has been projected to remain stable or increase slightly over the forecast period, with growth rates ranging from 0 percent to 1 percent per year. Non-detergent uses, such as food and beverage products and other uses, have been forecast to increase at rates of 1.4 percent to 2.4 percent per year.

The problems facing elemental phosphorus producers in the region include the cost and availability of electricity and the maturity of their markets. The costs of additional electricity beyond current contracted amounts may lead to no expansion in capacity over the forecast period. This was assumed to be the case for the low scenario. The high-case projection is a weighted average of the higher ranges of forecasts for detergent and non-detergent uses of elemental phosphorus. Projections of production are shown in Table 5-7.

The residual category for chemicals (SIC 28XX) includes a wide variety of products manufactured in the region. The larger groups in employment and energy use are the nuclear engineering, fuels and waste processing segments, and agricultural chemicals (primarily fertilizers and pesticides). There also are many other types of chemical products manufactured in the region. The forecasts for the other chemicals category are shown in Table 5-7.

The forecast range for the region can be compared to national forecasts for the chemicals industry. The WEFA Group's forecasts for chemicals range from 1.9 percent to 3 percent growth in output from 1989 to 2010. The forecasts for the region are lower because of the slower growth forecast for the agricultural chemicals and the nuclear fuels processing segments of the regional industry.

Agriculture and Food Processing

Over the past decade, agriculture has adjusted to changes in the national economy, federal programs and international markets. Northwest agriculture and food markets are increasingly national and international. Increasing sales of farm products from the Midwest and Northeast to large East Coast markets has put more pressure on Northwest producers to sell overseas, primarily in the Orient. A comprehensive study of Northwest agriculture concluded that if Northwest agriculture is to experience reasonable growth, it must continue to develop foreign markets. Regional agriculture has been fairly successful in doing so.

Agricultural production supports a large food processing industry. In 1989, 75,500 persons were employed in food and kindred products (SIC 20), which represented nearly 12 percent of regional manufacturing jobs. Activity in this industry is concentrated in frozen and canned fruits and vegetables (SIC 203), which accounted for nearly half of the employment in food and kindred products and over half of food processing electricity consumption. Processed potatoes are the major products in this category, accounting for over half of the value added in the regional food processing industry. Another portion of the industry important to coastal areas is the seafood canning and freezing industry. Poor commercial fishing conditions have closed a number of these plants.

The outlook for employment in frozen and canned fruit and vegetable products relies on future demand for processed foods in the United States and

Pacific Rim countries. Changes in consumer lifestyle and preferences have prompted the industry to seek specialized market niches. Most food manufacturers have implemented practices to increase the efficient use of labor, management and energy. These changes have become permanently incorporated into the industry structure and are important in the forecasts.[5] The projections of employment and output in food processing for the region are shown in Table 5-8. Only the high and medium-high cases show an increase in regional food processing employment.

Table 5-8
Forecasts of Employment and Output
Food Processing
Pacific Northwest
1989-2010

	Employment (in thousands)		Average Annual Rate of Growth (%) 1989-2010	
	1989	2010	Employment	Output
Food Processing				
High		87.8	0.6	4.5
Medium-high		76.3	0.1	3.6
Medium	75.5	71.0	-0.3	3.3
Medium-low		64.2	-0.8	2.8
Low		54.6	-1.5	1.8

The High-Technology Industries

A great deal of attention has been focused recently on the high-technology industries. State and local governments in the United States and national governments around the world have initiated studies and programs designed to understand and attract economic development by encouraging growth in high-technology industries. In past years, the growth of electronics and software firms has been heralded by some as a panacea for stagnation in some of the region's resource-based industries.

The first step in a discussion of high-technology industries is to define the group of industries to be discussed. Several methods of defining high technology have been proposed, but there is no general agreement on which definition is the most appropriate. To a certain extent, the nature of technology-intensive activity makes definition difficult, because the industries are changing so rapidly. New industries are created and others become obsolete, thus causing any definition of high-technology industries to be tied to a particular point in time.

5./ *Food Processing, SIC 20*, John Wilkins, Cynthia Stenberg, Mark Farah and Marilyn Burge, Bonneville Power Administration, August 1989.

Most definitions have looked at one or a combination of three factors: research and development expenditures as a proportion of value added, the percentage of scientific and technical personnel in industry employment, and product sophistication. The definition described in this chapter was adopted from a Battelle study[6] for the state of Washington and reflects a combination of all three factors. The Battelle study included a number of chemical industries in its definition of high-technology industries. These industries were excluded from the definition of high-technology industries used in this chapter. The chemical industry forecasts have been discussed in a previous section. The modified list of industries included in the high-technology groups and their SIC codes are shown in Table 5-9.

Even at the level of industry detail shown in Table 5-9, it is difficult to categorize industries as high-technology industries. At more detailed levels of categorization, however, data are not available to analyze the industries because of disclosure laws that protect companies' rights to proprietary information. In the United States, the industries listed in Table 5-9 comprised approximately 5.0 percent of total wage and salary employment in 1987, compared to 5.7 percent for the region. The high-technology share of total employment was 7.6 percent in Washington, 4 percent in Oregon, 4.5 percent in Idaho and 0.5 percent in Montana.

In 1987, high-technology industries employed 158,700 persons in the region, with approximately 43 percent of the employment concentrated in the transportation equipment category. The second largest category was electrical equipment, with 20.5 percent, followed with 15.8 percent of high-technology employment. Table 5-10 shows employment in 1987 by state for the major high-technology groupings.

The aerospace industry in the region is dominated by The Boeing Company, which has production facilities in Washington and Oregon. Aerospace employment in Washington has been extremely cyclical, dropping from 104,000 in 1968 to 40,000 by 1971. In 1981, it reached a level of 80,900, only to drop to 65,000 by 1983. From 1983 to 1989, aerospace employment increased more than 70 percent to 112,900.

From 1970 to 1987, the high-technology industries increased employment at an average annual rate of 3.4 percent. This compares to a national growth rate of 2.1 percent over the same period. Removing aerospace from the calculation shows that non-aerospace, high-technology employment increased at an average annual rate of 11.5 percent in the region, compared to a national rate of 2.4 percent.

The factors often cited as favorable for the region's growth in high technology include the quality of the region's labor force, available land, good educational facilities and an environment suitable for maintaining a high quality of life. A survey of high-technology companies regarding location factors was completed by the Congressional Joint Economic Committee in 1982. The results are shown in

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6./ Battelle Seattle Research Center, *High Technology Employment, Education and Training in Washington State*, June 1984.

Table 5-11. The existing concentration of firms in the region also testifies to the importance of spin-off activity from Pacific Northwest firms and California firms.

Table 5-9
High-Technology Industries

SIC Code	Industry Name
	Machinery
351	Engine and Turbines
357	Office, Computing and Accounting Machines
	Electrical Equipment
361	Electric Transmission and Distribution Equipment
362	Electrical Industrial Apparatus
365	Radio and Television Receiving Equipment
366	Communication Equipment
367	Electronic Components and Accessories
369	Miscellaneous Electrical Machinery
	Transportation Equipment
372	Aircraft and Parts
376	Guided Missiles and Space Vehicles and Parts
	Professional Instruments
381	Scientific Instruments
382	Measuring and Controlling Instruments
383	Optical Instruments
384	Medical and Dental Instruments
386	Photographic Equipment and Supplies
	Business Services
737	Computer and Data Processing Services
7391	Research and Development Laboratories

Table 5-10
Employment in High-Technology Industries, 1987

	United States	Pacific Northwest	Washington	Oregon	Idaho	Montana
Machinery (SIC 351, 357)	462,500	12,400	4,800	4,600	3,000	0
Percent of High-Tech	10.8%	7.8%	4.3%	12.9%	26.3%	0.0%
Electrical Equipment (SIC 361, 362, 365, 366, 367, 369)	1,679,300	32,500	17,500	11,300	3,400	300
Percent of High-Tech	39.2%	20.5%	15.8%	31.7%	29.8%	27.3%
Transportation Equipment (SIC 372, 376)	815,100	67,900	65,700	2,200	0	0
Percent of High-Tech	19.0%	42.8%	59.4%	6.2%	0.0%	0.0%
Professional Instruments (SIC 381, 382, 383, 384, 386)	562,800	20,750	7,800	12,200	500	250
Percent of High-Tech	13.1%	13.1%	7.1%	34.3%	4.4%	22.7%
Business Services (SIC 737, 7391)	766,600	25,150	14,800	5,300	4,500	550
Percent of High-Tech	17.9%	15.8%	13.4%	14.9%	39.5%	50.0%
Total High-Tech	4,286,300	158,700	110,600	35,600	11,400	1,100
Percent of Total Employment	5.0%	5.7%	7.6%	4.0%	4.5%	0.5%
TOTAL EMPLOYMENT	85,483,800	2,805,500	1,464,600	883,400	253,300	204,200

SOURCES: U.S. Census Bureau *County Business Patterns*, 1987. The employment figures shown in this table are based on a survey of employment during the pay period including March 12. As such, they are not comparable to annual average data used in other segments of this report. They are used for illustration purposes here because they are available at the level of industry detail needed for all states.

D:DK/DEB.AP5 Table 5-10

Table 5-11
Factors that Influence Regional Location of High-Technology Companies

Factor	Percentage of Firms Citing Factors as Significant or Very Significant
Labor Skills and Availability	89.3
Labor Costs	72.2
Tax Climate	67.2
Academic Institutions	58.7
Cost of Living	58.5
Transportation	58.4
Access to Markets	58.1
Regulatory Practices	49.0
Energy Costs and Availability	41.4
Cultural Amenities	36.8
Climate	35.8
Access to Raw Materials	27.6

NOTE: Firms were asked to rate each factor as very significant, significant, somewhat significant, or not significant.

SOURCE: U.S., Congress, Joint Economic Committee. *Location of High Technology Firms and Regional Economic Development*, June 1982, p. 23; and from Battelle Seattle Research Center, *High Technology Employment, Education and Training in Washington State*, June 1984.

The factors often cited as unfavorable for the region's growth in high-technology industries include high labor costs, unfavorable tax policies, and complex regulatory practices that make it difficult to expand or locate facilities. There is also some question as to the region's commitment to improving or maintaining the quality of its educational systems in light of tax revolts and state and local budget crises. Many states and cities in the United States are competing aggressively to attract high-technology industries. Some areas of the country, such as New England and North Carolina's Research Triangle Park, enjoy advantages in their traditions of high-quality academic institutions.

Forecasts of employment for high-technology industries are shown in Table 5-12. The table shows forecasts for industries at the two-digit SIC level, which includes some businesses that are not classified as high-technology industries. Electrical equipment and professional instruments are the only categories in which nearly all of the employment is in the high-technology category. In machinery and business services, only 32 percent and 19 percent, respectively, of the employment are in the high-technology industries.

Table 5-12
Forecasts of Employment and Output
High-technology Industries
Pacific Northwest
Average Annual Rate of Growth (%)
1989-2010

	High	Medium-High	Medium	Medium-Low	Low
	Employment				
Machinery (SIC 35)	3.0	2.0	1.2	0.3	-0.7
Electrical Equipment (SIC 36)	3.2	2.1	1.5	0.3	-0.9
Transportation Equipment (SIC 37)	1.2	0.2	-0.7	-1.9	-3.0
Professional Instruments (SIC 38)	3.1	2.3	1.6	0.8	-0.4
Business Services (SIC 73)[a]	4.4	3.5	2.9	2.3	0.9
	Output				
Machinery (SIC 35)	7.5	6.2	5.4	4.5	3.2
Electrical Equipment (SIC 36)	7.6	6.4	5.7	4.4	2.9
Transportation (SIC 37)	3.9	2.7	1.8	0.5	-0.8
Professional Instruments (SIC 38)	7.3	6.2	5.5	4.7	3.2

[a] Forecasts of output are not developed for the non-manufacturing industries.

The computer machinery category has been a rapidly growing sector of the machinery industry in the region. Much of the remainder of the machinery industry is farm, construction, logging and other heavy machinery. These categories are not forecast to grow rapidly.

Aerospace employment, which is dominated by the The Boeing Company, accounts for 80 percent of employment in the transportation equipment industry in the region. Commercial aircraft production represents the largest portion of production in the region. During the early 1980s, annual average employment in aerospace declined almost 20 percent. Commercial aircraft orders had dropped substantially because of low profits in the airline industry and declines in passenger miles. Since then, Boeing has increased employment over 70 percent as orders increased, in response to improvements in economic conditions and in the financial condition of airlines. Boeing's primary competition is Airbus Industries, a European aircraft consortium.[7] The market for commercial aircraft is projected to be strong, although it will probably continue to be highly cyclical. Because employment in this category is dominated so much by one company, the forecasts encompass a wide range of uncertainty.

7./ *Transportation Equipment, SIC 37*, Dennis Yee, Mark Farah, Stephen Wood, Peter West and Marilyn Burge, Bonneville Power Administration, August 1989.

Other Manufacturing Industries

There are a number of smaller manufacturing industries that play a relatively minor role in employment and electricity use in the region. The largest of these industries include printing and publishing, fabricated metals, and stone, clay and glass products. Recently, printing and publishing employment has increased rapidly. This is largely because of growth in the demand for computer software manuals and industry changes spurred by advances in desktop publishing systems. The fabricated metals and stone, clay and glass industries are projected to grow slowly, in line with national trends. The forecasts for these industries are shown in Table 5-13.

Table 5-13
Forecasts of Manufacturing Employment and Output
Average Annual Rate of Growth (%)
1989-2010

	Employment				
	High	Medium-High	Medium	Medium-Low	Low
Printing and Publishing	3.3	2.5	2.0	0.6	-0.6
Fabricated Metals	2.3	1.1	0.6	-0.2	-0.7
Stone, Clay and Glass	2.1	0.5	-0.3	-1.2	-2.1
Petroleum	1.6	1.0	-0.4	-2.6	-3.8
Textiles	1.5	0.2	-0.5	-1.1	-2.7
Apparel	2.4	1.1	0.6	-0.4	-1.9
Furniture	2.5	1.5	0.8	-0.5	-1.6
Rubber and Plastics	3.4	2.4	1.5	-0.7	-1.4
Leather Products	1.7	0.7	0.1	-0.6	-2.4
Miscellaneous Manufacturing	2.8	1.7	1.0	-1.4	-2.8
	Output				
Printing and Publishing	4.3	3.1	2.6	1.4	-0.1
Fabricated Metals	4.3	2.9	2.5	1.7	1.0
Stone, Clay and Glass	4.9	3.1	2.3	1.4	0.3
Petroleum	4.8	3.9	2.6	0.2	-1.0
Textiles	5.9	4.4	3.6	3.0	1.2
Apparel	5.0	3.6	3.0	2.0	0.3
Furniture	5.4	4.1	3.4	2.0	0.6
Rubber and Plastics	6.5	5.1	4.1	2.0	1.0
Leather Products	2.5	1.3	0.7	-0.1	-2.1
Miscellaneous Manufacturing	5.9	4.7	4.0	1.5	0.1

Growth in Non-manufacturing Industries

The non-manufacturing industries account for most of the region's employment, 83.7 percent in 1989. Employment in non-manufacturing industries has grown faster in the last two decades than employment in manufacturing. Table 5-14 shows the shares of total employment by industry for the region and the United States. The largest category of non-manufacturing employment in the

region is wholesale and retail trade, followed by services (which includes such industries as health care, business services and personal services). The third largest non-manufacturing industry is government.

Table 5-14
Total Employment Shares
U.S. and the Pacific Northwest
Percent of Total (%)

	Pacific Northwest		U.S.	
	1970	1989	1970	1989
Total Employment	100.0	100.0	100.0	100.0
Manufacturing	20.5	16.3	25.1	17.5
Non-manufacturing	79.5	83.7	74.9	82.5
Mining	0.5	0.3	0.8	0.6
Agriculture	9.0	7.2	4.3	2.9
Construction	4.3	4.2	5.1	4.7
Transportation and Public Utilities	6.2	4.9	5.8	5.1
Wholesale and Retail Trade	20.6	23.2	20.7	23.1
Finance, Insurance and Real Estate	4.6	5.4	5.0	6.1
Services	14.3	21.1	16.0	24.1
Government	20.0	17.4	17.1	15.9

The growth in the non-manufacturing sectors has occurred at the national level, as well as at the regional level. A larger proportion of manufactured goods is produced in other countries, which has had a negative impact on the proportion of employment in manufacturing. Productivity gains in the past have been higher in manufacturing industries, and this has lowered employment relative to output. However, computerization of some activities could lead to higher productivity gains in non-manufacturing.

A closer look at specific industries may add some insight into the growth in the non-manufacturing sectors.[8] The services industry was the fastest growing industry in the region from 1970 through 1987, increasing employment at 5.5 percent per year. In 1987, health services accounted for 33 percent of the region's employment in services. Employment in health services increased at an annual rate of 5.3 percent from 1970 through 1987. Growth in this sector resulted from the expansion of health-care benefits for workers and elderly people and growing public interest in personal health.

The second largest service category--business services--accounted for 16 percent of the region's employment in services. This category was among the fastest growing sectors in services, increasing employment at an annual rate of 7.7 percent. This category includes a diverse group of industries, such as computer

8./ This discussion of non-manufacturing industries relies on data from County Business Patterns. The most recent year available for all four states was 1987. Please refer to Table 5-15 for further information.

and data processing services, advertising agencies, building services companies and personnel agencies.

Although it only accounted for 3 percent of services employment in 1987, the legal services industry was the fastest growing of the services industries. Employment increased at an annual rate of 8.7 percent from 1970 through 1987.

Employment in construction increased 2.7 percent per year from 1970 through 1987. Even so, construction employment may exceed 1979 levels for the first time in 1990, as a result of slower population growth during most of the 1980s.

The finance, insurance and real estate sector increased employment at an average annual rate of 3.7 percent from 1970 through 1987. The most rapidly growing sectors in this industry were holding and investment offices and credit agencies (other than banks). Deregulation of the financial industry has led to the creation of a wide range of services and financial instruments offered by a diverse group of businesses. The competition has put a great deal of strain on financial institutions. This may result in an industry shakeout in the next few years, accompanied by slower employment growth.

Wholesale and retail trade accounted for the largest share of total employment in 1989, as shown in Table 5-14. Wholesale trade accounted for approximately one-fourth of employment in trade and increased at an annual rate of 2.6 percent from 1970 through 1987. Employment in retail trade increased at a rate of 3.7 percent per year during the same period.

Eating and drinking establishments accounted for 35 percent of employment in retail trade. This was also the fastest growing category of employment in retail trade, increasing at an annual rate of 6.0 percent from 1970 through 1987. The increase in household consumption of food away from home reflects the increase in household income and the increase in the participation of women in the labor force. In addition, a larger proportion of household budgets for persons aged 25 to 44 is spent on food away from home than for other groups. The rapid growth of persons in this age group during the past twenty years contributed to rapid growth in this sector. Since this age group is growing slower in the future than it has over the last 20 years, the rate of employment growth in this sector is expected to slow.

Other fast-growing retail-trade categories included clothing stores, food stores and miscellaneous retail stores, which includes specialty stores and mail-order houses. Employment in these categories increased at average annual rates slightly over 4 percent from 1970 through 1987.

The government sector was the third largest employment category in the region in 1989, as shown in Table 5-14. State and local government accounted for more than 80 percent of employment in government. From 1970 through 1987, employment in the federal government increased 1.1 percent per year, while state and local government employment increased 2.4 percent per year. Education accounts for the largest proportion of state and local government employment. The outlook for future employment changes in this sector depends on the level of population growth and policy decisions.

Employment in transportation, communications and public utilities increased at an annual rate of 2.5 percent from 1970 to 1987. The fastest growing category was transportation services, which include travel agencies, freight forwarding services, and shipping agents and brokers. Employment in transportation services increased at an average annual rate of 9.1 percent from 1970 to 1987. The largest categories of transportation and public utilities employment in 1987 were trucking and warehousing, and communication services, with 29 percent and 32 percent respectively. Trucking and warehousing employment increased at an average annual rate of 3.6 percent. Employment in communications increased at an average annual rate of 1.7 percent.

The discussion of non-manufacturing industries presented thus far has centered on industries as defined by the Standard Industrial Classification (SIC) system. Industries such as the travel industry and port activity are not separated from other economic data to allow historical analysis of their importance to the regional economy.

The travel industry, which includes tourism and business travel, has impacts on retail trade sectors, such as eating and drinking places, retail stores and service stations. It affects transportation industries, such as transportation services, and air or rail transportation. It has an impact on the services industry, which includes hotels and lodging places, personal services, and amusement and recreation services. It also has an impact on the government sector, through parks and recreation, national parks, national and state forests, and the highway system. Because all of these services are consumed by the local population as well as out-of-state travelers, it is difficult to measure the impact of the travel industry on the economy.

Nevertheless, the travel industry is an important activity in the region. The beauty and diversity of the region's natural environment provide opportunities for a variety of recreational activities. Factors that will aid the growth of the travel industry in the future include increases in real income and changes in the age composition of the population. State and local governments in the region have developed programs to promote tourism and conventions, which will add to the industry's growth.

Another economic activity that appears to have increased in importance is port activity related to trade with Alaska and other countries. The expansion of the economies of the Pacific Rim countries and the region's proximity to these countries point to increased trade and transportation activity. The employment impacts are difficult to measure, because they are spread across a number of SIC categories. Port activity affects the transportation, wholesale trade, services and financial industries. It has an impact on manufacturing industries, as well, by providing markets for goods produced in the region. A study by the Port of Seattle[9] showed a direct impact of 55,800 jobs resulting from the harbor and airport facilities. This estimate was for 1982, which was a year of worldwide economic slowdown. In addition, the estimate included jobs in King County only, which would underestimate the impact of the port on the state of Washington and the region.

9./ Port of Seattle, *1982 Economic Impact Study*, October 1984.

In recent years, more attention has focused on the non-manufacturing industries as an increasing source of jobs to the economy. The traditional approach to understanding regional economic development emphasized manufacturing, agriculture and extractive industries as the basis for economic growth. Other industries were treated as secondary, providing support services to these industries and to the local population. A recent study of the services sector in the central Puget Sound region[10] disputes this approach. The study interviewed firms from selected industries in the services sector and estimated that approximately one-third of the employment in these industries is linked to export markets. The study points out many areas where the dynamics of location and growth of non-manufacturing industries have remained largely unexplored.

In developing the range of forecasts of employment growth in the non-manufacturing industries, the Council and Bonneville have relied on national forecasts developed by Wharton and the Bureau of Labor Statistics, comparing them to historical regional growth rates by industry. Table 5-15 shows a comparison of the forecasts of non-manufacturing employment by industry with historical growth rates.

10./ Beyers, William B., Alvine, Michael J., and Johnsen, Erik G., *The Service Economy: Export of Services in the Central Puget Sound Region*, Central Puget Sound Economic Development District, April 1985.

Table 5-15
Non-manufacturing Employment Projections
Pacific Northwest
Average Annual Rate of Growth (%)

	1970-1987[a]	1989-2010				
		High	Medium-High	Medium	Medium-Low	Low
Construction	2.7	2.5	1.9	0.9	0.3	-0.1
Transportation, Communications and Public Utilities	2.3	1.8	1.1	0.7	0.1	-0.6
Trade	3.3	3.3	2.6	2.1	1.5	0.6
Wholesale Trade	2.6	3.2	2.5	2.0	1.4	0.6
Retail Trade	3.7	3.4	2.6	2.1	1.5	0.6
Food Stores	3.8	2.8	1.9	1.2	0.5	-0.1
Eating and Drinking Places	6.0	4.1	3.5	3.1	2.7	1.5
Finance, Insurance and Real Estate	3.7	3.5	2.6	1.9	1.4	0.5
Services	5.5	3.8	2.8	2.2	1.7	0.8
Hotels and Lodging Places	2.5	3.0	2.6	2.2	1.7	0.5
Business Services	7.7	4.4	3.5	2.9	2.3	0.9
Health Services	5.3	4.2	3.3	2.4	1.9	1.0
Government	2.2	2.5	1.8	1.2	0.7	0.1
Federal Government	1.1	1.9	1.3	0.7	0.2	-0.4
State and Local Government	2.4	2.6	1.9	1.3	0.7	0.2

[a] Historical data except government employment is based on *County Business Patterns*. The employment figures shown in this table are based on a survey of employment during the pay period including March 12. As such, they are not comparable to annual average data used in other segments of this report. They are used for illustration purposes in this table and in the text, because they are available at the level of industry detail needed.

Changes in Productivity Growth

The early phases of an economic recovery often show large gains in productivity. The conditions may exist at this time, however, for a more sustained growth in labor productivity in the United States that could last well beyond the cyclical impacts of recession and recovery. Some of the factors encouraging higher productivity growth were brought about by the recession. Intense foreign competition and a high value of the U.S. dollar against foreign currencies in the early 1980s put downward pressure on prices. Efforts to increase profitability have focused on improving productivity.

Over the long-term, demographic factors will have an impact on labor productivity growth. With the maturation of the baby-boom generation, there will be fewer young, inexperienced workers in the labor force.

The impact of developments in high technology is just beginning to be observed in office automation, robotics, electronic technology and telecommunications. Spurred by foreign competition and tempted by numerous success stories, U.S. companies are turning to new technology to remain competitive in world markets.

Two factors that may have dampened productivity growth in the 1970s may have contributed to productivity growth in the 1980s by their absence. These are energy price shocks and new federal regulations. The costs of adjusting to higher prices and higher environmental standards diverted funds from investments that contribute more directly to measures of productivity during the 1970s. These factors may have slowed down labor productivity growth in the 1970s.

Table 5-16 shows rates of growth in real output per employee for manufacturing. As shown, productivity growth in the 1970s was slow compared to previous decades. The WEFA Group's long-term forecasts show a continuation of the trends established over the last 20-years. Table 5-A-4 of Appendix 5-A shows productivity forecasts by industry for manufacturing industries.

Table 5-16
Real Output per Employee, U.S. Manufacturing
Average Annual Rate of Growth (%)

Years	Percent
1959-1969	2.6%
1969-1979	2.3
1979-1989	3.4
1969-1989	2.9

Forecast 1989-2010	Percent
High	3.0%
Medium	2.9
Low	2.7

Population, Households and Housing Stock

Total population in the region was 8.9 million in 1989. Regional population increased at an average annual rate of 1.2 percent from 1980 to 1989, higher than the rate of U.S. population growth (1.0 percent) in the same period. In the 1970s, population growth in the region was twice the rate of U.S. population growth, and more than one-third faster than during the 1950s and 1960s. Washington was the fastest growing state in the region during the 1980s, while Idaho was the fastest growing during the 1970s. Table 5-17 summarizes historical data on population and households.

The number of households in the region and the nation grew at a higher rate than population. Growth in the number of households was most rapid in the 1970s. During the 1970s, the baby-boom generation reached the 20 to 29 year age group, where household formation rates are high. Smaller families also became more common.

Householder rates, or the proportion of the population in an age group designated to represent a household, increased rapidly with the rise in divorce

rates and single-person households. In the 1970s, householder rates increased dramatically for females over the age of 65, as more women in this group have maintained their own household, rather than move in with family or to group quarters. In addition, women in the 20 to 29 age group have maintained households at a higher rate. The combination of shifts in age composition and of changes in householder rates lowered average household size in the region from 3.1 in 1970 to 2.7 in 1980. During the 1980s, average household size continued to drop but at a much slower pace.

Table 5-17
Total Population and Households

	Total Population (Thousands)				Average Annual Rate of Growth(%)		
	1960	1970	1980	1989	1960-1970	1970-1980	1980-1989
Washington	2,853.2	3,409.2	4,132.2	4,761.0	1.80	1.94	1.59
Oregon	1,768.7	2,091.4	2,633.1	2,820.0	1.69	2.33	0.76
Idaho	667.2	712.6	944.0	1,014.0	0.67	2.85	0.80
Western Montana	231.7	253.5	294.5	313.0	0.90	1.51	0.68
PNW	5,520.8	6,466.7	8,003.8	8,908.0	1.59	2.16	1.20
U.S.	180,671.0	204,878.0	227,020.0	248,810.0	1.27	1.03	1.02

	Total Households (Thousands)				Average Annual Rate of Growth(%)		
	1960	1970	1980	1989*	1960-1970	1970-1980	1980-1989
Washington	894.0	1,106.0	1,540.5	1,874.4	2.15	3.37	2.20
Oregon	558.0	692.0	991.6	1,128.0	2.18	3.66	1.44
Idaho	194.0	219.0	324.1	362.1	1.22	4.00	1.24
Western Montana	70.0	79.0	106.4	118.6	1.25	3.47	1.21
PNW	1,716.0	2,096.0	2,962.6	3,483.1	2.02	3.52	1.81
U.S.	53,021.0	63,450.0	80,377.0	92,830.0	1.81	2.39	1.61

* Estimate

Persons per Household

	1960	1970	1980	1989
PNW	3.22	3.09	2.70	2.56
U.S.	3.41	3.23	2.82	2.68

The population forecast is derived from the forecast of total employment by using an average employment to population ratio. Changes in the employment to population ratio reflect changes in labor force participation, unemployment rates and age composition of the population. The participation of women in the labor force increased rapidly in the 1960s and 1970s. From 1960 to 1987, the percent of women in the labor force increased from 37 percent to 57 percent. The

employment to population ratios in this forecast incorporate the impacts of continued increases in female labor-force participation, although at slower rates than in the past. The range of projections was based on national trends as forecast by Wharton and the U.S. Bureau of Labor Statistics. Changes in employment to population ratios implied in the national forecasts were tracked in the state-level forecasts, maintaining historical differences between the state and national ratios. Table 5-A-1 in Appendix 5-A shows employment to population ratios for each state for the ranges.

The forecast for total households is obtained from the forecast of population after dividing by average household size. Changes in average household size reflect changes in the age composition of the population and householder rates by age group. The projections are based on national trends as forecast by the U.S. Bureau of the Census. The high and medium cases assume that householder rates will continue to increase, but at much slower rates than in the 1970s. This results in part because of increases in the relative cost of housing and in a slowing of increases in the divorce rate. The low case assumes that householder rates do not increase, but average household size decreases slightly because of changes in age composition. Average household size projections by state for the ranges are shown in Table 5-A-2 of Appendix 5-A.

Table 5-18 shows the forecasts of population and households that result from the assumptions described. There were 2.963 million occupied housing units in the region in 1980. Results from the 1980 U.S. Census indicated that approximately 78 percent of the occupied housing stock was single-family units (1 to 4 units per building). An additional 14 percent was multifamily units, and 8 percent were manufactured homes. Change in the housing stock is the result of change in total households plus replacement of existing units. The proportion of new housing units by type is projected for each state. Table 5-A-3 in Appendix 5-A shows the proportion of housing additions by type for each state and scenario. Changes in the stock of housing by type are shown in Table 5-19.

Table 5-18
Forecast of Population and Households
Pacific Northwest
1989-2010

Scenario	1980	1989	2010	Average Annual Rate of Growth(%)
Total Population (in thousands)				
High			13,727.5	2.1
Medium-high			12,247.0	1.5
Medium	8,003.7	8,908.0	11,322.2	1.1
Medium-low			10,515.0	0.8
Low			9,576.2	0.3
Total Households (in thousands)				
High			6,239.8	2.8
Medium-high			5,274.6	2.0
Medium	2,962.6	3,483.1	4,875.4	1.6
Medium-low			4,527.5	1.3
Low			3,697.3	0.3

Table 5-19
Housing Stock Projections
Pacific Northwest
Share of Occupied Housing Units (%)
1980-2010

		2010				
	1980	High	Medium-High	Medium	Medium-Low	Low
Single-family (5-4 units)	77.8	77.1	72.4	70.8	69.6	69.1
Multifamily (5 and more)	14.4	15.2	17.2	18.4	19.3	20.9
Manufactured Homes	7.8	7.7	10.4	10.8	11.1	10.0

Personal Income

Real per capita income is an important input to many econometric models of energy demand. It plays a far less critical role in the more structural end-use models used by the Council. The only sector it affects directly is the residential sector, where it influences the penetration rate of certain types of appliances and the long-run expected use of appliances. In 1980, the personal income per capita of the Pacific Northwest was $10,392. That was 4.8 percent greater than the U.S. average of $9,916.

Table 5-20 shows historical and forecast growth of real personal income per capita in the Pacific Northwest and for the United States. During the 1960s, income per capita increased at a slightly slower rate in the region as in the United States. In fact, the region's real income per capita dipped below the United States in 1970. Income per capita increased faster in the region than in the United States during the 1970s. Over the entire 20-year period from 1960 to 1980, the region's per capita income increased at almost the identical rate as the United States average. From 1980 to 1989, real income per capita increased at half the rate in the region than in the United States. The forecasts for 1989 to 2010 are shown in Table 5-20 as well.

Table 5-20
Growth Rates of Real Income per Capita
Average Annual Percent (%)

	Pacific Northwest	United States
Historical		
1960-70	2.9	3.2
1970-80	2.7	2.2
1980-89	1.0	2.0
Forecast 1989-2010		
High	2.9	1.6
Medium-high	2.4	
Medium	1.8	1.4
Medium-low	1.5	
Low	1.2	1.1

Alternative Fuel Prices

Assumptions about the future prices of natural gas, oil and coal are important determinants of demand for electricity. These fuel price assumptions are important for two reasons. First, because these fuels are alternatives to electricity in many uses of energy, their prices will affect the demand for electricity. This is particularly true for the residential and commercial sectors, where electricity, natural gas and oil compete for space heating, water heating, air conditioning and cooking.

The second reason that fuel prices are important is that they are highly uncertain. In the last 20 years, crude oil prices have varied between a low of less than $3 a barrel in 1970 and a high of $37 a barrel in 1981. Electricity demand forecasts are much less sensitive to fuel prices changes than to changes in economic activity. (Sensitivity tests show that reducing fuel prices by one-half would reduce electricity demand by less than 5 percent.) Nevertheless, the large uncertainty about fuel prices causes them to be a substantial factor in the risks facing electricity planning.

The forecasts of fuel prices reflect an assumption that natural gas prices will tend to follow oil prices in the long run. This occurs through the competition between residual oil and interruptible natural gas in the industrial sector boiler markets. Coal is not currently competitive in industrial markets in the Northwest. However, as oil and natural gas prices rise, coal could become a third competitor in the industrial market.

Prices of oil products, such as heating oil or gasoline, follow world crude oil prices. Thus, assumptions about world crude oil prices are the starting point for forecasts of alternative fuel prices. Shortly after the Council's 1986 plan was published, world oil prices collapsed to less than half their previous levels. This event demonstrated, in many analysts' minds, that oil prices of more than $30 per barrel are not sustainable for long. Since 1986, oil prices have varied between $14 and $18 on an annual basis with more variation on a monthly basis.

Iraq's invasion of Kuwait, and the subsequent blockade of those countries, have decreased oil supplies and sent oil prices above $30 in recent months. However, these events have not changed the long-term outlook for oil prices. Nearly all analysts agree that future oil prices are likely to be volatile. Events in the Middle East could cause prices to move temporarily above or below the proposed range of assumptions. The potential for such volatility is not reflected in the proposed assumptions. Instead, the assumptions are meant to bracket alternative trends in oil prices about which fluctuations would likely occur.

The range of world oil price assumptions proposed in this paper encompasses the recent forecasts of many analysts. The range is illustrated in Figure 5-3 and Table 5-21. Figure 5-3 also illustrates the historical pattern of oil prices from 1970 to 1989, including the large increases of 1973 and 1979 and the collapse in 1986. It is also clear from Figure 5-3 that the real oil price decreased dramatically between 1981 and 1985 even though that decrease did not cause the stir that resulted from the 1986 collapse.

World Oil Prices

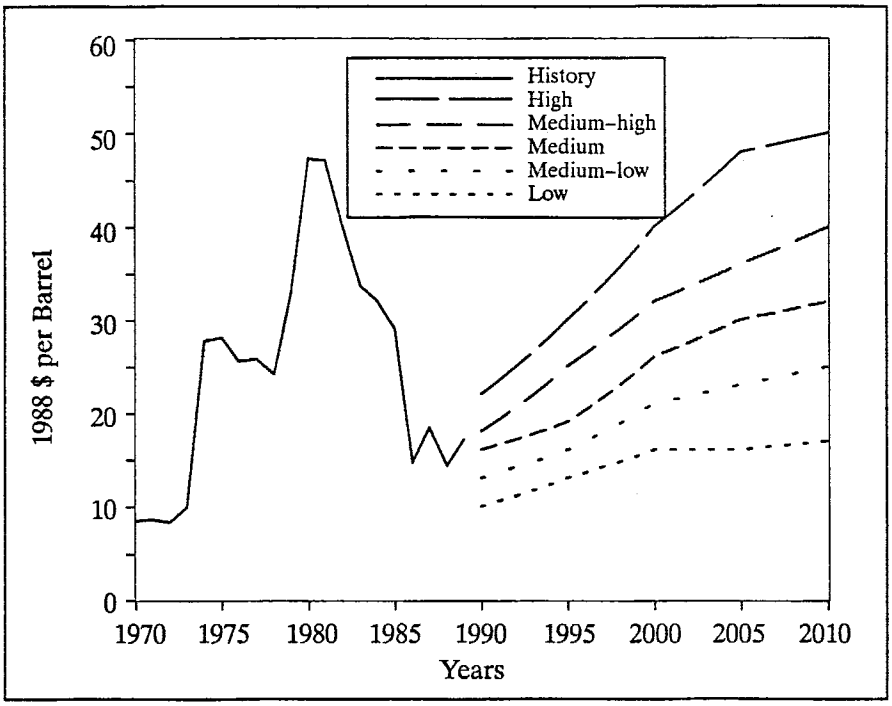


Figure 5-3
World Oil Prices—Historical and Forecast Range to 2010

The medium forecast shows real world oil prices (in 1988 dollars) growing at 3.1 percent per year from current levels, reaching $32 per barrel by the year 2010. The range about this medium forecast reflects a judgment that there is slightly more risk on the high side than on the low side. In 2010 the high oil price is $18 above the medium, while the low oil price is $15 below the medium.

The low forecast assumes that oil prices remain near current levels in real terms; that is, they increase at about the same rate as general economic price inflation. This scenario would be consistent with very favorable oil and natural gas supplies combined with significant progress in improved energy efficiency even with low price incentives. Under such conditions, the Organization of Petroleum Exporting Countries (OPEC) would not be able to exercise effective control of world oil markets.

Table 5-21
World Oil Prices
(1988 Dollars per Barrel)

	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	17	17	17	17	17
2000	40	32	26	21	16
2005	48	36	30	23	16
2010	50	40	32	25	17
Growth Rates (%)					
1988-2010	5.3	4.2	3.1	1.9	0.0

In the high scenario, per barrel prices recover into the low-20s by 1990 and continue to make significant real gains, reaching $50 by 2010. Such a future could be consistent with OPEC having a fairly secure control of oil markets. That could happen if new oil and gas discoveries are disappointing, the world experiences strong economic growth, and efficiency improvements are slow in being realized. The medium-low and medium-high forecasts bound a more likely long-term range that spans from $25 to $40 per barrel in 2010.

The range of oil price assumptions is significantly lower than those used for the Council's 1986 Power Plan Figure 5-4 compares the new assumptions with the Council's 1986 plan range, which is shown with dashed lines. The figure shows that actual oil prices fell below the 1986 low case after 1986. The price assumptions were revised for the Council's 1989 Power Plan Supplement and the August 1989 Bonneville white book forecast. The proposed assumptions for the 1990 Power Plan are similar to those used in these recent forecasts.

World Oil Prices

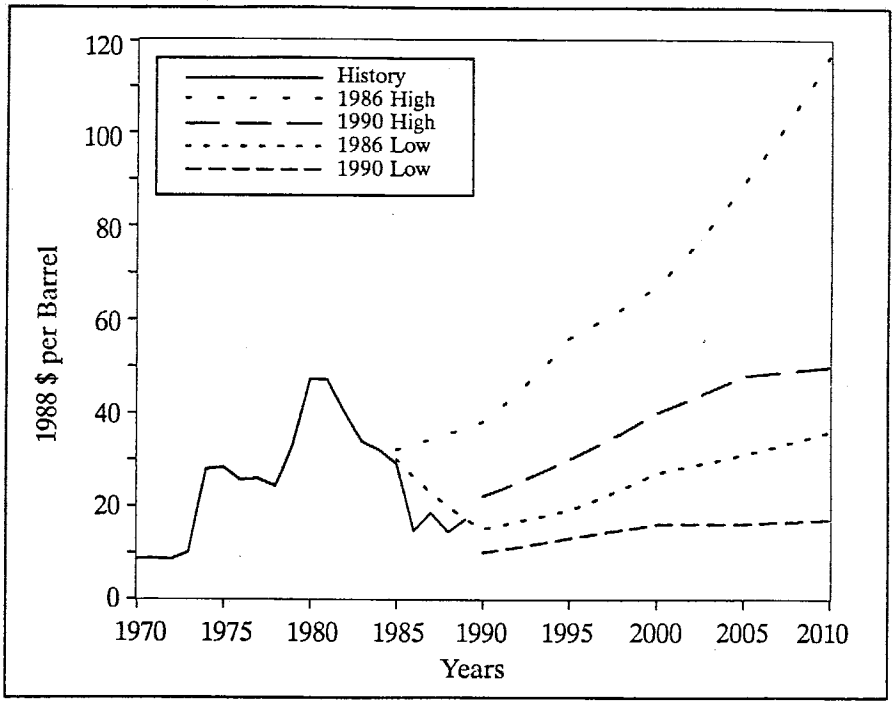


Figure 5-4
World Oil Prices—Compared to Council's 1986 Power Plan

As described above, oil price assumptions provide the basis for forecasting retail prices of the important fuel competitors to electricity. Some important assumptions and forecast characteristics can be illustrated by focusing on the industrial sector where the most important interfuel competition takes place. The relative forecasts of crude oil prices and the retail prices of fuels are illustrated for the industrial sector medium forecast in Figure 5-5.

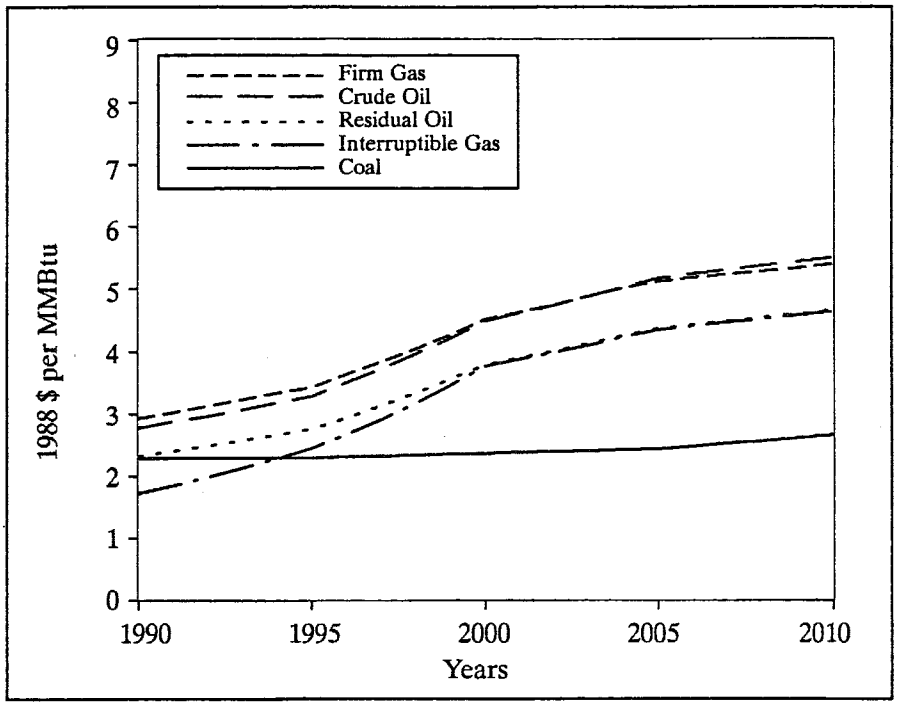
Industrial interruptible natural gas prices are expected to eventually equate to residual oil prices, but remain below that equilibrium condition until the year 2000, reflecting a prolonged weakness in natural gas markets. This weakness reflects the "gas bubble" and the existence of large gas supplies in western Canada with limited transportation to eastern markets. The shaded area in Figure 5-5 shows the near-term weakness in interruptible natural gas price forecasts compared to residual oil.

Coal prices are currently set at a floor that approximates the cost of coal production. There is currently a large amount of excess capacity in western coal mining. This large surplus, combined with slow growth in coal demand, serves to keep coal prices depressed. Only in the later years of the higher oil price scenarios is there significant strengthening of coal prices.

The retail price forecasts for each consuming sector are related to the industrial residual fuel oil price and interruptible natural gas price using average historical price differences. Tables in Appendix 5-C show forecasts of retail prices for the residential, commercial and industrial sectors, respectively. These price forecasts are used in forecasting electricity demand.

Price Comparison

Figure 5-5
Industry Price Comparisons—Medium Case



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APPENDIX 5-A

DETAIL ON ECONOMIC INPUT ASSUMPTIONS

Table 5-A-1
Employment-Population Ratios

	1985	1990	1995	2000	2005	2010
WASHINGTON						
High	.414	.455	.475	.495	.505	.515
Medium-high	.414	.450	.460	.472	.483	.493
Medium	.414	.446	.448	.456	.464	.472
Medium-low	.414	.436	.422	.435	.445	.451
Low	.414	.422	.396	.406	.415	.420
OREGON						
High	.422	.470	.490	.510	.520	.531
Medium-high	.422	.461	.475	.490	.500	.508
Medium	.422	.456	.461	.472	.480	.487
Medium-low	.422	.442	.437	.448	.454	.465
Low	.422	.427	.418	.425	.431	.435
IDAHO						
High	.400	.430	.445	.460	.470	.476
Medium-high	.400	.425	435	.445	.450	.456
Medium	.400	.418	.416	.425	.431	.437
Medium-low	.400	.408	398	.406	.412	.417
Low	.400	.398	384	.388	.390	.391
WESTERN MONTANA						
High	.321	.341	.360	.380	.390	.395
Medium-high	.321	.331	.342	.353	.364	.374
Medium	.321	.327	.335	.343	.351	.358
Medium-low	.321	.321	.327	.333	.338	.342
Low	.321	.310	.313	.316	.318	.320
PACIFIC NORTHWEST						
High	.412	.453	.472	.492	.502	.512
Medium-High	.412	.446	.458	.470	.481	.489
Medium	.412	.442	.444	.453	.461	.469
Medium-Low	.412	.431	.421	.432	.440	.448
Low	.412	.417	.399	.407	.414	.418

Table 5-A-2
Average Household Size

	1980	1985	1990	1995	2000	2005	2010
WASHINGTON							
High		2.61	2.50	2.40	2.30	2.22	2.18
Medium	2.68	2.61	2.52	2.42	2.36	2.31	2.29
Low		2.61	2.56	2.56	2.56	2.56	2.56
OREGON							
High		2.56	2.45	2.35	2.28	2.22	2.18
Medium	2.66	2.56	2.50	2.43	2.38	2.33	2.31
Low		2.56	2.50	2.52	2.53	2.54	2.55
IDAHO							
High		2.84	2.68	2.52	2.45	2.40	2.36
Medium	2.91	2.84	2.79	2.69	2.60	2.55	2.53
Low		2.84	2.80	2.82	2.84	2.85	2.86
WESTERN MONTANA							
High		2.70	2.48	2.34	2.24	2.24	2.24
Medium	2.77	2.70	2.62	2.50	2.39	2.34	2.32
Low		2.70	2.64	2.63	2.62	2.61	2.60
PACIFIC NORTHWEST							
High		2.62	2.50	2.39	2.31	2.24	2.20
Medium	2.70	2.62	2.54	2.45	2.39	2.34	2.32
Low		2.62	2.57	2.58	2.58	2.59	2.59

Table 5-A-3
Share of Housing Additions by Type of Housing Unit
1987-2010
(% of New Housing Starts)

State	High	Medium-High	Medium	Medium-Low	Low
WASHINGTON					
Single-family (1-4 units)	75	65	60	55	45
Multifamily (5 and more)	16	20	23.5	27	35
Manufactured Homes	9	15	16.5	18	20
OREGON					
Single-family (1-4 units)	76	68	65	62	51
Multifamily (5 and more)	13	16	17	18	27
Manufactured Homes	11	16	18	20	22
IDAHO					
Single-family (1-4 units)	81	71	67.5	64	55
Multifamily (5 and more)	8	10	11	12	17
Manufactured Homes	11	19	21.5	24	28
WESTERN MONTANA					
Single-family (1-4 units)	82	70	62.5	55	45
Multifamily (5 and more)	05	10	12.5	15	20
Manufactured Homes	13	20	25	30	35

Table 5-A-4
Production per Employee by Industry[a]
Average Annual Rates of Change (%)
1989-2010

SIC	High	Medium[b]	Low
20	3.1	2.9	2.7
22	4.1	3.9	3.7
23	2.8	2.6	2.4
25	2.4	2.2	2.0
27	1.0	0.8	0.6
29	3.4	3.2	3.0
30	3.2	3.0	2.8
31	2.2	2.0	1.8
32	2.4	2.2	2.0
33XX	1.6	1.5	1.5
34	2.3	2.1	1.9
35	4.7	4.5	4.3
36	4.5	4.3	4.1
37	3.1	2.8	2.6
38	4.1	3.9	3.7
39	4.3	4.3	4.4

[a] Please refer to Table 5-B-1 in Appendix 5-B for a listing of SIC Codes.

[b] Growth rates shown are used in the medium-high, medium and medium-low cases except for the lumber, paper and chemicals industries. Forecasts for production per employee for the lumber, paper and chemicals industries are shown in the sections discussing the outlook for those industries.

APPENDIX 5-B

MANUFACTURING FORECASTS

Table 5-B-1
SIC Code Listings

SIC Code	Industry	SIC Code	Industry
20	Food and kindred products	3334	Primary aluminum
22	Textiles	40-49	Transportation and public utilities
23	Apparel	50-51	Wholesale trade
25	Furniture	52,53+	Retail trade except food stores (54) and eating places (58)
27	Printing and publishing	54	Food stores
29	Petroleum refining	58	Eating and drinking places
30	Rubber and plastics	60-67	Finance, insurance and real estate
31	Leather and leather products	70	Hotels and lodging
32	Stone, clay, glass and concrete	72	Personal services
33XX	Primary metals except aluminum	73	Business services
34	Fabricated metals		
35	Machinery except electrical	76	Miscellaneous repair services
36	Electrical machinery		
37	Transportation equipment		
38	Professional instruments	80	Health services
39	Miscellaneous manufacturing	81	Legal services
2421	Sawmills and planing mills	82, 941	Educational services
2436	Softwood veneer and plywood	83	Social services
24XX	Other lumber and wood products		
2611	Pulp mills	75,78+	Other services
2621	Paper mills	89	Miscellaneous services
2631	Paperboard mills	90-99	Government except education (941)
26XX	Other paper products		
2812	Alkalies and chlorine		
2819	Elemental phosphorus		
28XX	Other chemicals		

APPENDIX 5-C

FUEL PRICE FORECASTS

Table 5-C-1
Residential Fuel Prices

	Natural Gas (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	5.52	5.52	5.52	5.52	5.52
2000	7.98	6.82	5.95	5.21	4.49
2010	9.45	7.98	6.82	5.80	4.64
Growth Rates (%)					
1988-2010	2.5	1.7	1.0	0.2	-0.8

	Heating Oil (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	4.62	4.62	4.62	4.62	4.62
2000	9.44	7.83	6.53	5.52	4.52
2010	11.45	9.44	7.83	6.33	4.72
Growth Rates (%)					
1988-2010	4.2	3.3	2.4	1.4	0.1

Table 5-C-2
Commercial Fuel Prices

	Natural Gas (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	4.58	4.58	4.58	4.58	4.58
2000	7.20	6.03	5.16	4.42	3.70
2010	8.67	7.20	6.03	5.01	3.85
Growth Rates (%)					
1988-2010	2.9	2.1	1.3	0.4	-0.8

	Oil (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	3.92	3.92	3.92	3.92	3.92
2000	8.33	6.83	5.72	4.72	3.82
2010	10.24	8.33	6.83	5.52	4.02
Growth Rates (%)					
1988-2010	4.5	3.5	2.6	1.6	0.1

Table 5-C-3
Industrial Fuel Prices

	Natural Gas (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	3.10	3.10	3.10	3.10	3.10
2000	6.10	4.94	4.05	3.31	2.61
2010	7.57	6.10	4.94	3.91	2.74
Growth Rates (%)					
1988-2010	4.1	3.1	2.1	1.0	-0.6

	Oil (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	3.21	3.21	3.21	3.21	3.21
2000	7.26	5.91	4.90	4.05	3.22
2010	8.96	7.26	5.91	4.73	3.39
Growth Rates (%)					
1988-2010	4.8	3.8	2.8	1.8	0.2

	Coal (1988 dollars per million British Thermal Units)				
	High	Medium-High	Medium	Medium-Low	Low
Prices					
1988	2.22	2.22	2.22	2.22	2.22
2000	2.55	2.48	2.35	1.99	1.93
2010	2.99	2.76	2.65	2.10	1.93
Growth Rates (%)					
1988-2010	1.4	1.0	0.8	-.3	-.6

APPENDIX 5-D

DETAILED TABLES

MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO – WASHINGTON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	31.900	31.100	32.300	33.100	34.000	34.400	34.900	35.300	35.600	35.900	36.100	37.000	38.000	38.900
22	1.000	0.900	1.200	1.300	1.300	1.500	1.500	1.500	1.600	1.600	1.700	1.700	1.700	1.700
23	6.500	6.200	5.400	6.100	6.300	6.700	7.200	7.700	8.100	8.500	8.800	9.500	10.300	11.000
25	3.300	3.800	3.800	4.200	4.300	4.700	5.100	5.500	5.800	6.100	6.400	7.000	7.500	8.000
27	15.800	17.600	20.100	21.400	22.100	24.000	25.500	26.500	27.500	28.500	29.500	35.000	40.000	45.500
29	2.100	1.800	1.800	1.900	2.000	2.300	2.357	2.416	2.476	2.537	2.600	2.800	2.900	3.000
30	3.500	4.500	5.200	5.800	6.200	6.800	7.200	7.700	8.100	8.300	8.500	10.500	12.000	12.800
31	0.400	0.400	0.400	0.500	0.600	0.600	0.619	0.638	0.658	0.679	0.700	0.800	0.800	0.800
32	6.900	6.400	6.900	7.500	7.500	7.900	8.200	8.500	8.800	9.100	9.300	10.300	11.000	11.600
33XX	9.000	6.900	6.900	7.200	7.700	8.500	8.598	8.697	8.797	8.898	9.000	9.300	9.500	9.600
34	11.800	9.700	10.500	10.900	11.300	11.900	12.368	12.700	13.200	13.700	14.200	16.600	18.500	20.000
35	15.000	17.100	16.200	18.100	19.500	21.000	22.000	23.000	24.000	25.000	26.000	31.000	35.000	37.000
36	11.200	12.100	13.200	13.500	14.300	16.000	16.559	17.139	17.738	18.358	19.000	22.000	26.000	29.000
37	98.350	89.600	106.200	116.000	128.000	135.000	142.000	147.000	150.000	153.000	154.000	156.900	160.000	162.500
38	6.400	10.700	10.800	11.500	11.800	12.800	13.600	14.100	14.500	14.900	15.300	17.300	19.600	21.500
39	4.600	4.500	4.800	5.300	5.900	6.400	6.800	7.200	7.700	8.100	8.500	9.000	9.500	10.000
2421	16.027	13.400	14.500	14.700	14.700	15.759	15.570	15.383	15.050	14.836	14.625	14.373	14.577	14.330
2436	4.982	4.200	3.900	4.100	4.100	4.217	4.111	4.007	3.886	3.732	3.579	3.043	2.756	2.689
24XX	25.991	20.700	22.000	22.600	23.300	23.509	23.286	23.016	23.060	23.104	23.149	23.011	22.759	22.412
2611	2.974	2.100	2.050	2.100	2.100	2.118	2.107	2.098	2.089	2.079	2.068	1.982	1.885	1.781
2621	8.818	9.000	8.400	8.600	8.700	8.801	8.756	8.719	8.677	8.630	8.591	8.454	8.198	7.849
2631	1.637	1.200	1.200	1.200	1.200	1.214	1.206	1.198	1.190	1.181	1.174	1.114	1.050	0.982
26XX	4.171	4.400	4.950	5.100	5.300	5.360	5.421	5.482	5.544	5.607	5.670	5.920	6.046	5.858
2812	0.513	0.500	0.500	0.500	0.500	0.523	0.525	0.526	0.528	0.529	0.531	0.535	0.529	0.514
2819	5.300	7.700	7.700	6.800	6.400	7.400	7.862	7.884	7.907	7.929	7.951	7.899	7.813	7.699
28XX	2.887	3.100	3.300	3.300	3.300	3.510	3.538	3.565	3.593	3.621	3.650	3.773	3.818	3.801
3334	7.700	5.800	4.400	5.600	5.600	5.600	5.600	5.600	5.600	5.600	5.600	5.600	5.600	5.600
SUBTOT	308.750	295.400	318.600	338.900	358.000	378.511	392.482	403.069	411.694	420.022	426.187	452.404	477.330	496.414

NON-MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO - WASHINGTON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	91.400	93.600	98.500	101.500	105.700	109.901	112.849	115.875	118.983	122.174	125.451	138.362	147.520	155.381
50-51	100.500	105.700	111.400	115.500	120.700	126.534	132.304	138.337	144.645	151.241	158.137	187.458	214.796	243.185
52,53+	141.000	146.900	161.200	167.200	175.100	183.461	190.901	198.643	206.699	215.082	223.805	261.808	296.068	330.808
54	38.200	49.200	57.400	59.500	62.300	65.000	68.000	71.000	73.000	75.000	77.000	89.000	101.000	110.822
58	101.600	118.900	128.200	133.000	139.200	151.041	158.931	167.234	175.970	185.163	194.836	238.424	282.080	329.680
60-67	91.800	99.600	107.500	109.800	114.300	122.596	128.211	134.083	140.224	146.647	153.363	181.975	208.715	236.532
70	17.800	20.100	21.500	23.000	24.300	26.000	26.755	27.926	29.150	30.426	31.759	37.322	42.391	47.574
72	16.000	19.900	20.800	22.200	23.400	25.890	26.806	27.754	28.736	29.752	30.805	33.847	37.151	40.298
73	52.900	61.000	78.000	83.400	87.900	92.400	98.700	103.000	108.000	112.000	116.000	145.000	175.837	215.147
76	5.500	5.600	5.900	6.300	6.600	7.383	7.707	8.045	8.399	8.767	9.152	11.061	12.922	14.914
80	95.800	117.400	129.300	133.500	140.800	156.774	164.172	171.919	180.032	188.527	197.424	243.545	290.375	342.114
81	9.200	12.400	14.400	15.400	16.200	17.200	18.041	19.055	20.126	21.257	22.452	28.836	35.797	43.905
83	15.600	22.600	25.000	26.700	28.200	30.456	31.973	33.565	35.237	36.992	38.834	46.098	54.302	63.189
89	19.500	21.100	23.100	24.700	26.000	30.043	31.122	32.239	33.397	34.596	35.838	42.102	49.188	56.768
75,78+	66.800	83.500	89.000	95.100	100.300	108.218	112.616	117.193	121.956	126.912	132.070	151.347	170.235	189.189
82	8.900	12.000	13.100	13.900	14.300	15.200	15.600	16.000	16.400	16.900	17.300	19.700	22.500	25.600
941	145.500	143.600	151.100	155.000	159.500	166.000	170.400	174.900	179.500	184.200	189.100	215.400	245.300	279.400
90-99	117.400	129.100	135.500	140.300	144.400	152.561	158.465	164.597	170.967	177.584	184.456	211.524	234.457	256.758
Const	92.600	80.600	88.900	96.000	104.700	109.500	112.919	115.828	118.813	121.875	125.015	141.160	158.777	176.455
Agric	119.300	115.100	114.400	113.300	112.300	113.812	114.094	114.377	114.661	114.946	115.231	115.840	117.153	118.086
Mining	3.200	2.700	3.000	3.300	3.400	3.400	3.539	3.579	3.619	3.659	3.700	3.800	3.900	3.900
Fd Gvt	67.900	70.100	70.600	71.600	72.700	77.000	82.660	83.940	85.240	86.560	87.900	95.000	102.600	110.900
SUBTOT	1418.400	1530.700	1647.800	1710.200	1782.300	1890.370	1966.765	2039.089	2113.754	2190.260	2269.628	2638.609	3003.064	3390.605
TOTAL	1727.150	1826.100	1966.400	2049.100	2140.300	2268.881	2359.246	2442.158	2525.448	2610.282	2695.815	3091.013	3480.395	3887.019

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — HIGH SCENARIO – WASHINGTON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	1193.211	1266.263	1310.322	1343.032	1401.606	1486.703	1545.760	1600.140	1655.028	1711.214	1768.166	2036.916	2336.847	2613.967
MF	250.130	298.560	315.713	323.219	336.082	354.629	367.603	379.577	391.662	404.027	416.558	475.786	541.653	602.522
MO	97.169	126.178	134.965	138.046	144.130	153.289	159.206	164.445	169.626	174.841	180.027	202.286	225.947	245.717
TOTAL	1540.510	1691.000	1761.000	1804.297	1881.818	1994.621	2072.569	2144.162	2216.316	2290.083	2364.750	2714.988	3104.446	3462.206
POPUL	4132.160	4406.000	4538.000	4619.000	4761.000	4986.552	5139.970	5274.639	5407.812	5542.000	5675.400	6244.471	6891.871	7547.610
HHLDS	1540.510	1691.000	1761.000	1804.297	1881.818	1994.621	2072.569	2144.162	2216.316	2290.083	2364.750	2714.988	3104.446	3462.206
PCI	10784.10	10925.00	11338.90	11529.50	11794.70	12125.00	12464.50	12813.50	13172.20	13541.10	13920.20	15981.30	18347.50	21064.10

MANUFACTURING EMPLOYMENT (1000'S) HIGH SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	24.300	23.800	24.000	24.100	24.200	24.700	24.838	24.978	25.118	25.258	25.400	26.000	26.500	27.000
22	2.000	1.600	1.800	1.800	1.700	2.100	2.120	2.139	2.159	2.180	2.200	2.300	2.400	2.400
23	3.200	2.400	2.500	2.700	2.600	3.000	3.058	3.117	3.177	3.238	3.300	3.500	3.600	3.600
25	2.600	2.700	2.500	2.700	2.800	3.000	3.058	3.117	3.177	3.238	3.300	3.600	3.803	3.800
27	10.000	11.500	12.800	13.500	13.700	15.200	15.900	16.900	17.900	19.000	20.000	23.000	25.500	27.000
29	0.600	0.400	0.500	0.600	0.600	0.600	0.619	0.638	0.658	0.679	0.700	0.700	0.700	0.700
30	2.400	3.200	3.800	4.500	4.500	5.300	5.900	6.400	6.700	7.000	7.100	8.200	8.600	9.000
31	0.300	0.400	0.500	0.500	0.500	0.700	0.719	0.738	0.758	0.779	0.800	0.800	0.800	0.800
32	4.500	3.100	3.600	4.100	4.500	4.800	5.100	5.300	5.400	5.500	5.600	6.000	6.400	6.700
33XX	9.600	8.200	8.600	9.300	10.250	10.700	10.800	10.900	11.000	11.100	11.200	11.000	10.800	10.600
34	12.700	11.000	10.200	11.000	11.300	12.000	12.194	12.390	12.590	12.794	13.000	14.000	14.500	15.300
35	17.700	15.500	15.800	17.100	18.500	20.500	22.000	23.000	24.000	24.700	25.300	28.400	30.200	31.000
36	9.800	13.900	13.600	15.300	16.800	18.500	19.500	20.300	21.000	21.700	22.300	25.800	29.400	32.000
37	10.300	9.200	10.800	11.200	10.800	14.200	14.357	14.515	14.675	14.836	15.000	15.500	16.000	16.500
38	19.300	14.600	12.100	11.900	11.400	13.200	13.596	14.003	14.423	14.855	15.300	17.400	19.800	22.200
39	2.200	2.400	3.200	3.800	4.000	4.400	4.800	5.100	5.400	5.900	6.300	7.500	7.800	8.000
2421	23.800	20.500	22.000	21.500	20.800	21.721	21.435	21.138	20.636	20.347	20.049	19.635	19.857	19.472
2436	20.100	15.500	16.800	16.700	16.300	15.609	15.294	14.986	14.486	13.805	13.144	10.975	9.709	9.364
24XX	25.600	27.600	29.200	30.500	29.900	31.137	31.172	31.207	31.242	31.277	31.312	31.125	30.785	30.316
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	5.100	4.160	4.000	3.900	4.100	4.324	4.303	4.283	4.260	4.241	4.219	4.153	4.025	3.854
2631	2.000	2.100	2.000	1.900	2.000	2.048	2.034	2.020	2.005	1.992	1.979	1.879	1.769	1.655
26XX	3.300	2.840	3.200	2.900	3.000	3.064	3.120	3.179	3.232	3.279	3.321	3.438	3.421	3.150
2812	0.250	0.200	0.200	0.200	0.200	0.209	0.210	0.210	0.211	0.212	0.212	0.214	0.211	0.206
2819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28XX	2.050	1.900	1.900	2.000	2.100	2.105	2.116	2.132	2.135	2.140	2.145	2.165	2.191	2.182
3334	1.400	0.600	0.700	0.900	0.900	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
SUBTOT	215.100	199.300	206.300	214.600	217.450	233.916	239.044	243.491	247.143	250.850	253.979	268.084	279.573	287.599

NON-MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO - OREGON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	60.500	57.300	58.500	60.500	63.400	66.500	69.000	71.000	73.000	74.700	75.900	82.000	86.500	90.006
50-51	67.400	65.800	68.200	72.000	77.700	82.000	86.000	90.000	93.000	96.000	99.000	115.481	131.551	148.069
52,53+	96.200	92.900	98.700	102.000	107.200	112.083	116.541	121.176	125.996	131.007	136.218	158.424	178.109	197.843
54	24.600	29.500	33.800	36.500	38.100	40.000	41.500	43.000	44.500	46.000	47.500	54.423	61.185	67.964
58	67.400	70.400	76.000	79.900	83.400	87.685	92.152	96.846	101.779	106.963	112.412	136.703	160.720	186.661
60-67	70.000	66.800	72.100	73.600	75.000	81.000	85.654	89.422	93.356	97.463	101.750	119.976	136.738	153.982
70	14.800	14.600	15.600	16.800	17.400	18.400	19.200	20.000	20.800	21.500	22.200	25.200	28.200	30.998
72	9.800	10.400	10.800	11.000	11.300	12.159	12.642	13.144	13.665	14.208	14.772	17.022	18.960	20.866
73	24.900	35.000	45.500	49.200	51.300	55.000	59.000	63.000	66.000	69.000	72.000	90.000	108.000	125.862
76	3.000	3.500	4.100	4.400	4.600	4.900	5.400	5.800	6.200	6.500	6.800	7.800	8.800	9.800
80	62.100	69.400	74.400	77.400	83.200	90.000	97.000	102.000	107.000	112.000	117.000	144.000	170.000	192.006
81	5.600	7.300	8.100	8.800	9.100	10.275	10.896	11.554	12.252	12.993	13.778	17.525	21.549	26.177
83	11.400	14.000	16.900	18.300	18.900	19.900	20.900	22.000	23.000	24.000	25.000	30.000	35.000	39.624
89	11.100	10.300	11.300	12.200	12.600	13.848	14.517	15.218	15.953	16.723	17.531	21.054	24.443	28.032
75,78+	42.200	43.500	47.400	51.300	52.600	57.193	59.463	61.824	64.278	66.830	69.483	80.068	89.184	98.148
82	7.100	8.300	10.300	11.100	11.400	12.800	13.200	13.600	14.000	14.400	14.800	16.800	18.900	20.700
941	94.200	94.600	97.400	99.300	101.600	105.000	108.200	111.400	114.700	118.200	121.700	138.400	154.900	170.000
90-99	78.200	73.500	77.700	80.600	82.400	86.277	89.443	92.726	96.129	99.657	103.314	117.326	128.778	139.688
Const	46.500	33.100	35.300	39.000	42.900	44.000	46.000	48.500	50.000	51.000	52.000	57.000	62.000	66.655
Agric	96.300	98.800	99.700	100.300	101.000	103.272	103.369	103.467	103.565	103.662	103.760	105.318	106.177	107.098
Mining	2.300	1.500	1.400	1.400	1.600	2.000	2.057	2.115	2.175	2.237	2.300	2.500	2.700	2.800
Fd Gvt	30.800	29.600	30.600	31.700	31.800	33.500	34.000	34.500	35.000	35.400	35.900	38.800	41.900	45.200
SUBTOT	926.400	930.100	993.800	1037.300	1078.500	1137.792	1186.134	1232.292	1276.348	1320.443	1365.118	1575.820	1774.294	1968.179
TOTAL	1141.500	1129.400	1200.100	1251.900	1295.950	1371.708	1425.178	1475.783	1523.491	1571.293	1619.097	1843.904	2053.867	2255.778

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — HIGH SCENARIO – OREGON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	766.113	797.066	817.839	835.282	872.516	910.929	946.783	980.928	1013.358	1046.066	1079.005	1221.957	1376.560	1513.196
MF	143.583	154.439	159.705	162.851	167.713	174.281	180.420	186.273	191.839	197.452	203.104	227.705	254.215	277.609
MO	81.898	92.495	96.456	98.267	101.471	106.026	110.124	113.883	117.301	120.665	123.968	136.083	148.390	157.896
TOTAL	991.593	1044.000	1074.000	1096.400	1141.700	1191.236	1237.327	1281.084	1322.498	1364.183	1406.077	1585.745	1779.164	1948.701
POPUL	2633.160	2675.800	2690.000	2741.000	2820.000	2918.529	3006.705	3087.412	3160.771	3233.113	3304.280	3615.499	3949.744	4248.169
HHLDS	991.593	1044.000	1074.000	1096.400	1141.700	1191.236	1237.327	1281.084	1322.498	1364.183	1406.077	1585.745	1779.164	1948.701
PCI	9897.80	9845.90	10201.80	10450.20	10649.00	10968.50	11297.50	11636.40	11985.50	12345.10	12715.50	14740.70	17088.50	19810.30

MANUFACTURING EMPLOYMENT (1000'S) HIGH SCENARIO - IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	17.000	16.600	16.100	17.400	16.700	18.000	19.200	19.500	19.800	20.100	20.500	20.900	21.100	21.300
22	0.000	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
23	0.300	0.250	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
25	0.250	0.600	0.600	0.700	0.700	0.800	0.850	0.900	0.950	1.000	1.000	1.100	1.200	1.300
27	3.100	4.200	4.300	4.500	4.700	5.000	5.300	5.600	5.800	6.000	6.200	7.200	7.800	8.300
29	0.100	0.025	0.050	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
30	1.000	0.850	1.100	0.700	0.800	0.900	0.953	1.010	1.070	1.133	1.200	1.200	1.200	1.200
31	0.000	0.100	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
32	1.300	0.900	0.800	0.900	1.000	1.200	1.300	1.400	1.450	1.500	1.500	1.600	1.600	1.600
33XX	1.200	0.100	0.000	0.150	0.150	0.250	0.259	0.269	0.279	0.289	0.300	0.300	0.300	0.300
34	2.100	1.900	2.000	2.000	2.300	2.600	2.800	2.900	3.000	3.000	3.000	3.300	3.700	4.000
35	5.000	5.800	5.200	5.500	6.100	7.100	7.900	8.600	9.200	9.600	10.000	12.500	13.500	14.500
36	1.500	2.800	3.300	4.300	4.700	5.500	6.200	6.700	7.000	7.300	7.600	8.100	8.500	8.800
37	0.700	0.950	1.100	1.250	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300	1.300
38	0.150	0.300	0.300	0.400	0.450	0.500	0.550	0.600	0.650	0.700	0.750	0.850	0.950	1.050
39	0.400	0.325	0.300	0.400	0.400	0.500	0.519	0.538	0.558	0.579	0.600	0.700	0.700	0.700
2421	8.100	6.400	6.600	6.600	6.600	6.957	7.067	7.179	7.144	7.249	7.351	7.438	7.811	7.786
2436	0.500	0.400	0.400	0.400	0.400	0.355	0.322	0.290	0.279	0.283	0.286	0.292	0.294	0.296
24XX	6.775	6.700	6.400	6.800	7.300	7.300	7.200	7.196	7.217	7.238	7.260	7.217	7.138	7.029
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.225	0.250	0.250	0.300	0.300	0.301	0.300	0.300	0.300	0.299	0.299	0.294	0.285	0.273
2631	0.850	0.950	0.950	1.000	1.000	0.996	0.989	0.982	0.975	0.969	0.962	0.914	0.861	0.805
26XX	0.425	0.575	0.600	0.600	0.600	0.602	0.616	0.630	0.645	0.660	0.676	0.718	0.718	0.681
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	1.067	1.000	0.900	0.900	0.900	0.905	0.909	0.912	0.915	0.917	0.919	0.913	0.903	0.890
28XX	2.433	2.600	2.400	2.600	2.700	2.712	2.723	2.735	2.747	2.759	2.771	2.831	2.893	2.955
3334	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOT	54.475	54.625	54.200	58.000	59.750	64.428	67.908	70.191	71.930	73.526	75.124	80.317	83.403	85.714

NON-MANUFACTURING EMPLOYMENT (1000'S) HIGH SCENARIO - IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	20.100	19.200	17.900	18.600	19.100	20.200	20.800	21.200	21.700	22.100	22.600	24.500	26.400	27.800
50-51	22.300	20.800	20.500	20.600	21.700	22.833	23.615	24.423	25.260	26.125	27.019	30.329	32.916	35.292
52,53+	29.900	31.300	31.500	32.500	35.000	36.300	37.200	38.391	39.927	41.524	43.185	49.836	55.591	61.269
54	9.400	10.700	11.100	11.300	12.100	12.800	13.200	13.600	14.069	14.632	15.217	17.561	19.589	21.590
58	19.000	21.600	21.600	22.700	24.900	26.500	27.700	28.800	29.025	30.457	31.960	38.568	44.994	51.852
60-67	23.400	23.600	19.200	19.400	19.300	21.829	22.768	23.748	24.770	25.836	26.948	31.555	35.719	39.949
70	5.100	5.200	5.800	6.100	6.500	7.000	7.500	7.900	8.200	8.500	8.700	9.700	10.600	11.500
72	3.000	3.800	3.600	3.600	3.800	4.200	4.300	4.381	4.555	4.736	4.924	5.674	6.320	6.955
73	11.000	12.100	12.800	14.500	15.500	17.000	18.200	19.100	19.900	20.700	21.500	26.900	32.400	37.700
76	1.000	1.100	1.000	1.100	1.200	1.264	1.323	1.385	1.450	1.518	1.589	1.894	2.183	2.486
80	15.500	17.900	19.100	19.800	21.000	22.600	23.600	24.544	25.797	27.113	28.497	34.672	40.783	47.389
81	2.100	2.400	2.500	2.700	2.900	3.200	3.400	3.600	3.800	4.000	4.200	5.200	6.200	7.444
83	3.400	4.000	4.100	4.500	4.800	5.200	5.500	5.800	6.000	6.200	6.400	7.415	8.629	9.921
89	4.800	3.900	3.900	4.100	4.400	4.800	5.200	5.500	5.700	5.900	6.100	7.100	8.000	8.815
75,78+	10.300	10.800	11.000	11.400	12.100	13.000	13.800	14.400	14.900	15.300	15.600	16.800	18.030	19.370
82	3.800	3.900	4.100	4.300	4.400	4.800	4.900	5.000	5.100	5.200	5.400	6.000	6.700	7.500
941	31.100	32.300	33.400	34.500	35.600	36.800	37.800	38.500	39.200	40.000	40.700	45.400	50.800	56.700
90-99	26.400	26.100	27.700	28.500	29.400	30.800	31.600	32.300	33.190	34.341	35.533	39.973	43.466	46.696
Const	17.400	15.100	13.600	14.500	16.200	17.800	18.400	18.700	19.000	19.200	19.377	21.980	24.423	26.796
Agric	69.100	65.400	64.800	64.155	63.500	63.911	63.902	63.894	63.885	63.877	63.868	64.403	64.662	65.147
Mining	4.700	3.800	2.600	3.300	3.700	4.000	4.095	4.193	4.293	4.395	4.500	5.000	5.100	5.100
Fd Gvt	13.000	11.800	12.200	12.700	12.600	13.400	13.813	14.030	14.250	14.473	14.700	15.900	17.200	18.600
SUBTOT	345.800	346.800	344.000	354.855	369.700	390.237	402.616	413.389	423.971	436.127	448.517	506.360	560.705	615.871
TOTAL	400.275	401.425	398.200	412.855	429.450	454.665	470.524	483.580	495.901	509.653	523.641	586.677	644.108	701.585

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — HIGH SCENARIO - IDAHO — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	262.386	280.726	283.014	283.179	294.300	314.498	327.494	338.701	350.939	363.084	375.610	422.322	467.026	514.288
MF	25.070	29.289	29.842	29.901	31.024	33.037	34.344	35.476	36.709	37.933	39.194	43.940	48.487	53.276
MO	36.714	43.986	44.144	43.705	44.750	47.002	48.222	49.156	50.188	51.164	52.149	54.303	55.505	56.977
TOTAL	324.170	354.000	357.000	356.786	370.073	394.537	410.060	423.332	437.835	452.181	466.953	520.565	571.018	624.542
POPUL	944.000	1004.000	998.000	999.000	1014.000	1057.359	1086.660	1109.130	1129.615	1153.061	1176.722	1275.385	1370.442	1473.918
HHLDS	324.170	354.000	357.000	356.786	370.073	394.537	410.060	423.332	437.835	452.181	466.953	520.565	571.018	624.542
PCI	8611.20	8400.50	8563.10	8841.00	9150.40	9434.10	9726.50	10028.00	10338.90	10659.40	10989.90	12802.20	14913.50	17372.90

MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	0.700	0.465	0.525	0.550	0.550	0.550	0.560	0.569	0.579	0.590	0.600	0.600	0.600	0.600
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.025	0.050	0.050	0.050	0.050	0.100	0.108	0.118	0.128	0.138	0.150	0.150	0.200	0.200
25	0.000	0.140	0.150	0.150	0.150	0.200	0.209	0.219	0.229	0.239	0.250	0.300	0.350	0.350
27	0.750	0.700	0.725	0.750	0.750	0.800	0.837	0.875	0.915	0.956	1.000	1.200	1.400	1.500
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.025	0.025	0.010	0.010	0.050	0.057	0.066	0.076	0.087	0.100	0.150	0.200	0.250
31	0.000	0.025	0.030	0.010	0.010	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
32	0.400	0.325	0.280	0.290	0.300	0.300	0.306	0.312	0.318	0.324	0.330	0.350	0.371	0.400
33XX	1.000	0.150	0.050	0.050	0.050	0.200	0.209	0.219	0.229	0.239	0.250	0.300	0.300	0.300
34	0.150	0.250	0.275	0.250	0.250	0.350	0.368	0.387	0.407	0.428	0.450	0.500	0.550	0.600
35	0.050	0.225	0.325	0.350	0.350	0.350	0.368	0.387	0.407	0.428	0.450	0.550	0.600	0.650
36	0.050	0.075	0.075	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.204	0.225
37	0.100	0.075	0.050	0.100	0.100	0.150	0.166	0.184	0.204	0.226	0.250	0.350	0.450	0.500
38	0.100	0.125	0.120	0.130	0.100	0.150	0.159	0.168	0.178	0.189	0.200	0.253	0.300	0.350
39	0.150	0.175	0.300	0.650	0.650	0.700	0.750	0.750	0.750	0.750	0.750	0.800	0.850	0.900
2421	4.500	4.000	4.150	3.900	3.932	4.578	4.653	4.724	4.703	4.772	4.840	4.897	5.141	5.125
2436	1.000	0.800	0.800	0.800	0.781	0.826	0.749	0.673	0.650	0.658	0.665	0.679	0.684	0.688
24XX	2.700	2.100	2.500	2.500	2.611	2.669	2.676	2.684	2.692	2.700	2.708	2.692	2.663	2.622
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2631	0.550	0.750	0.750	0.750	0.758	0.754	0.749	0.744	0.739	0.734	0.729	0.692	0.652	0.610
26XX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	0.200	0.190	0.180	0.180	0.183	0.184	0.184	0.185	0.186	0.186	0.187	0.185	0.183	0.180
28XX	0.100	0.050	0.050	0.100	0.104	0.105	0.106	0.106	0.107	0.108	0.109	0.113	0.114	0.114
3334	1.250	0.850	0.750	0.800	0.800	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
SUBTOT	13.775	11.545	12.160	12.470	12.587	14.065	14.272	14.440	14.574	14.840	15.118	15.886	16.763	17.113

NON-MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	7.500	6.400	6.650	6.700	7.238	7.467	7.699	7.939	8.186	8.440	8.703	9.622	10.285	10.859
50-51	3.800	3.400	3.275	3.375	3.589	3.742	3.900	4.064	4.235	4.414	4.600	5.363	6.044	6.730
52,53+	8.000	8.200	8.650	8.700	9.194	9.561	9.938	10.329	10.736	11.159	11.599	13.347	14.845	16.313
54	2.900	3.000	2.825	2.800	2.875	2.925	3.040	3.160	3.284	3.414	3.548	4.083	4.541	4.990
58	7.500	7.500	7.475	7.500	7.797	7.972	8.360	8.767	9.194	9.642	10.111	12.167	14.153	16.262
60-67	3.700	3.400	3.650	3.650	3.799	3.858	4.021	4.192	4.369	4.554	4.747	5.539	6.249	6.965
70	2.500	2.700	2.900	2.850	3.030	3.152	3.277	3.407	3.543	3.684	3.830	4.413	4.916	5.410
72	0.800	0.900	0.875	0.900	0.986	1.032	1.080	1.130	1.182	1.237	1.294	1.538	1.768	2.007
73	1.000	1.700	2.175	2.200	2.328	2.452	2.580	2.715	2.857	3.007	3.164	3.874	4.586	5.362
76	0.300	0.300	0.350	0.350	0.400	0.400	0.410	0.419	0.429	0.440	0.450	0.513	0.589	0.669
80	6.400	7.650	8.300	8.400	9.061	9.525	10.006	10.512	11.043	11.602	12.188	14.793	17.359	20.121
81	0.500	0.600	0.700	0.700	0.750	0.801	0.838	0.877	0.918	0.960	1.005	1.108	1.312	1.535
83	1.400	1.200	1.525	1.500	1.619	1.683	1.714	1.746	1.779	1.812	1.846	2.092	2.423	2.772
89	1.000	0.700	0.800	0.800	0.857	0.903	0.923	0.943	0.963	0.985	1.006	1.196	1.375	1.561
75,78+	3.300	3.325	3.450	3.500	3.586	3.738	3.894	4.057	4.226	4.402	4.586	5.336	6.002	6.670
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
941	8.900	9.775	9.500	9.400	10.377	10.733	11.094	11.467	11.853	12.252	12.664	14.174	15.337	16.395
90-99	8.300	7.400	7.400	7.400	8.558	8.852	9.150	9.457	9.775	10.104	10.444	11.690	12.649	13.522
Const	4.800	3.800	2.800	3.050	3.279	3.428	3.582	3.743	3.911	4.086	4.270	5.045	5.761	6.500
Agric	7.500	7.300	7.300	7.300	7.372	7.406	7.413	7.420	7.427	7.434	7.441	7.439	7.607	7.769
Mining	3.100	1.875	2.075	2.175	2.500	2.600	2.800	3.000	3.100	3.200	3.300	3.600	3.900	4.200
Fd Gvt	5.600	4.850	4.900	4.950	5.100	5.200	5.278	5.356	5.436	5.518	5.600	6.000	6.500	7.100
SUBTOT	88.800	85.975	87.575	88.200	94.295	97.430	100.997	104.700	108.446	112.346	116.396	132.932	148.201	163.712
TOTAL	102.575	97.520	99.735	100.670	106.882	111.495	115.269	119.140	123.020	127.186	131.514	148.818	164.964	180.825

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — HIGH SCENARIO – WESTERN MONTANA — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	82.313	84.905	85.799	86.492	94.276	101.377	105.318	109.405	113.397	117.872	122.569	139.558	152.905	167.542
MF	8.950	10.092	10.201	10.195	10.654	11.070	11.290	11.518	11.740	11.991	12.256	13.168	13.841	14.581
MO	15.138	17.403	17.500	17.524	18.520	19.393	19.765	20.141	20.483	20.881	21.293	22.108	22.087	22.246
TOTAL	106.400	112.400	113.500	114.211	123.449	131.841	136.373	141.064	145.621	150.744	156.118	174.834	188.832	204.369
POPUL	294.500	303.900	303.500	303.800	320.968	326.966	334.114	341.375	349.489	357.264	365.316	391.627	422.984	457.786
HHLDS	106.400	112.400	113.500	114.211	123.449	131.841	136.373	141.064	145.621	150.744	156.118	174.834	188.832	204.369
PCI	7793.00	7983.00	8666.10	8983.50	9312.50	9653.50	11555.40	11555.40	11555.40	11555.40	11555.40	13832.00	16557.10	19819.10

MANUFACTURING EMPLOYMENT (1000'S)

HIGH SCENARIO – REGION

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	73.900	71.965	72.925	75.150	75.450	77.650	79.498	80.347	81.097	81.848	82.600	84.500	86.200	87.800
22	3.000	2.550	3.100	3.200	3.100	3.700	3.720	3.739	3.859	3.880	4.000	4.100	4.200	4.200
23	10.025	8.900	8.250	9.150	9.250	10.100	10.666	11.235	11.705	12.176	12.550	13.450	14.400	15.100
25	6.150	7.240	7.050	7.750	7.950	8.700	9.217	9.736	10.156	10.577	10.950	12.000	12.853	13.450
27	29.650	34.000	37.925	40.150	41.250	45.000	47.537	49.875	52.115	54.456	56.700	66.400	74.700	82.300
29	2.800	2.225	2.350	2.550	2.700	3.000	3.076	3.154	3.234	3.316	3.400	3.600	3.700	3.800
30	6.900	8.575	10.125	11.010	11.510	13.050	14.110	15.176	15.946	16.520	16.900	20.050	22.000	23.250
31	0.700	0.925	1.080	1.160	1.260	1.500	1.538	1.576	1.616	1.658	1.700	1.800	1.800	1.800
32	13.100	10.725	11.580	12.790	13.300	14.200	14.906	15.512	15.968	16.424	16.730	18.250	19.371	20.300
33XX	20.800	15.350	15.550	16.700	18.150	19.650	19.866	20.085	20.305	20.526	20.750	20.900	20.900	20.800
34	26.750	22.850	22.975	24.150	25.150	26.850	27.730	28.377	29.197	29.922	30.650	34.400	37.250	39.900
35	37.750	38.625	37.525	41.050	44.450	48.950	52.268	54.987	57.607	59.728	61.750	72.450	79.300	83.150
36	22.550	28.875	30.175	33.200	35.900	40.100	42.367	44.257	45.866	47.496	49.050	56.075	64.104	70.025
37	109.450	99.825	118.150	128.550	140.200	150.650	157.823	162.999	166.179	169.362	170.550	174.050	177.750	180.800
38	25.950	25.725	23.320	23.930	23.750	26.650	27.905	28.871	29.751	30.644	31.550	35.803	40.650	45.100
39	7.350	7.400	8.600	10.150	10.950	12.000	12.869	13.588	14.408	15.329	16.150	18.000	18.850	19.600
2421	52.427	44.300	47.250	46.700	46.032	49.015	48.725	48.425	47.532	47.205	46.865	46.343	47.386	46.712
2436	26.582	20.900	21.900	22.000	21.581	21.007	20.476	19.957	19.302	18.478	17.673	14.989	13.443	13.036
24XX	61.066	57.100	60.100	62.400	63.111	64.615	64.334	64.103	64.211	64.320	64.428	64.045	63.345	62.379
2611	2.974	2.100	2.050	2.100	2.100	2.118	2.107	2.098	2.089	2.079	2.068	1.982	1.885	1.781
2621	14.143	13.410	12.650	12.800	13.100	13.426	13.360	13.303	13.238	13.171	13.108	12.902	12.509	11.976
2631	5.037	5.000	4.900	4.850	4.958	5.012	4.979	4.945	4.910	4.877	4.844	4.599	4.332	4.052
26XX	7.896	7.815	8.750	8.600	8.900	9.026	9.157	9.291	9.421	9.546	9.667	10.076	10.186	9.689
2812	0.763	0.700	0.700	0.700	0.700	0.732	0.734	0.737	0.739	0.741	0.743	0.750	0.740	0.719
2819	6.567	8.890	8.780	7.880	7.483	8.489	8.955	8.981	9.007	9.032	9.057	8.997	8.899	8.769
28XX	7.470	7.650	7.650	8.000	8.204	8.431	8.482	8.539	8.583	8.628	8.674	8.881	9.015	9.052
3334	10.350	7.250	5.850	7.300	7.300	7.300	7.300	7.300	7.300	7.300	7.300	7.300	7.300	7.300
SUBTOT	592.100	560.870	591.260	623.970	647.787	690.920	713.705	731.191	745.341	759.238	770.408	816.691	857.069	886.840

NON-MANUFACTURING EMPLOYMENT (1000'S) HIGH SCENARIO - REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	179.500	176.500	181.550	187.300	195.438	204.068	210.348	216.014	221.869	227.414	232.654	254.484	270.705	284.046
50-51	194.000	195.700	203.375	211.475	223.689	235.109	245.819	256.824	267.140	277.780	288.756	338.631	385.307	433.276
52,53+	275.100	279.300	300.050	310.400	326.494	341.405	354.580	368.539	383.358	398.772	414.807	483.415	544.613	606.233
54	75.100	92.400	105.125	110.100	115.375	120.725	125.740	130.760	134.853	139.046	143.265	165.067	186.315	205.366
58	195.500	218.400	233.275	243.100	255.297	273.198	287.143	301.647	315.968	332.225	349.319	425.862	501.947	584.455
60-67	188.900	193.400	202.450	206.450	212.399	229.283	240.654	251.445	262.719	274.500	286.808	339.045	387.421	437.428
70	40.200	42.600	45.800	48.750	51.230	54.552	56.732	59.233	61.693	64.110	66.489	76.635	86.107	95.482
72	29.600	35.000	36.075	37.700	39.486	43.281	44.828	46.409	48.138	49.933	51.795	58.081	64.199	70.126
73	89.800	109.800	138.475	149.300	157.028	166.852	178.480	187.815	196.757	204.707	212.664	265.774	320.823	384.071
76	9.800	10.500	11.350	12.150	12.800	13.947	14.840	15.649	16.478	17.225	17.991	21.268	24.494	27.869
80	179.800	212.350	231.100	239.100	254.061	278.899	294.778	308.975	323.872	339.242	355.109	437.010	518.517	601.630
81	17.400	22.700	25.700	27.600	28.950	31.476	33.175	35.086	37.096	39.210	41.435	52.669	64.858	79.061
83	31.800	41.800	47.525	51.000	53.519	57.239	60.087	63.111	66.016	69.004	72.080	85.605	100.354	115.506
89	36.400	36.000	39.100	41.800	43.857	49.594	51.762	53.900	56.013	58.204	60.475	71.452	83.006	95.176
75,78+	122.600	141.125	150.850	161.300	168.586	182.149	189.773	197.474	205.360	213.444	221.739	253.551	283.451	313.377
82	19.800	24.200	27.500	29.300	30.100	32.800	33.700	34.600	35.500	36.500	37.500	42.500	48.100	53.800
941	279.700	280.275	291.400	298.200	307.077	318.533	327.494	336.267	345.253	354.652	364.164	413.374	466.337	522.495
90-99	230.300	236.100	248.300	256.800	264.758	278.490	288.658	299.080	310.061	321.686	333.747	380.513	419.350	456.664
Const	161.300	132.600	140.600	152.550	167.079	174.728	180.901	186.771	191.724	196.161	200.662	225.185	250.961	276.406
Agric	292.200	286.600	286.200	285.055	284.172	288.401	288.778	289.158	289.538	289.919	290.300	293.000	295.599	298.100
Mining	13.300	9.875	9.075	10.175	11.200	12.000	12.491	12.887	13.187	13.491	13.800	14.900	15.600	16.000
Fd Gvt	117.300	116.350	118.300	120.950	122.200	129.100	135.751	137.826	139.926	141.951	144.100	155.700	168.200	181.800
SUBTOT	2779.400	2893.575	3073.175	3190.555	3324.796	3515.829	3656.512	3789.470	3922.519	4059.176	4199.660	4853.721	5486.265	6138.367
TOTAL	3371.500	3454.446	3664.435	3814.525	3972.583	4206.750	4370.217	4520.661	4667.860	4818.414	4970.068	5670.413	6343.333	7025.208

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — HIGH SCENARIO – REGION — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	2304.022	2428.959	2496.974	2547.985	2662.697	2813.508	2925.355	3029.174	3132.722	3238.236	3345.350	3820.753	4333.338	4808.994
MF	427.732	492.379	515.462	526.167	545.474	573.018	593.657	612.844	631.950	651.403	671.112	760.599	858.195	947.988
MO	230.919	280.062	293.064	297.542	308.870	325.709	337.317	347.624	357.598	367.551	377.437	414.780	451.927	482.837
TOTAL	2962.673	3201.400	3305.500	3371.693	3517.041	3712.235	3856.329	3989.642	4122.270	4257.190	4393.898	4996.132	5643.460	6239.818
POPUL	8003.820	8389.700	8529.500	8662.800	8915.968	9289.406	9567.449	9812.557	10047.687	10285.438	10521.718	11526.982	12635.040	13727.482
HHLDS	2962.673	3201.400	3305.500	3371.693	3517.041	3712.235	3856.329	3989.642	4122.270	4257.191	4393.897	4996.132	5643.460	6239.818
PCI	10391.70	10444.58	10846.96	11082.16	11340.88	11676.18	12071.31	12410.19	12759.47	13118.37	13487.45	15577.60	17995.43	20785.17

MANUFACTURING EMPLOYMENT (1000'S)

MEDHI SCENARIO – WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	31.900	31.100	32.300	33.100	34.000	34.200	34.000	34.000	34.000	34.000	34.000	33.900	33.800	33.700
22	1.000	0.900	1.200	1.300	1.300	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400
23	6.500	6.200	5.400	6.100	6.300	6.400	6.700	6.900	7.100	7.300	7.500	8.000	8.300	8.600
25	3.300	3.800	3.800	4.200	4.300	4.500	4.700	4.900	5.100	5.300	5.500	6.000	6.500	7.000
27	15.800	17.600	20.100	21.400	22.100	23.400	24.400	25.400	26.300	27.100	28.000	32.000	34.000	35.900
29	2.100	1.800	1.800	1.900	2.000	2.100	2.139	2.178	2.218	2.259	2.300	2.500	2.600	2.600
30	3.500	4.500	5.200	5.800	6.200	6.600	7.000	7.300	7.600	7.800	8.000	9.000	9.500	10.000
31	0.400	0.400	0.400	0.500	0.600	0.600	0.619	0.638	0.658	0.679	0.700	0.700	0.700	0.700
32	6.900	6.400	6.900	7.500	7.500	7.700	7.900	8.100	8.000	8.100	8.000	7.900	7.800	7.700
33XX	9.000	6.900	6.900	7.200	7.700	8.300	8.359	8.419	8.479	8.539	8.600	8.800	9.000	9.100
34	11.800	9.700	10.500	10.900	11.300	11.500	11.700	11.900	12.100	12.300	12.500	13.500	14.500	15.500
35	15.000	17.100	16.200	18.100	19.500	20.300	21.000	21.500	22.000	22.500	23.000	25.000	27.000	28.500
36	11.200	12.100	13.200	13.500	14.300	15.500	15.789	16.083	16.383	16.689	17.000	18.500	19.500	20.300
37	98.350	89.600	106.200	116.000	128.000	136.000	141.000	145.000	146.000	145.000	144.000	140.000	136.500	133.000
38	6.400	10.700	10.800	11.500	11.800	12.500	13.200	13.700	14.000	14.300	14.500	16.000	17.300	18.400
39	4.600	4.500	4.800	5.300	5.900	6.100	6.300	6.600	7.000	7.400	7.800	8.100	8.300	8.500
2421	16.027	13.400	14.500	14.700	14.700	14.418	14.267	14.129	13.843	13.686	13.521	13.408	13.744	13.645
2436	4.982	4.200	3.900	4.100	4.100	3.792	3.709	3.627	3.527	3.396	3.268	2.821	2.590	2.567
24XX	25.991	20.700	22.000	22.600	23.300	22.098	22.000	21.903	21.806	21.709	21.613	20.887	20.160	19.437
2611	2.974	2.100	2.050	2.100	2.100	2.085	2.068	2.051	2.035	2.018	2.001	1.905	1.803	1.698
2621	8.818	9.000	8.400	8.600	8.700	8.654	8.584	8.512	8.437	8.366	8.299	8.104	7.816	7.472
2631	1.637	1.200	1.200	1.200	1.200	1.182	1.166	1.151	1.136	1.121	1.106	1.026	0.948	0.873
26XX	4.171	4.400	4.950	5.100	5.300	5.262	5.321	5.381	5.441	5.502	5.563	5.689	5.641	5.209
2812	0.513	0.500	0.500	0.500	0.500	0.511	0.512	0.512	0.513	0.514	0.515	0.517	0.514	0.506
2819	5.300	7.700	7.700	6.800	6.400	7.000	7.100	7.200	7.300	7.400	7.500	7.700	7.620	7.525
28XX	2.887	3.100	3.300	3.300	3.300	3.398	3.403	3.408	3.413	3.419	3.424	3.435	3.414	3.366
3334	7.700	5.800	4.400	5.600	5.600	5.500	5.400	5.300	5.100	5.000	4.900	4.700	4.700	4.700
SUBTOT	308.750	295.400	318.600	338.900	358.000	371.001	379.737	387.192	390.888	392.797	394.510	401.490	405.650	407.898

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDHI SCENARIO - WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	91.400	93.600	98.500	101.500	105.700	108.800	111.000	113.000	115.000	117.000	119.000	125.000	129.000	133.000
50-51	100.500	105.700	111.400	115.500	120.700	124.000	127.000	130.137	134.437	138.879	143.467	164.463	185.440	208.236
52,53+	141.000	146.900	161.200	167.200	175.100	179.001	183.126	187.347	191.665	196.082	200.601	225.296	248.867	273.774
54	38.200	49.200	57.400	59.500	62.300	64.400	66.400	68.000	69.000	70.000	70.500	78.000	85.000	91.715
58	101.600	118.900	128.200	133.000	139.200	144.000	152.738	159.168	165.869	172.852	180.129	215.670	253.929	297.761
60-67	91.800	99.600	107.500	109.800	114.300	117.741	121.513	125.407	129.425	133.571	137.851	157.257	176.452	197.177
70	17.800	20.100	21.500	23.000	24.300	25.503	26.000	26.627	27.534	28.471	29.440	33.913	38.425	43.360
72	16.000	19.900	20.800	22.200	23.400	24.736	25.209	25.691	26.183	26.684	27.194	29.979	32.504	35.095
73	52.900	61.000	78.000	83.400	87.900	91.800	97.000	100.000	102.000	104.000	106.000	126.000	148.967	179.816
76	5.500	5.600	5.900	6.300	6.600	7.100	7.300	7.400	7.500	7.600	7.700	8.500	9.200	9.757
80	95.800	117.400	129.300	133.500	140.800	150.905	155.864	160.985	166.275	171.739	177.382	210.340	245.266	284.828
81	9.200	12.400	14.400	15.400	16.200	16.900	17.500	18.000	18.439	19.189	19.969	24.492	29.541	35.487
83	15.600	22.600	25.000	26.700	28.200	29.046	29.954	30.890	31.856	32.852	33.879	39.599	45.529	52.133
89	19.500	21.100	23.100	24.700	26.000	27.518	28.000	28.500	29.000	29.500	29.936	33.819	37.578	41.583
75,78+	66.800	83.500	89.000	95.100	100.300	105.001	109.000	112.000	114.000	116.000	118.000	128.000	136.000	144.018
82	8.900	12.000	13.100	13.900	14.300	15.000	15.400	15.700	16.000	16.300	16.600	18.200	20.000	21.900
941	145.500	143.600	151.100	155.000	159.500	164.000	167.100	170.300	173.500	176.800	180.200	198.000	217.500	239.000
90-99	117.400	129.100	135.500	140.300	144.400	150.000	154.000	157.000	160.000	163.000	167.024	185.034	201.603	218.750
Const	92.600	80.600	88.900	96.000	104.700	108.040	109.963	111.921	113.914	115.942	118.006	128.015	141.962	158.016
Agric	119.300	115.100	114.400	113.300	112.300	112.090	112.194	112.298	112.402	112.507	112.611	111.609	111.327	110.678
Mining	3.200	2.700	3.000	3.300	3.400	3.400	3.420	3.440	3.460	3.480	3.500	3.600	3.600	3.700
Fd Gvt	67.900	70.100	70.600	71.600	72.700	76.000	78.080	78.969	79.869	80.779	81.700	86.500	91.600	96.900
SUBTOT	1418.400	1530.700	1647.800	1710.200	1782.300	1844.981	1897.761	1942.780	1987.328	2033.227	2080.689	2331.286	2589.290	2876.684
TOTAL	1727.150	1826.100	1966.400	2049.100	2140.300	2215.982	2277.498	2329.972	2378.216	2426.024	2475.199	2732.776	2994.940	3284.583

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDHI SCENARIO – WASHINGTON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	1193.211	1266.263	1305.589	1332.903	1377.816	1429.015	1468.339	1502.878	1538.403	1571.109	1601.881	1750.439	1900.878	2047.959
MF	250.130	298.560	317.582	327.219	342.095	358.926	372.122	383.865	395.930	407.147	417.788	469.621	522.425	574.503
MO	97.169	126.178	137.830	144.175	154.499	166.187	175.024	182.651	190.402	197.394	203.830	233.236	260.984	286.900
TOTAL	1540.510	1691.000	1761.000	1804.297	1874.409	1954.129	2015.485	2069.394	2124.735	2175.650	2223.499	2453.297	2684.287	2909.362
POPUL	4132.160	4406.000	4538.000	4619.000	4761.000	4924.404	5038.712	5132.096	5226.849	5308.586	5380.868	5789.780	6200.704	6662.439
HHLDS	1540.510	1691.000	1761.000	1804.297	1874.409	1954.129	2015.485	2069.394	2124.735	2175.650	2223.499	2453.297	2684.287	2909.362
PCI	10784.10	10925.00	11338.90	11529.50	11794.70	12066.00	12343.50	12627.40	12917.80	13214.90	13518.90	15146.70	16970.60	19014.10

MANUFACTURING EMPLOYMENT (1000'S)

MEDHI SCENARIO - OREGON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	24.300	23.800	24.000	24.100	24.200	24.500	24.700	24.700	24.700	24.700	24.700	24.800	24.900	25.000
22	2.000	1.600	1.800	1.800	1.700	1.900	1.880	1.859	1.839	1.820	1.800	1.800	1.800	1.800
23	3.200	2.400	2.500	2.700	2.600	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
25	2.600	2.700	2.500	2.700	2.800	2.700	2.720	2.740	2.760	2.780	2.800	2.800	2.803	2.800
27	10.000	11.500	12.800	13.500	13.700	14.500	14.800	15.600	16.500	17.200	17.900	20.400	22.400	23.900
29	0.600	0.400	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
30	2.400	3.200	3.800	4.500	4.500	5.000	5.400	5.600	5.800	5.900	6.000	6.900	7.500	8.000
31	0.300	0.400	0.500	0.500	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
32	4.500	3.100	3.600	4.100	4.500	4.600	4.800	4.900	5.000	5.000	5.100	5.300	5.400	5.500
33XX	9.600	8.200	8.600	9.300	10.250	10.600	10.700	10.700	10.800	10.800	10.800	10.700	10.600	10.400
34	12.700	11.000	10.200	11.000	11.300	11.400	11.459	11.519	11.579	11.639	11.700	12.000	12.300	12.600
35	17.700	15.500	15.800	17.100	18.500	19.900	20.500	21.000	21.300	21.700	21.900	24.000	26.000	27.000
36	9.800	13.900	13.600	15.300	16.800	18.100	19.000	19.600	20.000	20.500	21.100	24.000	26.200	28.000
37	10.300	9.200	10.800	11.200	10.800	13.200	13.200	13.200	13.200	13.200	13.200	13.200	13.200	13.200
38	19.300	14.600	12.100	11.900	11.400	12.500	12.713	12.929	13.149	13.373	13.600	15.000	16.500	18.400
39	2.200	2.400	3.200	3.800	4.000	4.200	4.400	4.600	4.700	4.800	4.900	5.400	5.800	6.000
2421	23.800	20.500	22.000	21.500	20.800	19.874	19.642	19.411	19.000	18.761	18.524	18.329	18.718	18.535
2436	20.100	15.500	16.800	16.700	16.300	14.042	13.797	13.555	13.146	12.564	11.997	10.162	9.125	8.938
24XX	25.600	27.600	29.200	30.500	29.900	30.093	29.758	29.627	29.495	29.365	29.235	28.252	27.270	26.292
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	5.100	4.160	4.000	3.900	4.100	4.249	4.215	4.179	4.142	4.107	4.074	3.979	3.839	3.669
2631	2.000	2.100	2.000	1.900	2.000	1.994	1.968	1.941	1.916	1.892	1.866	1.730	1.598	1.472
26XX	3.300	2.840	3.200	2.900	3.000	2.960	2.959	2.958	2.956	2.955	2.953	3.013	3.046	2.904
2812	0.250	0.200	0.200	0.200	0.200	0.204	0.204	0.205	0.205	0.205	0.206	0.207	0.206	0.202
2819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28XX	2.050	1.900	1.900	2.000	2.100	2.091	2.070	2.039	2.010	1.982	1.965	1.972	1.959	1.932
3334	1.400	0.600	0.700	0.900	0.900	0.800	0.800	0.800	0.800	0.800	0.800	0.700	0.700	0.700
SUBTOT	215.100	199.300	206.300	214.600	217.450	223.406	225.684	227.662	228.998	230.044	231.120	238.644	245.863	251.243

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDHI SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	60.500	57.300	58.500	60.500	63.400	65.000	67.000	68.000	69.000	70.000	70.800	73.900	76.000	78.000
50-51	67.400	65.800	68.200	72.000	77.700	80.500	83.500	86.500	89.000	91.500	93.500	105.000	116.000	126.483
52,53+	96.200	92.900	98.700	102.000	107.200	111.011	114.000	117.000	120.000	122.500	125.000	138.000	151.000	163.329
54	24.600	29.500	33.800	36.500	38.100	39.200	40.500	41.700	42.800	43.700	44.500	46.766	51.330	56.108
58	67.400	70.400	76.000	79.900	83.400	85.500	88.318	91.859	95.543	99.374	103.359	122.563	142.914	165.966
60-67	70.000	66.800	72.100	73.600	75.000	79.068	81.440	83.883	86.399	88.991	91.660	104.055	116.186	129.199
70	14.800	14.600	15.600	16.800	17.400	18.100	18.800	19.400	19.900	20.300	20.700	23.400	26.300	28.644
72	9.800	10.400	10.800	11.000	11.300	11.700	12.200	12.500	12.800	13.000	13.200	14.336	15.466	16.617
73	24.900	35.000	45.500	49.200	51.300	53.300	55.000	57.000	59.000	61.000	63.000	75.000	89.000	105.176
76	3.000	3.500	4.100	4.400	4.600	4.800	5.200	5.500	5.700	5.800	5.900	6.500	7.000	7.500
80	62.100	69.400	74.400	77.400	83.200	89.000	94.500	99.500	103.400	106.800	109.300	126.000	142.000	157.316
81	5.600	7.300	8.100	8.800	9.100	9.856	10.311	10.787	11.284	11.805	12.350	15.074	18.094	21.632
83	11.400	14.000	16.900	18.300	18.900	19.500	20.200	20.800	21.300	21.800	22.300	25.800	29.500	33.048
89	11.100	10.300	11.300	12.200	12.600	13.128	13.522	13.929	14.347	14.778	15.222	17.196	19.107	21.144
75,78+	42.200	43.500	47.400	51.300	52.600	56.034	57.183	58.355	59.552	60.773	62.019	66.578	71.477	76.418
82	7.100	8.300	10.300	11.100	11.400	11.900	12.200	12.400	12.700	13.000	13.300	14.600	16.000	17.300
941	94.200	94.600	97.400	99.300	101.600	104.400	116.700	109.000	111.400	113.900	116.400	127.800	139.600	151.500
90-99	78.200	73.500	77.700	80.600	82.400	85.200	86.800	88.400	90.000	92.000	94.045	103.524	112.075	120.832
Const	46.500	33.100	35.300	39.000	42.900	42.900	43.100	43.600	44.199	45.121	46.063	49.439	54.934	60.788
Agric	96.300	98.800	99.700	100.300	101.000	102.338	102.150	101.962	101.775	101.588	101.401	101.472	100.897	100.380
Mining	2.300	1.500	1.400	1.400	1.600	1.900	1.938	1.978	2.018	2.058	2.100	2.300	2.500	2.500
Fd Gvt	30.800	29.600	30.600	31.700	31.800	33.000	31.852	32.208	32.568	32.932	33.300	35.300	37.400	39.600
SUBTOT	926.400	930.100	993.800	1037.300	1078.500	1117.335	1156.414	1176.261	1204.685	1232.720	1259.419	1394.603	1534.780	1679.480
TOTAL	1141.500	1129.400	1200.100	1251.900	1295.950	1340.741	1382.098	1403.923	1433.683	1462.764	1490.539	1633.247	1780.643	1930.723

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDHI SCENARIO – OREGON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	766.113	797.066	816.018	831.109	854.788	878.945	904.583	918.778	938.520	952.915	967.288	1043.974	1134.281	1216.980
MF	143.583	154.439	160.388	164.417	168.689	174.723	181.108	184.852	189.889	193.695	197.504	217.768	241.319	263.184
MO	81.898	92.495	97.594	100.874	104.523	109.665	115.070	117.724	121.586	124.116	126.557	138.745	152.849	165.133
TOTAL	991.593	1044.000	1074.000	1096.400	1128.000	1163.333	1200.762	1221.355	1249.994	1270.726	1291.349	1400.486	1528.449	1645.297
POPUL	2633.160	2675.800	2690.000	2741.000	2820.000	2908.333	2985.094	3019.189	3069.985	3105.656	3137.978	3333.157	3561.286	3800.636
HHLDS	991.593	1044.000	1074.000	1096.400	1128.000	1163.333	1200.762	1221.355	1249.994	1270.726	1291.349	1400.486	1528.449	1645.297
PCI	9897.80	9845.90	10201.80	10450.20	10649.00	10915.20	11188.10	11467.80	11754.50	12048.40	12349.60	13972.40	15808.50	17885.90

MANUFACTURING EMPLOYMENT (1000'S) MEDHI SCENARIO – IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	17.000	16.600	16.100	17.400	16.700	17.500	18.400	18.500	18.500	18.300	18.300	17.800	17.400	17.100
22	0.000	0.050	0.100	0.100	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
23	0.300	0.250	0.300	0.300	0.300	0.250	0.239	0.229	0.219	0.209	0.200	0.200	0.200	0.200
25	0.250	0.600	0.600	0.700	0.700	0.750	0.750	0.750	0.800	0.800	0.800	0.800	0.800	0.800
27	3.100	4.200	4.300	4.500	4.700	4.900	5.100	5.300	5.500	5.600	5.700	6.600	7.200	7.700
29	0.100	0.025	0.050	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
30	1.000	0.850	1.100	0.700	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.700	0.700	0.700
31	0.000	0.100	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.100	0.100	0.100
32	1.300	0.900	0.800	0.900	1.000	1.100	1.200	1.200	1.100	1.100	1.000	1.000	1.050	1.100
33XX	1.200	0.100	0.000	0.150	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.200	0.200
34	2.100	1.900	2.000	2.000	2.300	2.500	2.600	2.700	2.700	2.700	2.700	2.900	3.000	3.000
35	5.000	5.800	5.200	5.500	6.100	6.700	6.900	7.100	7.362	7.675	8.000	9.000	10.500	10.800
36	1.500	2.800	3.300	4.300	4.700	5.200	5.700	6.100	6.300	6.500	6.700	7.100	7.300	7.500
37	0.700	0.950	1.100	1.250	1.300	1.250	1.250	1.250	1.250	1.250	1.250	1.150	1.050	1.000
38	0.150	0.300	0.300	0.400	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.700	0.800	0.900
39	0.400	0.325	0.300	0.400	0.400	0.400	0.418	0.437	0.457	0.478	0.500	0.500	0.500	0.500
2421	8.100	6.400	6.600	6.600	6.600	6.362	6.481	6.594	6.577	6.687	6.792	6.940	7.362	7.409
2436	0.500	0.400	0.400	0.400	0.400	0.320	0.290	0.262	0.254	0.258	0.261	0.271	0.276	0.282
24XX	6.775	6.700	6.400	6.800	7.300	7.100	7.000	6.869	6.839	6.808	6.778	6.550	6.323	6.096
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.225	0.250	0.250	0.300	0.300	0.295	0.294	0.293	0.292	0.290	0.289	0.282	0.272	0.260
2631	0.850	0.950	0.950	1.000	1.000	0.970	0.957	0.945	0.932	0.920	0.908	0.842	0.777	0.716
26XX	0.425	0.575	0.600	0.600	0.600	0.597	0.600	0.604	0.608	0.612	0.615	0.627	0.635	0.622
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	1.067	1.000	0.900	0.900	0.900	0.887	0.887	0.888	0.888	0.889	0.889	0.881	0.872	0.861
28XX	2.433	2.600	2.400	2.600	2.700	2.699	2.698	2.698	2.697	2.696	2.695	2.691	2.687	2.683
3334	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOT	54.475	54.625	54.200	58.000	59.750	61.605	63.615	64.593	65.173	65.697	66.327	68.034	70.154	70.679

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDHI SCENARIO - IDAHO

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	20.100	19.200	17.900	18.600	19.100	20.000	20.500	20.800	21.000	21.200	21.400	22.800	24.000	25.000
50-51	22.300	20.800	20.500	20.600	21.700	22.648	23.367	24.109	24.874	25.663	26.478	30.161	33.793	37.707
52,53+	29.900	31.300	31.500	32.500	35.000	36.000	36.800	37.500	38.000	38.500	39.169	43.713	47.979	52.445
54	9.400	10.700	11.100	11.300	12.100	12.500	12.800	13.100	13.300	13.600	13.900	15.403	16.907	18.481
58	19.000	21.600	21.600	22.700	24.900	25.900	26.700	27.500	28.200	29.000	29.976	35.718	41.851	48.838
60-67	23.400	23.600	19.200	19.400	19.300	20.700	21.720	22.394	23.089	23.806	24.545	27.864	31.113	34.597
70	5.100	5.200	5.800	6.100	6.500	6.900	7.300	7.600	7.800	8.000	8.100	8.900	9.734	10.985
72	3.000	3.800	3.600	3.600	3.800	4.100	4.100	4.200	4.197	4.276	4.356	4.779	5.155	5.539
73	11.000	12.100	12.800	14.500	15.500	16.600	17.500	18.100	18.600	19.200	19.800	23.700	28.200	32.916
76	1.000	1.100	1.000	1.100	1.200	1.200	1.210	1.239	1.269	1.300	1.331	1.460	1.575	1.693
80	15.500	17.900	19.100	19.800	21.000	22.400	23.200	24.100	25.000	25.600	26.300	31.300	34.965	40.224
81	2.100	2.400	2.500	2.700	2.900	3.100	3.300	3.400	3.500	3.600	3.700	4.600	5.400	6.288
83	3.400	4.000	4.100	4.500	4.800	5.100	5.300	5.400	5.500	5.600	5.700	6.700	7.600	8.464
89	4.800	3.900	3.900	4.100	4.400	4.700	4.900	5.100	5.200	5.300	5.400	6.000	6.500	6.872
75,78+	10.300	10.800	11.000	11.400	12.100	12.800	13.500	14.000	14.300	14.500	14.600	15.600	16.200	16.848
82	3.800	3.900	4.100	4.300	4.400	4.700	4.800	4.900	5.000	5.100	5.200	5.700	6.200	6.800
941	31.100	32.300	33.400	34.500	35.600	36.600	37.300	38.000	38.500	39.000	39.400	43.300	47.500	52.100
90-99	26.400	26.100	27.700	28.500	29.400	30.600	31.200	31.700	32.100	32.500	32.849	36.160	39.146	42.205
Const	17.400	15.100	13.600	14.500	16.200	17.500	17.900	18.100	18.200	18.300	18.400	20.300	22.659	24.068
Agric	69.100	65.400	64.800	64.155	63.500	63.333	63.149	62.965	62.781	62.598	62.416	62.051	61.447	61.060
Mining	4.700	3.800	2.600	3.300	3.700	3.900	4.000	4.000	4.100	4.100	4.100	4.500	4.700	4.700
Fd Gvt	13.000	11.800	12.200	12.700	12.600	13.100	13.100	13.214	13.374	13.536	13.700	14.500	15.300	16.200
SUBTOT	345.800	346.800	344.000	354.855	369.700	384.381	393.646	401.421	407.884	414.279	420.820	465.209	507.924	554.030
TOTAL	400.275	401.425	398.200	412.855	429.450	445.986	457.261	466.014	473.057	479.976	487.147	533.243	578.078	624.709

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDHI SCENARIO – IDAHO — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	262.386	280.726	282.675	282.614	287.445	297.534	305.802	311.995	317.513	322.055	326.130	359.408	391.885	420.700
MF	25.070	29.289	29.910	30.014	30.794	32.313	33.578	34.554	35.438	36.187	36.871	42.129	47.312	52.013
MO	36.714	43.986	44.415	44.157	45.201	47.628	49.527	50.829	51.912	52.693	53.310	59.347	64.574	68.780
TOTAL	324.170	354.000	357.000	356.786	363.441	377.474	388.907	397.379	404.862	410.935	416.312	460.884	503.772	541.493
POPUL	944.000	1004.000	998.000	999.000	1014.000	1049.379	1073.383	1088.818	1105.274	1113.633	1119.879	1198.299	1284.618	1369.976
HHLDS	324.170	354.000	357.000	356.786	363.441	377.474	388.907	397.379	404.862	410.935	416.312	460.884	503.772	541.493
PCI	8611.20	8400.50	8563.10	8841.00	9150.40	9379.20	9613.60	9854.00	10100.30	10352.80	10611.70	12006.10	13583.80	15368.80

MANUFACTURING EMPLOYMENT (1000'S)

MEDHI SCENARIO – WESTERN MONTANA , 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	0.700	0.465	0.525	0.550	0.550	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.025	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.075	0.075	0.075
25	0.000	0.140	0.150	0.150	0.150	0.100	0.108	0.118	0.128	0.138	0.150	0.200	0.200	0.200
27	0.750	0.700	0.725	0.750	0.750	0.800	0.837	0.875	0.915	0.956	1.000	1.100	1.200	1.200
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.025	0.025	0.010	0.010	0.050	0.054	0.059	0.064	0.069	0.075	0.075	0.100	0.100
31	0.000	0.025	0.030	0.010	0.010	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
32	0.400	0.325	0.280	0.290	0.300	0.300	0.306	0.312	0.318	0.324	0.330	0.350	0.371	0.400
33XX	1.000	0.150	0.050	0.050	0.050	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
34	0.150	0.250	0.275	0.250	0.250	0.250	0.259	0.269	0.279	0.289	0.300	0.300	0.300	0.300
35	0.050	0.225	0.325	0.350	0.350	0.300	0.300	0.300	0.300	0.300	0.300	0.350	0.400	0.425
36	0.050	0.075	0.075	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.204	0.225
37	0.100	0.075	0.050	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.200	0.250	0.300
38	0.100	0.125	0.120	0.130	0.140	0.150	0.159	0.168	0.178	0.189	0.200	0.225	0.253	0.275
39	0.150	0.175	0.300	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.650
2421	4.500	4.000	4.150	3.900	3.939	4.197	4.273	4.350	4.337	4.408	4.480	4.579	4.857	4.887
2436	1.000	0.800	0.800	0.800	0.769	0.732	0.665	0.601	0.581	0.590	0.598	0.621	0.634	0.646
24XX	2.700	2.100	2.500	2.500	2.556	2.585	2.574	2.562	2.551	2.540	2.528	2.443	2.359	2.274
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2631	0.550	0.750	0.750	0.750	0.745	0.736	0.727	0.717	0.707	0.698	0.689	0.639	0.590	0.543
26XX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	0.200	0.190	0.180	0.180	0.181	0.181	0.181	0.181	0.181	0.181	0.181	0.180	0.178	0.176
28XX	0.100	0.050	0.050	0.100	0.102	0.102	0.102	0.102	0.102	0.103	0.103	0.103	0.102	0.101
3334	1.250	0.850	0.750	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
SUBTOT	13.775	11.545	12.160	12.470	12.552	12.884	12.960	13.050	13.098	13.261	13.435	13.764	14.222	14.278

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDHI SCENARIO – WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	7.500	6.400	6.650	6.700	7.037	7.159	7.280	7.404	7.529	7.656	7.786	8.251	8.599	8.924
50-51	3.800	3.400	3.275	3.375	3.496	3.599	3.703	3.811	3.921	4.035	4.152	4.667	5.161	5.683
52,53+	8.000	8.200	8.650	8.700	8.927	9.148	9.372	9.602	9.837	10.078	10.325	11.355	12.280	13.227
54	2.900	3.000	2.825	2.800	2.831	2.858	2.916	2.974	3.034	3.096	3.158	3.473	3.756	4.046
58	7.500	7.500	7.475	7.500	7.726	7.860	8.207	8.569	8.946	9.341	9.753	11.791	14.018	16.597
60-67	3.700	3.400	3.650	3.650	3.695	3.747	3.842	3.938	4.038	4.140	4.244	4.748	5.224	5.725
70	2.500	2.700	2.900	2.850	3.002	3.108	3.217	3.330	3.446	3.567	3.692	4.274	4.866	5.518
72	0.800	0.900	0.875	0.900	0.941	0.962	0.983	1.005	1.027	1.049	1.072	1.165	1.244	1.324
73	1.000	1.700	2.175	2.200	2.282	2.379	2.479	2.583	2.692	2.805	2.923	3.500	4.121	4.832
76	0.300	0.300	0.350	0.350	0.315	0.322	0.330	0.338	0.346	0.354	0.363	0.398	0.430	0.462
80	6.400	7.650	8.300	8.400	8.791	9.102	9.421	9.751	10.092	10.446	10.812	12.516	14.251	16.159
81	0.500	0.600	0.700	0.700	0.700	0.754	0.768	0.783	0.798	0.813	0.829	0.988	1.157	1.350
83	1.400	1.200	1.525	1.500	1.559	1.550	1.569	1.588	1.607	1.626	1.646	1.764	1.979	2.211
89	1.000	0.700	0.800	0.800	0.800	0.859	0.870	0.882	0.893	0.905	0.917	0.965	1.057	1.152
75,78+	3.300	3.325	3.450	3.500	3.552	3.600	3.675	3.752	3.831	3.911	3.993	4.380	4.726	5.078
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
941	8.900	9.775	9.500	9.400	10.137	10.364	10.592	10.825	11.063	11.306	11.555	12.552	13.409	14.265
90-99	8.300	7.400	7.400	7.400	8.361	8.547	8.735	8.927	9.124	9.325	9.530	10.352	11.059	11.765
Const	4.800	3.800	2.800	3.050	3.166	3.252	3.340	3.430	3.523	3.618	3.716	4.137	4.529	4.939
Agric	7.500	7.300	7.300	7.300	7.326	7.339	7.326	7.312	7.299	7.285	7.272	7.168	7.229	7.281
Mining	3.100	1.875	2.075	2.175	2.300	2.500	2.600	2.700	2.800	2.900	3.000	3.300	3.500	3.800
Fd Gvt	5.600	4.850	4.900	4.950	5.000	5.100	5.139	5.179	5.219	5.259	5.300	5.500	5.800	6.200
SUBTOT	88.800	85.975	87.575	88.200	91.944	94.109	96.364	98.683	101.065	103.515	106.038	117.244	128.395	140.538
TOTAL	102.575	97.520	99.735	100.670	104.496	106.993	109.324	111.733	114.163	116.776	119.473	131.008	142.617	154.816

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDHI SCENARIO – WESTERN MONTANA — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	82.313	84.905	85.568	86.062	90.411	92.639	94.758	97.321	99.310	102.128	104.679	116.433	125.976	134.701
MF	8.950	10.092	10.297	10.374	11.027	11.376	11.709	12.107	12.422	12.858	13.255	15.104	16.643	18.071
MO	15.138	17.403	17.634	17.775	18.871	19.360	19.803	20.351	20.723	21.308	21.800	23.748	24.819	25.653
TOTAL	106.400	112.400	113.500	114.211	120.309	123.374	126.270	129.779	132.455	136.293	139.735	155.284	167.438	178.425
POPUL	294.500	303.900	303.500	303.800	317.616	323.241	328.302	333.531	337.761	343.459	349.336	371.128	391.805	413.945
HHLDS	106.400	112.400	113.500	114.211	120.309	123.374	126.270	129.779	132.455	136.293	139.735	155.284	167.438	178.425
PCI	7793.00	7983.00	8527.20	8697.80	8871.70	9049.10	9991.00	9991.00	9991.00	9991.00	9991.00	11030.90	12179.00	13446.70

MANUFACTURING EMPLOYMENT (1000'S) MEDHI SCENARIO – REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	73.900	71.965	72.925	75.150	75.450	76.700	77.600	77.700	77.700	77.500	77.500	77.000	76.600	76.300
22	3.000	2.550	3.100	3.200	3.100	3.350	3.330	3.309	3.289	3.270	3.250	3.250	3.250	3.250
23	10.025	8.900	8.250	9.150	9.250	9.500	9.789	9.979	10.169	10.359	10.550	11.075	11.375	11.675
25	6.150	7.240	7.050	7.750	7.950	8.050	8.278	8.508	8.788	9.018	9.250	9.800	10.303	10.800
27	29.650	34.000	37.925	40.150	41.250	43.600	45.137	47.175	49.215	50.856	52.600	60.100	64.800	68.700
29	2.800	2.225	2.350	2.550	2.700	2.800	2.839	2.878	2.918	2.959	3.000	3.200	3.300	3.300
30	6.900	8.575	10.125	11.010	11.510	12.450	13.254	13.759	14.264	14.569	14.875	16.675	17.800	18.800
31	0.700	0.925	1.080	1.160	1.260	1.400	1.419	1.438	1.458	1.479	1.500	1.450	1.450	1.450
32	13.100	10.725	11.580	12.790	13.300	13.700	14.206	14.512	14.418	14.524	14.430	14.550	14.621	14.700
33XX	20.800	15.350	15.550	16.700	18.150	19.300	19.459	19.519	19.679	19.739	19.800	19.900	19.950	19.850
34	26.750	22.850	22.975	24.150	25.150	25.650	26.018	26.388	26.658	26.928	27.200	28.700	30.100	31.400
35	37.750	38.625	37.525	41.050	44.450	47.200	48.700	49.900	50.962	52.175	53.200	58.350	63.900	66.725
36	22.550	28.875	30.175	33.200	35.900	38.900	40.597	41.901	42.811	43.827	44.950	49.775	53.204	56.025
37	109.450	99.825	118.150	128.550	140.200	150.550	155.558	159.568	160.578	159.588	158.600	154.550	151.000	147.500
38	25.950	25.725	23.320	23.930	23.790	25.625	26.572	27.322	27.877	28.437	28.900	31.925	34.853	37.975
39	7.350	7.400	8.600	10.150	10.950	11.350	11.768	12.287	12.807	13.328	13.850	14.650	15.250	15.650
2421	52.427	44.300	47.250	46.700	46.039	44.851	44.663	44.484	43.757	43.543	43.317	43.255	44.680	44.477
2436	26.582	20.900	21.900	22.000	21.569	18.886	18.461	18.045	17.507	16.808	16.124	13.874	12.626	12.434
24XX	61.066	57.100	60.100	62.400	63.056	61.876	61.332	60.961	60.691	60.422	60.155	58.133	56.111	54.099
2611	2.974	2.100	2.050	2.100	2.100	2.085	2.068	2.051	2.035	2.018	2.001	1.905	1.803	1.698
2621	14.143	13.410	12.650	12.800	13.100	13.198	13.093	12.984	12.871	12.764	12.662	12.365	11.927	11.401
2631	5.037	5.000	4.900	4.850	4.945	4.882	4.818	4.754	4.691	4.631	4.569	4.237	3.913	3.603
26XX	7.896	7.815	8.750	8.600	8.900	8.819	8.880	8.942	9.005	9.068	9.132	9.329	9.321	8.735
2812	0.763	0.700	0.700	0.700	0.700	0.715	0.716	0.717	0.718	0.719	0.721	0.724	0.720	0.708
2819	6.567	8.890	8.780	7.880	7.481	8.068	8.168	8.269	8.369	8.470	8.571	8.761	8.670	8.562
28XX	7.470	7.650	7.650	8.000	8.202	8.290	8.273	8.247	8.223	8.199	8.187	8.200	8.162	8.081
3334	10.350	7.250	5.850	7.300	7.300	7.100	7.000	6.900	6.700	6.600	6.500	6.200	6.200	6.200
SUBTOT	592.100	560.870	591.260	623.970	647.752	668.896	681.997	692.497	698.158	701.798	705.393	721.932	735.889	744.098

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDHI SCENARIO – REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	179.500	176.500	181.550	187.300	195.237	200.959	205.780	209.204	212.529	215.856	218.986	229.951	237.599	244.924
50-51	194.000	195.700	203.375	211.475	223.596	230.747	237.570	244.557	252.232	260.077	267.597	304.291	340.394	378.109
52,53+	275.100	279.300	300.050	310.400	326.227	335.160	343.298	351.449	359.502	367.160	375.095	418.364	460.126	502.775
54	75.100	92.400	105.125	110.100	115.331	118.958	122.616	125.774	128.134	130.396	132.058	143.642	156.993	170.350
58	195.500	218.400	233.275	243.100	255.226	263.260	275.963	287.096	298.558	310.567	323.217	385.742	452.712	529.162
60-67	188.900	193.400	202.450	206.450	212.295	221.256	228.515	235.622	242.951	250.508	258.300	293.924	328.975	366.698
70	40.200	42.600	45.800	48.750	51.202	53.611	55.317	56.957	58.680	60.338	61.932	70.487	79.325	88.507
72	29.600	35.000	36.075	37.700	39.441	41.498	42.492	43.396	44.207	45.009	45.822	50.259	54.369	58.575
73	89.800	109.800	138.475	149.300	156.982	164.079	171.979	177.683	182.292	187.005	191.723	228.200	270.288	322.740
76	9.800	10.500	11.350	12.150	12.715	13.422	14.040	14.477	14.815	15.054	15.294	16.858	18.205	19.412
80	179.800	212.350	231.100	239.100	253.791	271.407	282.985	294.336	304.767	314.585	323.794	380.156	436.482	498.527
81	17.400	22.700	25.700	27.600	28.900	30.610	31.879	32.970	34.021	35.407	36.848	45.154	54.192	64.757
83	31.800	41.800	47.525	51.000	53.459	55.196	57.023	58.678	60.263	61.878	63.525	73.863	84.608	95.856
89	36.400	36.000	39.100	41.800	43.800	46.205	47.292	48.411	49.440	50.483	51.475	57.980	64.242	70.751
75,78+	122.600	141.125	150.850	161.300	168.552	177.435	183.358	188.107	191.683	195.184	198.612	214.558	228.403	242.362
82	19.800	24.200	27.500	29.300	30.100	31.600	32.400	33.000	33.700	34.400	35.100	38.500	42.200	46.000
941	279.700	280.275	291.400	298.200	306.837	315.364	331.692	328.125	334.463	341.006	347.555	381.652	418.009	456.865
90-99	230.300	236.100	248.300	256.800	264.561	274.347	280.735	286.027	291.224	296.825	303.448	335.070	363.883	393.552
Const	161.300	132.600	140.600	152.550	166.966	171.692	174.303	177.051	179.836	182.981	186.185	201.891	224.084	247.811
Agric	292.200	286.600	286.200	285.055	284.126	285.100	284.819	284.537	284.257	283.978	283.700	282.300	280.900	279.399
Mining	13.300	9.875	9.075	10.175	11.000	11.700	11.958	12.118	12.378	12.538	12.700	13.700	14.300	14.700
Fd Gvt	117.300	116.350	118.300	120.950	122.100	127.200	128.171	129.570	131.030	132.506	134.000	141.800	150.100	158.900
SUBTOT	2779.400	2893.575	3073.175	3190.555	3322.445	3440.806	3544.185	3619.145	3700.962	3783.741	3866.966	4308.343	4760.389	5250.733
TOTAL	3371.500	3454.446	3664.435	3814.525	3970.197	4109.702	4226.182	4311.642	4399.120	4485.540	4572.359	5030.275	5496.278	5994.831

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDHI SCENARIO - REGION — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	2304.022	2428.959	2489.849	2532.689	2610.460	2698.132	2773.482	2830.972	2893.745	2948.207	2999.978	3270.254	3553.020	3820.339
MF	427.732	492.379	518.178	532.024	552.605	577.338	598.517	615.378	633.679	649.887	665.418	744.622	827.700	907.772
MO	230.919	280.062	297.473	306.980	323.094	342.841	359.425	371.556	384.623	395.510	405.498	455.076	503.226	546.465
TOTAL	2962.673	3201.400	3305.500	3371.693	3486.160	3618.311	3731.423	3817.906	3912.047	3993.604	4070.894	4469.951	4883.946	5274.576
POPUL	8003.820	8389.700	8529.500	8662.800	8912.616	9205.356	9425.491	9573.635	9739.871	9871.333	9988.062	10692.365	11438.413	12246.997
HHLDS	2962.673	3201.400	3305.500	3371.693	3486.160	3618.311	3731.423	3817.906	3912.047	3993.605	4070.895	4469.951	4883.946	5274.577
PCI	10391.70	10444.58	10842.06	11072.24	11326.12	11596.44	11898.05	12175.44	12458.77	12749.84	13047.46	14674.42	16501.30	18559.96

MANUFACTURING EMPLOYMENT (1000'S)

MEDIUM SCENARIO – WASHINGTON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	31.900	31.100	32.300	33.100	34.000	33.900	33.700	33.700	33.600	33.400	33.300	32.700	32.100	31.500
22	1.000	0.900	1.200	1.300	1.300	1.300	1.300	1.300	1.300	1.200	1.200	1.150	1.150	1.150
23	6.500	6.200	5.400	6.100	6.300	6.100	6.200	6.300	6.400	6.500	6.700	7.100	7.400	7.700
25	3.300	3.800	3.800	4.200	4.300	4.300	4.500	4.600	4.700	4.800	4.900	5.400	5.700	6.000
27	15.800	17.600	20.100	21.400	22.100	22.800	23.400	24.000	24.700	25.500	26.500	29.500	31.000	32.200
29	2.100	1.800	1.800	1.900	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
30	3.500	4.500	5.200	5.800	6.200	6.400	6.500	6.600	6.700	6.800	6.900	7.400	7.700	8.000
31	0.400	0.400	0.400	0.500	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
32	6.900	6.400	6.900	7.500	7.500	7.300	7.200	7.200	7.100	7.100	7.100	7.000	7.000	7.000
33XX	9.000	6.900	6.900	7.200	7.700	7.900	8.100	8.200	8.200	8.200	8.200	8.300	8.400	8.400
34	11.800	9.700	10.500	10.900	11.300	11.100	11.200	11.400	11.600	11.800	12.000	12.800	13.400	13.900
35	15.000	17.100	16.200	18.100	19.500	19.900	20.500	20.800	21.000	21.100	21.200	22.500	23.700	24.950
36	11.200	12.100	13.200	13.500	14.300	14.600	15.300	15.400	15.500	15.600	15.700	16.400	17.000	17.600
37	98.350	89.600	106.200	116.000	128.000	133.200	136.200	137.800	136.000	134.000	132.000	124.000	116.800	109.900
38	6.400	10.700	10.800	11.500	11.800	12.300	12.900	12.900	13.000	13.200	13.300	14.400	15.200	16.050
39	4.600	4.500	4.800	5.300	5.900	5.900	6.100	6.300	6.500	6.700	7.000	7.500	7.500	7.500
2421	16.027	13.400	14.500	14.700	14.700	13.726	13.590	13.456	13.185	13.032	12.871	12.766	13.091	12.993
2436	4.982	4.200	3.900	4.100	4.100	3.611	3.534	3.454	3.360	3.235	3.113	2.685	2.468	2.446
24XX	25.991	20.700	22.000	22.600	23.300	22.346	21.582	21.000	20.706	20.417	20.132	19.155	18.225	17.340
2611	2.974	2.100	2.050	2.100	2.100	2.049	2.001	1.959	1.917	1.886	1.854	1.706	1.570	1.442
2621	8.818	9.000	8.400	8.600	8.700	8.510	8.324	8.233	8.142	8.051	7.966	7.708	7.412	7.082
2631	1.637	1.200	1.200	1.200	1.200	1.176	1.158	1.145	1.131	1.118	1.105	1.045	0.985	0.926
26XX	4.171	4.400	4.950	5.100	5.300	5.055	5.068	5.081	5.095	5.108	5.121	5.090	5.093	4.881
2812	0.513	0.500	0.500	0.500	0.500	0.501	0.501	0.502	0.502	0.502	0.503	0.509	0.511	0.511
2819	5.300	7.700	7.700	6.800	6.400	6.400	6.400	6.400	6.400	6.400	6.400	6.200	6.000	6.000
28XX	2.887	3.100	3.300	3.300	3.300	3.290	3.280	3.271	3.261	3.251	3.242	3.202	3.155	3.101
3334	7.700	5.800	4.400	5.600	5.600	4.900	4.800	4.700	4.600	4.540	4.500	4.300	4.300	4.300
SUBTOT	308.750	295.400	318.600	338.900	358.000	361.164	365.939	368.302	367.200	366.041	365.406	363.116	359.460	355.472

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDIUM SCENARIO - WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	91.400	93.600	98.500	101.500	105.700	107.700	110.000	111.500	113.000	114.000	115.000	120.000	122.000	124.000
50-51	100.500	105.700	111.400	115.500	120.700	122.600	124.200	126.000	128.000	131.209	134.631	151.340	167.748	185.170
52,53+	141.000	146.900	161.200	167.200	175.100	179.100	183.000	184.000	185.000	187.000	188.000	204.783	221.371	238.315
54	38.200	49.200	57.400	59.500	62.300	63.700	64.500	65.200	65.700	66.000	66.400	69.500	74.160	79.836
58	101.600	118.900	128.200	133.000	139.200	142.400	148.108	153.519	159.128	164.942	170.969	202.189	235.761	273.869
60-67	91.800	99.600	107.500	109.800	114.300	116.100	119.900	121.200	122.885	125.930	129.050	144.189	158.885	174.307
70	17.800	20.100	21.500	23.000	24.300	25.000	25.500	26.000	26.500	27.072	27.831	31.592	35.361	39.418
72	16.000	19.900	20.800	22.200	23.400	24.100	24.000	25.300	25.600	25.800	26.000	28.000	29.800	31.518
73	52.900	61.000	78.000	83.400	87.900	90.700	95.000	97.000	99.000	100.000	101.000	117.000	138.000	159.938
76	5.500	5.600	5.900	6.300	6.600	6.900	7.000	6.900	7.000	7.050	7.089	7.661	8.164	8.664
80	95.800	117.400	129.300	133.500	140.800	145.200	148.100	151.033	154.459	157.963	161.547	184.023	207.192	232.594
81	9.200	12.400	14.400	15.400	16.200	16.700	17.100	17.400	17.800	18.200	18.732	22.530	26.720	31.561
83	15.600	22.600	25.000	26.700	28.200	29.004	29.304	29.734	30.481	31.247	32.033	36.897	41.908	47.406
89	19.500	21.100	23.100	24.700	26.000	26.900	27.300	27.600	27.900	28.260	28.852	32.512	36.125	39.975
75,78+	66.800	83.500	89.000	95.100	100.300	103.400	106.000	107.000	107.500	108.000	108.000	116.000	123.253	130.802
82	8.900	12.000	13.100	13.900	14.300	14.600	14.900	15.100	15.400	15.600	15.800	17.000	18.100	18.500
941	145.500	143.600	151.100	155.000	159.500	162.500	165.700	168.200	170.700	173.300	175.900	189.300	198.000	205.500
90-99	117.400	129.100	135.500	140.300	144.400	147.100	150.000	152.000	153.000	155.000	157.300	168.700	178.954	189.914
Const	92.600	80.600	88.900	96.000	104.700	105.500	104.000	105.000	106.089	107.481	108.890	115.760	121.243	127.005
Agric	119.300	115.100	114.400	113.300	112.300	111.402	111.266	111.131	110.996	110.861	110.726	108.545	107.066	105.311
Mining	3.200	2.700	3.000	3.300	3.400	3.400	3.400	3.400	3.300	3.300	3.300	3.300	3.300	3.300
Fd Gvt	67.900	70.100	70.600	71.600	72.700	73.900	74.700	74.800	74.900	75.000	75.000	78.000	81.000	85.000
SUBTOT	1418.400	1530.700	1647.800	1710.200	1782.300	1817.906	1852.978	1879.017	1904.338	1933.215	1962.050	2148.821	2334.111	2531.903
TOTAL	1727.150	1826.100	1966.400	2049.100	2140.300	2179.071	2218.917	2247.319	2271.538	2299.256	2327.456	2511.938	2693.571	2887.375

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDIUM SCENARIO – WASHINGTON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	1193.211	1266.263	1303.362	1328.127	1369.005	1406.487	1438.792	1462.792	1482.151	1503.759	1525.990	1634.049	1737.635	1828.924
MF	250.130	298.560	319.108	330.498	348.236	364.680	379.133	390.369	399.824	410.195	420.845	473.390	524.971	572.420
MO	97.169	126.178	138.530	145.673	157.169	167.645	176.607	183.191	188.404	194.139	199.948	226.728	250.429	269.975
TOTAL	1540.510	1691.000	1761.000	1804.297	1874.409	1938.813	1994.532	2036.353	2070.379	2108.094	2146.782	2334.167	2513.035	2671.319
POPUL	4132.160	4406.000	4538.000	4619.000	4761.000	4885.808	4986.331	5050.155	5093.133	5143.749	5195.214	5508.635	5805.110	6117.320
HHLDS	1540.510	1691.000	1761.000	1804.297	1874.409	1938.813	1994.532	2036.353	2070.379	2108.094	2146.782	2334.167	2513.035	2671.319
PCI	10784.10	10925.00	11338.90	11529.50	11794.70	11991.70	12191.90	12395.50	12602.50	12813.00	13027.00	14151.70	15373.50	16700.80

MANUFACTURING EMPLOYMENT (1000'S) MEDIUM SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	24.300	23.800	24.000	24.100	24.200	24.300	24.400	24.200	24.300	24.400	24.500	24.000	23.500	23.200
22	2.000	1.600	1.800	1.800	1.700	1.700	1.700	1.700	1.700	1.700	1.700	1.600	1.600	1.600
23	3.200	2.400	2.500	2.700	2.600	2.600	2.600	2.600	2.600	2.600	2.600	2.500	2.500	2.500
25	2.600	2.700	2.500	2.700	2.800	2.700	2.700	2.600	2.600	2.600	2.600	2.600	2.602	2.600
27	10.000	11.500	12.800	13.500	13.700	14.000	14.200	15.000	15.800	16.400	17.100	19.300	20.800	22.000
29	0.600	0.400	0.500	0.600	0.600	0.600	0.600	0.500	0.500	0.500	0.500	0.450	0.400	0.400
30	2.400	3.200	3.800	4.500	4.500	4.800	4.900	5.100	5.300	5.300	5.500	6.400	7.000	7.300
31	0.300	0.400	0.500	0.500	0.500	0.500	0.500	0.579	0.569	0.560	0.550	0.550	0.550	0.550
32	4.500	3.100	3.600	4.100	4.500	4.400	4.300	4.600	4.600	4.600	4.600	4.500	4.400	4.300
33XX	9.600	8.200	8.600	9.300	10.250	10.500	10.600	10.600	10.700	10.600	10.600	10.500	10.300	10.100
34	12.700	11.000	10.200	11.000	11.300	10.800	10.700	10.800	11.000	11.200	11.400	11.600	11.800	11.900
35	17.700	15.500	15.800	17.100	18.500	19.400	19.600	19.700	19.800	19.900	20.000	21.000	22.000	23.000
36	9.800	13.900	13.600	15.300	16.800	17.850	18.500	18.900	19.100	19.300	19.500	21.800	23.400	24.600
37	10.300	9.200	10.800	11.200	10.800	11.800	12.000	12.000	12.000	12.000	12.000	11.200	11.000	11.000
38	19.300	14.600	12.100	11.900	11.400	11.300	11.300	11.500	11.700	11.800	12.100	13.300	14.550	15.950
39	2.200	2.400	3.200	3.800	4.000	4.100	4.200	4.300	4.300	4.200	4.200	4.700	5.100	5.300
2421	23.800	20.500	22.000	21.500	20.800	18.929	18.702	18.492	18.086	17.866	17.649	17.452	17.828	17.658
2436	20.100	15.500	16.800	16.700	16.300	13.374	13.138	12.919	12.520	11.959	11.425	9.686	8.693	8.509
24XX	25.600	27.600	29.200	30.500	29.900	29.289	28.700	28.203	27.875	27.551	27.231	25.909	24.652	23.455
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	5.100	4.160	4.000	3.900	4.100	4.135	4.089	4.044	4.001	3.956	3.913	3.785	3.639	3.478
2631	2.000	2.100	2.000	1.900	2.000	1.976	1.953	1.931	1.907	1.885	1.863	1.762	1.662	1.561
26XX	3.300	2.840	3.200	2.900	3.000	2.963	2.927	2.893	2.847	2.829	2.825	2.825	2.817	2.717
2812	0.250	0.200	0.200	0.200	0.200	0.200	0.200	0.201	0.201	0.201	0.201	0.203	0.204	0.204
2819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28XX	2.050	1.900	1.900	2.000	2.100	1.888	1.883	1.877	1.872	1.866	1.861	1.838	1.811	1.780
3334	1.400	0.600	0.700	0.900	0.900	0.900	0.800	0.700	0.700	0.700	0.700	0.650	0.600	0.600
SUBTOT	215.100	199.300	206.300	214.600	217.450	215.004	215.194	215.939	216.578	216.474	217.117	220.112	223.408	226.262

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDIUM SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	60.500	57.300	58.500	60.500	63.400	64.100	64.400	65.000	65.600	66.100	66.500	68.500	70.200	72.000
50-51	67.400	65.800	68.200	72.000	77.700	79.300	79.500	79.800	80.572	81.816	83.079	92.645	101.887	111.589
52,53+	96.200	92.900	98.700	102.000	107.200	108.800	109.600	110.876	112.340	113.823	115.325	123.250	132.188	141.146
54	24.600	29.500	33.800	36.500	38.100	38.700	39.000	39.400	39.800	40.100	40.500	43.300	46.400	48.487
58	67.400	70.400	76.000	79.900	83.400	84.700	85.635	88.593	91.653	94.818	98.093	114.888	132.670	152.625
60-67	70.000	66.800	72.100	73.600	75.000	76.000	77.300	78.400	79.500	80.500	82.000	89.000	98.000	107.000
70	14.800	14.600	15.600	16.800	17.400	17.900	18.500	18.900	19.200	19.500	19.700	21.100	23.500	25.759
72	9.800	10.400	10.800	11.000	11.300	11.600	12.000	12.200	12.400	12.600	12.700	13.400	14.100	14.754
73	24.900	35.000	45.500	49.200	51.300	52.700	54.600	55.600	56.500	57.500	58.500	68.800	80.000	92.533
76	3.000	3.500	4.100	4.400	4.600	4.700	5.000	5.200	5.300	5.400	5.500	5.800	6.100	6.200
80	62.100	69.400	74.400	77.400	83.200	88.500	93.700	98.200	101.600	103.000	105.000	118.000	130.000	140.300
81	5.600	7.300	8.100	8.800	9.100	9.554	9.923	10.305	10.703	11.116	11.545	13.786	16.231	19.039
83	11.400	14.000	16.900	18.300	18.900	19.300	19.900	20.300	20.600	20.900	21.300	24.000	27.000	29.714
89	11.100	10.300	11.300	12.200	12.600	12.832	13.160	13.496	13.840	14.194	14.556	16.323	18.049	19.874
75,78+	42.200	43.500	47.400	51.300	52.600	54.201	54.827	55.461	56.101	56.749	57.405	61.578	65.137	68.616
82	7.100	8.300	10.300	11.100	11.400	11.700	11.900	12.100	12.200	12.400	12.600	13.500	14.400	15.100
941	94.200	94.600	97.400	99.300	101.600	103.900	105.500	107.000	108.600	110.300	111.900	120.000	127.800	134.400
90-99	78.200	73.500	77.700	80.600	82.400	84.300	85.600	86.900	88.200	89.500	90.800	97.300	103.500	109.000
Const	46.500	33.100	35.300	39.000	42.900	41.300	40.320	40.613	40.909	41.206	41.506	42.969	45.526	48.659
Agric	96.300	98.800	99.700	100.300	101.000	101.710	101.305	100.902	100.501	100.101	99.703	98.687	97.036	95.512
Mining	2.300	1.500	1.400	1.400	1.600	1.650	1.670	1.689	1.709	1.730	1.750	1.850	1.950	1.950
Fd Gvt	30.800	29.600	30.600	31.700	31.800	32.500	31.700	31.500	31.300	31.339	31.450	32.450	34.050	35.700
SUBTOT	926.400	930.100	993.800	1037.300	1078.500	1099.947	1115.040	1132.435	1149.128	1164.692	1181.412	1281.126	1385.724	1489.957
TOTAL	1141.500	1129.400	1200.100	1251.900	1295.950	1314.951	1330.234	1348.374	1365.706	1381.166	1398.529	1501.238	1609.132	1716.219

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDIUM SCENARIO – OREGON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	766.113	797.066	815.229	829.526	849.841	866.212	886.660	900.626	912.314	919.967	928.583	985.698	1053.693	1112.404
MF	143.583	154.439	160.683	164.970	170.843	175.694	181.623	185.867	189.527	192.141	195.016	213.207	234.451	253.426
MO	81.898	92.495	98.088	101.904	107.316	111.560	116.855	120.274	122.981	124.490	126.186	137.477	150.637	161.308
TOTAL	991.593	1044.000	1074.000	1096.400	1128.000	1153.466	1185.139	1206.767	1224.822	1236.598	1249.786	1336.382	1438.780	1527.137
POPUL	2633.160	2675.800	2690.000	2741.000	2820.000	2883.665	2946.255	2983.128	3008.163	3022.245	3036.979	3180.588	3352.358	3527.686
HHLDS	991.593	1044.000	1074.000	1096.400	1128.000	1153.466	1185.139	1206.767	1224.822	1236.598	1249.786	1336.382	1438.780	1527.137
PCI	9897.80	9845.90	10201.80	10450.20	10649.00	10851.30	11057.50	11267.60	11481.70	11699.80	11922.10	13098.60	14391.20	15811.30

MANUFACTURING EMPLOYMENT (1000'S)

MEDIUM SCENARIO - IDAHO

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	17.000	16.600	16.100	17.400	16.700	16.800	17.000	17.200	17.200	17.200	17.300	16.800	16.300	15.800
22	0.000	0.050	0.100	0.100	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
23	0.300	0.250	0.300	0.300	0.300	0.250	0.239	0.229	0.219	0.209	0.200	0.150	0.150	0.150
25	0.250	0.600	0.600	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
27	3.100	4.200	4.300	4.500	4.700	4.800	5.000	5.200	5.200	5.300	5.400	6.000	6.500	7.000
29	0.100	0.025	0.050	0.050	0.100	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
30	1.000	0.850	1.100	0.700	0.800	0.550	0.540	0.529	0.519	0.510	0.500	0.500	0.500	0.500
31	0.000	0.100	0.150	0.150	0.150	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
32	1.300	0.900	0.800	0.900	1.000	1.000	1.100	1.000	0.900	0.900	0.900	0.900	0.900	0.900
33XX	1.200	0.100	0.000	0.150	0.150	0.200	0.200	0.250	0.250	0.250	0.250	0.250	0.200	0.200
34	2.100	1.900	2.000	2.000	2.300	2.400	2.400	2.500	2.500	2.600	2.600	2.700	2.700	2.700
35	5.000	5.800	5.200	5.500	6.100	6.400	6.500	6.600	6.700	6.800	6.900	7.650	8.550	8.900
36	1.500	2.800	3.300	4.300	4.700	4.900	5.100	5.300	5.500	5.700	5.800	6.100	6.400	6.600
37	0.700	0.950	1.100	1.250	1.300	1.300	1.300	1.300	1.200	1.200	1.200	1.000	0.900	0.800
38	0.150	0.300	0.300	0.400	0.450	0.500	0.500	0.550	0.550	0.550	0.550	0.600	0.650	0.700
39	0.400	0.325	0.300	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
2421	8.100	6.400	6.600	6.600	6.600	6.060	6.172	6.282	6.262	6.366	6.468	6.613	7.012	7.057
2436	0.500	0.400	0.400	0.400	0.400	0.304	0.277	0.250	0.242	0.245	0.249	0.258	0.263	0.269
24XX	6.775	6.700	6.400	6.800	7.300	7.000	6.800	6.505	6.440	6.377	6.314	6.007	5.716	5.438
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.225	0.250	0.250	0.300	0.300	0.289	0.286	0.284	0.282	0.279	0.277	0.268	0.258	0.247
2631	0.850	0.950	0.950	1.000	1.000	0.961	0.950	0.938	0.928	0.917	0.906	0.857	0.808	0.760
26XX	0.425	0.575	0.600	0.600	0.600	0.560	0.564	0.568	0.572	0.576	0.580	0.558	0.565	0.547
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	1.067	1.000	0.900	0.900	0.900	0.865	0.860	0.855	0.850	0.845	0.840	0.816	0.792	0.768
28XX	2.433	2.600	2.400	2.600	2.700	2.692	2.684	2.676	2.668	2.660	2.652	2.613	2.575	2.537
3334	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOT	54.475	54.625	54.200	58.000	59.750	59.156	59.797	60.341	60.307	60.809	61.211	61.966	63.064	63.197

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDIUM SCENARIO – IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	20.100	19.200	17.900	18.600	19.100	19.800	20.100	20.300	20.400	20.500	20.600	22.300	23.000	23.500
50-51	22.300	20.800	20.500	20.600	21.700	22.100	22.500	22.800	23.400	24.000	24.962	27.972	30.914	34.024
52,53+	29.900	31.300	31.500	32.500	35.000	35.600	36.200	36.800	37.200	37.500	37.700	40.700	43.500	46.359
54	9.400	10.700	11.100	11.300	12.100	12.300	12.500	12.700	12.800	12.900	13.000	14.125	15.224	16.336
58	19.000	21.600	21.600	22.700	24.900	25.300	25.700	26.200	27.000	27.500	28.000	33.694	39.194	45.419
60-67	23.400	23.600	19.200	19.400	19.300	19.800	20.100	20.300	20.800	21.500	22.000	25.000	27.500	29.900
70	5.100	5.200	5.800	6.100	6.500	6.800	7.100	7.300	7.400	7.500	7.600	8.300	9.100	9.986
72	3.000	3.800	3.600	3.600	3.800	4.000	4.000	4.100	4.100	4.200	4.200	4.500	4.740	5.031
73	11.000	12.100	12.800	14.500	15.500	16.400	16.900	17.500	18.100	18.600	19.000	22.000	25.000	29.600
76	1.000	1.100	1.000	1.100	1.200	1.200	1.200	1.200	1.210	1.231	1.253	1.351	1.436	1.520
80	15.500	17.900	19.100	19.800	21.000	22.100	22.900	23.600	24.200	24.700	25.200	28.000	31.000	33.570
81	2.100	2.400	2.500	2.700	2.900	3.000	3.100	3.100	3.136	3.257	3.382	4.058	4.801	5.657
83	3.400	4.000	4.100	4.500	4.800	5.000	5.200	5.300	5.400	5.500	5.500	6.300	7.000	7.782
89	4.800	3.900	3.900	4.100	4.400	4.600	4.700	4.800	4.900	5.000	5.100	5.800	6.300	6.606
75,78+	10.300	10.800	11.000	11.400	12.100	12.700	13.200	13.500	13.700	13.800	13.900	14.700	15.300	15.800
82	3.800	3.900	4.100	4.300	4.400	4.500	4.600	4.600	4.700	4.800	4.800	5.200	5.500	5.900
941	31.100	32.300	33.400	34.500	35.600	36.400	37.000	37.600	38.000	38.400	38.700	41.000	43.500	46.200
90-99	26.400	26.100	27.700	28.500	29.400	30.400	30.900	31.200	31.500	31.700	31.900	33.482	35.132	37.166
Const	17.400	15.100	13.600	14.500	16.200	17.000	17.400	17.200	17.000	16.918	17.216	18.657	20.098	21.588
Agric	69.100	65.400	64.800	64.155	63.500	62.945	62.627	62.311	61.996	61.683	61.371	60.348	59.096	58.099
Mining	4.700	3.800	2.600	3.300	3.700	3.800	3.800	3.800	3.800	3.800	3.800	3.750	3.700	3.700
Fd Gvt	13.000	11.800	12.200	12.700	12.600	12.900	12.600	12.600	12.600	12.639	12.700	13.350	13.950	14.650
SUBTOT	345.800	346.800	344.000	354.855	369.700	378.645	384.327	388.811	393.342	397.628	401.884	434.587	464.985	498.393
TOTAL	400.275	401.425	398.200	412.855	429.450	437.801	444.124	449.152	453.649	458.437	463.095	496.553	528.049	561.590

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDIUM SCENARIO – IDAHO — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	262.386	280.726	282.559	282.417	286.055	295.047	301.871	306.816	312.842	317.854	321.534	346.609	369.017	388.953
MF	25.070	29.289	29.947	30.064	30.799	32.410	33.670	34.628	35.763	36.737	37.496	42.420	46.969	51.167
MO	36.714	43.986	44.494	44.305	45.288	47.945	49.876	51.172	52.776	54.019	54.802	60.340	64.473	67.826
TOTAL	324.170	354.000	357.000	356.786	362.143	375.402	385.417	392.616	401.381	408.611	413.832	449.369	480.459	507.946
POPUL	944.000	1004.000	998.000	999.000	1014.000	1047.371	1067.606	1079.693	1095.770	1107.336	1113.208	1168.359	1225.171	1285.103
HHLDS	324.170	354.000	357.000	356.786	362.143	375.402	385.417	392.616	401.381	408.611	413.832	449.369	480.459	507.946
PCI	8611.20	8400.50	8563.10	8841.00	9150.40	9338.90	9531.30	9727.60	9928.00	10132.50	10341.30	11451.20	12680.30	14041.30

MANUFACTURING EMPLOYMENT (1000'S)

MEDIUM SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	0.700	0.465	0.525	0.550	0.550	0.500	0.495	0.490	0.485	0.480	0.475	0.475	0.450	0.450
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.025	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.075	0.075	0.075
25	0.000	0.140	0.150	0.150	0.150	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.175	0.175
27	0.750	0.700	0.725	0.750	0.750	0.725	0.748	0.773	0.798	0.823	0.850	1.000	1.050	1.050
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.025	0.025	0.010	0.010	0.038	0.040	0.042	0.045	0.047	0.050	0.050	0.063	0.063
31	0.000	0.025	0.030	0.010	0.010	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
32	0.400	0.325	0.280	0.290	0.300	0.300	0.303	0.306	0.309	0.312	0.315	0.325	0.336	0.350
33XX	1.000	0.150	0.050	0.050	0.050	0.125	0.130	0.134	0.139	0.145	0.150	0.150	0.150	0.150
34	0.150	0.250	0.275	0.250	0.250	0.250	0.255	0.260	0.265	0.270	0.275	0.275	0.275	0.275
35	0.050	0.225	0.325	0.350	0.350	0.250	0.259	0.269	0.279	0.289	0.300	0.350	0.400	0.425
36	0.050	0.075	0.075	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.204	0.225
37	0.100	0.075	0.050	0.100	0.100	0.100	0.105	0.109	0.114	0.120	0.125	0.150	0.175	0.200
38	0.100	0.125	0.120	0.130	0.140	0.150	0.159	0.168	0.178	0.189	0.200	0.225	0.253	0.275
39	0.150	0.175	0.300	0.650	0.650	0.625	0.600	0.575	0.550	0.525	0.500	0.450	0.400	0.400
2421	4.500	4.000	4.150	3.900	3.939	3.997	4.069	4.143	4.129	4.199	4.268	4.361	4.625	4.654
2436	1.000	0.800	0.800	0.800	0.769	0.697	0.634	0.572	0.553	0.562	0.570	0.591	0.603	0.616
24XX	2.700	2.100	2.500	2.500	2.475	2.451	2.427	2.402	2.379	2.355	2.332	2.219	2.111	2.009
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2631	0.550	0.750	0.750	0.750	0.741	0.732	0.724	0.715	0.707	0.699	0.691	0.653	0.616	0.579
26XX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	0.200	0.190	0.180	0.180	0.178	0.176	0.175	0.174	0.173	0.172	0.171	0.166	0.161	0.157
28XX	0.100	0.050	0.050	0.100	0.100	0.099	0.099	0.099	0.099	0.098	0.098	0.097	0.095	0.094
3334	1.250	0.850	0.750	0.800	0.800	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
SUBTOT	13.775	11.545	12.160	12.470	12.462	12.203	12.226	12.255	12.246	12.349	12.457	12.700	12.956	12.959

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDIUM SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	7.500	6.400	6.650	6.700	6.924	6.987	7.071	7.156	7.241	7.328	7.416	7.780	8.048	8.293
50-51	3.800	3.400	3.275	3.375	3.441	3.513	3.597	3.684	3.772	3.863	3.956	4.404	4.834	5.284
52,53+	8.000	8.200	8.650	8.700	8.772	8.912	9.079	9.250	9.424	9.601	9.781	10.611	11.353	12.092
54	2.900	3.000	2.825	2.800	2.800	2.800	2.837	2.875	2.914	2.953	2.992	3.246	3.473	3.699
58	7.500	7.500	7.475	7.500	7.600	7.641	7.928	8.225	8.534	8.855	9.187	10.918	12.792	14.932
60-67	3.700	3.400	3.650	3.650	3.650	3.707	3.771	3.836	3.902	3.969	4.037	4.467	4.874	5.295
70	2.500	2.700	2.900	2.850	2.945	3.021	3.107	3.196	3.287	3.381	3.477	3.956	4.439	4.961
72	0.800	0.900	0.875	0.900	0.926	0.939	0.955	0.971	0.987	1.004	1.021	1.098	1.164	1.230
73	1.000	1.700	2.175	2.200	2.250	2.329	2.418	2.510	2.605	2.704	2.807	3.344	3.927	4.594
76	0.300	0.300	0.350	0.350	0.309	0.313	0.319	0.324	0.330	0.336	0.342	0.368	0.392	0.415
80	6.400	7.650	8.300	8.400	8.598	8.805	9.048	9.297	9.554	9.817	10.088	11.425	12.738	14.161
81	0.500	0.600	0.700	0.700	0.680	0.663	0.688	0.713	0.740	0.767	0.796	0.943	1.103	1.284
83	1.400	1.200	1.525	1.500	1.500	1.395	1.414	1.432	1.451	1.470	1.490	1.696	1.903	2.126
89	1.000	0.700	0.800	0.800	0.751	0.747	0.766	0.785	0.805	0.825	0.846	0.946	1.044	1.146
75,78+	3.300	3.325	3.450	3.500	3.500	3.512	3.563	3.614	3.666	3.719	3.773	4.078	4.345	4.612
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
941	8.900	9.775	9.500	9.400	9.600	9.806	9.982	10.161	10.343	10.529	10.718	11.683	12.328	12.954
90-99	8.300	7.400	7.400	7.400	8.011	8.319	8.452	8.587	8.724	8.863	9.005	9.635	10.167	10.684
Const	4.800	3.800	2.800	3.050	3.091	3.137	3.190	3.243	3.298	3.354	3.410	3.673	3.918	4.167
Agric	7.500	7.300	7.300	7.300	7.295	7.294	7.265	7.236	7.207	7.179	7.150	6.971	6.953	6.928
Mining	3.100	1.875	2.075	2.175	2.250	2.350	2.400	2.450	2.500	2.550	2.650	2.750	2.850	2.950
Fd Gvt	5.600	4.850	4.900	4.950	5.000	5.000	5.039	5.079	5.119	5.159	5.200	5.400	5.500	5.600
SUBTOT	88.800	85.975	87.575	88.200	89.893	91.190	92.889	94.624	96.403	98.226	100.142	109.392	118.145	127.407
TOTAL	102.575	97.520	99.735	100.670	102.355	103.393	105.115	106.879	108.649	110.575	112.599	122.092	131.101	140.366

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDIUM SCENARIO – WESTERN MONTANA — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	82.313	84.905	85.437	85.857	88.561	89.876	91.252	93.223	94.688	96.863	98.575	107.951	115.087	121.397
MF	8.950	10.092	10.354	10.500	11.104	11.431	11.772	12.233	12.594	13.098	13.511	15.753	17.571	19.243
MO	15.138	17.403	17.709	17.854	18.901	19.375	19.860	20.566	21.053	21.808	22.362	25.231	26.961	28.361
TOTAL	106.400	112.400	113.500	114.211	118.565	120.682	122.884	126.022	128.335	131.769	134.447	148.935	159.618	169.001
POPUL	294.500	303.900	303.500	303.800	313.012	316.188	319.498	323.877	327.255	332.058	336.117	355.954	373.507	392.083
HHLDS	106.400	112.400	113.500	114.211	118.565	120.682	122.884	126.022	128.335	131.769	134.447	148.935	159.618	169.001
PCI	7793.00	7983.00	8527.20	8697.80	8871.70	9049.10	9991.00	9991.00	9991.00	9991.00	9991.00	11030.90	12179.00	13446.70

MANUFACTURING EMPLOYMENT (1000'S)

MEDIUM SCENARIO – REGION

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	73.900	71.965	72.925	75.150	75.450	75.500	75.595	75.590	75.585	75.480	75.575	73.975	72.350	70.950
22	3.000	2.550	3.100	3.200	3.100	3.050	3.050	3.050	3.050	2.950	2.950	2.800	2.800	2.800
23	10.025	8.900	8.250	9.150	9.250	9.000	9.089	9.179	9.269	9.359	9.550	9.825	10.125	10.425
25	6.150	7.240	7.050	7.750	7.950	7.800	8.008	8.018	8.128	8.238	8.350	8.875	9.177	9.475
27	29.650	34.000	37.925	40.150	41.250	42.325	43.348	44.973	46.498	48.023	49.850	55.800	59.350	62.250
29	2.800	2.225	2.350	2.550	2.700	2.675	2.675	2.575	2.575	2.575	2.575	2.525	2.475	2.475
30	6.900	8.575	10.125	11.010	11.510	11.788	11.980	12.271	12.564	12.657	12.950	14.350	15.263	15.863
31	0.700	0.925	1.080	1.160	1.260	1.238	1.238	1.317	1.307	1.298	1.288	1.288	1.288	1.288
32	13.100	10.725	11.580	12.790	13.300	13.000	12.903	13.106	12.909	12.912	12.915	12.725	12.636	12.550
33XX	20.800	15.350	15.550	16.700	18.150	18.725	19.030	19.184	19.289	19.195	19.200	19.200	19.050	18.850
34	26.750	22.850	22.975	24.150	25.150	24.550	24.555	24.960	25.365	25.870	26.275	27.375	28.175	28.775
35	37.750	38.625	37.525	41.050	44.450	45.950	46.859	47.369	47.779	48.089	48.400	51.500	54.650	57.275
36	22.550	28.875	30.175	33.200	35.900	37.450	39.008	39.718	40.228	40.738	41.150	44.475	47.004	49.025
37	109.450	99.825	118.150	128.550	140.200	146.400	149.605	151.209	149.314	147.320	145.325	136.350	128.875	121.900
38	25.950	25.725	23.320	23.930	23.790	24.250	24.859	25.118	25.428	25.739	26.150	28.525	30.653	32.975
39	7.350	7.400	8.600	10.150	10.950	11.025	11.300	11.575	11.750	11.825	12.100	13.050	13.400	13.600
2421	52.427	44.300	47.250	46.700	46.039	42.712	42.534	42.372	41.662	41.464	41.255	41.193	42.556	42.363
2436	26.582	20.900	21.900	22.000	21.569	17.987	17.583	17.195	16.674	16.001	15.356	13.220	12.028	11.839
24XX	61.066	57.100	60.100	62.400	62.975	61.085	59.509	58.111	57.401	56.700	56.008	53.289	50.703	48.242
2611	2.974	2.100	2.050	2.100	2.100	2.049	2.001	1.959	1.917	1.886	1.854	1.706	1.570	1.442
2621	14.143	13.410	12.650	12.800	13.100	12.933	12.700	12.561	12.426	12.287	12.156	11.761	11.309	10.807
2631	5.037	5.000	4.900	4.850	4.941	4.845	4.785	4.729	4.673	4.619	4.565	4.318	4.072	3.825
26XX	7.896	7.815	8.750	8.600	8.900	8.578	8.560	8.543	8.513	8.513	8.525	8.473	8.474	8.145
2812	0.763	0.700	0.700	0.700	0.700	0.701	0.701	0.702	0.703	0.703	0.704	0.712	0.716	0.715
2819	6.567	8.890	8.780	7.880	7.478	7.442	7.436	7.429	7.423	7.417	7.411	7.182	6.953	6.925
28XX	7.470	7.650	7.650	8.000	8.200	7.970	7.947	7.923	7.900	7.876	7.853	7.750	7.636	7.511
3334	10.350	7.250	5.850	7.300	7.300	6.500	6.300	6.100	6.000	5.940	5.900	5.650	5.600	5.600
SUBTOT	592.100	560.870	591.260	623.970	647.662	647.528	653.156	656.838	656.330	655.674	656.190	657.894	658.887	657.890

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDIUM SCENARIO – REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	179.500	176.500	181.550	187.300	195.124	198.587	201.571	203.956	206.241	207.928	209.516	218.580	223.248	227.793
50-51	194.000	195.700	203.375	211.475	223.541	227.513	229.797	232.284	235.744	240.888	246.628	276.361	305.383	336.067
52,53+	275.100	279.300	300.050	310.400	326.072	332.412	337.879	340.926	343.964	347.924	350.806	379.344	408.412	437.912
54	75.100	92.400	105.125	110.100	115.300	117.500	118.837	120.175	121.214	121.953	122.892	130.171	139.257	148.358
58	195.500	218.400	233.275	243.100	255.100	260.041	267.371	276.537	286.315	296.115	306.249	361.689	420.417	486.845
60-67	188.900	193.400	202.450	206.450	212.250	215.607	221.071	223.736	227.087	231.899	237.087	262.656	289.259	316.502
70	40.200	42.600	45.800	48.750	51.145	52.721	54.207	55.396	56.387	57.453	58.608	64.948	72.400	80.124
72	29.600	35.000	36.075	37.700	39.426	40.639	40.955	42.571	43.087	43.604	43.921	46.998	49.804	52.533
73	89.800	109.800	138.475	149.300	156.950	162.129	168.918	172.610	176.205	178.804	181.307	211.144	246.927	286.665
76	9.800	10.500	11.350	12.150	12.709	13.113	13.519	13.624	13.840	14.017	14.184	15.180	16.092	16.799
80	179.800	212.350	231.100	239.100	253.598	264.605	273.748	282.130	289.813	295.480	301.835	341.448	380.930	420.625
81	17.400	22.700	25.700	27.600	28.880	29.917	30.811	31.518	32.379	33.340	34.455	41.317	48.855	57.541
83	31.800	41.800	47.525	51.000	53.400	54.699	55.818	56.766	57.932	59.117	60.323	68.893	77.811	87.028
89	36.400	36.000	39.100	41.800	43.751	45.079	45.926	46.681	47.445	48.279	49.354	55.581	61.518	67.601
75,78+	122.600	141.125	150.850	161.300	168.500	173.813	177.590	179.575	180.967	182.268	183.078	196.356	208.035	219.830
82	19.800	24.200	27.500	29.300	30.100	30.800	31.400	31.800	32.300	32.800	33.200	35.700	38.000	39.500
941	279.700	280.275	291.400	298.200	306.300	312.606	318.182	322.961	327.643	332.529	337.218	361.983	381.628	399.054
90-99	230.300	236.100	248.300	256.800	264.211	270.119	274.952	278.687	281.424	285.063	289.005	309.117	327.753	346.764
Const	161.300	132.600	140.600	152.550	166.891	166.937	164.910	166.056	167.296	168.959	171.022	181.059	190.785	201.419
Agric	292.200	286.600	286.200	285.055	284.095	283.351	282.463	281.580	280.700	279.824	278.950	274.551	270.151	265.850
Mining	13.300	9.875	9.075	10.175	10.950	11.200	11.270	11.339	11.309	11.380	11.500	11.650	11.800	11.900
Fd Gvt	117.300	116.350	118.300	120.950	122.100	124.300	124.039	123.979	123.919	124.137	124.350	129.200	134.500	140.950
SUBTOT	2779.400	2893.575	3073.175	3190.555	3320.393	3387.688	3445.234	3494.887	3543.211	3593.761	3645.488	3973.926	4302.965	4647.661
TOTAL	3371.500	3454.446	3664.435	3814.525	3968.055	4035.217	4098.391	4151.725	4199.542	4249.435	4301.679	4631.820	4961.852	5305.551

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDIUM SCENARIO – REGION — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	2304.022	2428.959	2486.587	2525.927	2593.463	2657.622	2718.576	2763.457	2801.996	2838.444	2874.682	3074.306	3275.431	3451.678
MF	427.732	492.379	520.091	536.031	560.981	584.215	606.199	623.097	637.708	652.171	666.868	744.770	823.961	896.256
MO	230.919	280.062	298.822	309.736	328.674	346.526	363.198	375.203	385.214	394.457	403.297	449.777	492.500	527.470
TOTAL	2962.673	3201.400	3305.500	3371.693	3483.118	3588.363	3687.973	3761.758	3824.918	3885.072	3944.848	4268.853	4591.894	4875.404
POPUL	8003.820	8389.700	8529.500	8662.800	8908.013	9133.032	9319.689	9436.854	9524.323	9605.389	9681.520	10213.537	10756.146	11322.192
HHLDS	2962.673	3201.400	3305.500	3371.693	3483.118	3588.363	3687.972	3761.758	3824.918	3885.072	3944.847	4268.853	4591.893	4875.403
PCI	10391.70	10444.58	10842.06	11072.24	11327.43	11529.93	11762.64	11966.26	12171.46	12382.17	12598.10	13768.36	15044.79	16440.09

MANUFACTURING EMPLOYMENT (1000'S)

MEDLO SCENARIO – WASHINGTON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	31.900	31.100	32.300	33.100	34.000	33.500	33.000	32.500	32.000	31.500	31.300	30.500	29.700	28.800
22	1.000	0.900	1.200	1.300	1.300	1.100	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
23	6.500	6.200	5.400	6.100	6.300	6.000	5.800	5.500	5.500	5.500	5.500	5.900	6.100	6.300
25	3.300	3.800	3.800	4.200	4.300	4.100	3.900	3.740	3.760	3.780	3.800	3.900	4.000	4.100
27	15.800	17.600	20.100	21.400	22.100	22.300	22.500	22.600	22.700	22.800	22.900	24.800	26.700	28.500
29	2.100	1.800	1.800	1.900	2.000	1.800	1.700	1.600	1.600	1.500	1.500	1.400	1.300	1.200
30	3.500	4.500	5.200	5.800	6.200	5.800	5.500	5.400	5.300	5.300	5.300	5.300	5.300	5.300
31	0.400	0.400	0.400	0.500	0.600	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
32	6.900	6.400	6.900	7.500	7.500	7.200	6.100	6.100	6.100	6.100	6.100	6.100	6.100	6.100
33XX	9.000	6.900	6.900	7.200	7.700	7.500	7.040	7.079	7.119	7.160	7.200	7.400	7.600	7.600
34	11.800	9.700	10.500	10.900	11.300	10.900	10.500	10.240	10.260	10.280	10.300	10.500	10.600	10.700
35	15.000	17.100	16.200	18.100	19.500	18.500	17.500	17.093	17.293	17.495	17.700	18.800	20.200	21.400
36	11.200	12.100	13.200	13.500	14.300	14.000	13.800	13.600	13.500	13.398	13.500	13.800	14.300	14.900
37	98.350	89.600	106.200	116.000	128.000	130.000	125.000	110.000	105.000	100.000	95.000	90.800	86.800	83.000
38	6.400	10.700	10.800	11.500	11.800	11.200	11.240	11.280	11.320	11.360	11.400	12.000	12.700	13.500
39	4.600	4.500	4.800	5.300	5.900	4.500	4.520	4.540	4.560	4.580	4.600	4.600	4.600	4.600
2421	16.027	13.400	14.500	14.700	14.700	11.673	11.549	11.438	11.210	11.080	10.940	10.852	11.125	11.047
2436	4.982	4.200	3.900	4.100	4.100	3.071	3.002	2.937	2.857	2.749	2.644	2.283	2.097	2.079
24XX	25.991	20.700	22.000	22.600	23.300	20.969	20.699	20.432	20.169	19.910	19.654	18.425	17.269	16.183
2611	2.974	2.100	2.050	2.100	2.100	2.016	1.982	1.950	1.917	1.886	1.854	1.706	1.570	1.442
2621	8.818	9.000	8.400	8.600	8.700	8.284	8.223	8.161	8.098	8.032	7.966	7.708	7.412	7.082
2631	1.637	1.200	1.200	1.200	1.200	1.172	1.158	1.145	1.131	1.118	1.105	1.045	0.985	0.926
26XX	4.171	4.400	4.950	5.100	5.300	5.055	5.068	5.081	5.095	5.108	5.121	5.090	5.093	4.881
2812	0.513	0.500	0.500	0.500	0.500	0.501	0.501	0.502	0.502	0.502	0.503	0.496	0.487	0.511
2819	5.300	7.700	7.700	6.800	6.400	4.500	4.400	4.300	4.200	4.100	4.000	4.000	4.000	4.000
28XX	2.887	3.100	3.300	3.300	3.300	3.251	3.235	3.219	3.203	3.187	3.172	3.096	3.020	2.944
3334	7.700	5.800	4.400	5.600	5.600	4.400	4.000	3.680	3.620	3.560	3.500	3.400	3.400	3.400
SUBTOT	308.750	295.400	318.600	338.900	358.000	343.791	333.418	315.618	309.515	303.486	298.059	295.401	293.959	291.994

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDLO SCENARIO – WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	91.400	93.600	98.500	101.500	105.700	103.000	100.275	100.551	100.827	101.104	101.382	104.759	107.031	108.928
50-51	100.500	105.700	111.400	115.500	120.700	117.015	117.015	119.239	121.505	123.815	126.168	139.038	151.488	164.372
52,53+	141.000	146.900	161.200	167.200	175.100	173.000	169.179	170.338	171.504	172.678	173.860	185.986	196.735	207.241
54	38.200	49.200	57.400	59.500	62.300	60.000	57.259	57.503	57.749	57.996	58.244	62.306	65.907	69.426
58	101.600	118.900	128.200	133.000	139.200	141.000	143.581	148.027	152.611	157.338	162.210	189.470	218.796	251.705
60-67	91.800	99.600	107.500	109.800	114.300	114.000	113.000	114.611	116.618	118.660	120.737	132.077	142.846	153.855
70	17.800	20.100	21.500	23.000	24.300	24.101	24.500	24.631	25.172	25.725	26.290	29.401	32.508	35.797
72	16.000	19.900	20.800	22.200	23.400	23.400	23.453	23.609	23.767	23.926	24.086	25.639	26.987	28.288
73	52.900	61.000	78.000	83.400	87.900	88.500	89.300	90.000	91.500	93.000	95.000	110.000	125.000	142.219
76	5.500	5.600	5.900	6.300	6.600	6.361	6.361	6.431	6.501	6.572	6.644	7.037	7.371	7.688
80	95.800	117.400	129.300	133.500	140.800	142.645	144.000	146.000	148.015	150.775	153.586	173.444	193.664	215.356
81	9.200	12.400	14.400	15.400	16.200	16.500	16.800	17.000	17.100	17.300	17.570	20.722	24.163	28.061
83	15.600	22.600	25.000	26.700	28.200	28.000	28.200	28.400	28.700	29.528	30.265	34.345	38.537	43.063
89	19.500	21.100	23.100	24.700	26.000	26.400	26.800	27.100	27.400	27.700	28.000	31.233	34.704	38.402
75,78+	66.800	83.500	89.000	95.100	100.300	101.000	101.800	102.400	103.000	103.500	104.000	109.000	113.272	118.732
82	8.900	12.000	13.100	13.900	14.300	14.400	14.500	14.600	14.700	14.800	15.000	15.800	16.600	17.200
941	145.500	143.600	151.100	155.000	159.500	161.000	164.000	167.283	168.948	170.628	172.326	181.633	189.297	196.463
90-99	117.400	129.100	135.500	140.300	144.400	146.000	148.000	148.000	148.500	149.000	150.000	154.000	160.000	164.709
Const	92.600	80.600	88.900	96.000	104.700	100.000	95.000	90.990	92.077	93.178	94.291	100.371	105.648	110.740
Agric	119.300	115.100	114.400	113.300	112.300	110.714	110.337	109.961	109.586	109.213	108.841	105.481	102.806	99.943
Mining	3.200	2.700	3.000	3.300	3.400	2.900	2.900	2.900	2.900	2.900	2.900	2.900	2.900	2.900
Fd Gvt	67.900	70.100	70.600	71.600	72.700	72.000	71.000	71.500	71.500	71.500	71.500	72.700	75.300	78.000
SUBTOT	1418.400	1530.700	1647.800	1710.200	1782.300	1771.936	1767.260	1781.074	1800.180	1820.836	1842.900	1987.342	2131.560	2283.088
TOTAL	1727.150	1826.100	1966.400	2049.100	2140.300	2115.728	2100.678	2096.692	2109.695	2124.322	2140.959	2282.743	2425.519	2575.082

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDLO SCENARIO – WASHINGTON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	1193.211	1266.263	1300.855	1322.773	1359.575	1386.007	1410.046	1430.610	1444.854	1457.542	1471.542	1533.542	1600.558	1665.987
MF	250.130	298.560	320.920	334.363	354.964	370.515	384.941	397.711	407.423	416.423	426.121	471.450	520.487	569.879
MO	97.169	126.178	139.225	147.160	159.871	169.108	177.481	184.632	189.627	194.026	198.767	218.604	238.524	257.461
TOTAL	1540.510	1691.000	1761.000	1804.297	1874.409	1925.630	1972.468	2012.953	2041.904	2067.990	2096.430	2223.596	2359.569	2493.326
POPUL	4132.160	4406.000	4538.000	4619.000	4761.000	4852.586	4931.169	4992.124	5023.083	5045.896	5073.362	5247.686	5450.604	5709.716
HHLDS	1540.510	1691.000	1761.000	1804.297	1874.409	1925.630	1972.468	2012.953	2041.904	2067.990	2096.430	2223.596	2359.569	2493.326
PCI	10784.10	10925.00	11338.90	11529.50	11794.70	11953.90	12115.30	12278.90	12444.60	12612.60	12782.90	13669.40	14617.30	15631.00

MANUFACTURING EMPLOYMENT (1000'S) MEDLO SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	24.300	23.800	24.000	24.100	24.200	24.000	23.600	23.500	23.400	23.300	23.100	22.000	21.500	21.000
22	2.000	1.600	1.800	1.800	1.700	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400
23	3.200	2.400	2.500	2.700	2.600	2.200	2.158	2.118	2.078	2.038	2.000	2.000	2.000	2.000
25	2.600	2.700	2.500	2.700	2.800	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
27	10.000	11.500	12.800	13.500	13.700	13.500	13.000	13.100	13.100	13.100	13.100	13.100	13.100	13.100
29	0.600	0.400	0.500	0.600	0.600	0.400	0.400	0.400	0.400	0.400	0.400	0.300	0.300	0.300
30	2.400	3.200	3.800	4.500	4.500	4.000	3.639	3.679	3.719	3.759	3.800	3.900	4.000	4.100
31	0.300	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
32	4.500	3.100	3.600	4.100	4.500	3.500	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100
33XX	9.600	8.200	8.600	9.300	10.250	8.600	8.640	8.679	8.719	8.760	8.800	9.000	9.000	9.000
34	12.700	11.000	10.200	11.000	11.300	10.500	10.559	10.619	10.679	10.739	10.800	11.000	11.100	11.200
35	17.700	15.500	15.800	17.100	18.500	18.000	17.000	16.500	16.500	16.500	16.500	17.500	18.200	18.900
36	9.800	13.900	13.600	15.300	16.800	16.400	16.000	15.500	15.600	15.700	15.800	16.500	17.200	18.000
37	10.300	9.200	10.800	11.200	10.800	10.500	10.398	10.297	10.197	10.098	10.000	9.700	9.500	9.200
38	19.300	14.600	12.100	11.900	11.400	10.600	10.717	10.836	10.956	11.077	11.200	12.000	12.800	13.700
39	2.200	2.400	3.200	3.800	4.000	3.700	3.200	3.000	3.000	3.000	3.000	3.000	3.000	3.000
2421	23.800	20.500	22.000	21.500	20.800	16.094	15.898	15.719	15.386	15.182	14.994	14.836	15.158	15.003
2436	20.100	15.500	16.800	16.700	16.300	11.370	11.177	10.974	10.640	10.168	9.707	8.225	7.388	7.230
24XX	25.600	27.600	29.200	30.500	29.900	28.363	27.998	27.637	27.282	26.931	26.584	24.922	23.359	21.889
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	5.100	4.160	4.000	3.900	4.100	4.069	4.038	4.005	3.975	3.942	3.913	3.785	3.639	3.478
2631	2.000	2.100	2.000	1.900	2.000	1.976	1.953	1.931	1.907	1.885	1.863	1.762	1.662	1.561
26XX	3.300	2.840	3.200	2.900	3.000	2.846	2.842	2.838	2.833	2.829	2.825	2.825	2.817	2.717
2812	0.250	0.200	0.200	0.200	0.200	0.200	0.200	0.201	0.201	0.201	0.201	0.203	0.204	0.204
2819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28XX	2.050	1.900	1.900	2.000	2.100	1.866	1.857	1.848	1.839	1.829	1.820	1.777	1.733	1.690
3334	1.400	0.600	0.700	0.900	0.900	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
SUBTOT	215.100	199.300	206.300	214.600	217.450	197.485	193.174	191.280	190.311	189.338	188.308	186.236	185.560	185.173

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDLO SCENARIO - OREGON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	60.500	57.300	58.500	60.500	63.400	62.500	60.000	60.100	60.300	60.500	60.700	61.100	61.600	62.100
50-51	67.400	65.800	68.200	72.000	77.700	76.000	76.100	76.100	76.179	76.919	77.665	84.751	91.436	98.240
52,53+	96.200	92.900	98.700	102.000	107.200	105.000	105.000	105.500	106.003	107.006	108.019	113.146	117.221	121.638
54	24.600	29.500	33.800	36.500	38.100	38.100	37.700	37.800	38.000	38.300	38.600	39.000	40.300	41.786
58	67.400	70.400	76.000	79.900	83.400	84.000	84.500	85.418	87.892	90.438	93.058	107.678	123.201	140.386
60-67	70.000	66.800	72.100	73.600	75.000	74.041	74.800	75.400	76.000	77.000	78.000	85.000	91.000	96.000
70	14.800	14.600	15.600	16.800	17.400	17.000	17.000	17.000	17.000	17.149	17.492	19.371	21.210	23.127
72	9.800	10.400	10.800	11.000	11.300	11.100	11.101	11.195	11.289	11.385	11.481	12.101	12.612	13.089
73	24.900	35.000	45.500	49.200	51.300	50.000	49.000	50.000	51.300	52.700	54.100	63.000	71.400	81.354
76	3.000	3.500	4.100	4.400	4.600	4.600	4.500	4.500	4.500	4.600	4.600	4.700	4.800	4.900
80	62.100	69.400	74.400	77.400	83.200	85.000	86.000	87.000	88.300	89.400	90.300	98.110	107.928	118.846
81	5.600	7.300	8.100	8.800	9.100	9.456	9.707	9.965	10.230	10.502	10.781	12.592	14.541	16.728
83	11.400	14.000	16.900	18.300	18.900	19.000	19.200	19.400	19.700	19.900	20.100	22.300	24.400	26.686
89	11.100	10.300	11.300	12.200	12.600	12.541	12.804	13.072	13.346	13.626	13.912	15.482	17.035	18.666
75,78+	42.200	43.500	47.400	51.300	52.600	52.497	52.795	53.095	53.397	53.700	54.005	56.921	59.323	61.569
82	7.100	8.300	10.300	11.100	11.400	11.500	11.600	11.800	11.900	12.100	12.200	12.800	13.200	13.500
941	94.200	94.600	97.400	99.300	101.600	102.500	103.700	105.000	106.200	107.500	108.800	114.300	117.200	120.200
90-99	78.200	73.500	77.700	80.600	82.400	82.000	81.000	81.000	81.300	81.600	81.900	84.408	87.101	89.505
Const	46.500	33.100	35.300	39.000	42.900	39.000	36.000	35.603	35.957	36.315	36.676	38.657	40.288	41.814
Agric	96.300	98.800	99.700	100.300	101.000	101.082	100.459	99.840	99.224	98.613	98.005	95.901	93.174	90.644
Mining	2.300	1.500	1.400	1.400	1.600	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400	1.400
Fd Gvt	30.800	29.600	30.600	31.700	31.800	31.500	28.999	28.899	28.799	28.699	28.600	29.600	30.700	31.800
SUBTOT	926.400	930.100	993.800	1037.300	1078.500	1069.817	1063.365	1069.087	1078.216	1089.352	1100.394	1172.318	1241.070	1313.978
TOTAL	1141.500	1129.400	1200.100	1251.900	1295.950	1267.302	1256.539	1260.367	1268.527	1278.690	1288.702	1358.554	1426.630	1499.151

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDLO SCENARIO – OREGON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	766.113	797.066	814.652	827.980	849.330	860.673	873.019	879.021	886.559	892.453	900.679	937.736	983.879	1012.591
MF	143.583	154.439	160.844	165.460	170.510	174.471	178.733	181.196	184.113	186.574	189.715	204.455	222.083	234.952
MO	81.898	92.495	98.505	102.960	108.160	111.735	115.560	117.282	119.422	120.963	123.176	131.963	142.689	148.119
TOTAL	991.593	1044.000	1074.000	1096.400	1128.000	1146.880	1167.312	1177.500	1190.095	1199.990	1213.570	1274.154	1348.651	1395.663
POPUL	2633.160	2675.800	2690.000	2741.000	2820.000	2867.199	2901.937	2910.779	2922.873	2932.776	2948.975	3032.487	3142.357	3223.981
HHLDS	991.593	1044.000	1074.000	1096.400	1128.000	1146.880	1167.312	1177.500	1190.095	1199.990	1213.570	1274.154	1348.651	1395.663
PCI	9897.80	9845.90	10201.80	10450.20	10649.00	10814.10	10981.70	11151.90	11324.70	11500.30	11678.50	12612.10	13620.30	14709.10

MANUFACTURING EMPLOYMENT (1000'S) MEDLO SCENARIO - IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	17.000	16.600	16.100	17.400	16.700	16.600	16.400	16.200	16.000	15.700	15.400	14.500	14.000	14.000
22	0.000	0.050	0.100	0.100	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
23	0.300	0.250	0.300	0.300	0.300	0.200	0.189	0.178	0.168	0.159	0.150	0.100	0.100	0.100
25	0.250	0.600	0.600	0.700	0.700	0.600	0.600	0.600	0.600	0.600	0.600	0.550	0.500	0.500
27	3.100	4.200	4.300	4.500	4.700	4.500	4.520	4.540	4.560	4.580	4.600	4.700	4.700	4.700
29	0.100	0.025	0.050	0.050	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
30	1.000	0.850	1.100	0.700	0.800	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
31	0.000	0.100	0.150	0.150	0.150	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
32	1.300	0.900	0.800	0.900	1.000	0.900	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
33XX	1.200	0.100	0.000	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
34	2.100	1.900	2.000	2.000	2.300	2.200	2.100	2.000	2.000	2.000	2.000	2.050	2.050	2.100
35	5.000	5.800	5.200	5.500	6.100	6.200	6.200	6.200	6.100	6.100	6.100	6.400	6.700	7.000
36	1.500	2.800	3.300	4.300	4.700	4.500	4.400	4.300	4.300	4.300	4.300	4.600	4.800	5.000
37	0.700	0.950	1.100	1.250	1.300	0.900	0.879	0.859	0.839	0.819	0.800	0.700	0.600	0.600
38	0.150	0.300	0.300	0.400	0.450	0.400	0.350	0.350	0.350	0.350	0.350	0.400	0.450	0.500
39	0.400	0.325	0.300	0.400	0.400	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
2421	8.100	6.400	6.600	6.600	6.600	5.149	5.244	5.338	5.323	5.411	5.501	5.619	5.960	5.997
2436	0.500	0.400	0.400	0.400	0.400	0.259	0.235	0.212	0.205	0.208	0.211	0.219	0.224	0.228
24XX	6.775	6.700	6.400	6.800	7.300	6.800	6.491	6.408	6.325	6.244	6.164	5.778	5.416	5.075
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.225	0.250	0.250	0.300	0.300	0.289	0.286	0.284	0.282	0.279	0.277	0.268	0.258	0.247
2631	0.850	0.950	0.950	1.000	1.000	0.961	0.950	0.938	0.928	0.917	0.906	0.857	0.808	0.760
26XX	0.425	0.575	0.600	0.600	0.600	0.560	0.564	0.568	0.572	0.576	0.580	0.558	0.565	0.547
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	1.067	1.000	0.900	0.900	0.900	0.855	0.847	0.838	0.830	0.822	0.814	0.774	0.737	0.701
28XX	2.433	2.600	2.400	2.600	2.700	2.687	2.673	2.660	2.647	2.634	2.621	2.557	2.494	2.433
3334	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOT	54.475	54.625	54.200	58.000	59.750	55.685	54.854	54.399	53.954	53.624	53.299	52.556	52.287	52.412

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDLO SCENARIO - IDAHO

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	20.100	19.200	17.900	18.600	19.100	18.800	18.300	18.300	18.400	18.500	18.600	19.057	19.470	19.815
50-51	22.300	20.800	20.500	20.600	21.700	21.900	22.100	22.300	22.652	23.082	23.521	25.920	28.241	30.643
52,53+	29.900	31.300	31.500	32.500	35.000	34.000	33.500	33.600	33.700	33.855	34.293	36.685	38.805	40.877
54	9.400	10.700	11.100	11.300	12.100	12.000	11.900	11.900	12.000	12.100	12.200	12.927	13.674	14.404
58	19.000	21.600	21.600	22.700	24.900	24.700	25.000	25.300	25.700	26.385	27.202	31.774	36.691	42.210
60-67	23.400	23.600	19.200	19.400	19.300	19.400	19.500	19.700	20.000	20.500	21.000	23.500	25.500	27.000
70	5.100	5.200	5.800	6.100	6.500	6.500	6.500	6.600	6.700	6.800	6.800	7.448	8.235	9.069
72	3.000	3.800	3.600	3.600	3.800	3.800	3.800	3.800	3.797	3.842	3.888	4.139	4.357	4.567
73	11.000	12.100	12.800	14.500	15.500	15.700	15.900	16.100	16.300	16.600	17.000	19.800	22.807	26.614
76	1.000	1.100	1.000	1.100	1.200	1.116	1.128	1.141	1.153	1.166	1.179	1.249	1.308	1.364
80	15.500	17.900	19.100	19.800	21.000	21.300	21.500	21.700	22.000	22.300	22.670	25.601	28.586	31.787
81	2.100	2.400	2.500	2.700	2.900	2.900	2.900	3.000	3.100	3.200	3.300	3.900	4.500	5.083
83	3.400	4.000	4.100	4.500	4.800	4.800	4.800	4.900	5.000	5.000	5.100	5.702	6.397	7.149
89	4.800	3.900	3.900	4.100	4.400	4.100	4.194	4.291	4.389	4.490	4.593	5.161	5.735	6.346
75,78+	10.300	10.800	11.000	11.400	12.100	12.100	12.100	12.200	12.300	12.400	12.400	13.000	13.554	14.207
82	3.800	3.900	4.100	4.300	4.400	4.400	4.450	4.470	4.500	4.550	4.600	4.800	5.000	5.200
941	31.100	32.300	33.400	34.500	35.600	35.700	35.900	36.100	36.300	36.500	36.700	38.300	39.800	41.500
90-99	26.400	26.100	27.700	28.500	29.400	29.300	29.300	29.200	29.100	29.200	29.300	30.253	31.530	32.724
Const	17.400	15.100	13.600	14.500	16.200	15.500	15.300	15.497	15.728	15.963	16.201	17.246	18.153	19.028
Agric	69.100	65.400	64.800	64.155	63.500	62.556	62.104	61.654	61.208	60.766	60.326	58.644	56.744	55.138
Mining	4.700	3.800	2.600	3.300	3.700	3.000	2.959	2.918	2.878	2.839	2.800	2.700	2.700	2.700
Fd Gvt	13.000	11.800	12.200	12.700	12.600	12.400	11.860	11.820	11.780	11.740	11.700	12.200	12.600	13.100
SUBTOT	345.800	346.800	344.000	354.855	369.700	365.972	364.995	366.491	368.685	371.778	375.373	400.006	424.387	450.525
TOTAL	400.275	401.425	398.200	412.855	429.450	421.656	419.849	420.890	422.639	425.402	428.672	452.562	476.674	502.937

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDLO SCENARIO – IDAHO — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	262.386	280.726	282.438	282.219	285.575	290.815	294.416	299.185	302.013	305.501	310.004	328.598	345.316	360.661
MF	25.070	29.289	29.978	30.128	30.937	32.101	32.963	34.047	34.772	35.624	36.670	41.215	45.492	49.587
MO	36.714	43.986	44.584	44.439	45.631	47.504	48.725	50.354	51.217	52.295	53.722	58.912	62.909	66.465
TOTAL	324.170	354.000	357.000	356.786	362.143	370.420	376.104	383.586	388.002	393.421	400.396	428.725	453.716	476.713
POPUL	944.000	1004.000	998.000	999.000	1014.000	1033.472	1041.809	1054.861	1059.246	1066.170	1077.064	1114.684	1156.976	1206.084
HHLDS	324.170	354.000	357.000	356.786	362.143	370.420	376.104	383.586	388.002	393.421	400.396	428.725	453.716	476.713
PCI	8611.20	8400.50	8563.10	8841.00	9150.40	9287.70	9427.00	9568.40	9711.90	9857.60	10005.40	10778.70	11611.70	12509.10

MANUFACTURING EMPLOYMENT (1000'S)

MEDLO SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	0.700	0.465	0.525	0.550	0.550	0.500	0.490	0.479	0.469	0.460	0.450	0.450	0.400	0.400
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.025	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.075	0.075	0.075
25	0.000	0.140	0.150	0.150	0.150	0.100	0.108	0.118	0.128	0.138	0.150	0.150	0.150	0.150
27	0.750	0.700	0.725	0.750	0.750	0.700	0.719	0.738	0.758	0.779	0.800	0.900	0.900	0.900
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.025	0.025	0.010	0.010	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
31	0.000	0.025	0.030	0.010	0.010	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
32	0.400	0.325	0.280	0.290	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
33XX	1.000	0.150	0.050	0.050	0.050	0.100	0.108	0.118	0.128	0.138	0.150	0.150	0.150	0.150
34	0.150	0.250	0.275	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
35	0.050	0.225	0.325	0.350	0.350	0.250	0.259	0.269	0.279	0.289	0.300	0.350	0.400	0.425
36	0.050	0.075	0.075	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.204	0.225
37	0.100	0.075	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
38	0.100	0.125	0.120	0.130	0.140	0.150	0.159	0.168	0.178	0.189	0.200	0.225	0.253	0.275
39	0.150	0.175	0.300	0.650	0.650	0.600	0.550	0.500	0.450	0.400	0.400	0.350	0.300	0.250
2421	4.500	4.000	4.150	3.900	3.939	3.397	3.459	3.521	3.511	3.569	3.628	3.706	3.932	3.957
2436	1.000	0.800	0.800	0.800	0.769	0.593	0.539	0.486	0.470	0.478	0.485	0.502	0.513	0.523
24XX	2.700	2.100	2.500	2.500	2.460	2.429	2.398	2.367	2.336	2.306	2.276	2.134	2.000	1.874
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2631	0.550	0.750	0.750	0.750	0.741	0.732	0.724	0.715	0.707	0.699	0.691	0.653	0.616	0.579
26XX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	0.200	0.190	0.180	0.180	0.176	0.174	0.173	0.171	0.169	0.168	0.166	0.158	0.150	0.143
28XX	0.100	0.050	0.050	0.100	0.099	0.099	0.098	0.098	0.097	0.097	0.096	0.094	0.092	0.089
3334	1.250	0.850	0.750	0.800	0.800	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
SUBTOT	13.775	11.545	12.160	12.470	12.445	11.274	11.241	11.216	11.159	11.197	11.292	11.372	11.435	11.316

NON-MANUFACTURING EMPLOYMENT (1000'S)

MEDLO SCENARIO – WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	7.500	6.400	6.650	6.700	6.812	6.818	6.866	6.913	6.962	7.010	7.059	7.330	7.526	7.698
50-51	3.800	3.400	3.275	3.375	3.386	3.429	3.494	3.561	3.629	3.698	3.768	4.152	4.524	4.909
52,53+	8.000	8.200	8.650	8.700	8.700	8.700	8.808	8.918	9.028	9.140	9.254	9.899	10.471	11.030
54	2.900	3.000	2.825	2.800	2.700	2.700	2.726	2.752	2.778	2.804	2.831	3.028	3.203	3.374
58	7.500	7.500	7.475	7.500	7.500	7.500	7.717	7.940	8.170	8.407	8.650	10.103	11.667	13.422
60-67	3.700	3.400	3.650	3.650	3.600	3.600	3.646	3.693	3.740	3.788	3.837	4.197	4.539	4.889
70	2.500	2.700	2.900	2.850	2.889	2.935	3.000	3.065	3.133	3.202	3.272	3.659	4.045	4.455
72	0.800	0.900	0.875	0.900	0.911	0.916	0.927	0.938	0.949	0.961	0.972	1.035	1.089	1.142
73	1.000	1.700	2.175	2.200	2.218	2.280	2.358	2.438	2.521	2.606	2.695	3.193	3.742	4.366
76	0.300	0.300	0.350	0.350	0.303	0.304	0.307	0.311	0.314	0.318	0.321	0.341	0.357	0.372
80	6.400	7.650	8.300	8.400	8.495	8.646	8.853	9.065	9.283	9.505	9.733	10.991	12.272	13.647
81	0.500	0.600	0.700	0.700	0.633	0.650	0.671	0.693	0.716	0.740	0.764	0.901	1.051	1.220
83	1.400	1.200	1.525	1.500	1.400	1.300	1.326	1.352	1.379	1.407	1.435	1.629	1.828	2.043
89	1.000	0.700	0.800	0.800	0.724	0.736	0.753	0.770	0.788	0.806	0.824	0.926	1.029	1.139
75,78+	3.300	3.325	3.450	3.500	3.439	3.359	3.399	3.440	3.481	3.522	3.564	3.794	3.994	4.186
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
941	8.900	9.775	9.500	9.400	9.776	9.814	9.912	10.010	10.110	10.210	10.312	10.869	11.327	11.756
90-99	8.300	7.400	7.400	7.400	7.463	7.444	7.609	7.777	7.949	8.125	8.305	8.964	9.342	9.696
Const	4.800	3.800	2.800	3.050	2.600	2.600	2.700	2.808	2.945	3.089	3.240	3.449	3.631	3.806
Agric	7.500	7.300	7.300	7.300	7.264	7.249	7.204	7.160	7.116	7.072	7.028	6.774	6.676	6.575
Mining	3.100	1.875	2.075	2.175	2.000	2.000	2.020	2.039	2.059	2.080	2.100	2.300	2.300	2.300
Fd Gvt	5.600	4.850	4.900	4.950	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.600	4.800	5.000
SUBTOT	88.800	85.975	87.575	88.200	87.313	87.480	88.796	90.143	91.550	92.990	94.464	102.134	109.413	117.025
TOTAL	102.575	97.520	99.735	100.670	99.758	98.754	100.037	101.359	102.709	104.187	105.756	113.506	120.848	128.341

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDLO SCENARIO – WESTERN MONTANA — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	82.313	84.905	85.280	85.525	86.974	87.134	88.203	89.581	90.532	92.077	93.437	100.631	106.215	111.093
MF	8.950	10.092	10.393	10.551	11.055	11.210	11.615	12.106	12.483	13.024	13.516	16.112	18.311	20.354
MO	15.138	17.403	17.827	18.135	18.958	19.078	19.671	20.415	20.917	21.721	22.412	25.876	28.268	30.305
TOTAL	106.400	112.400	113.500	114.211	116.988	117.422	119.490	122.103	123.932	126.822	129.365	142.619	152.794	161.752
POPUL	294.500	303.900	303.500	303.800	308.849	307.645	310.675	313.803	316.027	319.591	323.412	340.860	357.538	375.265
HHLDS	106.400	112.400	113.500	114.211	116.988	117.422	119.490	122.103	123.932	126.822	129.365	142.619	152.794	161.752
PCI	7793.00	7983.00	8527.20	8697.80	8871.70	9049.10	9991.00	9991.00	9991.00	9991.00	9991.00	11030.90	12179.00	13446.70

MANUFACTURING EMPLOYMENT (1000'S) MEDLO SCENARIO – REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	73.900	71.965	72.925	75.150	75.450	74.600	73.490	72.679	71.869	70.960	70.250	67.450	65.600	64.200
22	3.000	2.550	3.100	3.200	3.100	2.550	2.450	2.450	2.450	2.450	2.450	2.450	2.450	2.450
23	10.025	8.900	8.250	9.150	9.250	8.450	8.197	7.846	7.796	7.747	7.700	8.075	8.275	8.475
25	6.150	7.240	7.050	7.750	7.950	7.200	7.008	6.858	6.888	6.918	6.950	7.000	7.050	7.150
27	29.650	34.000	37.925	40.150	41.250	41.000	40.739	40.978	41.118	41.259	41.400	43.500	45.400	47.200
29	2.800	2.225	2.350	2.550	2.700	2.250	2.150	2.050	2.050	1.950	1.950	1.750	1.650	1.550
30	6.900	8.575	10.125	11.010	11.510	10.325	9.664	9.604	9.544	9.584	9.625	9.725	9.825	9.925
31	0.700	0.925	1.080	1.160	1.260	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100
32	13.100	10.725	11.580	12.790	13.300	11.900	10.300	10.300	10.300	10.300	10.300	10.300	10.300	10.300
33XX	20.800	15.350	15.550	16.700	18.150	16.350	15.938	16.026	16.116	16.208	16.300	16.700	16.900	16.900
34	26.750	22.850	22.975	24.150	25.150	23.850	23.409	23.109	23.189	23.269	23.350	23.800	24.000	24.250
35	37.750	38.625	37.525	41.050	44.450	42.950	40.959	40.062	40.172	40.384	40.600	43.050	45.500	47.725
36	22.550	28.875	30.175	33.200	35.900	35.000	34.308	33.518	33.528	33.536	33.750	35.075	36.504	38.125
37	109.450	99.825	118.150	128.550	140.200	141.500	136.377	121.256	116.136	111.017	105.900	101.300	97.000	92.900
38	25.950	25.725	23.320	23.930	23.790	22.350	22.466	22.634	22.804	22.976	23.150	24.625	26.203	27.975
39	7.350	7.400	8.600	10.150	10.950	9.100	8.570	8.340	8.310	8.280	8.300	8.250	8.200	8.150
2421	52.427	44.300	47.250	46.700	46.039	36.313	36.151	36.015	35.431	35.242	35.064	35.013	36.175	36.004
2436	26.582	20.900	21.900	22.000	21.569	15.293	14.952	14.610	14.172	13.603	13.048	11.230	10.223	10.061
24XX	61.066	57.100	60.100	62.400	62.960	58.560	57.586	56.844	56.113	55.391	54.678	51.260	48.045	45.021
2611	2.974	2.100	2.050	2.100	2.100	2.016	1.982	1.950	1.917	1.886	1.854	1.706	1.570	1.442
2621	14.143	13.410	12.650	12.800	13.100	12.642	12.547	12.451	12.355	12.254	12.156	11.761	11.309	10.807
2631	5.037	5.000	4.900	4.850	4.941	4.841	4.785	4.729	4.673	4.619	4.565	4.318	4.072	3.825
26XX	7.896	7.815	8.750	8.600	8.900	8.462	8.475	8.487	8.500	8.513	8.525	8.473	8.474	8.145
2812	0.763	0.700	0.700	0.700	0.700	0.701	0.701	0.702	0.703	0.703	0.704	0.699	0.691	0.715
2819	6.567	8.890	8.780	7.880	7.476	5.530	5.419	5.309	5.199	5.089	4.980	4.932	4.887	4.844
28XX	7.470	7.650	7.650	8.000	8.199	7.903	7.863	7.824	7.786	7.747	7.709	7.523	7.339	7.156
3334	10.350	7.250	5.850	7.300	7.300	5.500	5.100	4.780	4.720	4.660	4.600	4.500	4.500	4.500
SUBTOT	592.100	560.870	591.260	623.970	647.645	608.235	592.687	572.512	564.938	557.645	550.957	545.565	543.241	540.894

NON-MANUFACTURING EMPLOYMENT (1000'S) MEDLO SCENARIO – REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	179.500	176.500	181.550	187.300	195.012	191.118	185.441	185.864	186.489	187.114	187.741	192.246	195.627	198.541
50-51	194.000	195.700	203.375	211.475	223.486	218.344	218.709	221.200	223.965	227.514	231.122	253.861	275.689	298.164
52,53+	275.100	279.300	300.050	310.400	326.000	320.700	316.487	318.356	320.235	322.679	325.426	345.716	363.232	380.786
54	75.100	92.400	105.125	110.100	115.200	112.800	109.585	109.955	110.527	111.200	111.875	117.261	123.084	128.990
58	195.500	218.400	233.275	243.100	255.000	257.200	260.798	266.685	274.373	282.568	291.120	339.025	390.355	447.723
60-67	188.900	193.400	202.450	206.450	212.200	211.041	210.946	213.404	216.358	219.948	223.574	244.774	263.885	281.744
70	40.200	42.600	45.800	48.750	51.089	50.536	51.000	51.296	52.005	52.876	53.854	59.879	65.998	72.448
72	29.600	35.000	36.075	37.700	39.411	39.216	39.281	39.542	39.802	40.114	40.427	42.914	45.045	47.086
73	89.800	109.800	138.475	149.300	156.918	156.480	156.558	158.538	161.621	164.906	168.795	195.993	222.949	254.553
76	9.800	10.500	11.350	12.150	12.703	12.381	12.296	12.383	12.468	12.656	12.744	13.327	13.836	14.324
80	179.800	212.350	231.100	239.100	253.495	257.591	260.353	263.765	267.598	271.980	276.289	308.146	342.450	379.636
81	17.400	22.700	25.700	27.600	28.833	29.506	30.078	30.658	31.146	31.742	32.415	38.115	44.255	51.092
83	31.800	41.800	47.525	51.000	53.300	53.100	53.526	54.052	54.779	55.835	56.900	63.976	71.162	78.941
89	36.400	36.000	39.100	41.800	43.724	43.777	44.551	45.233	45.923	46.622	47.329	52.802	58.503	64.553
75,78+	122.600	141.125	150.850	161.300	168.439	168.956	170.094	171.135	172.178	173.122	173.969	182.715	190.143	198.694
82	19.800	24.200	27.500	29.300	30.100	30.300	30.550	30.870	31.100	31.450	31.800	33.400	34.800	35.900
941	279.700	280.275	291.400	298.200	306.476	309.014	313.512	318.393	321.558	324.838	328.138	345.102	357.624	369.919
90-99	230.300	236.100	248.300	256.800	263.663	264.744	265.909	265.977	266.849	267.925	269.505	277.625	287.973	296.634
Const	161.300	132.600	140.600	152.550	166.400	157.100	149.000	144.898	146.707	148.545	150.408	159.723	167.720	175.388
Agric	292.200	286.600	286.200	285.055	284.064	281.601	280.104	278.615	277.134	275.664	274.200	266.800	259.400	252.300
Mining	13.300	9.875	9.075	10.175	10.700	9.300	9.279	9.257	9.237	9.219	9.200	9.300	9.300	9.300
Fd Gvt	117.300	116.350	118.300	120.950	121.600	120.400	116.359	116.719	116.579	116.439	116.300	119.100	123.400	127.900
SUBTOT	2779.400	2893.575	3073.175	3190.555	3317.813	3295.205	3284.416	3306.795	3338.632	3374.956	3413.131	3661.801	3906.430	4164.616
TOTAL	3371.500	3454.446	3664.435	3814.525	3965.459	3903.440	3877.104	3879.308	3903.570	3932.601	3964.089	4207.366	4449.671	4705.511

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — MEDLO SCENARIO – REGION — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	2304.022	2428.959	2483.225	2518.497	2581.454	2624.629	2665.684	2698.396	2723.958	2747.573	2775.663	2900.507	3035.968	3150.331
MF	427.732	492.379	522.134	540.502	567.466	588.297	608.253	625.061	638.792	651.645	666.022	733.232	806.373	874.772
MO	230.919	280.062	300.141	312.694	332.621	347.425	361.437	372.684	381.183	389.005	398.076	435.355	472.390	502.350
TOTAL	2962.673	3201.400	3305.500	3371.693	3481.541	3560.351	3635.374	3696.141	3743.934	3788.223	3839.761	4069.094	4314.730	4527.454
POPUL	8003.820	8389.700	8529.500	8662.800	8903.849	9060.903	9185.591	9271.567	9321.229	9364.433	9422.813	9735.717	10107.47	10515.046
HHLDS	2962.673	3201.400	3305.500	3371.693	3481.541	3560.351	3635.374	3696.141	3743.933	3788.223	3839.761	4069.094	4314.730	4527.454
PCI	10391.70	10444.58	10842.06	11072.24	11328.62	11494.35	11688.65	11852.01	12016.97	12182.74	12349.92	13265.93	14251.29	15313.91

MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO - WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	31.900	31.100	32.300	33.100	34.000	33.000	32.000	32.000	31.500	31.000	30.500	28.000	26.000	24.100
22	1.000	0.900	1.200	1.300	1.300	1.000	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.700
23	6.500	6.200	5.400	6.100	6.300	5.800	5.400	5.000	5.000	4.800	4.500	4.500	4.500	4.500
25	3.300	3.800	3.800	4.200	4.300	3.900	3.700	3.600	3.500	3.420	3.400	3.300	3.200	3.100
27	15.800	17.600	20.100	21.400	22.100	21.000	20.000	20.100	20.200	20.300	20.400	20.500	20.600	20.700
29	2.100	1.800	1.800	1.900	2.000	1.700	1.600	1.500	1.400	1.400	1.300	1.200	1.100	1.000
30	3.500	4.500	5.200	5.800	6.200	5.500	5.200	5.000	4.800	4.600	4.600	4.600	4.600	4.600
31	0.400	0.400	0.400	0.500	0.600	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
32	6.900	6.400	6.900	7.500	7.500	6.800	6.300	6.000	5.900	5.800	5.700	5.500	5.400	5.200
33XX	9.000	6.900	6.900	7.200	7.700	7.200	6.600	6.295	6.195	6.097	6.000	6.000	6.000	6.000
34	11.800	9.700	10.500	10.900	11.300	10.500	10.000	9.600	9.600	9.600	9.600	9.600	9.600	9.600
35	15.000	17.100	16.200	18.100	19.500	18.000	16.500	15.480	15.520	15.560	15.600	16.200	17.500	17.900
36	11.200	12.100	13.200	13.500	14.300	13.300	12.500	12.000	11.820	11.860	11.900	12.200	12.500	12.500
37	98.350	89.600	106.200	116.000	128.000	125.000	105.000	90.000	85.000	81.087	79.000	74.400	70.200	65.700
38	6.400	10.700	10.800	11.500	11.800	10.000	10.040	10.080	10.120	10.160	10.200	10.600	10.900	10.900
39	4.600	4.500	4.800	5.300	5.900	4.400	4.359	4.319	4.279	4.239	4.200	4.000	3.800	3.600
2421	16.027	13.400	14.500	14.700	14.700	10.300	10.196	10.092	9.894	9.772	9.661	9.580	9.811	9.743
2436	4.982	4.200	3.900	4.100	4.100	2.715	2.659	2.608	2.541	2.449	2.362	2.058	1.912	1.911
24XX	25.991	20.700	22.000	22.600	23.300	20.408	20.024	19.648	19.279	18.916	18.561	17.206	15.938	14.753
2611	2.974	2.100	2.050	2.100	2.100	1.971	1.933	1.895	1.858	1.821	1.786	1.648	1.522	1.402
2621	8.818	9.000	8.400	8.600	8.700	8.128	8.047	7.973	7.891	7.816	7.740	7.549	7.316	7.050
2631	1.637	1.200	1.200	1.200	1.200	1.133	1.112	1.091	1.071	1.051	1.031	0.957	0.888	0.822
26XX	4.171	4.400	4.950	5.100	5.300	4.838	4.789	4.741	4.694	4.647	4.600	4.335	4.315	4.281
2812	0.513	0.500	0.500	0.500	0.500	0.484	0.481	0.478	0.474	0.471	0.468	0.474	0.477	0.445
2819	5.300	7.700	7.700	6.800	6.400	3.800	3.740	3.680	3.620	3.560	3.500	3.000	3.000	3.000
28XX	2.887	3.100	3.300	3.300	3.300	3.194	3.099	3.068	3.037	3.007	2.977	2.885	2.795	2.707
3334	7.700	5.800	4.400	5.600	5.600	4.000	3.200	2.920	2.880	2.840	2.800	2.800	2.800	2.800
SUBTOT	308.750	295.400	318.600	338.900	358.000	328.471	299.679	280.368	273.272	267.472	263.585	254.292	247.873	239.415

NON-MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO - WASHINGTON 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	91.400	93.600	98.500	101.500	105.700	100.000	96.000	94.576	94.272	93.968	93.666	93.478	92.546	90.801
50-51	100.500	105.700	111.400	115.500	120.700	115.000	114.000	113.306	114.410	115.524	116.649	124.185	131.167	137.312
52,53+	141.000	146.900	161.200	167.200	175.100	165.000	160.000	159.722	160.479	161.240	162.004	168.253	173.362	177.032
54	38.200	49.200	57.400	59.500	62.300	58.000	55.000	53.508	53.761	54.016	54.272	56.365	58.077	59.306
58	101.600	118.900	128.200	133.000	139.200	137.000	135.608	138.017	140.468	142.962	145.501	161.148	177.050	192.751
60-67	91.800	99.600	107.500	109.800	114.300	111.000	107.366	108.090	108.818	109.552	110.290	115.685	120.387	124.165
70	17.800	20.100	21.500	23.000	24.300	23.000	22.577	22.729	22.883	23.037	23.192	24.326	25.315	26.110
72	16.000	19.900	20.800	22.200	23.400	23.000	22.269	22.392	22.517	22.641	22.767	23.739	24.557	25.177
73	52.900	61.000	78.000	83.400	87.900	84.000	80.000	78.000	76.000	76.092	77.519	86.277	95.257	104.215
76	5.500	5.600	5.900	6.300	6.600	6.157	6.191	6.226	6.260	6.295	6.330	6.600	6.828	7.000
80	95.800	117.400	129.300	133.500	140.800	138.000	136.000	134.679	136.395	138.132	139.892	151.148	162.028	172.104
81	9.200	12.400	14.400	15.400	16.200	15.500	15.000	14.792	15.069	15.352	15.640	17.407	19.218	21.026
83	15.600	22.600	25.000	26.700	28.200	27.000	26.000	26.201	26.509	26.820	27.135	29.175	31.121	32.893
89	19.500	21.100	23.100	24.700	26.000	25.000	24.000	24.199	24.435	24.673	24.913	26.523	28.014	29.326
75,78+	66.800	83.500	89.000	95.100	100.300	98.000	96.000	96.000	96.000	95.832	96.478	101.198	105.311	108.616
82	8.900	12.000	13.100	13.900	14.300	14.200	14.200	14.300	14.400	14.500	14.600	14.800	15.000	15.200
941	145.500	143.600	151.100	155.000	159.500	160.000	160.100	160.248	160.629	161.012	161.395	165.633	168.636	170.159
90-99	117.400	129.100	135.500	140.300	144.400	142.000	140.000	136.000	134.667	134.988	135.309	138.862	141.380	142.656
Const	92.600	80.600	88.900	96.000	104.700	90.000	87.598	88.189	88.783	89.382	89.984	94.386	98.223	101.305
Agric	119.300	115.100	114.400	113.300	112.300	110.163	109.591	109.022	108.456	107.892	107.332	103.070	99.438	95.625
Mining	3.200	2.700	3.000	3.300	3.400	2.700	2.700	2.700	2.700	2.700	2.700	2.700	2.700	2.700
Fd Gvt	67.900	70.100	70.600	71.600	72.700	70.000	68.000	66.000	65.032	64.262	63.500	65.100	66.700	68.300
SUBTOT	1418.400	1530.700	1647.800	1710.200	1782.300	1714.720	1678.200	1668.896	1672.943	1680.872	1691.068	1770.058	1842.315	1903.779
TOTAL	1727.150	1826.100	1966.400	2049.100	2140.300	2043.191	1977.879	1949.264	1946.216	1948.344	1954.653	2024.350	2090.188	2143.194

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — LOW SCENARIO - WASHINGTON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	1193.211	1266.263	1296.121	1312.643	1334.749	1346.065	1356.959	1358.853	1359.003	1352.588	1348.041	1341.692	1334.587	1328.889
MF	250.130	298.560	324.707	342.468	364.427	378.081	391.512	398.031	403.298	403.553	405.369	428.802	454.204	483.132
MO	97.169	126.178	140.172	149.186	160.589	167.138	173.442	175.683	177.088	175.514	174.712	177.195	178.630	181.278
TOTAL	1540.510	1691.000	1761.000	1804.297	1859.766	1891.283	1921.913	1932.566	1939.389	1931.654	1928.122	1947.689	1967.421	1993.298
POPUL	4132.160	4406.000	4538.000	4619.000	4761.000	4841.686	4920.097	4947.370	4964.836	4945.035	4935.991	4986.083	5036.598	5102.844
HHLDS	1540.510	1691.000	1761.000	1804.297	1859.766	1891.283	1921.913	1932.566	1939.389	1931.654	1928.122	1947.689	1967.421	1993.298
PCI	10784.10	10925.00	11338.90	11529.50	11794.70	11912.60	12031.80	12152.10	12273.60	12396.30	12520.30	13159.00	13830.20	14535.70

MANUFACTURING EMPLOYMENT (1000'S)

LOW SCENARIO - OREGON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	24.300	23.800	24.000	24.100	24.200	23.100	22.076	21.853	21.633	21.416	21.200	20.000	18.800	17.900
22	2.000	1.600	1.800	1.800	1.700	1.300	1.279	1.259	1.239	1.219	1.200	1.100	1.000	1.000
23	3.200	2.400	2.500	2.700	2.600	2.000	1.980	1.959	1.939	1.920	1.900	1.800	1.700	1.600
25	2.600	2.700	2.500	2.700	2.800	2.200	2.200	2.200	2.200	2.200	2.200	2.200	2.200	2.200
27	10.000	11.500	12.800	13.500	13.700	12.500	11.356	11.215	11.075	10.937	10.800	10.800	10.800	10.800
29	0.600	0.400	0.500	0.600	0.600	0.400	0.378	0.357	0.337	0.318	0.300	0.200	0.200	0.200
30	2.400	3.200	3.800	4.500	4.500	3.800	3.620	3.640	3.660	3.680	3.700	3.800	3.800	3.700
31	0.300	0.400	0.500	0.500	0.500	0.400	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
32	4.500	3.100	3.600	4.100	4.500	3.100	2.880	2.860	2.840	2.820	2.800	2.800	2.700	2.600
33XX	9.600	8.200	8.600	9.300	10.250	7.800	7.739	7.679	7.619	7.559	7.500	7.200	7.000	7.000
34	12.700	11.000	10.200	11.000	11.300	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
35	17.700	15.500	15.800	17.100	18.500	16.500	15.500	14.539	14.459	14.379	14.300	15.000	15.400	15.500
36	9.800	13.900	13.600	15.300	16.800	15.500	14.000	13.500	13.120	13.160	13.200	13.400	13.600	13.800
37	10.300	9.200	10.800	11.200	10.800	10.000	9.898	9.797	9.697	9.598	9.500	9.000	8.500	8.500
38	19.300	14.600	12.100	11.900	11.400	9.600	9.640	9.680	9.720	9.760	9.800	10.100	10.300	10.300
39	2.200	2.400	3.200	3.800	4.000	3.000	2.480	2.460	2.440	2.420	2.400	2.300	2.200	2.100
2421	23.800	20.500	22.000	21.500	20.800	14.190	14.034	13.865	13.572	13.407	13.230	13.082	13.378	13.237
2436	20.100	15.500	16.800	16.700	16.300	10.054	9.899	9.747	9.461	9.058	8.665	7.421	6.734	6.651
24XX	25.600	27.600	29.200	30.500	29.900	27.605	27.086	26.577	26.077	25.587	25.106	23.273	21.559	19.956
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	5.100	4.160	4.000	3.900	4.100	3.993	3.953	3.916	3.875	3.837	3.800	3.706	3.592	3.464
2631	2.000	2.100	2.000	1.900	2.000	1.910	1.874	1.840	1.805	1.772	1.739	1.614	1.497	1.386
26XX	3.300	2.840	3.200	2.900	3.000	2.770	2.712	2.698	2.684	2.671	2.657	2.560	2.467	2.379
2812	0.250	0.200	0.200	0.200	0.200	0.194	0.192	0.191	0.190	0.188	0.187	0.185	0.182	0.178
2819	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28XX	2.050	1.900	1.900	2.000	2.100	1.906	1.779	1.763	1.743	1.726	1.709	1.656	1.604	1.554
3334	1.400	0.600	0.700	0.900	0.900	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
SUBTOT	215.100	199.300	206.300	214.600	217.450	184.221	177.255	174.295	172.085	170.333	168.591	163.898	159.913	156.705

NON-MANUFACTURING EMPLOYMENT (1000'S)

LOW SCENARIO - OREGON

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	60.500	57.300	58.500	60.500	63.400	61.000	59.000	58.000	58.000	58.000	58.000	58.000	58.000	58.000
50-51	67.400	65.800	68.200	72.000	77.700	74.000	72.000	70.855	71.545	72.242	72.945	77.658	82.024	85.866
52,53+	96.200	92.900	98.700	102.000	107.200	101.000	97.000	98.114	98.579	99.047	99.516	103.354	106.492	108.747
54	24.600	29.500	33.800	36.500	38.100	37.100	36.000	36.000	36.100	36.100	36.100	36.500	37.000	37.357
58	67.400	70.400	76.000	79.900	83.400	80.000	80.500	81.000	81.849	83.303	84.782	93.899	103.165	112.314
60-67	70.000	66.800	72.100	73.600	75.000	71.464	71.945	72.430	72.918	73.409	73.904	77.520	80.671	83.202
70	14.800	14.600	15.600	16.800	17.400	16.400	16.300	16.200	16.300	16.400	16.500	17.500	18.900	20.000
72	9.800	10.400	10.800	11.000	11.300	11.000	10.900	10.845	10.905	10.965	11.026	11.497	11.893	12.193
73	24.900	35.000	45.500	49.200	51.300	48.000	45.000	45.800	46.800	47.900	49.000	51.000	56.959	62.316
76	3.000	3.500	4.100	4.400	4.600	4.400	4.200	4.117	4.140	4.163	4.186	4.365	4.515	4.629
80	62.100	69.400	74.400	77.400	83.200	83.000	83.000	83.500	84.000	84.500	85.000	89.000	93.536	99.352
81	5.600	7.300	8.100	8.800	9.100	9.000	9.049	9.218	9.391	9.568	9.747	10.848	11.977	13.103
83	11.400	14.000	16.900	18.300	18.900	18.000	18.100	18.300	18.400	18.500	18.600	19.500	20.400	21.322
89	11.100	10.300	11.300	12.200	12.600	12.069	12.186	12.305	12.425	12.546	12.668	13.486	14.244	14.912
75,78+	42.200	43.500	47.400	51.300	52.600	50.633	50.974	51.318	51.663	52.012	52.362	54.923	57.156	58.949
82	7.100	8.300	10.300	11.100	11.400	10.800	10.900	11.000	11.100	11.100	11.200	11.600	11.800	12.000
941	94.200	94.600	97.400	99.300	101.600	101.000	101.800	102.600	103.400	104.300	105.100	108.800	109.600	110.000
90-99	78.200	73.500	77.700	80.600	82.400	80.000	76.235	76.417	76.599	76.781	76.964	78.985	80.417	81.143
Const	46.500	33.100	35.300	39.000	42.900	32.026	32.704	33.396	34.102	34.824	35.561	37.300	38.816	40.035
Agric	96.300	98.800	99.700	100.300	101.000	100.580	99.781	98.988	98.201	97.421	96.647	93.708	90.121	86.728
Mining	2.300	1.500	1.400	1.400	1.600	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
Fd Gvt	30.800	29.600	30.600	31.700	31.800	30.000	28.000	26.848	26.529	26.212	25.900	26.600	27.200	27.900
SUBTOT	926.400	930.100	993.800	1037.300	1078.500	1032.672	1016.774	1018.451	1024.146	1030.493	1036.908	1077.243	1116.086	1151.268
TOTAL	1141.500	1129.400	1200.100	1251.900	1295.950	1216.893	1194.029	1192.746	1196.231	1200.826	1205.499	1241.141	1275.999	1307.973

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — LOW SCENARIO – OREGON — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	766.113	797.066	812.147	822.242	839.320	844.210	846.225	844.849	843.002	841.706	840.453	839.592	839.234	839.174
MF	143.583	154.439	162.893	170.155	178.701	183.176	186.190	187.475	188.555	189.966	191.440	202.248	214.288	227.366
MO	81.898	92.495	98.960	104.003	109.979	112.561	113.856	113.643	113.170	112.874	112.539	112.442	112.050	112.611
TOTAL	991.593	1044.000	1074.000	1096.400	1128.000	1139.947	1146.271	1145.968	1144.728	1144.546	1144.432	1154.282	1165.573	1179.151
POPUL	2633.160	2675.800	2690.000	2741.000	2820.000	2849.866	2870.261	2874.086	2875.556	2879.679	2883.970	2920.333	2960.555	3006.835
HHLDS	991.593	1044.000	1074.000	1096.400	1128.000	1139.947	1146.271	1145.968	1144.728	1144.546	1144.432	1154.282	1165.573	1179.151
PCI	9897.80	9845.90	10201.80	10450.20	10649.00	10776.80	10906.10	11037.00	11169.40	11303.50	11439.10	12142.10	12888.30	13680.40

MANUFACTURING EMPLOYMENT (1000'S)

LOW SCENARIO - IDAHO

2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	17.000	16.600	16.100	17.400	16.700	16.400	16.000	15.000	14.715	14.557	14.400	13.600	12.800	12.200
22	0.000	0.050	0.100	0.100	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
23	0.300	0.250	0.300	0.300	0.300	0.100	0.087	0.076	0.066	0.057	0.050	0.050	0.050	0.050
25	0.250	0.600	0.600	0.700	0.700	0.400	0.378	0.357	0.337	0.318	0.300	0.300	0.300	0.300
27	3.100	4.200	4.300	4.500	4.700	4.400	4.400	4.400	4.400	4.400	4.400	4.400	4.400	4.400
29	0.100	0.025	0.050	0.050	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	1.000	0.850	1.100	0.700	0.800	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
31	0.000	0.100	0.150	0.150	0.150	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
32	1.300	0.900	0.800	0.900	1.000	0.700	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
33XX	1.200	0.100	0.000	0.150	0.150	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
34	2.100	1.900	2.000	2.000	2.300	2.100	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900
35	5.000	5.800	5.200	5.500	6.100	5.800	5.300	5.000	5.000	5.000	5.000	5.000	5.000	5.000
36	1.500	2.800	3.300	4.300	4.700	4.000	3.500	3.000	3.000	3.000	3.000	3.000	3.000	3.000
37	0.700	0.950	1.100	1.250	1.300	0.800	0.600	0.600	0.600	0.600	0.600	0.500	0.500	0.500
38	0.150	0.300	0.300	0.400	0.450	0.250	0.250	0.250	0.250	0.250	0.250	0.300	0.300	0.300
39	0.400	0.325	0.300	0.400	0.400	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
2421	8.100	6.400	6.600	6.600	6.600	4.545	4.630	4.709	4.695	4.777	4.853	4.956	5.260	5.293
2436	0.500	0.400	0.400	0.400	0.400	0.229	0.208	0.188	0.183	0.186	0.189	0.197	0.204	0.210
24XX	6.775	6.700	6.400	6.800	7.300	6.400	6.280	6.162	6.046	5.932	5.821	5.396	4.998	4.627
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.225	0.250	0.250	0.300	0.300	0.283	0.280	0.278	0.275	0.272	0.269	0.263	0.255	0.246
2631	0.850	0.950	0.950	1.000	1.000	0.929	0.912	0.895	0.878	0.862	0.846	0.785	0.728	0.675
26XX	0.425	0.575	0.600	0.600	0.600	0.522	0.525	0.528	0.531	0.533	0.536	0.470	0.469	0.436
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	1.067	1.000	0.900	0.900	0.900	0.842	0.832	0.822	0.813	0.803	0.793	0.762	0.731	0.701
28XX	2.433	2.600	2.400	2.600	2.700	2.680	2.660	2.640	2.620	2.600	2.581	2.485	2.394	2.305
3334	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOT	54.475	54.625	54.200	58.000	59.750	52.031	49.992	48.055	47.557	47.297	47.039	45.615	44.538	43.392

NON-MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO – IDAHO 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	20.100	19.200	17.900	18.600	19.100	18.000	17.400	17.379	17.357	17.336	17.315	17.454	17.454	17.297
50-51	22.300	20.800	20.500	20.600	21.700	20.600	19.843	20.149	20.459	20.774	21.094	23.755	25.340	26.783
52,53+	29.900	31.300	31.500	32.500	35.000	33.000	32.000	31.820	32.035	32.251	32.468	34.057	35.441	36.553
54	9.400	10.700	11.100	11.300	12.100	11.800	11.600	11.600	11.600	11.600	11.700	12.001	12.489	12.881
58	19.000	21.600	21.600	22.700	24.900	23.800	23.800	23.800	24.000	24.307	24.787	27.723	30.759	33.817
60-67	23.400	23.600	19.200	19.400	19.300	19.252	19.000	19.000	19.200	19.400	19.600	21.301	22.388	23.321
70	5.100	5.200	5.800	6.100	6.500	6.300	6.100	6.100	6.000	6.000	5.970	6.324	6.646	6.923
72	3.000	3.800	3.600	3.600	3.800	3.597	3.624	3.651	3.679	3.706	3.734	3.933	4.109	4.255
73	11.000	12.100	12.800	14.500	15.500	15.300	15.000	14.500	14.600	14.700	14.800	16.563	18.466	20.402
76	1.000	1.100	1.000	1.100	1.200	1.099	1.107	1.116	1.124	1.132	1.141	1.202	1.255	1.300
80	15.500	17.900	19.100	19.800	21.000	21.000	21.000	21.100	21.300	21.400	21.500	23.500	25.000	26.583
81	2.100	2.400	2.500	2.700	2.900	2.800	2.700	2.706	2.762	2.819	2.878	3.235	3.607	3.985
83	3.400	4.000	4.100	4.500	4.800	4.600	4.400	4.392	4.452	4.512	4.574	4.967	5.351	5.712
89	4.800	3.900	3.900	4.100	4.400	3.946	3.992	4.039	4.087	4.134	4.183	4.497	4.797	5.071
75,78+	10.300	10.800	11.000	11.400	12.100	11.230	11.328	11.427	11.527	11.628	11.730	12.426	13.060	13.604
82	3.800	3.900	4.100	4.300	4.400	4.300	4.320	4.350	4.370	4.400	4.400	4.500	4.700	4.800
941	31.100	32.300	33.400	34.500	35.600	35.000	35.100	35.200	35.300	35.500	35.700	36.700	37.600	38.600
90-99	26.400	26.100	27.700	28.500	29.400	29.000	28.500	28.600	28.700	28.700	28.800	29.200	29.700	30.100
Const	17.400	15.100	13.600	14.500	16.200	15.000	14.500	14.100	14.200	14.300	14.400	15.200	15.900	16.500
Agric	69.100	65.400	64.800	64.155	63.500	62.245	61.684	61.128	60.577	60.031	59.490	57.303	54.884	52.756
Mining	4.700	3.800	2.600	3.300	3.700	2.800	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500
Fd Gvt	13.000	11.800	12.200	12.700	12.600	12.000	11.156	11.015	10.875	10.736	10.600	10.900	11.200	11.400
SUBTOT	345.800	346.800	344.000	354.855	369.700	356.669	350.654	349.672	350.704	351.866	353.364	369.241	382.646	395.143
TOTAL	400.275	401.425	398.200	412.855	429.450	408.700	400.646	397.727	398.261	399.163	400.403	414.856	427.184	438.535

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — LOW SCENARIO - IDAHO — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	262.386	280.726	282.132	281.710	284.354	286.592	284.569	283.065	284.319	286.317	286.946	289.574	292.864	295.864
MF	25.070	29.289	30.147	30.410	31.615	32.703	32.486	32.437	33.247	34.294	34.928	38.060	41.593	45.225
MO	36.714	43.986	44.720	44.665	46.174	47.449	46.518	45.826	46.520	47.566	47.883	48.851	49.874	51.070
TOTAL	324.170	354.000	357.000	356.786	362.143	366.744	363.572	361.328	364.085	368.177	369.757	376.485	384.331	392.158
POPUL	944.000	1004.000	998.000	999.000	1014.000	1026.884	1019.456	1014.610	1023.808	1036.787	1042.715	1069.217	1095.343	1121.573
HHLDS	324.170	354.000	357.000	356.786	362.143	366.744	363.572	361.328	364.085	368.177	369.757	376.485	384.331	392.158
PCI	8611.20	8400.50	8563.10	8841.00	9150.40	9241.90	9334.30	9427.70	9521.90	9617.20	9713.30	10208.80	10729.60	11276.90

MANUFACTURING EMPLOYMENT (1000'S)

LOW SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	0.700	0.465	0.525	0.550	0.550	0.450	0.445	0.440	0.435	0.430	0.425	0.400	0.400	0.400
22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	0.025	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.075	0.075	0.075
25	0.000	0.140	0.150	0.150	0.150	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
27	0.750	0.700	0.725	0.750	0.750	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.025	0.025	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
31	0.000	0.025	0.030	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
32	0.400	0.325	0.280	0.290	0.300	0.250	0.239	0.229	0.219	0.209	0.200	0.200	0.200	0.200
33XX	1.000	0.150	0.050	0.050	0.050	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
34	0.150	0.250	0.275	0.250	0.250	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
35	0.050	0.225	0.325	0.350	0.350	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
36	0.050	0.075	0.075	0.100	0.100	0.100	0.108	0.118	0.128	0.138	0.150	0.175	0.204	0.225
37	0.100	0.075	0.050	0.100	0.100	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
38	0.100	0.125	0.120	0.130	0.140	0.150	0.159	0.168	0.178	0.189	0.200	0.225	0.253	0.275
39	0.150	0.175	0.300	0.650	0.650	0.550	0.450	0.350	0.300	0.250	0.150	0.100	0.100	0.100
2421	4.500	4.000	4.150	3.900	3.939	2.999	3.052	3.106	3.097	3.150	3.201	3.269	3.468	3.491
2436	1.000	0.800	0.800	0.800	0.771	0.525	0.478	0.432	0.419	0.426	0.433	0.454	0.468	0.482
24XX	2.700	2.100	2.500	2.500	2.416	2.364	2.319	2.276	2.233	2.191	2.150	1.993	1.846	1.709
2611	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2631	0.550	0.750	0.750	0.750	0.725	0.710	0.696	0.683	0.671	0.658	0.646	0.599	0.556	0.515
26XX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2819	0.200	0.190	0.180	0.180	0.174	0.172	0.170	0.168	0.166	0.164	0.162	0.155	0.149	0.143
28XX	0.100	0.050	0.050	0.100	0.097	0.096	0.095	0.094	0.093	0.092	0.091	0.088	0.085	0.083
3334	1.250	0.850	0.750	0.800	0.800	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450
SUBTOT	13.775	11.545	12.160	12.470	12.383	10.164	10.011	9.864	9.738	9.697	9.608	9.484	9.555	9.447

NON-MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO - WESTERN MONTANA 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	7.500	6.400	6.650	6.700	6.678	6.618	6.610	6.602	6.594	6.586	6.578	6.630	6.630	6.571
50-51	3.800	3.400	3.275	3.375	3.326	3.339	3.378	3.418	3.458	3.498	3.539	3.805	4.059	4.290
52,53+	8.000	8.200	8.650	8.700	8.481	8.472	8.529	8.586	8.644	8.702	8.761	9.190	9.563	9.864
54	2.900	3.000	2.825	2.800	2.594	2.591	2.609	2.626	2.644	2.662	2.680	2.811	2.925	3.017
58	7.500	7.500	7.475	7.500	7.064	7.147	7.288	7.432	7.579	7.729	7.882	8.815	9.780	10.753
60-67	3.700	3.400	3.650	3.650	3.406	3.409	3.439	3.469	3.499	3.530	3.561	3.772	3.965	4.130
70	2.500	2.700	2.900	2.850	2.805	2.808	2.832	2.857	2.882	2.907	2.932	3.106	3.265	3.401
72	0.800	0.900	0.875	0.900	0.899	0.899	0.906	0.913	0.920	0.927	0.934	0.983	1.027	1.064
73	1.000	1.700	2.175	2.200	2.154	2.182	2.227	2.274	2.321	2.369	2.418	2.717	3.030	3.347
76	0.300	0.300	0.350	0.350	0.300	0.300	0.302	0.304	0.307	0.309	0.311	0.328	0.342	0.355
80	6.400	7.650	8.300	8.400	8.312	8.368	8.492	8.617	8.744	8.873	9.004	9.827	10.639	11.412
81	0.500	0.600	0.700	0.700	0.615	0.623	0.636	0.649	0.663	0.677	0.691	0.776	0.866	0.956
83	1.400	1.200	1.525	1.500	1.214	1.221	1.238	1.255	1.272	1.289	1.307	1.419	1.529	1.632
89	1.000	0.700	0.800	0.800	0.705	0.708	0.716	0.725	0.733	0.742	0.751	0.807	0.861	0.910
75,78+	3.300	3.325	3.450	3.500	3.306	3.309	3.338	3.367	3.396	3.426	3.456	3.661	3.848	4.008
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
941	8.900	9.775	9.500	9.400	9.321	9.311	9.400	9.489	9.579	9.670	9.762	10.088	10.343	10.509
90-99	8.300	7.400	7.400	7.400	7.335	7.202	7.309	7.417	7.527	7.638	7.751	8.320	8.530	8.667
Const	4.800	3.800	2.800	3.050	2.500	2.550	2.600	2.650	2.700	2.750	2.800	3.128	3.498	3.644
Agric	7.500	7.300	7.300	7.300	7.244	7.212	7.155	7.098	7.042	6.986	6.931	6.619	6.457	6.291
Mining	3.100	1.875	2.075	2.175	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
Fd Gvt	5.600	4.850	4.900	4.950	4.400	4.300	4.238	4.177	4.117	4.058	4.000	4.100	4.200	4.300
SUBTOT	88.800	85.975	87.575	88.200	84.459	84.369	85.042	85.725	86.421	87.128	87.849	92.702	97.157	100.921
TOTAL	102.575	97.520	99.735	100.670	96.842	94.533	95.053	95.589	96.159	96.825	97.457	102.186	106.712	110.368

HOUSING, POPULATION, HOUSEHOLDS, AND INCOME — LOW SCENARIO – WESTERN MONTANA — 2/23/90

	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
HOUSING														
SF	82.313	84.905	85.088	85.166	86.134	85.388	85.366	85.526	85.537	85.775	85.826	87.317	88.874	89.858
MF	8.950	10.092	10.489	10.732	11.379	11.269	11.486	11.786	12.026	12.369	12.634	14.561	16.605	18.472
MO	15.138	17.403	17.922	18.312	19.241	18.853	19.007	19.289	19.446	19.765	19.929	21.546	23.092	24.324
TOTAL	106.400	112.400	113.500	114.211	116.754	115.510	115.859	116.601	117.009	117.909	118.389	123.425	128.571	132.654
POPUL	294.500	303.900	303.500	303.800	309.398	304.945	305.636	307.360	308.202	310.337	311.364	323.372	335.571	344.901
HHLDS	106.400	112.400	113.500	114.211	116.754	115.510	115.859	116.601	117.009	117.909	118.389	123.425	128.571	132.654
PCI	7793.00	7983.00	8477.00	8595.70	8716.10	8838.10	9474.30	9474.30	9474.30	9474.30	9474.30	10156.30	10887.50	11671.20

MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO - REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
20	73.900	71.965	72.925	75.150	75.450	72.950	70.521	69.293	68.283	67.403	66.525	62.000	58.000	54.600
22	3.000	2.550	3.100	3.200	3.100	2.350	2.129	2.109	2.089	2.069	2.050	1.950	1.850	1.750
23	10.025	8.900	8.250	9.150	9.250	7.950	7.517	7.085	7.055	6.827	6.500	6.425	6.325	6.225
25	6.150	7.240	7.050	7.750	7.950	6.600	6.378	6.257	6.137	6.038	6.000	5.900	5.800	5.700
27	29.650	34.000	37.925	40.150	41.250	38.500	36.356	36.315	36.275	36.237	36.200	36.300	36.400	36.500
29	2.800	2.225	2.350	2.550	2.700	2.100	1.978	1.857	1.737	1.718	1.600	1.400	1.300	1.200
30	6.900	8.575	10.125	11.010	11.510	9.600	9.120	8.940	8.760	8.580	8.600	8.700	8.700	8.600
31	0.700	0.925	1.080	1.160	1.260	0.850	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
32	13.100	10.725	11.580	12.790	13.300	10.850	10.019	9.689	9.559	9.429	9.300	9.100	8.900	8.600
33XX	20.800	15.350	15.550	16.700	18.150	15.150	14.489	14.124	13.964	13.806	13.650	13.350	13.150	13.150
34	26.750	22.850	22.975	24.150	25.150	22.800	22.100	21.700	21.700	21.700	21.700	21.700	21.700	21.700
35	37.750	38.625	37.525	41.050	44.450	40.550	37.550	35.269	35.229	35.189	35.150	36.450	38.150	38.650
36	22.550	28.875	30.175	33.200	35.900	32.900	30.108	28.618	28.068	28.158	28.250	28.775	29.304	29.525
37	109.450	99.825	118.150	128.550	140.200	135.850	115.548	100.447	95.347	91.335	89.150	83.950	79.250	74.750
38	25.950	25.725	23.320	23.930	23.790	20.000	20.089	20.178	20.268	20.359	20.450	21.225	21.753	21.775
39	7.350	7.400	8.600	10.150	10.950	8.150	7.489	7.329	7.219	7.109	6.950	6.600	6.300	6.000
2421	52.427	44.300	47.250	46.700	46.039	32.033	31.911	31.773	31.257	31.105	30.944	30.888	31.917	31.764
2436	26.582	20.900	21.900	22.000	21.571	13.522	13.244	12.975	12.603	12.119	11.648	10.130	9.318	9.254
24XX	61.066	57.100	60.100	62.400	62.916	56.777	55.710	54.662	53.635	52.627	51.637	47.867	44.341	41.045
2611	2.974	2.100	2.050	2.100	2.100	1.971	1.933	1.895	1.858	1.821	1.786	1.648	1.522	1.402
2621	14.143	13.410	12.650	12.800	13.100	12.404	12.280	12.166	12.041	11.925	11.809	11.519	11.163	10.760
2631	5.037	5.000	4.900	4.850	4.925	4.682	4.594	4.510	4.425	4.343	4.262	3.956	3.669	3.398
26XX	7.896	7.815	8.750	8.600	8.900	8.130	8.026	7.967	7.909	7.851	7.793	7.366	7.251	7.096
2812	0.763	0.700	0.700	0.700	0.700	0.678	0.673	0.669	0.664	0.660	0.655	0.659	0.658	0.624
2819	6.567	8.890	8.780	7.880	7.474	4.814	4.742	4.670	4.598	4.527	4.455	3.917	3.880	3.844
28XX	7.470	7.650	7.650	8.000	8.197	7.875	7.631	7.564	7.493	7.425	7.357	7.114	6.878	6.648
3334	10.350	7.250	5.850	7.300	7.300	4.850	4.050	3.770	3.730	3.690	3.650	3.650	3.650	3.650
SUBTOT	592.100	560.870	591.260	623.970	647.583	574.887	536.937	512.581	502.653	494.799	488.822	473.289	461.878	448.960

NON-MANUFACTURING EMPLOYMENT (1000'S) LOW SCENARIO - REGION 2/23/90

INDUSTRY	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
40-49	179.500	176.500	181.550	187.300	194.878	185.618	179.010	176.557	176.223	175.890	175.559	175.562	174.630	172.669
50-51	194.000	195.700	203.375	211.475	223.426	212.939	209.221	207.728	209.872	212.038	214.227	229.403	242.590	254.251
52,53+	275.100	279.300	300.050	310.400	325.781	307.472	297.529	298.242	299.737	301.240	302.749	314.854	324.858	332.196
54	75.100	92.400	105.125	110.100	115.094	109.491	105.209	103.734	104.105	104.378	104.752	107.677	110.491	112.561
58	195.500	218.400	233.275	243.100	254.564	247.947	247.196	250.249	253.896	258.301	262.952	291.585	320.754	349.635
60-67	188.900	193.400	202.450	206.450	212.006	205.125	201.750	202.989	204.435	205.891	207.355	218.278	227.411	234.818
70	40.200	42.600	45.800	48.750	51.005	48.508	47.809	47.886	48.065	48.344	48.594	51.256	54.126	56.434
72	29.600	35.000	36.075	37.700	39.399	38.496	37.699	37.801	38.021	38.239	38.461	40.152	41.586	42.689
73	89.800	109.800	138.475	149.300	156.854	149.482	142.227	140.574	139.721	141.061	143.737	156.557	173.712	190.280
76	9.800	10.500	11.350	12.150	12.700	11.956	11.800	11.763	11.831	11.899	11.968	12.495	12.940	13.284
80	179.800	212.350	231.100	239.100	253.312	250.368	248.492	247.896	250.439	252.905	255.396	273.475	291.203	309.451
81	17.400	22.700	25.700	27.600	28.815	27.923	27.385	27.365	27.885	28.416	28.956	32.266	35.668	39.070
83	31.800	41.800	47.525	51.000	53.114	50.821	49.738	50.148	50.633	51.121	51.616	55.061	58.401	61.559
89	36.400	36.000	39.100	41.800	43.705	41.723	40.894	41.268	41.680	42.095	42.515	45.313	47.916	50.219
75,78+	122.600	141.125	150.850	161.300	168.306	163.172	161.640	162.112	162.586	162.898	164.026	172.208	179.375	185.177
82	19.800	24.200	27.500	29.300	30.100	29.300	29.420	29.650	29.870	30.000	30.200	30.900	31.500	32.000
941	279.700	280.275	291.400	298.200	306.021	305.311	306.400	307.537	308.908	310.482	311.957	321.221	326.179	329.268
90-99	230.300	236.100	248.300	256.800	263.535	258.202	252.044	248.434	247.493	248.107	248.824	255.367	260.027	262.566
Const	161.300	132.600	140.600	152.550	166.300	139.576	137.402	138.335	139.785	141.256	142.745	150.014	156.437	161.484
Agric	292.200	286.600	286.200	285.055	284.044	280.200	278.211	276.236	274.276	272.330	270.400	260.700	250.900	241.400
Mining	13.300	9.875	9.075	10.175	10.500	8.500	8.200	8.200	8.200	8.200	8.200	8.200	8.200	8.200
Fd Gvt	117.300	116.350	118.300	120.950	121.500	116.300	111.394	108.040	106.553	105.268	104.000	106.700	109.300	111.900
SUBTOT	2779.400	2893.575	3073.175	3190.555	3314.959	3188.430	3130.670	3122.744	3134.214	3150.359	3169.189	3309.243	3438.204	3551.111
TOTAL	3371.500	3454.446	3664.435	3814.525	3962.542	3763.317	3667.607	3635.326	3636.867	3645.159	3658.011	3782.532	3900.083	4000.071

CHAPTER 6

FORECAST OF ELECTRICITY USE IN THE PACIFIC NORTHWEST

Chapter 6
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Introduction

Forecasts of demand for electricity are the foundation of electricity planning. This chapter describes long-term forecasts of electricity needs in the Pacific Northwest region. The forecasts were prepared jointly by the Northwest Power Planning Council (Council) and the Bonneville Power Administration. The Council is required by the Northwest Power Act to produce 20-year forecasts of the demand for electricity in the Pacific Northwest.

Demand forecasts play three important roles in the region's power planning process. The first is the traditional role; they are the basis for deciding how much electricity the region will need. The second role is to explore and define the uncertainty surrounding future electrical resource needs. Finally, the demand forecasts are an essential component of conservation assessment. Conservation is identified as the priority resource in the Act. Demand forecasts have a twofold role in conservation planning. First, they determine the conservation potential associated with various levels of demand. Second, they aid in determining the reduction in demand that can be attributed to programs to acquire conservation resources. The role of demand forecasts in resource planning is discussed in more detail in the final section of this chapter.

Bonneville uses long-term forecasts of demand as a basis for determining future federal system loads. Although Bonneville is responsible for meeting federal system loads rather than regional loads, regional load growth is one the the major determinants of federal system loads. Federal system load forecasts combine portions of the regional load forecast and load requirements that retail utilities decide to place on Bonneville.

Bonneville also needs near-term forecasts for system operations, rate setting, and financial planning. To maintain consistency between near-term forecasts and the long-term forecasts used in the resource planning process, Bonneville typically replaces the near-term loads in the medium forecast with more detailed customer group forecasts that better reflect near-term economic conditions. These near-term forecasts are prepared by Bonneville and regional utilities for the Pacific Northwest Utilities Conference Committee. Only the medium case long-term forecast is merged with near-term customer group specific forecasts. This merging applies only to loads through 1995.

Besides merging medium case forecasts, Bonneville also transforms the forecasts into monthly peak and energy loads, accounts for transmission and distribution losses and compiles calendar, fiscal, and operating year load (sales plus losses) forecasts to meet various needs. The discussion and tables of sector sales that follow cover unmerged long-term forecasts; however, tables showing loads forecasts by customer group are attached as Appendix 6-C.[1] They are in

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1./ The load forecasts in Appendix 6-C include reductions due to the 1990 building code revision in Washington. These reductions are not included in the sales forecasts described here. In 2010, these reductions range from about 220 average megawatts in the high case to about 70 average megawatts in the low case.

a format traditionally presented in Bonneville forecasts. These draft forecasts are being used by Bonneville in the forthcoming *1990 Pacific Northwest Loads and Resources* study.

The use of these demand forecasts in regional planning differs significantly from the traditional role of demand forecasts. The traditional use could be characterized as deterministic. That is, a "best-guess" demand forecast determined the amount of new electricity generation needed. Before the early 1970s, it was generally assumed that demand for electricity would continue to grow at close to historical rates. That growth had been rapid and relatively steady. It was assumed that economies of scale in power generation could be relied on to keep prices for electricity from increasing as new generating plants were added. Planners saw little reason for demand growth to slow down. In fact, it was widely assumed that there would be little or no response to price changes if they did occur.

The dramatic reduction in electricity demand growth that occurred in the rest of the country as electricity prices increased in the early 1970s caught most planners by surprise. The initial response seems to have been to develop much more sophisticated forecasting tools. The forecasting models adopted by the Council and Bonneville represent the results of those efforts. However, it has also been recognized that even with the best available tools, forecasts remain highly uncertain. Forecast ranges have been developed to deal with this uncertainty in planning.

The forecast of demand for electricity encompasses a range of five forecasts: a low, medium-low, medium, medium-high and high forecast. The high-demand forecast is designed to ensure that power supplies never constrain the region's economic growth potential. The high forecast portrays a future in which regional growth achieves record high levels, relative to national growth, combined with less competitive prices for alternative fuels. The likelihood that such rapid growth would occur for a 20-year period is considered very small. The forecast range is bounded on the low side by a forecast that is pessimistic about the regional economy, roughly in proportion to the optimism of the high case.

Inside the bounds of the low and high forecasts is a smaller, most probable range of demands bounded by the medium-low and medium-high forecasts. The medium-low, medium and medium-high forecasts will carry a greater weight in the planning of resources than will the high and low extremes. Nevertheless, the possibilities posed by the high-growth forecast must be addressed by appropriate resource options. Similarly, conditions that are implied by the low-demand forecast will be considered within a flexible planning strategy designed to minimize regional electricity costs and risks.

The forecasts of electricity demand are determined by three primary factors: economic growth and its composition, prices of alternative fuels, and the price of electricity. The economic and alternative fuel price assumptions that drive these demand forecasts are described in Chapter 5, "Economic Forecasts for the Pacific Northwest." Forecasts of electricity prices are based on the amount of electricity demand and the cost of generating the electricity needed to meet that demand. At the same time, electricity demand is affected by the price of electricity. Thus, the forecasts must take into account the interaction between electricity prices, as determined by resource choices and their costs, and electricity demand. The

interrelationships involved in determining the demand forecasts are illustrated in Figure 6-1. A demand forecasting system captures these relationships in considerable detail.

Forecast System

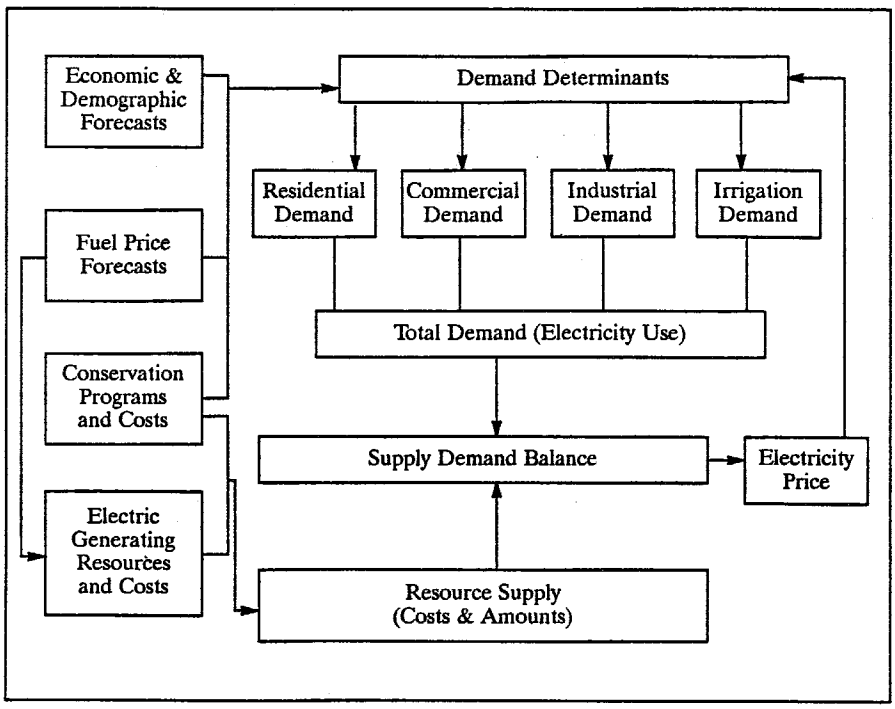


Figure 6–1
Structure of the Demand Forecast System

The demand forecast ranges are constructed by combining economic assumptions, fuel price assumptions and some modeling assumptions. This combination of assumptions is designed to explore a wide range of possible demands without combining assumptions unrealistically. That is, mutually inconsistent assumptions are not combined just to obtain extreme forecasts. In the high forecast, for example, the high economic assumptions are combined with high fuel price assumptions. In addition, for the high forecast, it was assumed large industrial consumers have relatively low price response. Electricity prices, which have a significant effect on demand, are determined for each scenario by an electricity pricing model based on the amount and cost of resources needed to meet demand. Generally, electricity prices are higher with higher demand growth.

Overview

In 1989, firm sales of electricity to the final consumer in the Pacific Northwest totaled 17,273 average megawatts, when adjusted to reflect normal temperatures. That is 151 billion kilowatt-hours. The high forecast shows this demand could grow to 28,859 average megawatts by 2010, nearly 70 percent higher than current electricity requirements. In more graphic terms, the high

implies the addition of electricity equivalent to that consumed by nearly 11 cities the size of Seattle by 2010. Under the set of assumptions leading to the low forecast, demand decreases to 15,317 average megawatts, about 11 percent lower than current requirements. This large uncertainty about future needs for electricity resources raises an important challenge for energy planning. The region needs to deal with this uncertainty in a manner that will neither prevent the region from attaining rapid economic growth, nor impose large and unnecessary costs should slower growth occur. Figure 6-2 illustrates the forecast range in the context of historical sales of electricity.

Table 6-1 shows that the rate of growth of demand could be as high as 2.5 percent per year, if the high case were to materialize, or as low as -0.6 if the low case were to occur. A more likely outcome, however, is between the medium-low growth rate of 0.5 percent and the medium-high rate of 1.6 percent. The medium forecast is for a 1.0 percent annual growth rate of electricity demand. More detailed tables summarizing the five forecasts appear in Appendix 6-A.

Forecast growth rates are higher if direct service industries are excluded. For all but the low case, non-direct-service-industry demand grows 0.3 percent faster that the total firm demand shown in Table 6-1. For example, the high case growth rate of 2.5 percent per year becomes 2.8 percent if direct service industries are excluded. By excluding direct service industries, the low case growth rate moves from -0.6 percent to 0.0 percent.

It is also important to realize that growth is not forecast to occur at a constant rate each year of the forecast. For example, year to year growth in the high case varies from 2.8 percent down to 1.9 percent, with the most rapid growth occurring in the early 1990s.

The forecasts reflect the robust regional economy over the last three years. As a result, the near-term forecasts are higher than forecasts that were done in 1989 by Bonneville and the Council. This is particularly true, of course, for the lower end of the forecast range. The long-term forecasts are also slightly higher, although not by significant amounts. All of the increases in 2010 are less than 3 percent. Running counter to this pattern is the slight decrease in the high forecast from the forecast included in Bonneville's *1989 Pacific Northwest Loads and Resources* study (white book) forecast, and a very small decrease in the low case from the Council's 1989 supplement forecast. The table in Appendix 6-B compares the recent forecasts to those in this draft.

Electricity Sales

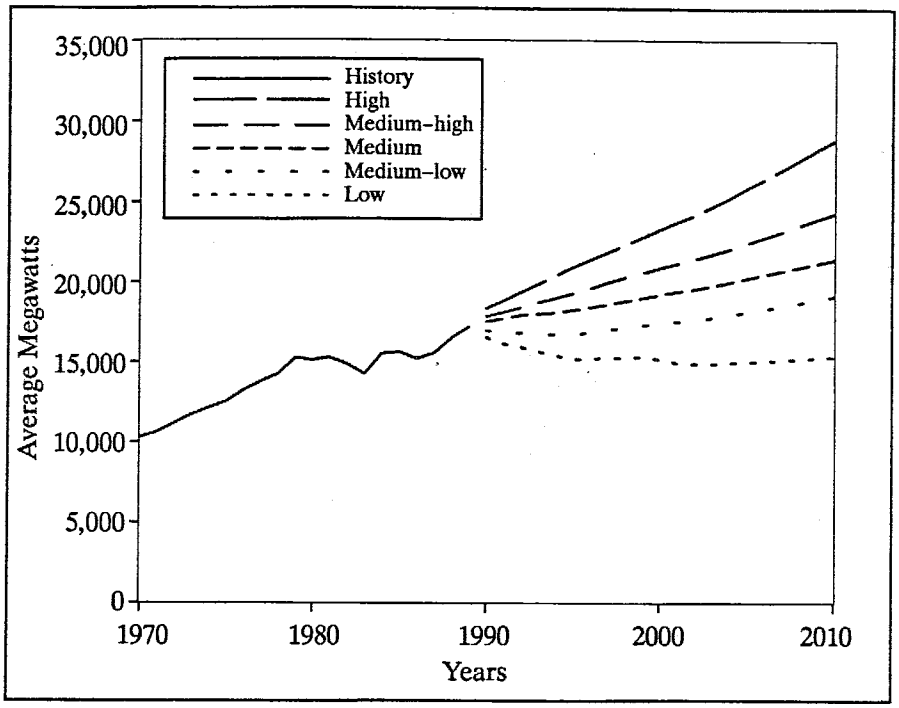


Figure 6-2
Sales of Electricity—Historical and Forecast

Table 6-1
Firm Sales of Electricity
(Average Megawatts)

	Actual 1989	Forecasts 1995	Forecasts 2000	Forecasts 2010	Growth Rate (% per year) 1989-2010
High	17,273	20,888	23,280	28,859	2.5
Medium-high	17,273	19,258	20,863	24,316	1.6
Medium	17,273	18,224	19,178	21,419	1.0
Medium-low	17,273	16,668	17,375	19,130	0.5
Low	17,273	15,136	15,147	15,317	-0.6

History can provide a useful guide for describing a forecast if the comparison is done carefully. However, year-to-year growth rates are influenced strongly by cycles in economic activity and weather conditions. For this reason, comparing a few years of demand growth with a 20-year forecast is inappropriate. Comparing longer periods or comparing weather-adjusted and cycle-adjusted growth can be useful.

Figure 6-3 compares the projected growth rates of demand to regional growth rates since 1950. Growth of electricity consumption in the Pacific Northwest averaged about 7 percent per year during the 1950s and 1960s. However, even during this time there were years of negative growth. In the 1970s, the region's electricity demand growth fell to a 4 percent rate.

Demand Growth

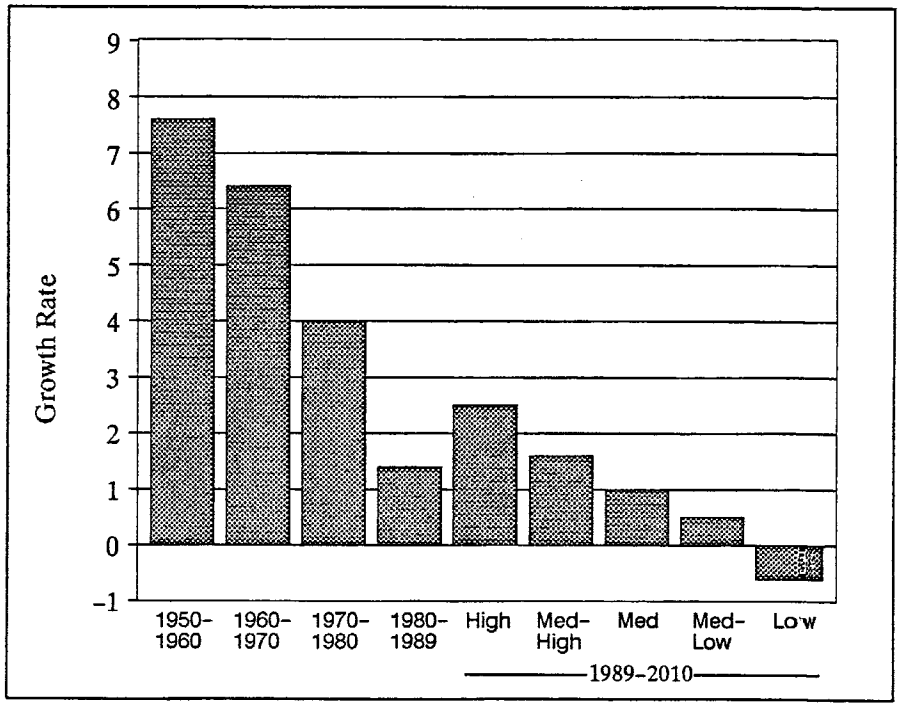


Figure 6-3
Historical and Forecast 1989–2010 Growth

The 1980s are difficult to characterize because of their volatility. However, when two years that are both economic cycle peaks are chosen to compute a growth rate (1979 and 1989), the average demand growth rate is about 1.2 percent per year. Although demand went up and down from 1980 to 1986, demand in 1986 was nearly the same as 1980. Since 1986, demand has been growing strongly, averaging about 4 percent per year. The years 1987, 1988 and 1989 have seen an economic boom in the Northwest. This economic prosperity is spread evenly across all sectors of the economy, but has been led by dramatic expansion of the Boeing Company. Even the energy-intensive, resource-based industries, such as paper, chemicals, wood products and metals, have shown strong growth. The Northwest economy has benefitted from the earlier decline in the value of the dollar relative to other currencies, making its products more competitive in foreign markets.

All of these factors have contributed to strong growth in demand for electricity. However, a recovery from a recession is not something to be compared to a 20-year trend forecast. The 1979 to 1989 growth rate of 1.2 percent per year is probably a better comparison. The most likely range of the

forecast centers around 1 percent, and it falls below the growth rates of the 1950s, 1960s and 1970s.

What are the reasons for expected demand growth being lower than growth rates experienced before 1980? Several factors are listed below.

- The rate of economic growth (employment, population, households and production) is expected to be significantly slower. This is true for the nation as a whole, as well as the region, and is due to basic demographic trends. For example, national forecasts of employment growth over the next 20 years are about half the rate experienced between 1960 and 1980.

- Electricity prices have increased dramatically since the late 1970s, thus decreasing the demand for electricity. This will continue to slow growth during the forecast as buildings and equipment are replaced using more energy-efficient practices. Some of these practices are now mandated by code. For example, buildings being built today use about 30 percent less electricity than the average building in the existing stock. By 2010, nearly half of the building stock will have been built since 1984.

- Oil and natural gas prices have decreased significantly since 1986. These changes, combined with higher electricity prices, make natural gas more attractive as a heating fuel.

- The source of much of the region's electricity demand growth during the earlier decades was in energy-intensive industries, including paper, wood products, aluminum, chemicals and food products. These five industries account for over 90 percent of industrial electricity use. In the future, these are not forecast to grow rapidly, even in the high case. This has a significant effect on expected growth in electricity demand.

- A continuing shift to commercial activities, away from manufacturing, reduces the growth of electricity use. For example, the commercial share of total employment is expected to increase from 73 percent in 1980 to about 82 percent in 2010, but the commercial sector uses only 1 average megawatt of electricity per 1,000 employees compared to 12 average megawatts in the manufacturing sector.

A further caution should be added about comparing historical growth rates to the forecast. Growth rates can vary significantly year to year or with different long-term intervals. However, more importantly for planning, growth rates at different points may have very different resource planning implications. For example, in the high case forecast, which grows at 2.5 percent per year, about 550 average megawatts of new load would be added annually. But in the 1950s and 1960s, with growth at 7 percent per year, only 406 average megawatts per year were added. Thus, a forecast growth rate that is just a little more than one-third of an historical growth rate, implies a need for 35 percent more electricity resources.

This chapter is concerned primarily with forecasts of electricity sales to final consumers. Further, the forecasts throughout this chapter are for average annual energy rather than peak electricity requirements at any particular time. The demand forecast concept presented is a "price effects" forecast. Such a forecast

indicates what demand would be if consumers responded to prices and if no new conservation programs were implemented. Other types of forecasts used in the planning process are described in a later section.

The amount of electricity generation required to meet forecast use is called "electricity load." Electricity load is larger than sales to final consumers because of transmission and distribution losses incurred in delivering the electricity from the generator to the consumer. This loss typically amounts to about 8 percent of the generated electricity.

Because electricity loads are needed to determine resource requirements, electricity demand forecasts are converted to loads for resource planning. A brief description of the load forecast follows, but the rest of the chapter focuses on the need for power from the consumer's point of view. This is because the need for power must be analyzed from the consumer's point of view in order to obtain reliable results and understand the role of conservation in power planning.

Regional firm electricity loads, including transmission and distribution losses, are forecast to grow from 18,687 average megawatts in 1989 to between 16,665 and 31,345 average megawatts by 2010. A more probable range is from 20,769 to 26,388 average megawatts, the 2010 forecasts for the medium-low and medium-high cases. The medium forecast is 22,990 average megawatts, which implies an average annual rate of growth of 1.0 percent. The load forecasts are summarized in Table 6-2.

Table 6-2
Electricity Load Forecasts
(Average Megawatts)

	Actual	Forecasts			Growth Rate (% per year)
	1989	1995	2000	2010	1989-2010
High	18,687	22,631	25,243	31,345	2.5
Medium-high	18,687	20,861	22,612	26,388	1.7
Medium	18,687	19,746	20,791	22,990	1.0
Medium-low	18,687	18,082	18,853	20,769	0.5
Low	18,687	16,440	16,459	16,665	-0.5

Forecast Detail

Summaries of forecast results tend to obscure important detail. A major dimension of the demand forecasting system is the separate treatment of demand by customers of public utilities and customers of investor-owned utilities. A second major dimension is the separate forecasting of residential, commercial, industrial, and irrigation uses of electricity. Further, most components of demand, such as residential use of electricity in investor-owned utility service areas, are analyzed for specific end-uses as well as other dimensions within the sector forecasting models. The detailed forecast results are described in this section. The forecasts for investor-owned and publicly owned utilities are described first, followed by results for individual consuming sectors.

Utility Type Forecasts

Separate forecasts are done for investor-owned utilities, public utilities and Bonneville direct customers. The economic assumptions driving the forecasts are divided into investor-owned and public utility service areas as described in Chapter 5, "Economic Forecasts for the Pacific Northwest." These economic assumptions, combined with differences in electricity rates and existing conditions, lead to differences in the forecasts for the two customer groups.

Table 6-3 shows the 1989 composition of firm electricity sales and the five forecasts for 2010. In 1989, total regional firm sales of electricity, adjusted for normal temperatures, were 17,273 average megawatts. Investor-owned utilities marketed 8,047 average megawatts or 47 percent of the total. Public utilities marketed 38 percent, and the Bonneville Power Administration directly marketed 16 percent.

Table 6-3
Firm Sales Forecast by Utility Type
(Average Megawatts)

	Total Sales	Investor-Owned Utility Sales	Public Utility Sales	Bonneville Direct Sales
Actual 1989	17,273	8,047	6,520	2,706
Forecast 2010				
High	28,859	14,635	11,610	2,614
Medium-high	24,316	12,027	9,775	2,514
Medium	21,419	10,651	8,418	2,350
Medium-low	19,130	9,344	7,991	1,795
Low	15,317	7,700	6,753	864
Growth rates 1989-2010				
High	2.5	2.9	2.8	-0.2
Medium-high	1.6	1.9	1.9	-0.4
Medium	1.0	1.3	1.2	-0.7
Medium-low	0.5	0.7	1.0	-1.9
Low	-0.6	-0.2	0.2	-5.3

Bonneville's direct sales decrease as a share of future regional electricity demand in all five of the forecast cases. Direct service industries accounted for most of Bonneville's direct sales in 1989, but are forecast to decrease in all forecast scenarios. Public utility sales are projected to grow slightly more slowly than investor-owned utility sales in the higher forecasts and slightly faster in the lower forecasts.

In addition to providing electricity directly to some customers, Bonneville is the source for much of the electricity that is sold by public utilities. Although several public utilities generate electricity to serve part of their loads, most public utilities rely entirely on Bonneville. Therefore, the Bonneville administrator's major regional obligations consist of, 1) direct service industrial customers and various federal agencies that are served directly by Bonneville; 2) all loads of publicly owned utilities that have no or insignificant electricity generating resources (non-generating publics); and 3) a part of the loads of publicly owned utilities that do have electricity resources (generating publics). In Figure 6-4, Bonneville-supplied electricity is illustrated by the shaded area. Bonneville was the source for about 40 percent of the firm electricity sales in the region in 1989.

Sales by Utility Type

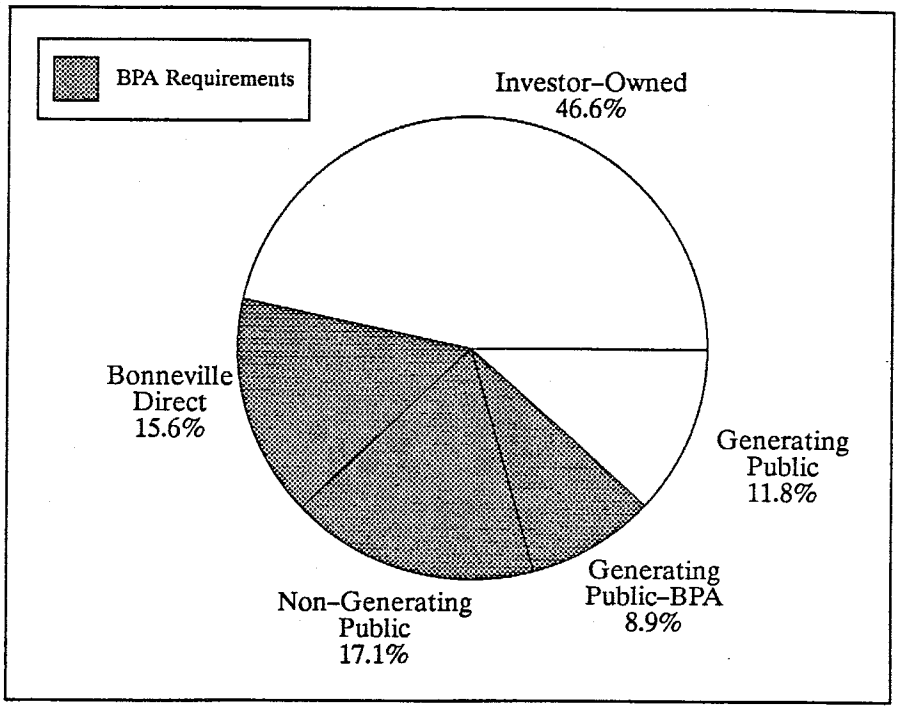


Figure 6–4
1989 Regional Firm Sales by Utility Type (Bonneville's Current Obligation Shaded)

Forecasting the growth of Bonneville's obligations to provide electricity is complicated by uncertainties well beyond the basic uncertainty embodied in forecasts of regional electricity demand. The Northwest Power Act and contracts between Bonneville and the investor-owned utilities allow for the possibility that investor-owned utilities could place loads on Bonneville providing they give seven years notice. Further, it is not clear to what extent publicly owned utilities will continue to rely on Bonneville to meet their load growth. These uncertainties result in a wide range of possible Bonneville requirements in the future.

Sectoral Forecasts

Figure 6-5 shows the composition by sector of 1989 electricity sales in the region. The industrial sector accounts for the largest share of electricity sales, followed by the residential sector, and then the commercial sector. The industrial, residential and commercial sectors together account for 95 percent of the region's electricity demand. Irrigation and other miscellaneous uses account for the remainder. Forecasts for each of the demand sectors are discussed in some detail in the sections that follow.

Electricity Use by Sector

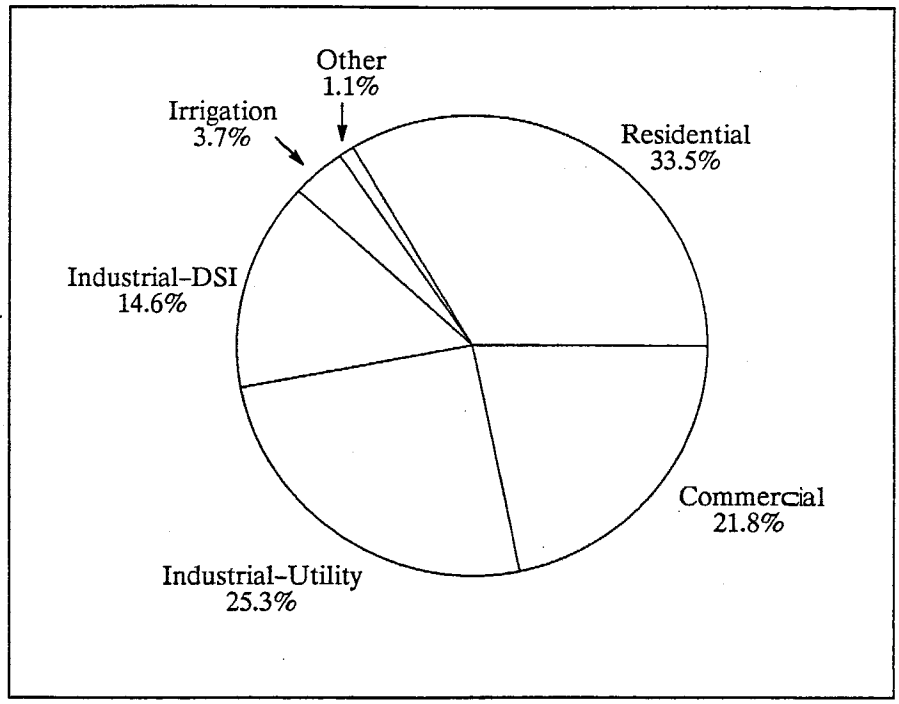


Figure 6-5
1989 Firm Sales Shares

Residential Demand

The residential sector accounted for 34 percent of regional firm sales of electricity in 1989. Residential sector demand is influenced by many social and economic factors, including fuel prices, per capita income, and the choices of efficiency for energy-consuming equipment available to consumers (available technology). The most important factor, however, is the number of households.

The structure of the residential sector demand model reflects this importance by using the individual household as the basic modeling unit. The model projects future demand for electricity, given future growth in households by housing type, by projecting the amount of electricity-using equipment the average household owns; choices of fuel for space heating, water heating, and cooking; the level of energy efficiency chosen; and the energy-using behavior of the household. These choices are influenced in the model by energy prices, equipment costs, average incomes and available technology.

The use of electricity is simulated for each of eight use classifications. Figure 6-6 shows estimated historical shares of these uses in 1989. Space heating and water heating are the two most important end-use categories, accounting for about half of all residential electricity use. The miscellaneous category also includes some back-up space heating in houses that are heated primarily by wood. Note

that Figure 6-6 shows end-use shares averaged over all houses, whether they use electricity for a given end use or not. Houses that use electricity for space and water heating will tend to use a larger share for those end uses than is shown in Figure 6-6.

The projections of residential demand for electricity cover a wide range. This range results mostly from variation in projections of the number of households, per capita income and fuel prices in the economic and demographic growth assumptions. Projected demand also varies because of different assumptions regarding use of wood for space heating.

Residential Electricity Uses

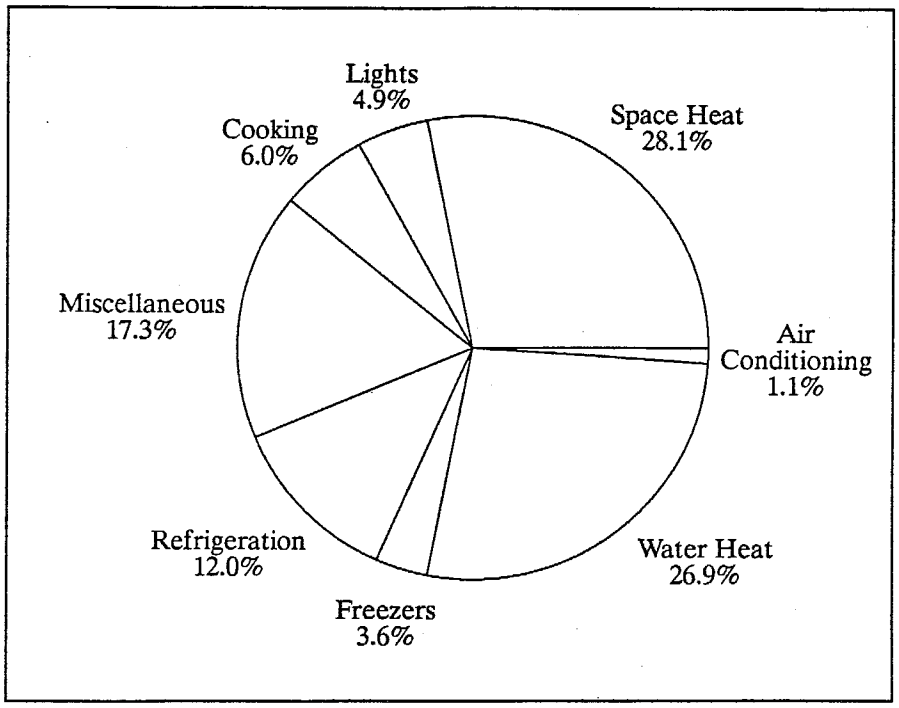


Figure 6-6
1989 Residential Use by Application

In the absence of new conservation programs, projected residential electricity use in the year 2010 ranges from 10,014 average megawatts in the high case to 5,883 average megawatts in the low case. As shown in Table 6-4, the average annual rate of growth based on the 1989 weather-adjusted actual of 5,790 average megawatts, varies from 2.6 percent for the high case to 0.1 percent for the low case.

Table 6-4
Residential Sector Electricity Demand
(Average Megawatts)

	Actual	Forecasts			Growth Rate (% per year)
	1989	1995	2000	2010	1989-2010
High	5,790	7,067	7,948	10,014	2.6
Medium-high	5,790	6,584	7,164	8,452	1.8
Medium	5,790	6,359	6,751	7,552	1.3
Medium-low	5,790	6,180	6,483	7,178	1.0
Low	5,790	5,765	5,782	5,883	0.1

The residential energy demand model is best described as a hybrid of engineering and econometric approaches. It is based on the fundamental idea that residential energy is used by equipment such as furnaces, refrigerators and water heaters to provide amenities to the occupants of residences. Residential energy use, as simulated by the model, is a function of the following factors.

1. Total number of residences and the number of new residences constructed. The projections for future years are taken from the economic and demographic projections.

2. Number of energy-using appliances in the average residence. Each year's appliance penetrations, or purchases of appliances per household, are simulated based on econometric analysis of historic sales patterns. Penetrations are influenced by equipment and energy costs and by per capita incomes.

3. Efficiencies of these appliances. Efficiency choice by consumers is simulated based on engineering analysis of costs of appliances of varying efficiencies and on econometric analysis of observed efficiency choices in the past. Efficiency choices are influenced by energy prices, the cost of more efficient appliances, and the inclination of consumers to invest in conservation (represented by their implicit discount rates). Efficiency choices can also be constrained (e.g., thermal integrity choices will be no worse than some specified level), which provides the means of representing such conservation programs as building codes and appliance efficiency standards.

4. Fuels used by these appliances. While some appliances such as air conditioners use electricity exclusively, others such as water heaters can use any of several fuels. Fuel choice is simulated based on the efficiency choices and econometric analysis of past fuel choice behavior. Fuel choices are influenced by relative fuel prices, equipment prices, and relative efficiencies of the appliances using the various fuels.

5. Intensity of use of these appliances. Intensity of use is varied by such means as thermostat settings, reduced use of hot water for washing clothes, and the like. Variation in intensity of use is based on econometric analysis of

observed short-run response to fuel prices. Intensity of use is determined in the model by fuel costs, appliance efficiencies and per capita incomes.

Table 6-5 provides a summary of historical and projected values of some of the components that determine total demand for electricity in both public and investor-owned utility (IOU) areas.

The thermal integrity of single-family houses (shown in Table 6-5) improves significantly from 1979 levels. This is due to more stringent building codes adopted in Washington and Oregon in 1985 taking effect after 1986, and weatherization programs throughout the 1980s. The greater thermal integrity of houses built after 1986 raises the average thermal integrity in 2010; the higher growth scenarios have a higher proportion of new houses, so the average thermal integrity of the total stock is higher.

Recent progress toward region-wide adoption of the Council's model conservation standards is not reflected in this forecast. The standards have been adopted in Washington, and a building code that obtains 50 to 60 percent of the savings of the model conservation standards has been adopted in Idaho. In Oregon, an administrative process leading to an updated energy code is under way. Energy savings expected to result from these developments are still counted as conservation resources in this draft plan.

The efficiency of refrigerators has improved significantly since the early 1970s and is expected to improve further. In 1972, the average new refrigerator (17 cubic feet, automatic defrost, top-mounted freezer compartment) was estimated to use about 1,600 kilowatt-hours per year. By the early 1980s a comparable new refrigerator was estimated to use about 1,100 kilowatt-hours. The 1990 federal efficiency standard for this average refrigerator is about 900 kilowatt-hours, and the 1993 federal efficiency standard is about 700 kilowatt-hours.

As time passes and older, less efficient refrigerators wear out and are replaced, the models that meet the 1990 and 1993 federal standards will make up a bigger share of the population of refrigerators. The average efficiency of refrigerators will therefore improve so that, by the end of the forecast period, it will approach the 1993 efficiency standard. This is an example of the long-term adjustment processes that can be expected in response to changes in energy prices and policy decisions that have already occurred. The 1993 federal standards are not reflected in this forecast, but are counted as conservation resources.

Projected improvements in refrigerator efficiencies are shown in Table 6-5. As in the case of thermal integrity, the higher growth scenarios have a higher share of newer, more efficient units, so these scenarios have more efficient stocks of refrigerators.

Table 6-5
Residential Sector Summary Indicators

		Estimated 1989	Forecast 2010				
			High	Medium-High	Medium	Medium-Low	Low
Households (millions)	Public	1.422	2.580	2.175	2.004	1.865	1.510
	IOU	2.061	3.660	3.100	2.871	2.663	2.187
Electricity Prices (1988 cents/kWh)	Public	3.7	4.5	4.0	4.1	3.3	3.0
	IOU	4.9	5.7	5.2	5.6	4.5	4.2
Natural Gas Price (1988 dollars/million Btu)	Both	5.08	9.65	8.15	6.96	5.92	4.73
Efficiency Measures							
Thermal Integrity (All electrically heated single family, efficiency relative to regional 1979 stock)	Public	1.24	1.55	1.49	1.45	1.42	1.35
	IOU	1.19	1.54	1.45	1.44	1.40	1.32
Refrigerators (Stock in single family houses, efficiency relative to regional 1979 stock)	Public	1.08	1.32	1.28	1.26	1.25	1.20
	IOU	1.07	1.30	1.26	1.25	1.29	1.24
Saturations:							
Electric Space Heat (% of homes with electric heat)	Public	59	66	63	61	58	58
	IOU	41	48	47	44	43	42
Electric Hot Water (% of homes with electric hot water)	Public	87	80	82	82	84	85
	IOU	80	74	75	74	76	77
kWh per Household (All homes)		14,562	14,060	14,037	13,570	13,888	13,936
Space Heat kWh per Household (Electrically heated homes)		8,464	7,612	7,641	7,425	7,680	7,659
Non-space-heat kWh per Household (All homes)		10,470	9,840	9,941	9,784	10,111	10,219
Space Heat Sales (MWa)		1,627	3,006	2,466	2,107	1,952	1,569
Total Sales (MWa)		5,790	10,015	8,452	7,552	7,178	5,882

DIKO/KC.AB4 Tables 6.3 and 6.4

Fuel choice projections have mixed effects on energy use per household. As shown in Table 6-5, the shares of households with electric water heating are projected to decrease in all forecasts. Electric space heating shares are projected to be higher in higher growth forecasts and lower in lower growth forecasts. Space and water heating saturations are influenced by electricity prices, per capita incomes, and the share of recently constructed houses in the stock. In addition, they are influenced heavily by the relationship of electricity prices to those of competing fuels such as natural gas and oil. As will be described in the section on electricity prices, the higher growth scenarios have higher electricity prices, but relatively lower prices of electricity compared to competing fuels. This pattern helps explain the higher saturation of electrical space heating in the higher growth scenarios.

Housing type also influences energy use per household. For all the forecasts, a reduction is projected in the total share of homes that are single-family houses, while an increase in the shares of multifamily units and manufactured homes is projected. Table 6-6 shows the 1980 historical shares of the three building types, along with the projected 2010 shares for each of the forecasts. This trend tends to decrease average use per household, since multifamily units and manufactured homes are smaller and require less energy to heat and cool.

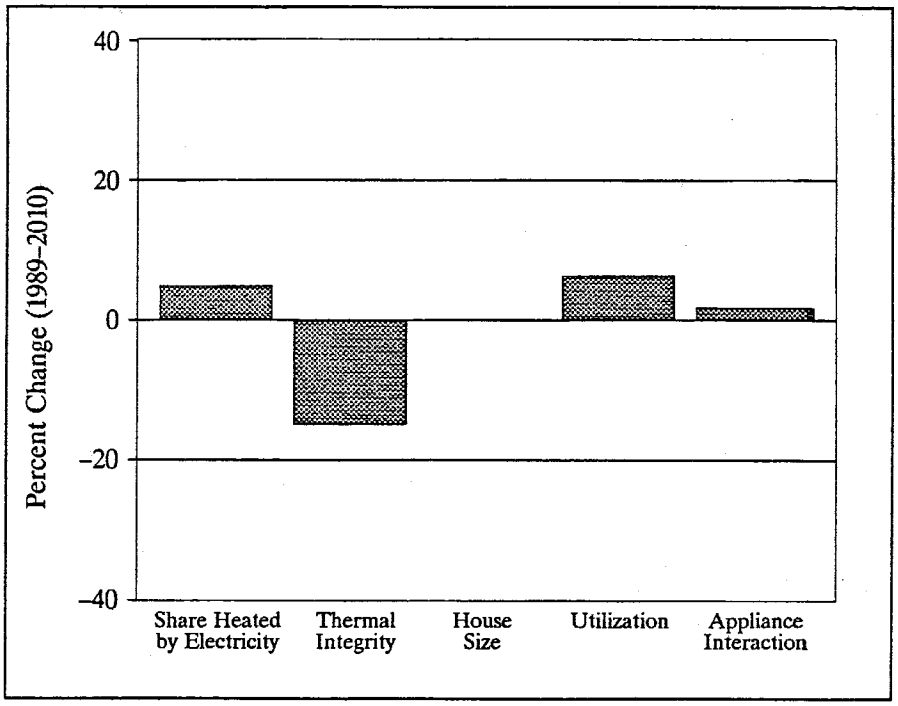
Table 6-6
Share of Housing Stock by Building Type
1980-2010 (%)

		2010				
	1980	High	Medium-High	Medium	Medium-Low	Low
Single-Family Homes	77.8	77.1	72.4	70.8	69.6	69.1
Multifamily Homes	14.4	15.2	17.2	18.4	19.3	20.9
Manufactured Homes	7.8	7.7	10.4	10.8	11.1	10.0

Electricity use per household is the net result of changes in efficiency, housing type, housing size, utilization levels, fuel choice and interaction between end uses (e.g., lower appliance use can increase space heating requirements). The changes in some of these individual components are substantial, but there is a tendency for them to offset one another in their effects on use per household. For example, efficiencies generally improve, tending to reduce use per household, while the sizes of multifamily units and manufactured homes are projected to increase, thereby increasing the per household energy requirements for space conditioning. These patterns are illustrated in Figures 6-7 and 6-8. Figure 6-7 shows the impact of the various determinants of electric space heating in single-family houses in the public rate pool. Figure 6-8 shows the same impacts for manufactured homes in the investor-owned utility rate pool.

Single–family Forecast Indicators

Figure 6–7
Factors Contributing to Change in Electric Space Heating in Public Rate Pool—Medium–High Scenario



Manufac–tured Home Forecast Indicators

Figure 6–8
Factors Contributing to Change in Electric Space Heating in IOU Rate Pool—Medium–High Scenario

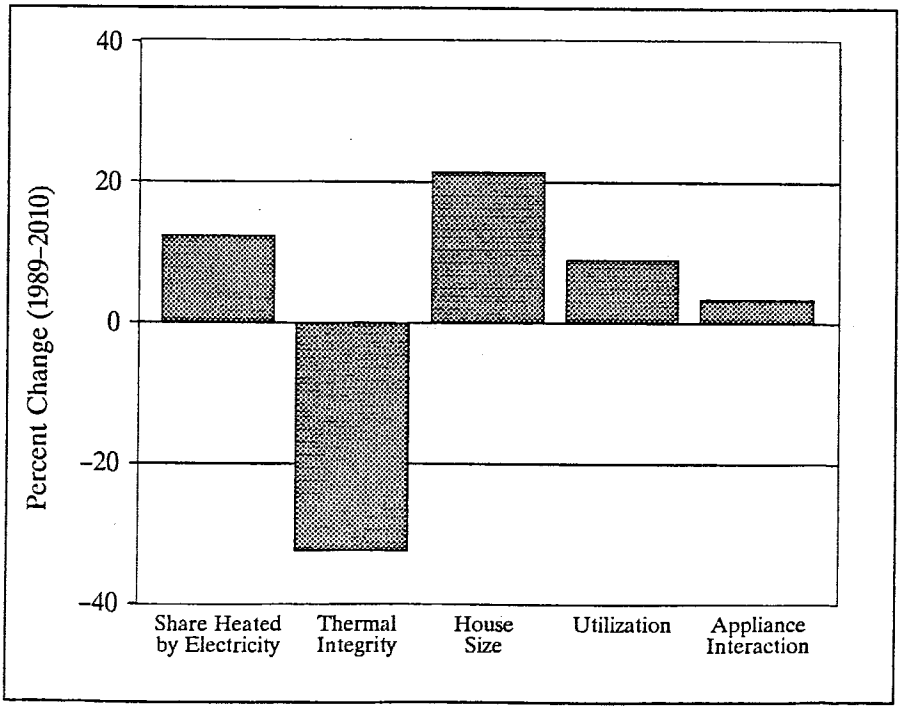


Figure 6-7 shows a decrease in per household use due to improvement in thermal integrity, partially balanced by increases in electricity's share of space heating, utilization levels, and the space heating load net of waste heat from appliances. The net change in electric space heating in single-family houses in the public rate pool between 1989 and 2010 in the medium-high scenario is a decrease of 3.5 percent per household.

Figure 6-8 shows a larger improvement in thermal integrity, partially offset by increases in electricity's share of space heating, utilization levels, house size, and space heating load net of waste heat from appliances. The net change in electric space heating for manufactured homes in the private rate pool is a decrease of 3.8 percent per household.

When all the influences just described are combined over all house types, end uses and rate pools, the net effect is the observed pattern of relatively small changes in per household use between scenarios. This means that the variation in total residential demand across the range is due largely to variation in the projected number of households.

The projection of electrical equipment use is based on demand for electricity before taking into account the Council's proposed conservation programs. The effects of these programs cause sales of electricity to grow at slower rates. In addition, the use of electricity per household would decline because of the increased thermal efficiency of buildings and improved appliance efficiencies. The effects of these efficiency increases would be somewhat diminished, however, by the greater use of energy services due to cost savings from improved efficiency in space and water heating. These effects are reflected in the "sales" forecasts that are the basis of the electricity prices used for the "price effects" forecasts.

Commercial Demand

Although currently the smallest of the major consuming sectors, the commercial sector is the fastest growing, averaging 3.4 percent growth per year since 1980. This rate of growth is more than twice that of total demand by all sectors. It has steadily increased its share of regional sales from 16 percent in 1970 to 22 percent in 1989.

Shares of historical commercial sector demand for electricity for various applications are shown in Figure 6-9. Space heating and lighting make up the largest shares of commercial electricity use. If space heating, ventilation and air conditioning are combined, as they commonly are, into an HVAC category, HVAC and lighting account for more than 80 percent of electricity use in the commercial sector.

Commercial sector electricity use is forecast separately for 10 different building types. The consumption shares of these building types are shown in Figure 6-10. Offices account for more than one-fourth of electricity use by the sector. Retail buildings are the next largest category, followed by miscellaneous buildings and groceries. More than two-thirds of the sector's electricity use is attributed to these four building types.

Commercial Electricity Uses

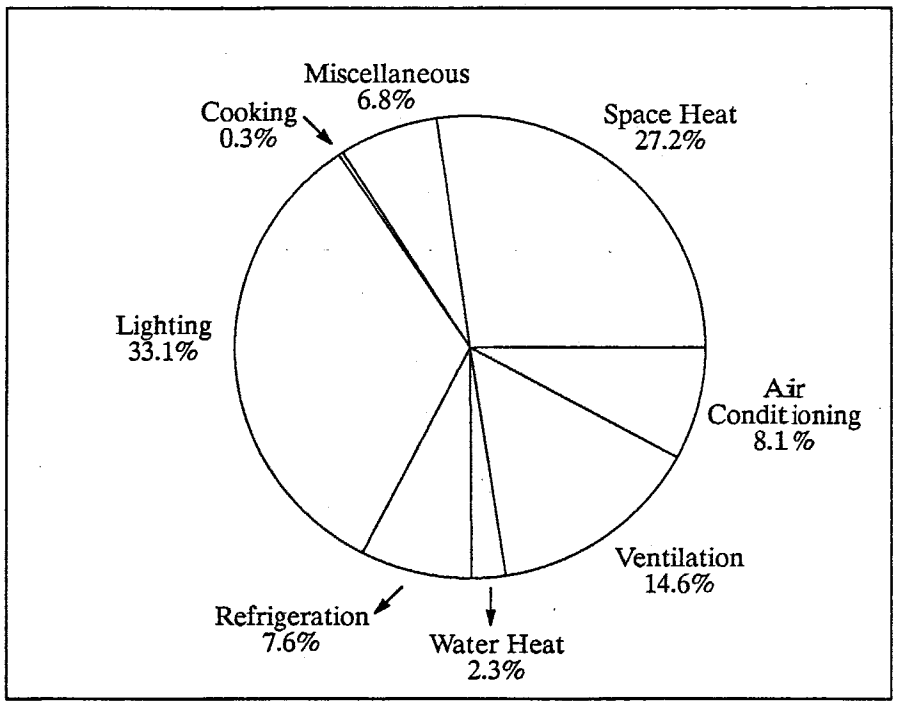


Figure 6–9
1989 Commercial Sector Use by Application

Commercial Use by Building Type

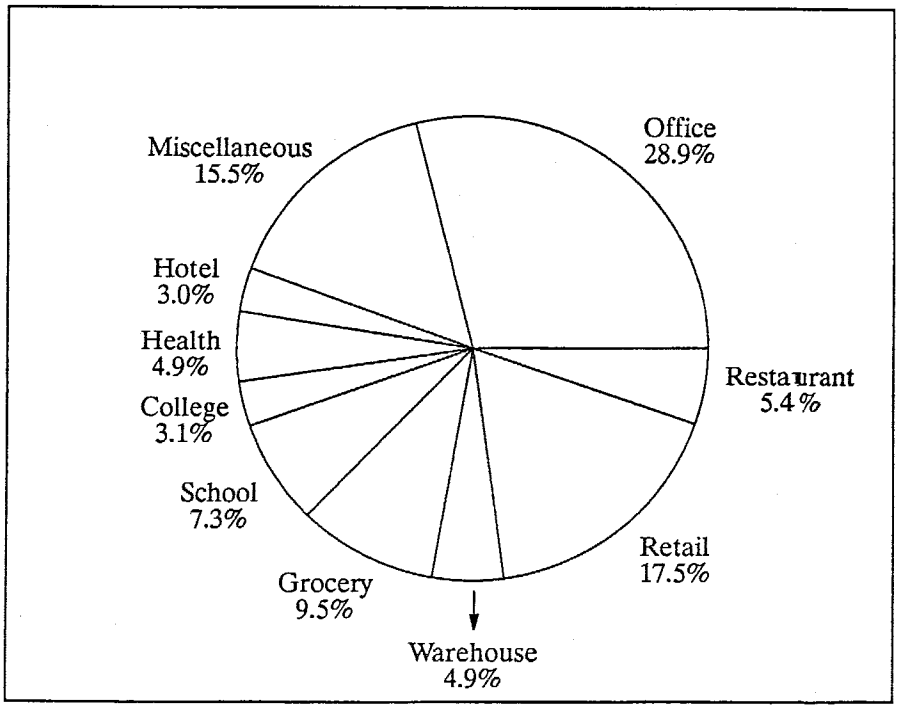


Figure 6–10
1989 Commercial Sector Use by Building Type

Commercial sector electricity demand, like that of the residential sector, is influenced by many factors, such as fuel prices and available technology. In particular, one fundamentally important factor used as a basis for energy use projections is the total floor space of the buildings in the commercial sector. The commercial sector demand model projects the amount of commercial floor space and then predicts fuel choice, efficiency choice, and the use of the energy-consuming equipment necessary to service this floor space. These choices are based on investment factors, fuel prices and available technology. Energy-use projections are made separately for different building types, applications and fuel types.

Since the 1986 Power Plan, development of the Council's commercial sector energy demand model has concentrated on incorporating recent data on floor space and energy use. Even before 1986, forecasters of commercial sector energy use in many parts of the United States were discovering that they tended to underforecast energy use in the early 1980s. A number of explanations were proposed, including unexpected growth in use of computers and other office machinery, a cyclical boom in construction of office building which exceeded the current requirements for floor space, and unexpected resistance to adoption of more efficient space conditioning and lighting equipment. Since 1986, data has become available which, while it does not eliminate all concern about the problem, does shed some light on its causes.

First, an estimate of the stock of commercial floor space was developed by Baker, Reiter and Associates under contract to the Bonneville Power Administration. This estimate was the result of a widespread sample of commercial buildings in the region and must be regarded as a significant improvement over the estimate previously used in the forecasting model. The estimated floor space of many building types changed substantially.

The estimation effort also resulted in estimates of 1980-1986 construction in the region. The estimated construction is consistent with a boom in office construction that saw estimated office space grow faster than employment of office workers. The differential growth of office space and office workers is also consistent with higher-than-normal vacancy rates (around 20 percent) in the metropolitan centers of the region. The assumption for the Council's forecast is that vacancy rates will gradually decline to around 10 percent, and then office floor space will grow in proportion to employment.

While office floor space appears to have grown faster than office employment, other building types seem to have grown more slowly than relevant employment. Health care buildings are one example. In these cases, our forecast assumes that the 1986 relationship of employment to floor space represents the long-term relationship, and that floor space will grow in proportion to employment growth after 1986.

The re-estimated floor space in the commercial sector made it necessary to re-estimate electricity use per square foot in the model's base year (1979). New energy use data from the End-Use Load and Conservation Assessment Program, the Commercial Audit Program and the Seattle City Light Commercial Data Base also contributed to the estimates.

The new energy use data also allowed the examination of the relationship of energy use in buildings built in the early 1980s to that of buildings built earlier. The data indicate that total electricity use in new offices and retail stores is not much different than use in older ones. Further, this relationship seems to hold even when use for heating, ventilation and air conditioning (HVAC) in new buildings is compared to HVAC use in older ones, and when lighting use is compared between new and older buildings.

These results could be interpreted to imply that the energy-efficiency of HVAC and lighting equipment has not improved since 1979. However, there is considerable anecdotal evidence that efficiencies have improved. This evidence suggests that new buildings and equipment are more energy-efficient, but are being used to provide a higher level of service or amenity to the occupants of the buildings. This higher amenity can take a number of forms (more hours of operation, greater control of temperature or humidity, more attractive display lighting, etc.), but the final effect is that energy use per square foot apparently has not declined with improved energy-efficiency of buildings or equipment.

Information about changing amenity levels in commercial buildings is mainly anecdotal--new schools tend to be air conditioned, new groceries tend to have delicatessens, and the like. Amenity levels may not increase in all new buildings, but they may increase in some existing buildings as well. The assumption in our commercial forecast is that for five building types (offices, retail, schools, colleges and miscellaneous), buildings built after 1980 provide increased amenities. These increased amenities, together with improved efficiencies, make HVAC and lighting electricity use about the same as the 1979 stock of these buildings types. It is also assumed that the pre-1980 stock of these same building types will provide gradually increasing levels of amenities until they reach the level provided by new buildings.

These assumptions had the effect of raising the forecast and brought the projected electricity use from 1979 to 1989 into much closer agreement with actual commercial sales during that period. This historical agreement is not conclusive proof that the assumptions are accurate, or that the assumptions lead to accurate long run forecasts. Historical agreement could have been obtained with a different combination of assumptions, leading to different long run forecasts. Given that these assumptions are based on the available data, the performance of the model in matching historical experience is some confirmation that the assumptions are reasonable.

Finally, the high scenario assumptions include modifications that bring fuel choices in the investor-owned utilities closer to fuel choice in the public utilities. The intent is to include in the high scenario the possibility that fuel choice is strongly influenced by factors not included in the forecasting model's simulation, and that the net effect of these factors is that electricity is preferred as a heating fuel even when electricity's apparent life cycle costs are not particularly attractive.

The resulting projections of commercial demand for electricity vary widely. In the low growth forecast, commercial demand for electricity decreases from 3,761 megawatts in 1989 to 3,741 megawatts by 2010. In the high growth forecast, it reaches 7,352 megawatts. As shown in Table 6-7, the average rate of growth of demand ranges from -0.0 to 3.2 percent per year.

Table 6-7
Commercial Sector Electricity Demand
(Average Megawatts)

	Actual	Forecasts			Growth Rate (% per year)
	1989	1995	2000	2010	1989-2010
High	3,761	4,889	5,541	7,352	3.2
Medium-high	3,761	4,394	4,851	6,053	2.3
Medium	3,761	3,880	4,384	5,243	1.6
Medium-low	3,761	3,784	3,903	4,561	0.9
Low	3,761	3,563	3,509	3,741	-0.0

Table 6-8 shows some of the components underlying these totals. Floor space increases in all forecasts, as a result of increased employment in the commercial sector, and is the major driver of growth in demand for electricity. Use of electricity per square foot of floor space of all buildings increases in the higher-growth forecasts and decreases in lower-growth forecasts. The change in use per square foot from 1989 to 2010 is modest for all forecasts, ranging from an increase of 3 percent in the high-growth forecast to a decrease of 9 percent in the low-growth forecast.

Table 6-8
Commercial Sector Summary Indicators

		Estimated 1989	Forecast 2010				
			High	Medium-High	Medium	Medium-Low	Low
Floor Space (million sq ft.)	Public	701.5	1,235.9	1,024.4	906.0	816.1	699.6
	IOU	1,322.0	2,577.0	2,172.9	1,925.9	1,722.9	1,492.9
Electricity Prices (1988 cents/kWh)	Public	3.2	3.9	3.5	3.5	2.8	2.5
	Private	5.1	6.8	6.2	5.8	5.3	5.2
Natural Gas Price (1988 dollars/million Btu)	Both	4.20	8.86	7.35	6.16	5.12	3.92
Sales - kWh per Square Foot Floor Space							
Offices							
Space Heat (offices heated by electricity)	Public	6.4	5.9	6.3	6.2	6.8	7.1
	IOU	6.2	5.1	5.5	5.8	4.5	4.4
Lighting	Public	8.2	8.0	8.2	8.0	8.5	8.7
	IOU	8.3	7.9	8.0	8.0	8.2	8.3
Total	Public	25.0	25.5	26.6	26.1	27.7	28.5
	IOU	24.0	23.5	23.9	24.3	22.7	22.9
All Commercial Buildings							
Space Heat (buildings heated by electricity)		9.1	6.7	8.0	8.3	9.3	10.5
Lighting		5.4	5.3	5.3	5.3	5.4	5.4
Total		16.4	16.9	16.6	16.2	15.7	14.9
Saturation of Electric Space Heat (%)							
Offices	Public	73	96	93	88	77	54
	IOU	67	94	84	73	52	44
All Commercial Buildings	Public	59	88	83	73	67	54
	IOU	43	75	52	44	27	14
Total Sales (MWa)							
Space Heat		1,033	2,314	1,797	1,434	1,059	699
Lighting		1,249	2,310	1,923	1,704	1,567	1,362
Total		3,761	7,352	6,053	5,243	4,561	3,741

D:KC/KC.AB4 Tables 6-5 and 6-8

Use of electricity per square foot of office floor space, however, is projected to move in different directions depending on utility type. It decreases in the investor-owned utilities for four scenarios, and increases very slightly (0.3 kilowatt-hour per square foot) in the other scenario. In the public utilities, it increases for all scenarios. These changes are modest in either direction. The largest projected increase is about 13 percent and the largest projected decrease is about 5 percent.

Saturation of electric space heating is projected to increase most in the higher growth scenarios, and to decrease in the lower scenarios. This pattern holds for offices as well as for commercial buildings generally.

The pattern of projected electric space heat saturations is due partly to the pattern of projected electricity prices. Table 6-8 shows that investor-owned utilities' rate pool prices increase in all growth scenarios, but public rate pool prices decrease or stay constant in the lower-growth scenarios. In addition, projected 2010 prices for investor-owned utilities are at least 70 percent higher than those for the public utilities.

Projected prices of competing fuels also influence space heat saturations. Figure 6-14, in the section on prices, demonstrates that while projected residential electricity prices are lowest in the low scenario, natural gas prices are projected to decline even more, so that electricity prices relative to natural gas prices are highest in the low scenario. Fuel prices projected for the commercial sector follow a similar pattern and lead to higher electric space heat saturations in the higher growth scenarios and lower electric space heat saturations in the lower-growth scenarios.

The mixed pattern of projected energy use is due in part to projected electricity prices and in part to conflicting trends in efficiency and amenity levels. As described earlier, new buildings are assumed to provide a higher level of service or amenity to their occupants, which tends to use more electricity. At the same time, new buildings and equipment are projected to be more energy-efficient in providing any specified level of amenity. The net result of these conflicting trends is the observed pattern of small increases and decreases in overall electricity use per square foot.

These projections do not take into account the conservation programs included in the draft power plan, but are based on existing building codes and market response to increased energy prices. The programs in the draft plan have been identified as cost-effective resources to meet this demand forecast. The conservation programs will reduce overall demand for electricity, reduce demand per square foot, and improve equipment efficiency.

In general, recent research and trends in commercial electricity use have left a number of unanswered questions. The assumptions made for this forecast seem to be reasonable, but further adjustments will undoubtedly be made as there is more information. Given its increasing share of regional electricity use, the commercial sector will be the subject of continuing research and analysis.

Industrial Demand

The industrial sector is the largest of the four consuming sectors. In 1989, the industrial sector consumed 6,899 average megawatts of firm power, accounting for 40 percent of total firm demand in the region. In addition to the firm power, the industrial sector consumes varying amounts of interruptible power depending on economic and hydroelectric conditions. In 1989, industry consumed 634 average megawatts of interruptible, or nonfirm electricity.

Unlike the residential and commercial sectors where the general uses of electricity are similar in different houses or buildings, the industrial uses of electricity are extremely diverse. It is very difficult to generalize about the end uses of energy or the amounts of energy used in a "typical" industrial plant. For example, the primary metals industry uses about 80 times as much electricity per dollar of output as the apparel industry.

The industrial use of electricity in the Northwest is highly concentrated in a few subsectors. Five industries--food, chemicals, paper, lumber and metals--account for nearly 90 percent of industrial use of electricity. Figure 6-11 illustrates the composition of total industrial demand for electricity based on the forecast for 1989. Metals production alone accounted for nearly half of total industrial electricity use.

Over 90 percent of electricity use in metals is by Bonneville's direct service industry customers, primarily the region's aluminum smelters. These aluminum smelters also dominate all direct service industry sales, accounting for about 90 percent of that total. Bonneville's direct service industrial customers accounted for 40 percent of total industrial demand for electricity in 1989, or about 17 percent of total regional sales to all sectors. One-fourth of the direct service industry demand is considered nonfirm demand, or interruptible demand. If Bonneville were to have a shortage of energy, for example, due to poor water conditions, it could withhold service for one-fourth of the direct service industry demand. Only the firm portion of direct service industry demands are included in the the Council's forecasts of energy requirements. However, the interruptible portion of direct service industry demand is considered in system operation and electricity pricing analyses.

Forecasts of industrial demand for electricity are based on production forecasts for the various industrial sectors, the amount of energy used per unit of output, and the effects of electricity and other fuel prices on their use of energy. Table 6-11 shows industrial sector firm demand forecasts for selected years for all five forecasts. In the high forecast, consumption of electricity by the industrial sector grows to 10,581 average megawatts by 2010--an average annual growth rate of 2.1 percent per year. In the low forecast, industrial demand decreases at a rate of 1.5 percent per year due to significant reductions in direct service industry sales offsetting modest growth in other industries. The more likely range of industrial demand growth is from -0.1 to 1.3 percent per year with the medium case growth at 0.6 percent per year.

Industrial Electricity Use

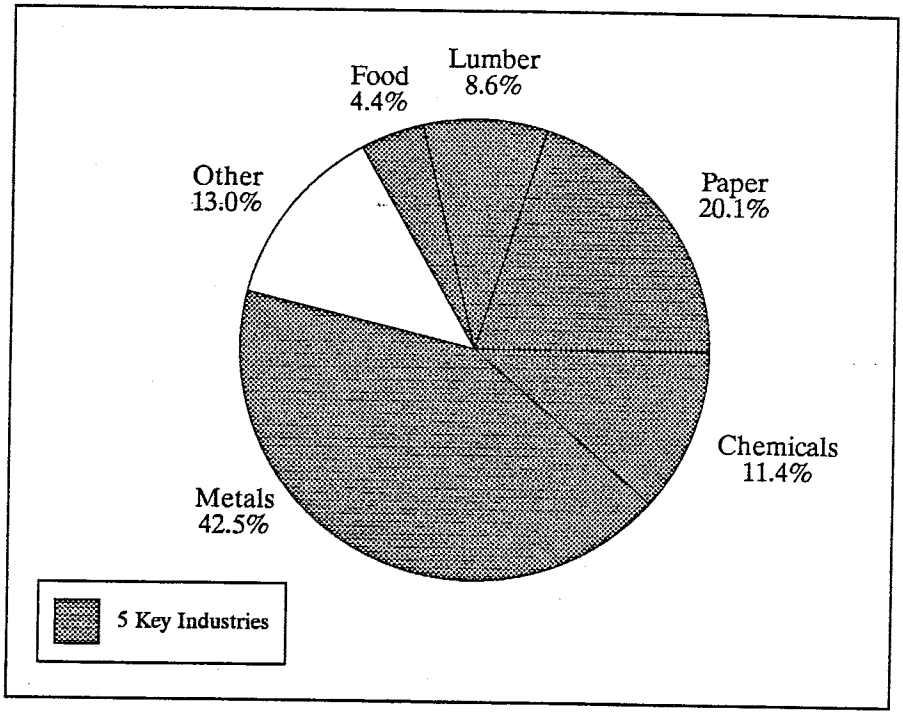


Figure 6–11
Composition of Industry Demand

Table 6-9
Industrial Sector Firm Sales
(Average Megawatts)

	Actual 1989	Forecasts 1995	2000	2010	Growth Rate (% per year) 1989-2010
High	6,899	8,035	9,595	10,581	2.1
Medium-high	6,899	7,432	8,002	8,961	1.3
Medium	6,899	6,920	7,258	7,832	0.6
Medium-low	6,899	5,919	6,204	6,645	-0.1
Low	6,899	5,066	5,122	4,994	-1.5

Methods of forecasting the industrial demand for electricity vary substantially among different industrial subsectors. In general, the forecasting methods are most detailed for the activities that consume the greatest amounts of electricity. It is necessary to forecast industrial activity and demand for electricity individually for up to 40 industry components in order to obtain reliable forecasts of total industry demands.

The composition of the industrial forecasting system is shown in Table 6-10. The components are defined using the Standard Industrial Classification (SIC) code. Table 6-10 shows the share of total industrial consumption of electricity estimated to have been consumed by each subsector in 1981. The concentration of demand for electricity that was illustrated in Figure 14 is also apparent in Table 6-10.

There are four different forecasting methods used for the industrial sector. The methods are referred to as, 1) key industry model, 2) econometric model, 3) simple relationships, and 4) eclectic. The method applied to each industry component is abbreviated in Table 6-10. Most of the forecasting methods are driven primarily by forecasts of industrial production. In addition, each of those methods modifies the relationship between production and electricity use to reflect the effects of changing energy prices and other factors.

The three largest non-direct service industries are forecast using the key industry models. The key industry models are highly detailed approaches to forecasting demand for electricity. The three key industries are lumber and wood products, pulp and paper, and chemicals. First, the industry is divided into the most energy-intensive activities. For those activities, the uses of electricity are divided into several types, such as motors for specific processes, electrolysis or lighting. The fraction of electricity use attributable to each of these end uses is estimated for an average plant. In the case of the chemical production of phosphorus and chlorine, the model is specified separately for each of the relatively few plants in the region.

The forecast requires a specification of how the types of end uses may change their shares over time. In addition, the degree to which electricity for each type of end use could be conserved in response to price changes must be specified. The degree of price response was varied across forecast scenarios, being largest in the low forecast and smallest in the high forecast. Given these specifications, the demand for electricity per unit of production will change from its base year value as production and electricity prices change.

The key industry models require a great deal of data and judgment. This information goes beyond readily available sources of data. For this reason, specification of the key industry models relied heavily on the judgment and advice of industry representatives and trade organizations.

The industrial forecasting system includes a variety of econometric forecasting equations for the remaining non-key and non-direct service industry demands for electricity. Econometric models consist of equations estimated from historical data. The equations attempt to measure the effect of industry production and energy prices on the demands for different types of energy, including electricity.

Alternative econometric estimates are available in the demand forecasting system for most industry components. In Table 6-10, the alternative equation used is specified in parentheses next to the forecasting method. Equations obtained from the Oregon Department of Energy are noted as ODOE. Equations obtained from Bonneville are labeled AEA for the consulting firm that estimated the equations, Applied Economic Associates.[2]

2./ Applied Economic Associates, Inc., *Update and Re-estimation of the Northwest Energy Policy Project Energy Demand Forecasting Model*, report to Bonneville Power Administration, December 1981.

Table 6-10
Industrial Forecasting Methods

SIC Code	Title	1981 Percent of Manufacturing Electricity		Forecasting Method
Manufacturing				
20	Food and Kindred Products	4.1		Simple
22	Textiles	.1		Econometric Model (AEA)
23	Apparel	.1		Simple
24	Lumber and Wood Products	6.8		Summed
2421	Sawmills and Planing Mills		2.8	Key Industry Model
2436	Softwood Veneer and Plywood		1.5	Key Industry Model
24XX	Rest of SIC 24		2.5	Simple
25	Furniture	.1		Simple
26	Pulp and Paper	21.0		Summed
2611	Pulp Mills		1.6	Key Industry Model
2621	Paper Mills		12.1	Key Industry Model
2621	Paper Mills - DSI Crown Zellerbach		.2	Eclectic
2631	Paperboard Mills		4.4	Key Industry Model
26XX	Rest of SIC 26		2.7	Simple
27	Printing and Publishing	.5		Econometric Model (ODOE)
28	Chemicals	11.0		Summed
2812	Chlorine and Alkalies		1.9	Key Industry Model
2812	Chlorine and Alkalies - DSI Georgia Pacific Pennwalt		1.1	Eclectic
2819	Elemental Phosphorus		5.6	Key Industry Model
2819	Elemental Phosphorus - DSI Pacific Carbide DOE Richland		.8	Eclectic (Included in Federal Agencies)
28XX	Rest of SIC 28		2.2	Econometric Model (ODOE)
29	Petroleum Refining	1.4		Simple
30	Rubber and Plastics	.5		Econometric Model (AEA)
31	Leather and Leather Goods	0.0		Included in Residual
32	Stone, Clay, Glass and Concrete	1.2		Summed
3291	Abrasive Products - DSI Carborundum		.3	Eclectic
32XX	Rest of SIC 32		.9	Econometric Model (ODOE)
33	Primary Metals	49.0		Summed
3334	Aluminum - DSI		43.2	Eclectic
3313	Electrometallurgical - DSI Hanna Gilmore		1.3	Eclectic
3339	Non-ferrous n.e.c. - DSI OREMET		.1	Eclectic
33XX	Rest of SIC 33		4.4	Econometric Model (ODOE)
34	Fabricated Metals	.8		Simple
35	Machinery Except Electrical	.8		Simple
36	Electrical Machinery	.4		Econometric Model (ODOE)
37	Transportation Equipment	1.9		Simple
38	Professional Instruments	.4		Simple
39	Miscellaneous Manufacturing	.1		Simple
XX	Residual Categories	.4		Simple
Mining				Grows with Employment

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Because historical data is generally of poor quality at the industrial subsector level, it is often difficult to obtain plausible relationships for econometric equations. Where econometric results appeared implausible, simple relationships between output and electricity use were used as a basis for the forecasts. The sectors whose forecasting methods are listed as "simple" are those for which econometric results were unsatisfactory.

In these simple forecasts, demand for electricity is assumed to grow at the same rate as production, but is modified by an assumed trend in electricity use per unit of production. There is substantial agreement, in econometric models and other research on industrial energy demand, that in the absence of other influences, energy demand will grow with production. There is much less agreement about the degree to which price changes influence demand. To reflect this uncertainty, assumptions about changes in demand per unit of production were varied across forecast scenarios. Electricity use per unit of production was assumed constant in the high forecast for industry components that were forecast using the simple method. In the medium-high forecast, the electric intensity was assumed to decrease by 0.5 percent per year; in the medium-low forecast, by 1.5 percent per year; and in the low forecast, by 2.0 percent per year. The medium case assumes a reduction of electricity use per unit output of 1.0 percent per year. These assumptions are similar to the range of results from econometric equations that were more acceptable theoretically and behaviorally.

Forecasting methods for the direct service industrial customers of Bonneville are described as eclectic, because they are the results of several types of forecast methods and studies. For example, aluminum industry electricity use was forecast using industry forecasting models, results of various aluminum studies, and external consultants, supplemented by judgment and specific knowledge gained through years of dealing with the industry. The forecasts are done primarily on the basis of the relationship between aluminum prices and production costs. The aluminum price projections are based on forecasts from independent consultants who follow the aluminum industry. Production costs for each smelter are Bonneville estimates. Different model approaches are used in the aluminum load forecasting process for the long term and the short term. In the long-term model, if a plant cannot recover its total production costs over several years, given the long-term aluminum price forecast, then it is assumed to permanently shut down. In the near-term model, if a plant cannot recover its variable costs given the prevailing aluminum prices, then it will temporarily close some production capacity, only to re-open it when the aluminum prices recover enough to exceed the variable production costs. The results are then evaluated with staff judgement to produce the aluminum electricity demand forecast.

Electricity use by non-aluminum direct service industries was forecast using econometric equations. Use is determined by general macroeconomic conditions reflected in industry-specific production indices, and the region's relative price of electricity. Variables reflecting national trends were taken from Data Resources Inc. In the case of a few plants, model forecasts were supplemented with an assessment of prices and production costs. For these plants, projected use is adjusted based on rough estimates of profits and losses.

The forecast growth rates of industrial demand for electricity are considerably smaller than the projected rates of growth in total industrial production. Production by Northwest manufacturing industries is expected to grow by 4.7

percent per year in the high forecast; 3.6 and 1.9 percent per year in the medium-high and medium-low forecasts, respectively; and by 0.8 percent per year in the low forecast. The medium forecast is 2.9 percent per year.

The relative growth rates of electricity demand and output imply an overall reduction in the electricity intensity of the Northwest industrial sector. The ratios of electricity use to production decline over the forecast period in all five forecasts. The rate of decline in the most probable range is about 2.1 percent per year. Although these rates of decrease are significant, they are lower than recent regional history. Between 1977 and 1986, regional industrial electricity intensity is estimated to have declined by about 3.8 percent per year. Such decreases in energy intensity are not unprecedented. At the national level, for example, total energy use per unit of production in the industrial sector has been estimated to have decreased by 4.5 percent per year between 1970 and 1986.

There are several factors operating to reduce industrial rates of electricity growth relative to production growth. The most important is a change in the mix of industry. Many of the large users of electricity are not expected to grow as fast as industry does on average. This is most notable in the case of the direct service industries, a very large portion of the industrial demand that is contractually limited to current levels and could decline due to economic forces.

During the 1980s, direct service industrial demands for electricity exhibited enormous volatility, primarily reflecting swings in aluminum industry market conditions. This volatility is expected to continue, with the uncertainty for the regional industry compounded by the potential outcomes of major issues. Such issues include the impact of resource strategies taken by the region on availability of power to aluminum smelters, terms and conditions of future direct service industry power sales contracts, the nature and extent of direct service industry contract assignments, and the level of industrial power rates. In general, future direct service industry demand for electricity will be a function of the perceptions of industrial producers about the attractiveness of the region as a place to invest and operate, as well as their ability to maintain competitiveness in product markets.

During the past two years, the competitive position of the region's aluminum smelters has improved. The excess aluminum smelting capacity worldwide in the early 1980s has been reduced through permanent plant closures and delays in announced new capacity in developing countries. Northwest aluminum companies have invested in improved efficiency and benefitted from Bonneville's variable electricity rate structure. In addition, reduced transportation costs to the Pacific rim, combined with a decreased value of the dollar against other world currencies, have made the Northwest smelters more competitive in those markets. Nevertheless, even though regional smelters have reduced their costs considerably, and have benefitted from recent market strength, continued operation of the aluminum smelters will depend, to a great extent, on the outcome of the issues discussed above.

The uncertainty of future direct service industry power sales is reflected in the five forecast scenarios for purposes of defining the full range of electrical resource needs. Figure 6-12 shows the percent of aluminum plant capacity that is expected to be operating in the region by the end of the forecast period for each of the five forecasts. Capacity is defined as the amount of electricity, in

terms of average megawatts, that regional aluminum smelters are expected to consume after efficiency improvements made under Bonneville's Conservation/Modernization program. In the high scenario, it is assumed that the aluminum direct service industries will operate at 100 percent of capacity. Operating rates for the medium-high, medium, and medium-low scenarios are assumed to be 97 percent, 90 percent, and 67 percent, respectively. In the low scenario, the aluminum industry is forecast to operate at about 50 percent of capacity until the year 2001. At that time it is assumed that new contract terms and poor economic conditions could result in a decrease in operating rates to 25 percent of capacity.

Aluminum Industry Assumptions

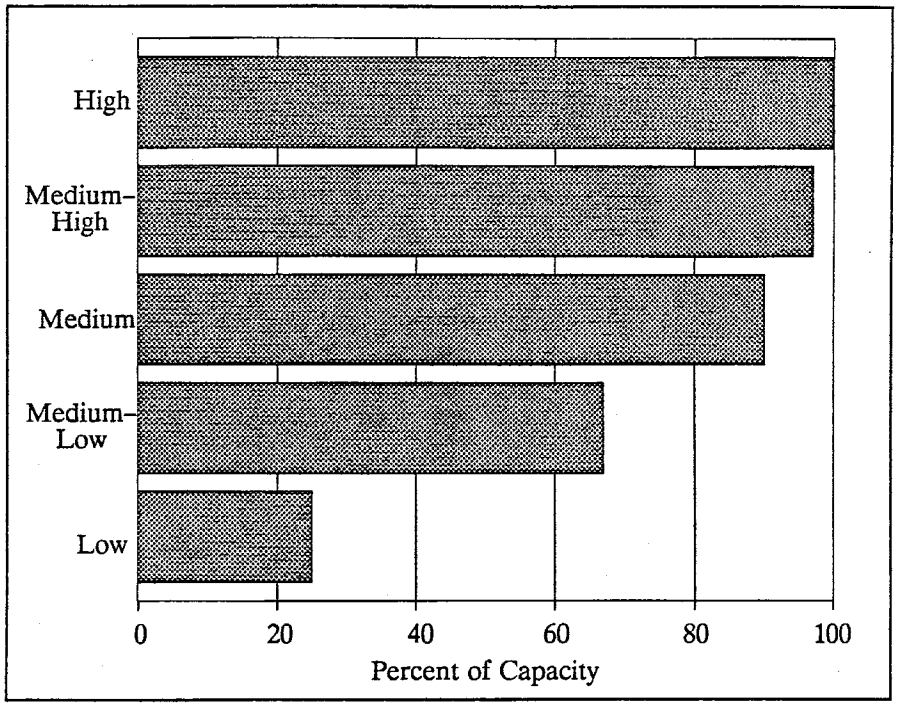

Figure 6–12 Projected Aluminum Operating Rates

The forecast of industrial electricity use is further dampened by the fact that some of the large non-direct service industrial users such as lumber and wood products, food processing and pulp and paper are not projected to grow as fast as less energy-intensive industries. As shown in Table 6-11, output growth for the key non-direct service industries combined is expected to be 1.4 percent per year in the medium forecast, compared to 2.9 percent per year for all industrial production. Thus, the two components of the industrial sector that accounted for nearly 90 percent of the sector's electricity demand historically will show relatively weak growth over the next 20 years.

Table 6-11
Composition of Industry Growth, 1989-2010: Medium Forecast

	Historical Share of Consumption (%)	Production Growth Rate (% per year)	Demand Growth Rate (% per year)
Direct Service Industries	44	NA	-0.8
Key Non-Direct Service Industries	43	1.4	0.8
Minor Industries	14	3.7	2.6
Total	100	2.9	0.5

The third major reason for lower electricity growth relative to production is the effect of the large change in the relative price of electricity in the region over the last several years. The effects of price on industrial demand cannot be separated into components as they can for the residential and commercial sectors. But conceptually they include efficiency improvements, fuel switching and product mix changes within individual industrial sectors. The forecasting models embody these changes as general price response.

Irrigation Demand

In 1989, 640 average megawatts of electricity were used for irrigation, less than 4 percent of total regional firm electricity sales. For several decades, Pacific Northwest irrigation sales climbed rapidly and steadily. However, after 1977 they became more erratic, leveled off, and then began to decrease slowly. The average annual rate of growth of on-farm and Bureau of Reclamation irrigation electricity use from 1970 to 1977 was a robust 10 percent. From 1977 to 1989 there was no net growth, reflecting increased electricity and water conservation and a slowing down in the development of new irrigated land.

There are currently about 8.2 million acres of irrigated land in the region. Nearly half of the region's irrigated acres are in Idaho. Oregon and Washington each have a little over one-fifth of the total irrigated acres. Most electricity use in irrigation is associated with sprinkler irrigation. Currently, about 55 percent of the irrigated land in the region is irrigated with sprinkler systems. The distribution of irrigation by state is different for electricity used than for irrigated acres. Washington and Idaho accounted for over 80 percent of irrigation electricity use in 1987 but only 67 percent of sprinkled acres. This difference is due to the high electricity intensity of Washington's irrigated agriculture.

Table 6-12 shows the forecasts of use of electricity for irrigation. The forecast range is quite flat. The high forecast shows a little growth in electricity used for irrigation from its 1989 level. The other cases each show declining amounts of electricity being used for irrigation compared to 1989. The irrigation forecast excludes about 100 megawatts of Bureau of Reclamation pumping loads at Grand Coulee and Roza dams. The forecasts shown in Table 6-12 include U.S. Bureau of Reclamation irrigation sales.

The forecasts reflect the expectation that major additions to Northwest irrigated agriculture are unlikely and that additions that do occur are likely to be offset by increased efficiency in the use of electricity and water. Two factors will limit irrigation growth; the depletion of aquifers in some areas, and the lack of additional good land to bring under irrigation.

Table 6-12
Irrigation Sector
(Average Megawatts)

	Actual 1989	Forecasts 1995	Forecasts 2000	Forecasts 2010	Growth Rate (% per year) 1989-2010
High	640	699	697	694	0.4
Medium-high	640	649	641	632	-0.1
Medium	640	618	579	573	-0.5
Medium-low	640	587	580	580	-0.5
Low	640	544	528	481	-1.3

The forecast of irrigation electricity use is based on a range of assumed rates of growth in irrigation sales for five-year increments. The resulting demands are then adjusted for the effects of price changes based on specified price elasticities. The long-term price elasticity was assumed to be -0.4. This price elasticity was jointly specified by the Council and Bonneville. The prices are from the Council's electricity pricing model for all but the medium forecast. The medium prices are from Bonneville's Supply Pricing Model. The medium forecast falls below the medium-low forecast in the later years of the forecast due to the medium case prices. Differences between the medium price forecasts and the other cases prices forecasts are discussed in the next section.

Retail Electricity Prices

The forecasts of electricity prices in the Pacific Northwest show relatively stable prices over the next several years. However, the exact price outlook varies substantially in the different forecasts.

Electricity prices are an important determinant of electricity demand. It is also true that electricity demand growth has an important effect on future electricity prices. These mutual dependencies are accounted for in the demand and price forecasts.

Figure 6-13 shows real average retail rates in 1988 dollars for the five forecasts. As can be seen from Figure 6-13, the price outlook varies substantially in the different forecasts, showing substantial increases in the high forecast and declining in real terms in the low forecast. This pattern results because nearly all new resources are more costly than the existing resource base, and the more new resources that need to be added, the greater the cost increase. In the middle

range of the forecasts, electricity prices are expected to be generally stable, or increase only moderately, relative to the prices of other goods and services.

It is apparent that the medium forecast prices have a different pattern over time than the other four cases. This is due to the fact that a different pricing model was used for the medium forecast. Bonneville's Supply Pricing Model (SPM) was used for the medium forecast, in order to facilitate use of the medium forecast in other Bonneville processes. In the near term, medium prices dip below the other cases. This is probably due to the fact that Bonneville's SPM is designed to deal with the near term in more detail, and has incorporated updated utility costs using more recent 1990 investor-owned utility and Bonneville cost information. The long-term prices projected by SPM differ from the Council's price forecasting model more than has been the case in past forecasts. The reasons for this are not known yet, although the exact resource costs and mixes are probably different. The Council and Bonneville staff will continued to explore the differences. However, since the medium forecast plays no special role in the Council's planning, the differences will not have any significant effect on the draft plan resource analysis.

Electricity Prices

Figure 6-13
Average Retail Electric Rates

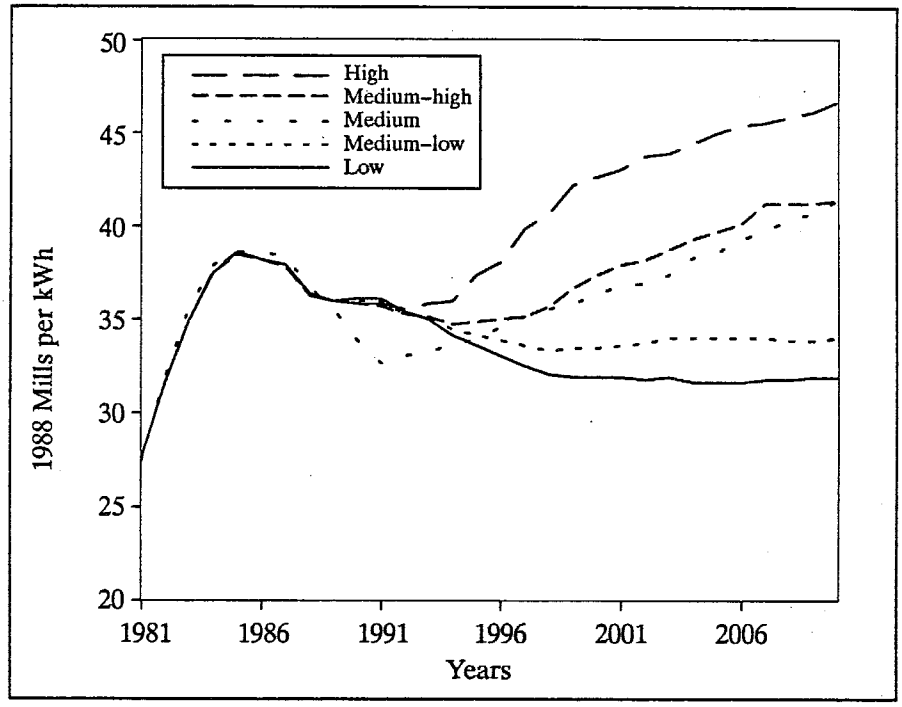

Table 6-13 shows 1989 estimated average electricity prices, forecasts for 2010, and average annual rates of change for three different kinds of rates. The rates include average retail rates paid by all consumers combined, average retail rates paid by customers of public utilities, and average retail rates paid by customers of investor-owned utilities.

Table 6-13
Electricity Price Forecasts
(1988 Cents per Kilowatt-Hour)

	Average Retail All Consumers	Average Retail Public Utilities	Average Retail Private Utilities
Estimated 1989 (1988 cents per kWh)	3.8	3.2	4.3
Forecast 2010 (1988 cents per kWh)			
High	4.7	3.8	5.7
Medium-high	4.1	3.4	5.2
Medium	4.1	3.4	5.1
Medium-low	3.4	2.7	4.4
Low	3.2	2.4	4.2
Growth rates (1989-2010) (% per year)			
High	1.0	0.8	1.4
Medium-high	0.4	0.3	0.9
Medium	0.4	-0.3	0.8
Medium-low	-0.5	-0.8	0.1
Low	-0.8	-1.3	-0.1

Average retail prices in the region are predicted to increase faster than inflation between 1989 and 2010 in the high, medium-high, and medium forecasts. In the low and medium-low forecasts, real prices decline. Private utility prices are projected to increase faster, or decrease less, than the prices for publicly owned utilities. This is because private utilities need to add new resources sooner than public utilities.

All but the medium case demand forecasts use retail electricity price forecasts produced by an electricity pricing model that is part of the Council's demand forecasting system. The model develops forecasts of retail prices by sector for investor-owned and public utilities. The prices are forecast through a detailed consideration of power system costs, secondary power sales, forecast assumptions, and the provisions of the Pacific Northwest Electric Power Planning and Conservation Act (the Act). Bonneville, as discussed above, has a similar electricity pricing model which was used for the medium case demand forecasts.

The Council's electricity pricing model contains capacity and cost information on both generating and conservation resources. Cost and capacity of the federal base hydroelectric resources are included as a total. However, most other resources are treated on an individual basis. Capability of each resource is specified for critical water conditions and for peak capacity. Capital cost and operating costs are specified for each generation resource. For conservation resources, only those costs that are to be paid through electric rates are included. The effects of conservation programs are generally predicted directly in the various

demand models, although in some cases the savings are included as a resource within the pricing model and subtracted from demand there.

The costs of generation and conservation are added up and allocated to the various owners (Bonneville and investor-owned and public utilities). The costs of resources used to provide power to customers of Bonneville, public utilities and investor-owned utilities are combined to reflect contractual agreements among utilities and the exchange and other provisions of the Act. The model develops forecasts of wholesale power costs for three Bonneville rate pools--priority firm, direct service industries and new resources. Similarly, costs are developed for investor-owned and public utilities. Retail markups are added to these costs to obtain estimates of retail rates for each consuming sector of each type of utility.

As demand grows, resources are added to meet demand, and the new resource costs are melded with existing resource costs. The pricing model balances resources and demand based on critical water capacities. However, the effects of different water conditions on secondary energy and electric rates are simulated by the pricing model. The operation of the hydroelectric system on a monthly basis over 40 historical water years is the basis of this simulation. When there is surplus hydroelectric power in any month for a specific water year, the model allocates that secondary power to various uses according to a set of priorities specified in the model assumptions. These uses in the assumed order of priority are, 1) serve the top quartile of direct service industry demand, 2) shut down combustion turbines, 3) sell outside the region, and 4) shut down other thermal generation.

For purposes of the pricing model, firm surpluses are added to secondary power and allocated using the same priorities. If the region is in a deficit situation, instead of surplus, the model will import power at a prespecified price until additional resources are added to meet demand.

The revenues from sales of secondary power and firm surplus power, or the costs of importing to cover deficits, are averaged over months and water years to obtain estimates of expected prices of power given uncertain water conditions.

These price forecast results depend on several important assumptions. It was assumed that a preliminary draft resource portfolio would be followed as resources are added to meet growing demand. The resource portfolio assumed for these forecasts is close, but not identical, to the one presented in this draft plan, but the differences are not expected to affect the demand forecast significantly. The portfolio will be modified following regional discussion and review of the resource alternatives in the draft plan.

Another important assumption is that no dramatically revised repayment requirement will be imposed for the federal debt on the region's hydroelectric system. Some of the more extreme versions of the revised repayment costs would have a significant effect on electricity prices.

It is assumed that investor-owned utilities do not place significant amounts of load on Bonneville, resources are not built before regional need, and that a constant real price is received for secondary and firm surplus power sales except during times of excess water conditions (spill).

Electricity price forecasts were described above, and fuel price forecasts were described in Chapter 5. However, for most of the demand sectors, the relative price of electricity compared to oil or natural gas is important. It is the relative price that most affects consumers' choice of fuel type. Figure 6-14 shows forecast prices of electricity relative to natural gas for residential customers. Natural gas prices have been divided by 0.8 to adjust for differences in the end-use efficiency of gas and electricity. Thus, the relative prices shown in Figure 6-14 are more appropriate comparisons of the cost of heating than of the cost of buying fuel. Although electric rates are highest in the high forecast, it is in the high forecast that relative electric rates are lowest. This stimulates the demand for electricity in the high forecast. The relative fuel price pattern results because the range of uncertainty in future fuel prices is much wider than the range of uncertainty in the electricity prices.

Natural Gas Price Comparison

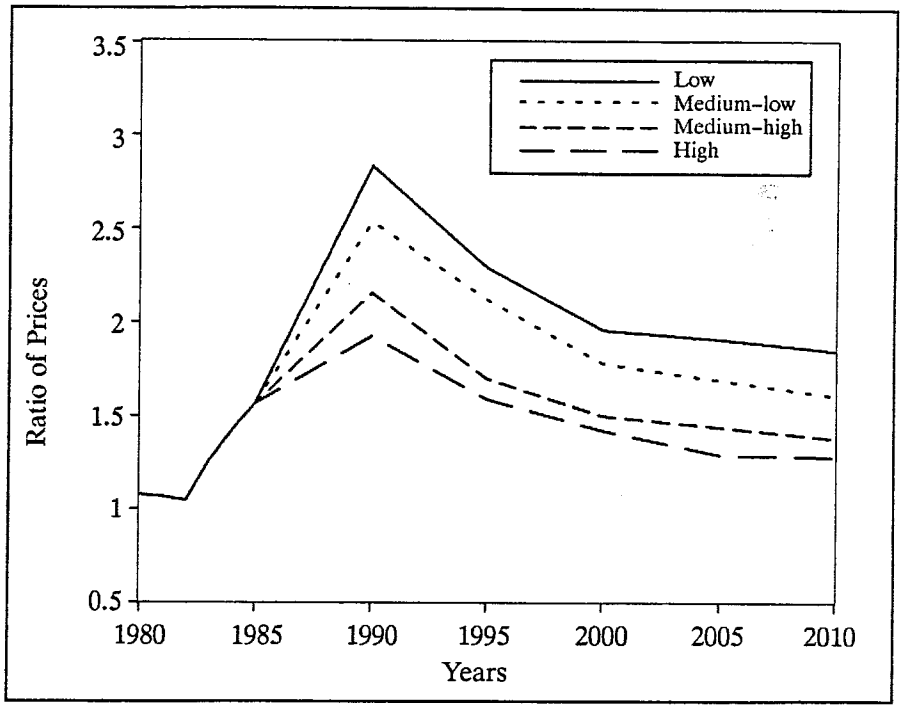

Figure 6-14
Relative Residential Energy Prices (Ratio of Electricity to Natural Gas)

When the ratio in Figure 6-14 is above 1.0, it means electricity is relatively more expensive than natural gas. During most of the 1970s, electricity in the Pacific Northwest was inexpensive relative to natural gas, its main competitor. However, recent large increases in electric rates combined with decreases in natural gas prices have increased the competitiveness of natural gas. This result is only a general tendency, because the relative prices of electricity vary significantly for different utility areas. Further, the attractiveness of electricity or natural gas also can depend on consumer tastes and the relative cost of equipment used to convert energy to a useful service, such as heat. The general conclusion to be drawn from Figure 6-14 is that natural gas and electricity prices could remain competitive within a fairly broad range. However, natural gas

prices have clearly become more attractive relative to electricity in the early 1980s, and could continue to gain advantage through 1990, particularly in the low and medium-low scenarios.

Demand Forecasts in Resource Planning

The demand forecasts are not simply a preliminary step to resource planning. Instead, the forecasts interact with resource planning in a number of ways, and as a result are an integral part of resource planning. Some important dimensions of the use of forecasts in resource planning are described in this section. First, the conceptual roles of forecasts in the planning process are described and then some of the practical applications of forecasts to resource planning are described.

Demand Forecast Roles

The integral planning role of demand forecasts has three major components. First, forecasts of demand define the extent and nature of uncertainty that planners must face. Second, the level of demand is not independent of resource choices, but will respond to the costs of resource choices to meet future demands. Finally, sophisticated demand models are needed to assess the potential impacts of choosing conservation programs as alternatives to building new generating resources. These roles are described below.

Defining the Range of Uncertainty

Future demand for electricity has been the primary uncertainty addressed in developing a risk-minimizing power plan for the region. The demand forecast range measures this uncertainty. The range of demand forecasts is based primarily on variations in the key assumptions. The forecast range has been described above in terms of five forecasts. However, for resource planning, a probability distribution is assumed to describe the likelihood that any given level of future electricity demand will occur within the range.

Bonneville and the Council currently assume different probability distributions about the forecast range. For planning purposes, the Council has adopted a trapezoidal distribution. The implications of the trapezoidal distribution are, 1) that demands outside the high and low forecasts are judged to be of sufficiently low probability that they are not formally considered in resource planning, and 2) that demands between the medium-high and medium-low forecasts are most likely and are considered equally probable. The probability of future demand being between the medium-low and the medium-high forecasts is about 50 percent. The probability of being between the medium-high and high or between the medium-low and low is about 25 percent.

Bonneville assumes a normal probability distribution around the medium forecast. The implications of this assumption are, 1) the medium forecast is described as the most probable future demand, and 2) future demands can fall outside of the low and high forecasts. Bonneville assumes that there is a 50-percent probability that demand will fall between the medium-low and medium-

high cases, that the probabilities of being between the medium-low and low or between the medium-high and high are each 20 percent, and that the probabilities of being either below the low or above the high case are each 5 percent.

Resource portfolio analysis is based on the entire probability distribution of future loads. This is a major change from the Council's first power plan in 1983 and is made possible by an enhanced decision model. The decision model analyzes hundreds of possible load paths that are distributed according to the assumed probability distribution defined over the range of demand forecasts. It is not expected that the specific form of probability distribution used in this analysis would have a significant effect on the results.

Effects of Resource Choices on Price

As discussed in the previous section, there is an electricity pricing model in the demand forecasting system. The pricing model develops forecasts of retail prices for each sector for investor-owned and public utilities. These rates are forecast through a detailed consideration of power system costs, secondary power sales, and the provisions of the Act. This model translates resource decisions into retail prices. The price model ensures that the implications of future resource decisions, including conservation programs, are consistently reflected in future prices and demands.

Conservation Analysis

In addition to defining uncertainty, the demand forecasting models play an important role in defining and evaluating conservation opportunities. This is particularly true for the residential and commercial sectors where the demand models are most detailed and conservation opportunities are best defined.

There are two major roles for the demand models in conservation analysis. The first is to help define the size of the potential conservation resource. The second is to predict the effectiveness of programs designed to achieve some portion of the potential conservation available.

Estimates of the number of energy-using buildings and equipment in the region, including their fuel type and efficiency characteristics, are needed to help determine how much additional efficiency can be achieved to offset the need for new electricity generation. The economic forecasts and the building energy demand models provide the detailed building forecasts necessary to analyze potential conservation. The demand models evaluate the effects of differing regional growth rates on new building construction and the effects of alternative energy prices on fuel choice in those buildings, thus resulting in different amounts of conservation potential for different forecast scenarios.

The effects of conservation programs can be quite complicated, and the demand models are designed to help assess those effects. For example, an energy-efficient building code can affect all three components of a building owner's energy choice: efficiency, fuel type and intensity of use. While the direct impact is on efficiency choice, there are also likely to be unintended effects on fuel choice

and intensity of use. For example, a more stringent code for residential electrical efficiency will tend to increase the construction cost of electrically heated homes. This relative increase in the initial cost, if borne by homebuyers, may cause some increase in the number of homes heated by natural gas or oil, even though the operating cost of the electrically heated homes would be reduced.

When cost-effective conservation actions are taken, the cost of providing an end-use service, such as space heating, will decrease. With the decrease in cost, the consumer's intensity of use may increase. Another important complication is that appliances give off waste heat that affects the heating and cooling requirements in buildings. Since more efficient appliances give off less waste heat, more heating and less cooling will be needed than with less efficient appliances. These secondary effects are evaluated in the detailed building models to give a more accurate assessment of the actual effects of conservation programs on demand for electricity.

Forecast Concepts

Treating conservation as a resource creates interactions among demand forecasts and resource choices that complicate analysis. For example, conservation actions that planners think are available resource choices may also be done by consumers in response to increasing electricity prices. Double counting of this conservation must be avoided in planning. In order to avoid such problems, some innovative analytical methods have been developed.

For example, three different demand forecast concepts are used in resource planning. Most presentations and publications, including this chapter, describe "price effects" forecasts. Price effects forecasts show what the demand for electricity would be if customers were to respond to price, but no new conservation programs were implemented. Price effects forecasts reflect state building codes as of 1988 and federal appliance efficiency standards beginning in 1990, but do not assume further adoption of the Council's model conservation standards. The adoption of the model conservation standards by Washington in late 1989 has not been included in the price effects forecast.

An important factor affecting price effects forecasts is what resource mix is assumed in developing the electricity price that is provided to the demand models. The electricity prices that determine the price effects forecast are based on a second concept of demand--a "sales" forecast. A "sales" forecast is a forecast of the demand for electricity after the effects of the model conservation standards and other conservation programs have been taken into account. This is the amount of electricity that would actually be sold by utilities if conservation programs were implemented and savings realized.

The third demand concept, the "frozen-efficiency" forecast, attempts to eliminate double counting of conservation actions that are taken by consumers in response to price, but which could also be achieved through the proposed conservation programs. Frozen-efficiency forecasts, as the name implies, hold the technical efficiency of energy use constant at current levels for uses where conservation programs are proposed. This eliminates the part of consumer price response that could potentially be double counted as conservation program savings.

Forecast Concepts

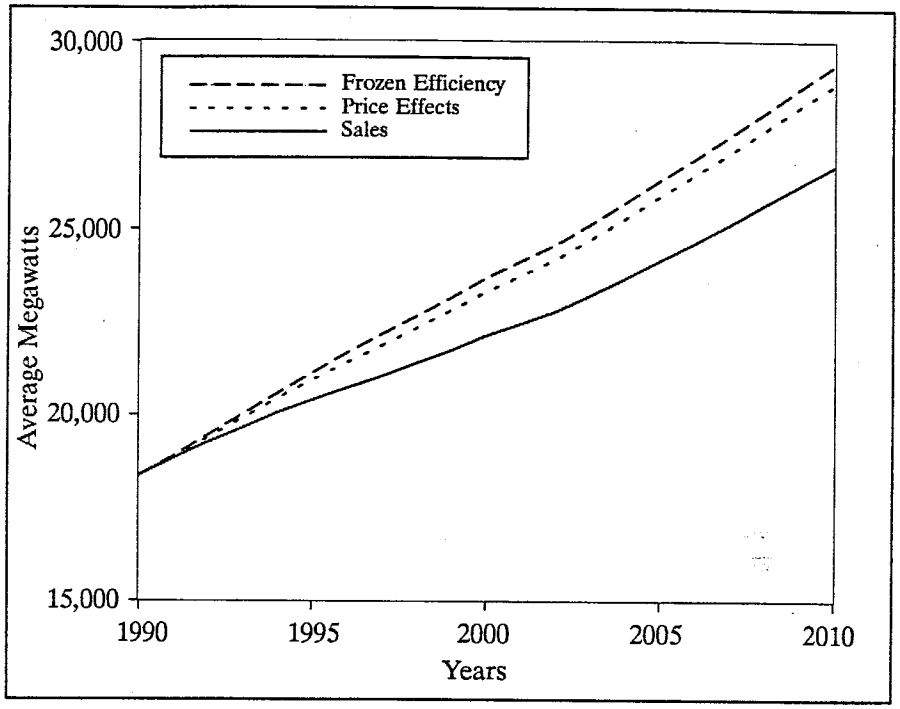

Figure 6-15
Comparison of High Forecast Concepts

The three forecasts for the high scenario are shown in Figure 6-15. Table 6-14 shows the growth rates for the three forecast concepts for each of the forecast scenarios. The price effects growth rates are the same as those shown in Table 6-1 and Figure 6-3. The frozen-efficiency growth rates are slightly higher because part of the demand decreases due to price response have been eliminated. The differences between price effects and frozen-efficiency forecasts are relatively small because prices are not forecast to increase much in most forecast scenarios. Demand growth is significantly lower for the sales forecasts than for the other two forecasts, reflecting potential conservation savings from the Council's programs. The differences between the frozen-efficiency and sales forecasts are smallest in the low case because only new building standards savings are acquired and relatively few new buildings are constructed.

Table 6-14
Growth Rates for Different Forecast Concepts
(Average Annual Rate of Change, 1989-2010)

	Sales	Price Effects	Frozen Efficiency
High	2.1	2.5	2.6
Medium-high	1.3	1.6	1.7
Medium	0.8	1.0	1.1
Medium-low	0.2	0.5	0.5
Low	-0.8	-0.6	-0.6

The difference between the highest forecast (the frozen-efficiency forecast) and the lowest (the sales forecast) is the total effect on electricity demand of conservation resources. The price-effects forecast divides that total effect into two parts, that which would result from price response and the incremental effect of conservation programs. The difference between the frozen-efficiency and price-effects forecasts represents the price response portion. The difference between the price-effects and the sales forecasts represents the incremental program impacts.

Electrical Loads for Resource Planning

Demand forecasts serve as the basis for resource portfolio analysis. This section describes what forecast concepts are used and how they are modified for resource planning analysis.

For resource portfolio analysis, the decision analysis model (ISAAC) uses frozen-efficiency forecasts of demand in order to avoid counting conservation potential twice.[3] However, several adjustments are made to these forecasts before they are used for resource planning.

First, demand forecasts are converted to load forecasts by adding transmission and distribution losses. The demand forecasts are for consumption of electricity at the point of use, while loads are the amount of electricity that needs to be generated. More electricity has to be generated than is actually consumed by utility customers, because some electricity is used or lost in the transmission and distribution of power. The demand forecasts are converted to loads based on historical average losses. These losses are about 8 percent.

Second, resource analysis is done on an operating year basis. Since the demand forecasts are done on a calendar year basis, the demands must be converted from a year that begins in January to a year that begins the previous September. (Note that the operating years described in Appendix 6-C are from July 1 through June 30.) This is done by calculating a weighted average of the

3./ For a description of the ISAAC model, see Volume II, Chapter 15.

previous and current calendar years. The previous year receives a one-third weight, and the current year a two-thirds weight In addition, for resource planning, the forecasts were set to actual values for operating year 1989. The forecasts were then interpolated to each scenario's respective 1995 level.

In the demand-forecast range, the forecasts of direct service industry demand for electricity are shown as a range of demand levels associated with specific forecast scenarios. The direct service industry loads are treated differently, however, for resource planning. The decision analysis model (ISAAC) embodies an aluminum forecasting submodel. This model forecasts levels of aluminum demand that depend on a randomly selected level of aluminum prices, as well as electricity prices and other costs of production. Aluminum prices are not assumed to be correlated to general economic conditions. As a result, levels of aluminum demand, instead of being associated with particular demand scenarios as they are in the demand forecast ranges described here, are independent of demand scenarios. The aluminum model was calibrated to result in the same range of aluminum loads as contained in the demand forecasts, but they are not associated with particular demand conditions. This better reflects the various counterbalancing influences that are likely to affect the aluminum industry under specific scenarios.

Federal agency and non-aluminum direct service industry loads are entered into the decision model separately from other loads, and do not vary by scenario. The operating year, frozen-efficiency, non-direct service industry and non-federal agency loads that are provided to the decision model are shown for selected years in Table 6-15.

Table 6-15
Decision Model Loads
(Average Megawatts by Operating Year)

	Estimated 1989	Forecasts 1995	Forecasts 2000	Forecasts 2010	Growth Rate (% per year) 1989-2010
High	15,800	19,817	22,631	28,947	2.9
Medium-high	15,800	18,173	20,031	24,001	2.0
Medium-low	15,800	16,180	16,988	18,920	0.9
Low	15,800	15,035	15,186	15,742	0.0

APPENDIX 6-A

FORECAST SUMMARY TABLES

1. Price Effects Forecasts

2. Sales Forecasts

3. Frozen Efficiency Forecasts

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3LP - 1990 DRAFT 3 LOW - PRICE

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3710	3563	3509	3578	3741	-0.90	0.33	-0.03
RESIDENTIAL	5586	5790	5783	5765	5782	5824	5883	-0.07	0.14	0.08
INDUSTRIAL FIRM (1)	6646	6899	6272	5066	5122	4885	4994	-5.02	-0.10	-1.53
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	4211	4381	3988	3937	4121	4234	4343	-1.77	0.66	-0.04
IRRIGATION (2)	649	640	549	544	528	493	481	-2.67	-0.82	-1.35
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16507	15136	15147	14992	15317	-2.18	0.08	-0.57
TOTAL NON-DSI SALES	14231	14755	14223	14008	14145	14341	14666	-0.86	0.31	-0.03
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1547	1526	1543	1588	1687	-0.25	0.67	0.41
RESIDENTIAL	2485	2597	2602	2595	2594	2608	2628	-0.01	0.08	0.06
INDUSTRIAL FIRM (1)	4449	4603	4259	3088	3072	2804	2871	-6.44	-0.48	-2.22
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	2014	2085	1975	1959	2070	2153	2220	-1.03	0.84	0.30
IRRIGATION (2)	327	324	273	273	267	253	248	-2.81	-0.64	-1.26
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	8846	7650	7651	7432	7617	-3.07	-0.03	-0.91
TOTAL NON-DSI SALES	6467	6708	6562	6521	6649	6781	6966	-0.47	0.44	0.18
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2163	2037	1965	1989	2054	-1.36	0.06	-0.35
RESIDENTIAL	3101	3193	3181	3170	3187	3216	3254	-0.12	0.17	0.09
INDUSTRIAL FIRM	2197	2296	2013	1978	2051	2080	2123	-2.45	0.47	-0.37
IRRIGATION	322	316	275	271	260	241	233	-2.53	-1.00	-1.44
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7661	7486	7496	7560	7700	-1.20	0.19	-0.21

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3MLP - 1990 DRAFT 3 MEDIUM LOW - PRICE

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3753	3784	3903	4134	4561	0.10	1.25	0.92
RESIDENTIAL	5586	5790	5860	6180	6483	6837	7178	1.09	1.00	1.03
INDUSTRIAL FIRM (1)	6646	6899	6570	5919	6204	6382	6645	-2.52	0.77	-0.18
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	4211	4381	4203	4340	4622	4800	5064	-0.16	1.03	0.69
IRRIGATION (2)	649	640	581	587	580	548	529	-1.43	-0.69	-0.90
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16958	16668	17375	18114	19130	-0.59	0.92	0.49
TOTAL NON-DSI SALES	14231	14755	14591	15088	15794	16532	17549	0.37	1.01	0.83
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1569	1632	1733	1831	2010	0.87	1.40	1.25
RESIDENTIAL	2485	2597	2640	2782	2905	3054	3206	1.15	0.95	1.01
INDUSTRIAL FIRM (1)	4449	4603	4454	3740	3888	3988	4120	-3.40	0.65	-0.53
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	2014	2085	2086	2161	2307	2407	2538	0.60	1.08	0.94
IRRIGATION (2)	327	324	288	292	289	276	267	-1.72	-0.59	-0.92
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9116	8613	8989	9328	9786	-1.14	0.85	0.28
TOTAL NON-DSI SALES	6467	6708	6748	7034	7408	7746	8205	0.79	1.03	0.96
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2184	2152	2170	2303	2550	-0.46	1.14	0.68
RESIDENTIAL	3101	3193	3219	3398	3578	3783	3972	1.04	1.05	1.04
INDUSTRIAL FIRM	2197	2296	2117	2179	2316	2393	2525	-0.87	0.99	0.45
IRRIGATION	322	316	294	295	290	273	261	-1.14	-0.81	-0.91
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7843	8054	8386	8786	9344	0.01	1.00	0.71

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D4MP - 1990 PLAN DRAFT 4 MEDIUM - PRICE W/ BPA'S SPM

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3880	4129	4384	4775	5243	1.57	1.61	1.59
RESIDENTIAL	5586	5790	5934	6359	6751	7173	7552	1.57	1.15	1.27
INDUSTRIAL FIRM (1)	6646	6899	6872	6920	7258	7500	7832	0.05	0.83	0.61
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	4211	4381	4426	4768	5123	5364	5696	1.42	1.19	1.26
IRRIGATION (2)	649	640	618	618	579	560	573	-0.58	-0.50	-0.53
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17499	18224	19178	20221	21419	0.90	1.08	1.03
TOTAL NON-DSI SALES	14231	14755	15053	16072	17042	18085	19282	1.44	1.22	1.28
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1602	1728	1826	1947	2115	1.84	1.36	1.49
RESIDENTIAL	2485	2597	2660	2829	2986	3160	3322	1.44	1.08	1.18
INDUSTRIAL FIRM (1)	4449	4603	4618	4459	4600	4716	4861	-0.53	0.58	0.26
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	2014	2085	2172	2307	2464	2580	2724	1.70	1.11	1.28
IRRIGATION (2)	327	324	304	302	286	279	287	-1.17	-0.34	-0.58
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9348	9485	9872	10280	10768	0.46	0.85	0.74
TOTAL NON-DSI SALES	6467	6708	6902	7333	7736	8144	8631	1.50	1.09	1.21
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2278	2402	2558	2828	3129	1.38	1.78	1.67
RESIDENTIAL	3101	3193	3275	3530	3765	4013	4230	1.69	1.21	1.35
INDUSTRIAL FIRM	2197	2296	2254	2461	2659	2784	2971	1.16	1.26	1.23
IRRIGATION	322	316	315	316	293	281	286	0.00	-0.66	-0.47
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8151	8738	9306	9941	10651	1.38	1.33	1.34

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3MHP - 1990 PLAN DRAFT 3 MEDIUM HIGH - PRICE

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3910	4394	4851	5369	6053	2.63	2.16	2.29
RESIDENTIAL	5586	5790	5956	6584	7164	7811	8452	2.16	1.68	1.82
INDUSTRIAL FIRM (1)	6646	6899	7096	7432	8002	8415	8961	1.25	1.26	1.25
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	4211	4381	4593	5096	5664	6115	6660	2.55	1.80	2.01
IRRIGATION (2)	649	640	652	649	641	630	632	0.23	-0.18	-0.06
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17807	19258	20863	22437	24316	1.83	1.57	1.64
TOTAL NON-DSI SALES	14231	14755	15304	16922	18526	20137	22015	2.31	1.77	1.92
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1640	1900	2112	2286	2521	3.46	1.90	2.35
RESIDENTIAL	2485	2597	2682	2961	3206	3478	3755	2.21	1.60	1.77
INDUSTRIAL FIRM (1)	4449	4603	4770	4837	5105	5281	5520	0.83	0.88	0.87
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	2014	2085	2267	2501	2768	2981	3220	3.08	1.70	2.09
IRRIGATION (2)	327	324	319	318	314	309	309	-0.31	-0.19	-0.23
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9576	10184	10911	11531	12289	1.66	1.26	1.37
TOTAL NON-DSI SALES	6467	6708	7073	7849	8573	9231	9988	2.65	1.62	1.91
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2270	2494	2740	3083	3532	2.02	2.35	2.25
RESIDENTIAL	3101	3193	3274	3623	3958	4333	4697	2.13	1.75	1.85
INDUSTRIAL FIRM	2197	2296	2325	2596	2896	3134	3441	2.07	1.90	1.95
IRRIGATION	322	316	333	331	326	322	322	0.78	-0.18	0.09
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8232	9074	9952	10906	12027	2.02	1.90	1.93

(1) INCLUDES COLOCKUM AND MININGNG
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(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3HP – 1990 PLAN DRAFT 3 HIGH – PRICE

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989–1995	1995–2010	1989–2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	4055	4889	5541	6359	7352	4.47	2.76	3.24
RESIDENTIAL	5586	5790	6095	7067	7948	8995	10014	3.38	2.35	2.64
INDUSTRIAL FIRM (1)	6646	6899	7308	8035	8888	9595	10581	2.57	1.85	2.06
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	4211	4381	4771	5559	6412	7194	8180	4.05	2.61	3.02
IRRIGATION (2)	649	640	688	699	697	694	694	1.48	-0.05	0.39
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	18340	20888	23280	25855	28859	3.22	2.18	2.47
TOTAL NON-DSI SALES	14231	14755	15803	18412	20804	23454	26458	3.76	2.45	2.82
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1688	2093	2382	2657	2985	5.14	2.39	3.17
RESIDENTIAL	2485	2597	2737	3151	3524	3979	4423	3.28	2.29	2.57
INDUSTRIAL FIRM (1)	4449	4603	4898	5190	5587	5874	6299	2.02	1.30	1.50
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	2014	2085	2361	2714	3111	3473	3898	4.49	2.44	3.02
IRRIGATION (2)	327	324	334	339	336	334	334	0.76	-0.10	0.14
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9823	10941	12003	13022	14224	2.88	1.76	2.08
TOTAL NON-DSI SALES	6467	6708	7285	8465	9527	10621	11823	3.95	2.25	2.74
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2367	2796	3159	3702	4366	3.98	3.02	3.29
RESIDENTIAL	3101	3193	3358	3917	4423	5016	5592	3.46	2.40	2.70
INDUSTRIAL FIRM	2197	2296	2410	2844	3301	3721	4281	3.63	2.76	3.01
IRRIGATION	322	316	353	359	361	360	361	2.15	0.04	0.64
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8517	9947	11277	12833	14635	3.60	2.61	2.89

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3L - 1990 PLAN DRAFT 3 LOW - SALES

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3710	3555	3466	3464	3483	-0.93	-0.14	-0.37
RESIDENTIAL	5586	5790	5783	5740	5667	5609	5595	-0.14	-0.17	-0.16
INDUSTRIAL FIRM (1)	6646	6899	6272	5066	5122	4867	4897	-5.02	-0.23	-1.62
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	4211	4381	3988	3937	4121	4216	4246	-1.77	0.50	-0.15
IRRIGATION (2)	649	640	549	544	528	493	481	-2.67	-0.82	-1.35
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16508	15103	14989	14646	14674	-2.21	-0.19	-0.77
TOTAL NON-DSI SALES	14231	14755	14223	13974	13988	13995	14023	-0.90	0.02	-0.24
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1547	1523	1528	1546	1616	-0.28	0.40	0.20
RESIDENTIAL	2485	2597	2602	2583	2540	2504	2493	-0.09	-0.24	-0.19
INDUSTRIAL FIRM (1)	4449	4603	4259	3088	3072	2804	2871	-6.44	-0.48	-2.22
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	2014	2085	1975	1959	2070	2153	2220	-1.03	0.84	0.30
IRRIGATION (2)	327	324	273	273	267	253	248	-2.81	-0.64	-1.26
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	8847	7635	7580	7286	7410	-3.11	-0.20	-1.04
TOTAL NON-DSI SALES	6467	6708	6562	6506	6579	6635	6759	-0.51	0.25	0.04
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2163	2031	1938	1917	1867	-1.41	-0.56	-0.80
RESIDENTIAL	3101	3193	3181	3157	3128	3105	3102	-0.19	-0.12	-0.14
INDUSTRIAL FIRM	2197	2296	2013	1978	2051	2063	2026	-2.45	0.16	-0.59
IRRIGATION	322	316	275	271	260	241	233	-2.53	-1.00	-1.44
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7661	7467	7409	7359	7264	-1.24	-0.18	-0.49

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3ML – 1990 PLAN DRAFT 3 MEDIUM LOW – SALES

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989–1995	1995–2010	1989–2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3753	3701	3725	3784	4014	-0.27	0.54	0.31
RESIDENTIAL	5586	5790	5860	6133	6312	6491	6706	0.96	0.60	0.70
INDUSTRIAL FIRM (1)	6646	6899	6570	5871	6075	6199	6457	-2.65	0.64	-0.31
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	4211	4381	4203	4291	4494	4617	4875	-0.35	0.85	0.51
IRRIGATION (2)	649	640	581	587	580	532	512	-1.43	-0.91	-1.06
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16958	16490	16897	17219	17907	-0.77	0.55	0.17
TOTAL NON-DSI SALES	14231	14755	14591	14910	15316	15637	16326	0.17	0.61	0.48
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1569	1622	1695	1749	1792	0.77	0.67	0.70
RESIDENTIAL	2485	2597	2640	2757	2822	2899	2997	1.00	0.56	0.68
INDUSTRIAL FIRM (1)	4449	4603	4454	3740	3888	3983	4109	-3.40	0.63	-0.54
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	2014	2085	2086	2161	2307	2401	2527	0.60	1.05	0.92
IRRIGATION (2)	327	324	288	292	289	276	267	-1.72	-0.59	-0.92
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9116	8579	8868	9086	9349	-1.20	0.57	0.06
TOTAL NON-DSI SALES	6467	6708	6748	6999	7287	7504	7767	0.71	0.70	0.70
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2184	2079	2030	2035	2222	-1.03	0.44	0.02
RESIDENTIAL	3101	3193	3220	3375	3490	3592	3709	0.93	0.63	0.72
INDUSTRIAL FIRM	2197	2296	2117	2131	2187	2216	2348	-1.24	0.65	0.11
IRRIGATION	322	316	294	295	290	257	244	-1.14	-1.26	-1.22
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7843	7911	8029	8133	8558	-0.28	0.53	0.29

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D4M – 1990 PLAN DRAFT 4 MEDIUM – SALES W/ BPA'S SPM

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989–1995	1995–2010	1989–2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3880	4038	4091	4304	4603	1.19	0.88	0.97
RESIDENTIAL	5586	5790	5934	6298	6523	6766	7018	1.41	0.72	0.92
INDUSTRIAL FIRM (1)	6646	6899	6872	6920	7258	7500	7832	0.05	0.83	0.61
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	4211	4381	4426	4768	5123	5364	5696	1.42	1.19	1.26
IRRIGATION (2)	649	640	618	618	579	560	573	-0.58	-0.50	-0.53
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17499	18072	18657	19342	20244	0.76	0.76	0.76
TOTAL NON-DSI SALES	14231	14755	15053	15920	16521	17206	18108	1.27	0.86	0.98
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1602	1711	1780	1800	1854	1.67	0.54	0.86
RESIDENTIAL	2485	2597	2660	2801	2891	2985	3082	1.27	0.64	0.82
INDUSTRIAL FIRM (1)	4449	4603	4618	4459	4600	4716	4861	-0.53	0.58	0.26
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	2014	2085	2172	2307	2464	2580	2724	1.70	1.11	1.28
IRRIGATION (2)	327	324	304	302	286	279	287	-1.17	-0.34	-0.58
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9348	9441	9730	9959	10267	0.38	0.56	0.51
TOTAL NON-DSI SALES	6467	6708	6902	7289	7594	7823	8131	1.39	0.73	0.92
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2278	2326	2311	2503	2749	0.84	1.12	1.04
RESIDENTIAL	3101	3193	3275	3497	3631	3781	3936	1.53	0.79	1.00
INDUSTRIAL FIRM	2197	2296	2254	2461	2659	2784	2971	1.16	1.26	1.23
IRRIGATION	322	316	315	316	293	281	286	0.00	-0.66	-0.47
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8151	8631	8926	9384	9977	1.17	0.97	1.03

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3MH - 1990 PLAN DRAFT 3 MEDIUM HIGH - SALES

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3910	4225	4433	4775	5344	1.96	1.58	1.69
RESIDENTIAL	5586	5790	5956	6501	6861	7300	7768	1.95	1.19	1.41
INDUSTRIAL FIRM (1)	6646	6899	7096	7378	7858	8182	8649	1.13	1.07	1.08
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	4211	4381	4593	5042	5520	5882	6348	2.37	1.55	1.78
IRRIGATION (2)	649	640	652	634	601	584	586	-0.16	-0.52	-0.42
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17808	18937	19960	21054	22564	1.54	1.18	1.28
TOTAL NON-DSI SALES	14231	14755	15305	16601	17622	18754	20264	1.98	1.34	1.52
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1640	1836	1944	2025	2212	2.87	1.25	1.71
RESIDENTIAL	2485	2597	2682	2925	3086	3259	3452	2.00	1.11	1.36
INDUSTRIAL FIRM (1)	4449	4603	4770	4831	5091	5256	5494	0.81	0.86	0.85
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	2014	2085	2267	2495	2753	2957	3194	3.04	1.66	2.05
IRRIGATION (2)	327	324	319	318	314	309	309	-0.31	-0.19	-0.23
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9576	10079	10609	11027	11651	1.48	0.97	1.12
TOTAL NON-DSI SALES	6467	6708	7073	7743	8271	8727	9350	2.42	1.27	1.59
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2270	2389	2489	2751	3131	1.29	1.82	1.67
RESIDENTIAL	3101	3193	3274	3576	3775	4041	4316	1.91	1.26	1.45
INDUSTRIAL FIRM	2197	2296	2325	2547	2767	2925	3155	1.74	1.44	1.52
IRRIGATION	322	316	333	316	287	276	276	0.00	-0.90	-0.64
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8232	8858	9351	10027	10914	1.61	1.40	1.46

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3H - 1990 PLAN DRAFT 3 HIGH - SALES

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	4046	4640	5057	5735	6586	3.56	2.36	2.70
RESIDENTIAL	5586	5790	6095	6859	7441	8202	8971	2.86	1.81	2.11
INDUSTRIAL FIRM (1)	6646	6899	7308	7981	8745	9362	10269	2.46	1.69	1.91
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	4211	4381	4771	5505	6268	6961	7868	3.88	2.41	2.83
IRRIGATION (2)	649	640	688	674	642	617	617	0.87	-0.59	-0.17
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	18331	20351	22090	24129	26662	2.77	1.82	2.09
TOTAL NON-DSI SALES	14231	14755	15794	17875	19614	21728	24261	3.25	2.06	2.40
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1685	1994	2191	2408	2682	4.30	2.00	2.65
RESIDENTIAL	2485	2597	2737	3034	3267	3576	3891	2.63	1.67	1.94
INDUSTRIAL FIRM (1)	4449	4603	4898	5185	5572	5849	6273	2.00	1.28	1.48
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	2014	2085	2361	2709	3096	3448	3872	4.46	2.41	2.99
IRRIGATION (2)	327	324	334	329	320	303	303	0.26	-0.55	-0.32
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9820	10710	11524	12315	13332	2.52	1.47	1.77
TOTAL NON-DSI SALES	6467	6708	7282	8234	9048	9914	10931	3.48	1.91	2.35
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2361	2646	2866	3327	3904	3.03	2.63	2.74
RESIDENTIAL	3101	3193	3358	3825	4173	4626	5081	3.06	1.91	2.24
INDUSTRIAL FIRM	2197	2296	2410	2796	3173	3512	3995	3.34	2.41	2.67
IRRIGATION	322	316	353	344	322	314	315	1.43	-0.59	-0.02
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8511	9642	10566	11813	13330	3.06	2.18	2.43

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3LF – 1990 DRAFT 3 LOW – FROZEN EFF.

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989–1995	1995–2010	1989–2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3710	3587	3539	3570	3753	-0.79	0.30	-0.01
RESIDENTIAL	5586	5790	5783	5765	5791	5856	5927	-0.07	0.18	0.11
INDUSTRIAL FIRM (1)	6646	6899	6272	5066	5122	4885	4994	-5.02	-0.10	-1.53
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	4211	4381	3988	3937	4121	4234	4343	-1.77	0.66	-0.04
IRRIGATION (2)	649	640	549	544	528	493	481	-2.67	-0.82	-1.35
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16507	15161	15186	15016	15374	-2.15	0.09	-0.55
TOTAL NON-DSI SALES	14231	14755	14223	14032	14184	14365	14723	-0.83	0.32	-0.01
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1547	1518	1525	1549	1665	-0.34	0.62	0.34
RESIDENTIAL	2485	2597	2602	2595	2603	2638	2669	-0.01	0.19	0.13
INDUSTRIAL FIRM (1)	4449	4603	4259	3088	3072	2804	2871	-6.44	-0.48	-2.22
DSI FIRM	2435	2518	2284	1129	1002	651	651	-12.51	-3.60	-6.24
NON-DSI FIRM	2014	2085	1975	1959	2070	2153	2220	-1.03	0.84	0.30
IRRIGATION (2)	327	324	273	273	267	253	248	-2.81	-0.64	-1.26
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	8846	7642	7640	7422	7635	-3.09	-0.01	-0.90
TOTAL NON-DSI SALES	6467	6708	6562	6513	6639	6771	6984	-0.49	0.47	0.19
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2163	2070	2014	2022	2088	-1.10	0.06	-0.27
RESIDENTIAL	3101	3193	3181	3170	3188	3218	3258	-0.12	0.18	0.10
INDUSTRIAL FIRM	2197	2296	2013	1978	2051	2080	2123	-2.45	0.47	-0.37
IRRIGATION	322	316	275	271	260	241	233	-2.53	-1.00	-1.44
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7661	7519	7545	7594	7739	-1.12	0.19	-0.19

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3MLF - 1990 DRAFT 3 MEDIUM LOW - FROZEN EFF.

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3753	3825	3978	4194	4669	0.28	1.34	1.04
RESIDENTIAL	5586	5790	5860	6180	6487	6853	7205	1.09	1.03	1.05
INDUSTRIAL FIRM (1)	6646	6899	6570	5919	6204	6382	6645	-2.52	0.77	-0.18
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	4211	4381	4203	4340	4622	4800	5064	-0.16	1.03	0.69
IRRIGATION (2)	649	640	581	587	580	548	529	-1.43	-0.69	-0.90
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	16958	16710	17454	18189	19266	-0.55	0.95	0.52
TOTAL NON-DSI SALES	14231	14755	14591	15130	15873	16607	17684	0.42	1.05	0.87
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1569	1633	1736	1823	2028	0.88	1.45	1.29
RESIDENTIAL	2485	2597	2640	2782	2908	3065	3223	1.15	0.99	1.03
INDUSTRIAL FIRM (1)	4449	4603	4454	3740	3888	3988	4120	-3.40	0.65	-0.53
DSI FIRM	2435	2518	2368	1580	1582	1582	1582	-7.47	0.01	-2.19
NON-DSI FIRM	2014	2085	2086	2161	2307	2407	2538	0.60	1.08	0.94
IRRIGATION (2)	327	324	288	292	289	276	267	-1.72	-0.59	-0.92
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9116	8615	8995	9331	9820	-1.14	0.88	0.30
TOTAL NON-DSI SALES	6467	6708	6748	7035	7413	7749	8239	0.80	1.06	0.98
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2184	2192	2242	2371	2641	-0.15	1.25	0.85
RESIDENTIAL	3101	3193	3219	3398	3579	3788	3982	1.04	1.06	1.06
INDUSTRIAL FIRM	2197	2296	2117	2179	2316	2393	2525	-0.87	0.99	0.45
IRRIGATION	322	316	294	295	290	273	261	-1.14	-0.81	-0.91
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	7843	8095	8459	8858	9445	0.10	1.03	0.77

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D4MF - 1990 PLAN DRAFT 3 MEDIUM - FROZEN EFF. W/ BPA'S SPM

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3880	4177	4490	4895	5480	1.76	1.83	1.81
RESIDENTIAL	5586	5790	5934	6359	6757	7200	7600	1.57	1.20	1.30
INDUSTRIAL FIRM (1)	6646	6899	6872	6920	7258	7500	7832	0.05	0.83	0.61
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	4211	4381	4426	4768	5123	5364	5696	1.42	1.19	1.26
IRRIGATION (2)	649	640	618	618	579	560	573	-0.58	-0.50	-0.53
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17499	18272	19290	20368	21704	0.94	1.15	1.09
TOTAL NON-DSI SALES	14231	14755	15053	16120	17154	18232	19567	1.49	1.30	1.35
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1602	1742	1867	1993	2197	1.98	1.56	1.68
RESIDENTIAL	2485	2597	2660	2829	2991	3178	3353	1.44	1.14	1.22
INDUSTRIAL FIRM (1)	4449	4603	4618	4459	4600	4716	4861	-0.53	0.58	0.26
DSI FIRM	2435	2518	2446	2152	2136	2136	2137	-2.58	-0.05	-0.78
NON-DSI FIRM	2014	2085	2172	2307	2464	2580	2724	1.70	1.11	1.28
IRRIGATION (2)	327	324	304	302	286	279	287	-1.17	-0.34	-0.58
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9348	9500	9917	10345	10882	0.49	0.91	0.79
TOTAL NON-DSI SALES	6467	6708	6902	7348	7781	8209	8745	1.53	1.17	1.27
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2278	2435	2623	2902	3283	1.61	2.01	1.90
RESIDENTIAL	3101	3193	3275	3530	3766	4022	4247	1.69	1.24	1.37
INDUSTRIAL FIRM	2197	2296	2254	2461	2659	2784	2971	1.16	1.26	1.23
IRRIGATION	322	316	315	316	293	281	286	0.00	-0.66	-0.47
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8151	8772	9373	10023	10822	1.45	1.41	1.42

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3MHF - 1990 PLAN DRAFT 3 MEDIUM HIGH - FROZEN EFF.

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989-1995	1995-2010	1989-2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	3910	4489	5041	5591	6405	2.99	2.40	2.57
RESIDENTIAL	5586	5790	5956	6585	7168	7827	8482	2.17	1.70	1.83
INDUSTRIAL FIRM (1)	6646	6899	7096	7432	8002	8415	8961	1.25	1.26	1.25
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	4211	4381	4593	5096	5664	6115	6660	2.55	1.80	2.01
IRRIGATION (2)	649	640	652	649	641	630	632	0.23	-0.18	-0.06
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	17807	19354	21057	22676	24698	1.91	1.64	1.72
TOTAL NON-DSI SALES	14231	14755	15304	17018	18719	20376	22397	2.41	1.85	2.01
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1640	1929	2169	2349	2616	3.72	2.05	2.53
RESIDENTIAL	2485	2597	2682	2962	3208	3487	3770	2.22	1.62	1.79
INDUSTRIAL FIRM (1)	4449	4603	4770	4837	5105	5281	5520	0.83	0.88	0.87
DSI FIRM	2435	2518	2503	2336	2338	2300	2301	-1.24	-0.10	-0.43
NON-DSI FIRM	2014	2085	2267	2501	2768	2981	3220	3.08	1.70	2.09
IRRIGATION (2)	327	324	319	318	314	309	309	-0.31	-0.19	-0.23
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9576	10214	10971	11604	12399	1.71	1.30	1.42
TOTAL NON-DSI SALES	6467	6708	7073	7878	8633	9304	10098	2.72	1.67	1.97
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2270	2560	2872	3241	3789	2.47	2.65	2.60
RESIDENTIAL	3101	3193	3274	3623	3960	4341	4711	2.13	1.77	1.87
INDUSTRIAL FIRM	2197	2296	2325	2596	2896	3134	3441	2.07	1.90	1.95
IRRIGATION	322	316	333	331	326	322	322	0.78	-0.18	0.09
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8232	9140	10086	11072	12299	2.15	2.00	2.04

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

PACIFIC NORTHWEST ELECTRICITY LOAD FORECASTING SYSTEM

SUMMARY OF REGIONAL DEMAND AND GROWTH RATES

90D3HF – 1990 PLAN DRAFT 3 HIGH – FROZEN

	DEMAND IN AVERAGE MEGAWATTS							DEMAND GROWTH RATES		
	1988	1989	1990	1995	2000	2005	2010	1989–1995	1995–2010	1989–2010
TOTAL:	(ACTUAL)	(ACTUAL)								
COMMERCIAL	3603	3761	4055	5069	5898	6755	7837	5.10	2.95	3.56
RESIDENTIAL	5586	5790	6095	7069	7958	9029	10066	3.38	2.38	2.67
INDUSTRIAL FIRM (1)	6646	6899	7308	8035	8888	9595	10581	2.57	1.85	2.06
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	4211	4381	4771	5559	6412	7194	8180	4.05	2.61	3.02
IRRIGATION (2)	649	640	688	699	697	694	694	1.48	-0.05	0.39
OTHER (3)	182	183	194	199	206	212	218	1.41	0.61	0.84
TOTAL FIRM SALES	16666	17273	18340	21070	23647	26285	29397	3.37	2.25	2.56
TOTAL NON-DSI SALES	14231	14755	15803	18593	21171	23884	26996	3.93	2.52	2.92
PUBLIC CUSTOMER POOL:										
COMMERCIAL	1488	1549	1688	2138	2481	2782	3161	5.52	2.64	3.45
RESIDENTIAL	2485	2597	2737	3151	3531	4000	4454	3.28	2.33	2.60
INDUSTRIAL FIRM (1)	4449	4603	4898	5190	5587	5874	6299	2.02	1.30	1.50
DSI FIRM	2435	2518	2538	2476	2476	2401	2401	-0.28	-0.20	-0.23
NON-DSI FIRM	2014	2085	2361	2714	3111	3473	3898	4.49	2.44	3.02
IRRIGATION (2)	327	324	334	339	336	334	334	0.76	-0.10	0.14
OTHER (3)	153	153	165	168	174	179	183	1.57	0.57	0.86
TOTAL FIRM SALES	8902	9226	9823	10987	12109	13168	14431	2.95	1.83	2.15
TOTAL NON-DSI SALES	6467	6708	7285	8511	9633	10767	12030	4.05	2.33	2.82
PRIVATE CUSTOMER POOL:										
COMMERCIAL	2115	2212	2367	2930	3417	3973	4676	4.80	3.17	3.63
RESIDENTIAL	3101	3193	3358	3917	4427	5029	5612	3.46	2.43	2.72
INDUSTRIAL FIRM	2197	2296	2410	2844	3301	3721	4281	3.63	2.76	3.01
IRRIGATION	322	316	353	359	361	360	361	2.15	0.04	0.64
OTHER (3)	29	30	29	31	32	34	35	0.55	0.81	0.74
TOTAL FIRM SALES	7764	8047	8517	10082	11538	13117	14966	3.83	2.67	3.00

(1) INCLUDES COLOCKUM AND MININGNG
(2) INCLUDES USBR, EXCLUDES GRAND COULEE AND ROZA PUMPING
(3) FEDERAL AGENCIES AND STREET LIGHTING

APPENDIX 6-B

FORECAST CHANGES FROM 1989

Table 6-B-1
Demand Forecast Changes
(90D3, 90D4M)

Year/ Scenario	1989 Supplement[a]	1989 White Book[b]	1990 Preliminary Draft	Change from 1989 Supplement	Change from 1989 White Book
1995					
Low	14,322	14,738	15,136	+814	+398
Medium-low	15,998	16,393	16,668	+670	+275
Medium	17,162	17,588	18,224	+1,062	+636
Medium-high	18,333	18,728	19,258	+925	+530
High	20,439	20,885	20,888	+449	+3
2000					
Low	14,414	14,501	15,147	+733	+646
Medium-low	16,721	16,847	17,375	+654	+528
Medium	18,372	18,559	19,178	+806	+619
Medium-high	19,933	20,263	20,863	+930	+600
High	22,975	23,386	23,280	+305	-106
2010					
Low	15,442	14,963	15,317	-125	+354
Medium-low	19,124	18,621	19,130	+6	+509
Medium	21,344	21,146	21,419	+75	+273
Medium-high	24,026	23,942	24,316	+290	+374
High	29,223	29,537	28,859	-364	-678

a *1989 Supplement to the 1986 Northwest Conservation and Electric Power Plan,* Spring 1989, Volume II, Appendix 2-A.

b *Forecast of Electricity Use in the Pacific Northwest,* August 1989, Appendix A.

D:TM/90PLAN.AB1 vol. 2 draft

APPENDIX 6-C

DETAILED FORECAST TABLES

1. Calendar Year Forecasts
2. Operating Year Forecasts
3. Fiscal Year Forecasts

1990 Draft Long-Term Regional Forecast
Low Case - Price Effects - Calendar Year
(Average Megawatts)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	2883.5	2875.3	2871.2	2871.2	2875.7	2891.3	2908.8	2917.1	2925.0	2929.9	2936.9	2946.0
2 DISTRIBUTION LOSSES	121.1	120.8	120.6	120.6	120.8	121.4	122.2	122.5	122.8	123.1	123.4	123.7
3 SYSTEM LOAD	3004.7	2996.1	2991.8	2991.8	2996.5	3012.7	3030.9	3039.6	3047.9	3053.0	3060.3	3069.8
4 DSI ALUM FIRM LOAD	1876.5	1700.6	1485.0	1256.6	1027.0	1027.0	1027.0	1027.0	1027.0	899.7	624.9	549.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	1976.5	1800.6	1585.0	1356.6	1127.0	1127.0	1127.0	1127.0	1127.0	999.7	724.9	649.0
8 TOT DSI FIRM TRANS LOSSES	51.5	47.0	41.4	35.4	29.4	29.4	29.4	29.4	29.4	26.1	19.0	16.9
9 BPA FEDERAL AGENCIES	144.5	143.3	141.7	142.8	143.9	144.9	145.8	146.7	147.5	148.4	149.2	150.1
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	135.9	131.1	125.3	119.4	113.5	114.0	114.5	114.7	115.0	111.9	105.0	103.2
12 ADDTL FEDERAL TRAN LOSSES	60.1	61.6	59.6	56.8	56.8	52.8	49.5	49.5	48.0	47.8	47.7	47.8
13 TOTAL FEDERAL FIRM LOAD	5389.1	5200.1	4970.7	4734.7	4505.1	4518.9	4535.2	4545.1	4552.9	4428.3	4154.8	4087.6
GENERATING PUBLIC UTILITIES												
14 SALES	3268.8	3259.5	3254.8	3254.7	3259.7	3277.4	3297.2	3306.6	3315.6	3321.1	3329.0	3339.3
15 TRANSMIS & DISTRIB LOSSES	209.2	208.6	208.3	208.3	208.6	209.8	211.0	211.6	212.2	212.5	213.1	213.7
16 SYSTEM LOAD	3478.0	3468.1	3463.1	3463.0	3468.4	3487.2	3508.3	3518.3	3527.8	3533.7	3542.1	3553.0
17 PUB RESIDENTL EXCHG--RPSA	305.2	304.6	301.4	297.8	296.6	298.0	297.9	297.0	297.9	298.3	298.8	299.6
18 PUB RESIDENTL EXCHG--ETCA	10.0	9.9	9.7	9.5	9.4	9.4	9.4	9.3	9.3	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6152.3	6134.8	6126.0	6125.9	6135.4	6168.7	6206.0	6223.7	6240.6	6251.0	6265.9	6285.3
INVESTOR-OWNED UTILITIES												
20 SALES	7606.1	7563.2	7534.9	7508.4	7483.8	7474.8	7474.7	7481.3	7488.6	7490.0	7495.1	7496.4
21 TRANSMIS & DISTRIB LOSSES	798.6	794.1	791.2	788.4	785.8	784.9	784.8	785.5	786.3	786.4	787.0	787.1
22 SYSTEM LOAD	8404.7	8357.3	8326.1	8296.8	8269.6	8259.7	8259.5	8266.8	8274.9	8276.4	8282.1	8283.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16126.8	15889.3	15634.9	15381.1	15137.5	15163.0	15200.9	15226.2	15251.2	15136.7	14882.9	14828.5
26 TOTAL REGIONAL FIRM LOAD	17451.8	17205.5	16939.9	16674.5	16423.0	16445.8	16482.9	16510.1	16535.5	16418.4	16159.0	16104.1
27 DSI ALUM TQ LOAD	625.7	566.9	495.0	419.1	342.0	342.0	342.0	342.0	342.0	300.0	208.3	183.0
28 DSI NON-ALUM TQ LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	658.7	599.9	528.0	452.1	375.0	375.0	375.0	375.0	375.0	333.0	241.3	216.0
31 TOT DSI T Q TRANS LOSSES	17.2	15.6	13.8	11.8	9.8	9.8	9.8	9.8	9.8	8.7	6.3	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	18286.6	17980.1	17640.7	17297.4	16966.8	16989.5	17026.7	17053.9	17079.3	16919.1	16565.6	16484.7

	2003	2004	2005	2006	2007	2008	2009	2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	2952.2	2971.2	2986.3	2998.8	3017.9	3032.7	3051.1	3067.6
2 DISTRIBUTION LOSSES	124.0	124.8	125.4	125.9	126.8	127.4	128.1	128.8
3 SYSTEM LOAD	3076.2	3096.0	3111.7	3124.7	3144.7	3160.1	3179.2	3196.4
4 DSI ALUM FIRM LOAD	549.0	549.0	549.0	549.0	549.0	549.0	549.0	549.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	649.0	649.0	649.0	649.0	649.0	649.0	649.0	649.0
8 TOT DSI FIRM TRANS LOSSES	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
9 BPA FEDERAL AGENCIES	150.5	151.1	151.9	152.5	153.2	153.8	154.3	154.8
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	103.3	103.9	104.3	104.7	105.2	105.6	106.1	106.6
12 ADDTL FEDERAL TRAN LOSSES	46.7	47.0	48.2	49.8	50.3	49.6	49.8	50.4
13 TOTAL FEDERAL FIRM LOAD	4093.6	4114.8	4132.9	4148.6	4170.3	4186.0	4206.6	4225.3
GENERATING PUBLIC UTILITIES								
14 SALES	3346.3	3367.8	3384.8	3399.0	3420.7	3437.4	3458.2	3476.9
15 TRANSMIS & DISTRIB LOSSES	214.2	215.5	216.6	217.5	218.9	220.0	221.3	222.5
16 SYSTEM LOAD	3560.5	3583.3	3601.5	3616.6	3639.6	3657.4	3679.5	3699.4
17 PUB RESIDENTL EXCHG--RPSA	300.0	301.7	302.9	304.2	305.7	306.9	308.4	310.4
18 PUB RESIDENTL EXCHG--ETCA	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6298.6	6339.0	6371.1	6397.8	6438.6	6470.1	6509.3	6544.5
INVESTOR-OWNED UTILITIES								
20 SALES	7496.1	7527.0	7549.2	7567.1	7594.4	7624.4	7656.3	7684.1
21 TRANSMIS & DISTRIB LOSSES	787.1	790.3	792.7	794.5	797.4	800.6	803.9	806.8
22 SYSTEM LOAD	8283.1	8317.4	8341.9	8361.6	8391.8	8424.9	8460.2	8490.9
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	14842.0	14913.9	14969.1	15014.2	15083.1	15145.1	15217.0	15280.4
26 TOTAL REGIONAL FIRM LOAD	16117.2	16195.5	16256.3	16306.7	16381.7	16448.2	16526.3	16595.6
27 DSI ALUM TQ LOAD	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0
28 DSI NON-ALUM TQ LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
31 TOT DSI T Q TRANS LOSSES	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	16497.9	16576.1	16636.9	16687.4	16762.3	16828.9	16906.9	16976.2

1990 Draft Long-Term Regional Forecast
Medium-Low Case - Price Effects - Calendar Year
(Average Megawatts)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3002.3	3026.3	3049.6	3079.1	3110.5	3150.6	3191.2	3221.7	3250.5	3275.9	3303.2	3327.3
2 DISTRIBUTION LOSSES	126.1	127.1	128.1	129.3	130.6	132.3	134.0	135.3	136.5	137.6	138.7	139.7
3 SYSTEM LOAD	3128.4	3153.4	3177.7	3208.5	3241.1	3282.9	3325.2	3357.0	3387.1	3413.5	3441.9	3467.0
4 DSI ALUM FIRM LOAD	1929.7	1864.6	1722.9	1581.5	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	166.0	157.5	139.3	139.3	139.7	140.1	140.6	141.1	141.3	141.8	142.1	142.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2095.7	2022.1	1862.2	1720.8	1578.7	1579.1	1579.6	1580.1	1580.3	1580.8	1581.1	1581.1
8 TOT DSI FIRM TRANS LOSSES	54.7	52.7	48.6	44.9	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2
9 BPA FEDERAL AGENCIES	144.5	143.3	141.7	142.8	143.9	144.9	145.8	146.7	147.5	148.4	149.2	150.1
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	142.3	141.0	137.4	134.5	131.7	132.9	134.0	134.9	135.7	136.4	137.2	137.9
12 ADDTL FEDERAL TRAN LOSSES	63.2	65.7	64.5	62.5	63.2	59.9	57.2	57.8	56.9	57.3	57.7	58.4
13 TOTAL FEDERAL FIRM LOAD	5641.4	5592.9	5450.8	5336.5	5226.0	5267.2	5309.3	5344.0	5375.0	5404.0	5434.8	5462.2
GENERATING PUBLIC UTILITIES												
14 SALES	3403.3	3430.5	3456.9	3490.3	3525.7	3571.1	3617.1	3651.7	3684.2	3712.9	3743.8	3771.0
15 TRANSMIS & DISTRIB LOSSES	217.8	219.6	221.2	223.4	225.6	228.5	231.5	233.7	235.8	237.6	239.6	241.3
16 SYSTEM LOAD	3621.1	3650.1	3678.2	3713.7	3751.4	3799.7	3848.6	3885.4	3920.0	3950.5	3983.4	4012.4
17 PUB RESIDENTL EXCHG--RPSA	317.8	320.6	320.1	319.4	320.9	324.7	326.8	328.0	331.1	333.6	336.1	338.4
18 PUB RESIDENTL EXCHG--ETCA	10.4	10.4	10.3	10.2	10.2	10.3	10.3	10.2	10.3	10.3	10.4	10.4
19 TOTAL PUBLIC SALES	6405.6	6456.8	6506.6	6569.5	6636.2	6721.7	6808.3	6873.4	6934.8	6988.8	7047.0	7098.3
INVESTOR-OWNED UTILITIES												
20 SALES	7869.4	7909.1	7954.1	7996.8	8047.6	8103.6	8163.5	8232.9	8304.7	8370.7	8433.9	8494.4
21 TRANSMIS & DISTRIB LOSSES	826.3	830.4	835.2	839.7	845.0	850.9	857.2	864.5	872.0	878.9	885.6	891.9
22 SYSTEM LOAD	8695.7	8739.5	8789.2	8836.4	8892.6	8954.5	9020.7	9097.4	9176.7	9249.6	9319.5	9386.3
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16762.6	16778.7	16711.8	16677.2	16653.9	16796.9	16944.7	17080.6	17214.8	17336.3	17458.9	17571.6
26 TOTAL REGIONAL FIRM LOAD	18138.2	18162.5	18098.2	18066.6	18050.1	18201.4	18358.6	18506.7	18651.7	18784.1	18917.7	19040.9
27 DSI ALUM TQ LOAD	643.4	621.5	574.3	527.5	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	55.4	52.5	46.3	46.3	46.5	46.7	47.2	47.2	47.2	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	698.8	674.0	620.7	573.8	526.5	526.7	527.2	527.2	527.2	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	18.2	17.6	16.2	15.0	13.7	13.7	13.7	13.7	13.7	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	19014.3	19013.1	18894.0	18814.4	18749.3	18900.8	19058.5	19206.7	19351.7	19484.1	19617.7	19740.9

	2003	2004	2005	2006	2007	2008	2009	2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3350.8	3388.3	3424.6	3461.3	3502.6	3542.4	3586.6	3629.5
2 DISTRIBUTION LOSSES	140.7	142.3	143.8	145.4	147.1	148.8	150.6	152.4
3 SYSTEM LOAD	3491.5	3530.6	3568.4	3606.7	3649.7	3691.2	3737.2	3781.9
4 DSI ALUM FIRM LOAD	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	142.1	142.2	142.3	142.3	142.3	142.6	142.8	142.8
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	1581.1	1581.2	1581.3	1581.3	1581.3	1581.6	1581.8	1581.8
8 TOT DSI FIRM TRANS LOSSES	41.2	41.2	41.2	41.2	41.2	41.2	41.3	41.3
9 BPA FEDERAL AGENCIES	150.5	151.1	151.9	152.5	153.2	153.8	154.3	154.8
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	138.5	139.6	140.6	141.6	142.8	143.9	145.1	146.3
12 ADDTL FEDERAL TRAN LOSSES	57.8	58.7	60.2	62.8	63.8	63.8	64.8	65.8
13 TOTAL FEDERAL FIRM LOAD	5487.3	5528.9	5570.3	5612.7	5658.5	5702.2	5751.4	5798.7
GENERATING PUBLIC UTILITIES								
14 SALES	3797.6	3840.1	3881.1	3922.7	3969.4	4014.5	4064.5	4113.1
15 TRANSMIS & DISTRIB LOSSES	243.0	245.8	248.4	251.1	254.0	256.9	260.1	263.2
16 SYSTEM LOAD	4040.7	4085.8	4129.5	4173.8	4223.4	4271.4	4324.7	4376.3
17 PUB RESIDENTL EXCHG--RPSA	340.6	344.2	347.5	351.2	354.9	358.6	362.7	367.3
18 PUB RESIDENTL EXCHG--ETCA	10.4	10.5	10.6	10.6	10.7	10.7	10.8	10.9
19 TOTAL PUBLIC SALES	7148.4	7228.3	7305.8	7384.1	7471.9	7556.9	7651.2	7742.5
INVESTOR-OWNED UTILITIES								
20 SALES	8557.3	8657.6	8760.4	8858.9	8969.5	9078.4	9195.1	9309.9
21 TRANSMIS & DISTRIB LOSSES	898.5	909.0	919.8	930.2	941.8	953.2	965.5	977.5
22 SYSTEM LOAD	9455.8	9566.6	9680.3	9789.1	9911.3	10031.6	10160.6	10287.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17685.1	17866.0	18047.2	18224.6	18423.8	18618.6	18830.5	19037.0
26 TOTAL REGIONAL FIRM LOAD	19163.7	19361.3	19560.0	19755.7	19973.3	20185.2	20416.6	20642.4
27 DSI ALUM TQ LOAD	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	527.3	527.3	527.3	527.3	527.3	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	19863.7	20061.4	20260.1	20455.7	20673.3	20885.3	21116.7	21342.5

1990 Draft Long-Term Regional Forecast
Medium Case - Price Effects - Calendar Year
(Average Megawatts)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3090.9	3121.3	3164.9	3224.0	3252.9	3291.5	3329.8	3360.7	3396.9	3429.5	3462.4	3495.4
2 DISTRIBUTION LOSSES	129.8	131.1	132.9	135.4	136.6	138.2	139.9	141.2	142.7	144.0	145.4	146.8
3 SYSTEM LOAD	3220.8	3252.4	3297.8	3359.4	3389.6	3429.8	3469.7	3501.9	3539.6	3573.5	3607.8	3642.2
4 DSI ALUM FIRM LOAD	2141.8	2087.0	2053.1	1986.3	1972.2	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0
5 DSI NON-ALUM FIRM LOAD	219.8	214.8	179.2	179.3	179.5	180.7	181.3	181.9	182.9	183.8	183.9	183.9
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2361.5	2301.8	2232.3	2165.5	2151.7	2131.7	2132.3	2132.9	2133.9	2134.8	2134.9	2134.9
8 TOT DSI FIRM TRANS LOSSES	61.6	60.1	58.2	56.5	56.1	55.6	55.6	55.6	55.6	55.7	55.7	55.7
9 BPA FEDERAL AGENCIES	144.5	143.3	141.7	142.8	143.9	144.9	145.8	146.7	147.5	148.4	149.2	150.1
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	151.7	150.9	150.2	150.1	150.6	151.1	152.2	153.1	154.1	155.1	156.0	156.9
12 ADDTL FEDERAL TRAN LOSSES	66.2	69.4	68.4	66.9	67.8	64.7	62.6	63.7	62.5	63.0	64.1	65.2
13 TOTAL FEDERAL FIRM LOAD	6012.1	5985.2	5957.6	5952.1	5970.9	5989.7	6030.0	6065.7	6105.2	6142.4	6179.8	6217.0
GENERATING PUBLIC UTILITIES												
14 SALES	3506.5	3553.1	3589.8	3646.7	3679.3	3722.8	3766.1	3801.0	3841.8	3878.6	3915.7	3952.9
15 TRANSMIS & DISTRIB LOSSES	224.4	227.4	229.7	233.4	235.5	238.3	241.0	243.3	245.9	248.2	250.6	253.0
16 SYSTEM LOAD	3730.9	3780.5	3819.6	3880.1	3914.7	3961.1	4007.1	4044.2	4087.6	4126.8	4166.3	4205.9
17 PUB RESIDENTL EXCHG--RPSA	327.1	330.7	332.3	334.4	335.6	339.3	341.0	342.2	346.0	349.2	352.3	355.5
18 PUB RESIDENTL EXCHG--ETCA	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.8	10.9	10.9
19 TOTAL PUBLIC SALES	6597.4	6674.4	6754.7	6870.8	6932.2	7014.4	7095.9	7161.7	7238.7	7308.1	7378.1	7448.3
INVESTOR-OWNED UTILITIES												
20 SALES	8332.3	8450.0	8553.8	8638.5	8729.3	8830.7	8933.7	9044.1	9171.0	9286.5	9397.8	9513.1
21 TRANSMIS & DISTRIB LOSSES	874.9	887.2	898.1	907.0	916.6	927.2	938.0	949.6	963.0	975.1	986.8	998.9
22 SYSTEM LOAD	9207.2	9337.3	9452.0	9545.5	9645.9	9757.9	9871.7	9993.7	10134.0	10261.6	10384.6	10512.0
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17683.1	17816.9	17929.8	18064.9	18204.5	18369.2	18555.1	18732.9	18938.6	19125.3	19307.8	19494.2
26 TOTAL REGIONAL FIRM LOAD	19130.1	19282.9	19409.2	19557.8	19711.6	19888.7	20088.9	20283.7	20506.8	20710.8	20910.7	21115.0
27 DSI ALUM TQ LOAD	713.6	696.0	684.1	661.9	657.4	650.0	650.0	650.0	650.0	650.0	650.0	650.0
28 DSI NON-ALUM TQ LOAD	89.9	71.7	59.8	59.8	59.8	60.4	60.4	60.6	61.0	61.4	61.4	61.4
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	803.5	767.7	743.9	721.8	717.3	710.4	710.4	710.6	711.0	711.4	711.4	711.4
31 TOT DSI T Q TRANS LOSSES	21.0	20.0	19.4	18.8	18.7	18.5	18.5	18.5	18.5	18.6	18.6	18.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	20113.6	20229.6	20331.5	20457.4	20606.5	20776.7	20976.8	21171.8	21395.3	21599.7	21799.7	22003.9

	2003	2004	2005	2006	2007	2008	2009	2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3527.6	3567.6	3608.8	3651.1	3695.5	3737.1	3782.5	3825.8
2 DISTRIBUTION LOSSES	148.2	149.8	151.6	153.3	155.2	157.0	158.9	160.7
3 SYSTEM LOAD	3675.8	3717.4	3760.4	3804.4	3850.7	3894.0	3941.3	3986.5
4 DSI ALUM FIRM LOAD	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0
5 DSI NON-ALUM FIRM LOAD	184.2	184.2	184.5	184.5	184.8	185.1	185.1	185.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2135.2	2135.2	2135.5	2135.5	2135.8	2136.1	2136.1	2136.1
8 TOT DSI FIRM TRANS LOSSES	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7
9 BPA FEDERAL AGENCIES	150.5	151.1	151.9	152.5	153.2	153.8	154.3	154.8
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	157.8	158.9	160.1	161.3	162.5	163.7	164.9	166.1
12 ADDTL FEDERAL TRAN LOSSES	65.0	66.1	68.0	70.8	72.0	72.2	73.1	74.4
13 TOTAL FEDERAL FIRM LOAD	6252.2	6296.6	6343.7	6392.3	6442.1	6487.6	6537.8	6585.9
GENERATING PUBLIC UTILITIES								
14 SALES	3989.3	4034.4	4080.9	4128.6	4178.8	4225.8	4277.0	4325.9
15 TRANSMIS & DISTRIB LOSSES	255.3	258.2	261.2	264.2	267.4	270.4	273.7	276.9
16 SYSTEM LOAD	4244.6	4292.6	4342.1	4392.9	4446.2	4496.2	4550.7	4602.8
17 PUB RESIDENTL EXCHG--RPSA	358.6	362.4	366.2	370.5	374.5	378.3	382.5	387.2
18 PUB RESIDENTL EXCHG--ETCA	11.0	11.1	11.1	11.2	11.3	11.3	11.4	11.5
19 TOTAL PUBLIC SALES	7516.9	7602.0	7689.8	7779.7	7874.3	7962.8	8059.5	8151.7
INVESTOR-OWNED UTILITIES								
20 SALES	9627.6	9758.5	9910.0	10041.4	10190.3	10327.3	10479.0	10609.5
21 TRANSMIS & DISTRIB LOSSES	1010.9	1024.6	1040.6	1054.3	1070.0	1084.4	1100.3	1114.0
22 SYSTEM LOAD	10638.5	10783.2	10950.6	11095.7	11260.3	11411.7	11579.3	11723.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	19678.0	19894.6	20135.1	20356.9	20601.5	20827.9	21077.0	21300.1
26 TOTAL REGIONAL FIRM LOAD	21315.3	21552.3	21816.4	22060.9	22328.6	22575.5	22847.9	23092.1
27 DSI ALUM TQ LOAD	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0
28 DSI NON-ALUM TQ LOAD	61.4	61.5	61.5	61.5	61.5	61.5	61.5	61.5
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	711.4	711.5	711.5	711.5	711.5	711.5	711.5	711.5
31 TOT DSI T Q TRANS LOSSES	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	22204.2	22441.4	22705.4	22949.9	23217.7	23464.6	23736.9	23981.2

1990 Draft Long-Term Regional Forecast
Medium-High Case - Price Effects - Calendar Year
(Average Megawatts)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3218.1	3288.8	3355.0	3423.6	3487.3	3562.3	3636.3	3697.6	3756.2	3811.5	3866.6	3920.6
2 DISTRIBUTION LOSSES	135.2	138.1	140.9	143.8	146.5	149.6	152.7	155.3	157.8	160.1	162.4	164.7
3 SYSTEM LOAD	3353.2	3426.9	3495.9	3567.4	3633.8	3711.9	3789.0	3852.9	3913.9	3971.6	4029.0	4085.2
4 DSI ALUM FIRM LOAD	2142.1	2123.0	2123.0	2115.5	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	274.4	264.9	247.2	247.3	247.5	248.1	248.4	249.1	249.2	249.8	231.0	212.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2416.5	2387.9	2370.2	2362.8	2334.5	2335.1	2335.4	2336.1	2336.2	2336.8	2318.0	2299.3
8 TOT DSI FIRM TRANS LOSSES	63.0	62.3	61.8	61.6	60.9	60.9	60.9	60.9	60.9	60.9	60.5	60.0
9 BPA FEDERAL AGENCIES	144.5	143.3	141.7	142.8	143.9	144.9	145.8	146.7	147.5	148.4	149.2	150.1
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	156.6	157.7	159.0	160.7	161.8	163.9	165.9	167.6	169.2	170.8	171.9	172.8
12 ADDTL FEDERAL TRAN LOSSES	69.2	72.8	72.7	72.0	73.3	70.6	68.9	70.5	70.3	71.5	73.0	74.8
13 TOTAL FEDERAL FIRM LOAD	6207.4	6256.1	6306.8	6373.0	6414.7	6493.9	6572.5	6641.3	6704.6	6766.6	6808.8	6850.0
GENERATING PUBLIC UTILITIES												
14 SALES	3647.9	3728.0	3803.0	3880.7	3952.7	4037.6	4121.4	4190.8	4257.1	4319.6	4382.0	4443.1
15 TRANSMIS & DISTRIB LOSSES	233.5	238.6	243.4	248.4	253.0	258.4	263.8	268.2	272.4	276.5	280.4	284.4
16 SYSTEM LOAD	3881.4	3966.6	4046.4	4129.1	4205.7	4296.0	4385.2	4459.0	4529.5	4596.1	4662.5	4727.5
17 PUB RESIDENTL EXCHG--RPSA	340.6	348.4	352.1	355.2	359.8	367.2	372.4	376.5	382.6	388.1	393.5	398.8
18 PUB RESIDENTL EXCHG--ETCA	11.1	11.3	11.3	11.4	11.5	11.6	11.7	11.8	11.9	12.0	12.1	12.3
19 TOTAL PUBLIC SALES	6866.0	7016.8	7158.0	7304.3	7440.1	7599.9	7757.7	7888.5	8013.3	8131.1	8248.6	8363.7
INVESTOR-OWNED UTILITIES												
20 SALES	8437.5	8595.6	8760.1	8916.5	9063.1	9231.9	9403.8	9580.0	9755.4	9928.1	10098.3	10276.4
21 TRANSMIS & DISTRIB LOSSES	885.9	902.5	919.8	936.2	951.6	969.3	987.4	1005.9	1024.3	1042.4	1060.3	1079.0
22 SYSTEM LOAD	9323.4	9498.1	9679.9	9852.7	10014.7	10201.3	10391.2	10585.9	10779.7	10970.5	11158.7	11355.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	18111.9	18391.0	18677.2	18973.7	19229.0	19559.3	19890.2	20198.7	20499.9	20792.0	21061.9	21337.3
26 TOTAL REGIONAL FIRM LOAD	19592.2	19900.8	20213.0	20534.8	20815.0	21171.2	21528.9	21866.3	22193.9	22513.2	22809.9	23113.0
27 DSI ALUM TQ LOAD	714.0	708.0	708.0	705.5	696.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	91.3	88.3	82.3	82.3	82.3	82.7	83.0	83.2	83.2	83.3	77.0	70.8
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	805.3	796.3	790.3	787.8	778.3	778.7	779.0	779.2	779.2	779.3	773.0	766.8
31 TOT DSI T Q TRANS LOSSES	21.0	20.8	20.6	20.5	20.3	20.3	20.3	20.3	20.3	20.3	20.2	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	20577.6	20876.8	21182.9	21502.2	21772.7	22129.2	22487.2	22824.8	23152.4	23471.8	23762.0	24058.8

	2003	2004	2005	2006	2007	2008	2009	2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3975.8	4039.5	4104.3	4171.6	4233.5	4304.0	4374.5	4442.8
2 DISTRIBUTION LOSSES	167.0	169.7	172.4	175.2	177.8	180.8	183.7	186.6
3 SYSTEM LOAD	4142.7	4209.2	4276.7	4346.9	4411.4	4484.7	4558.2	4629.4
4 DSI ALUM FIRM LOAD	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	212.4	212.3	212.6	212.7	212.7	213.3	213.3	213.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2299.4	2299.3	2299.6	2299.7	2299.7	2300.3	2300.3	2300.3
8 TOT DSI FIRM TRANS LOSSES	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
9 BPA FEDERAL AGENCIES	150.5	151.1	151.9	152.5	153.2	153.8	154.3	154.8
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	174.4	176.1	177.9	179.8	181.5	183.4	185.4	187.3
12 ADDTL FEDERAL TRAN LOSSES	75.0	76.6	79.1	82.3	84.0	84.7	86.4	88.0
13 TOTAL FEDERAL FIRM LOAD	6909.9	6980.2	7053.0	7128.9	7197.6	7274.8	7352.7	7427.8
GENERATING PUBLIC UTILITIES								
14 SALES	4505.5	4577.7	4651.0	4727.2	4797.3	4877.0	4956.9	5034.2
15 TRANSMIS & DISTRIB LOSSES	288.4	293.0	297.7	302.5	307.0	312.1	317.2	322.2
16 SYSTEM LOAD	4793.9	4870.7	4948.6	5029.8	5104.3	5189.1	5274.1	5356.3
17 PUB RESIDENTL EXCHG--RPSA	404.2	410.4	416.5	423.3	429.0	435.7	442.4	449.7
18 PUB RESIDENTL EXCHG--ETCA	12.4	12.5	12.7	12.8	12.9	13.1	13.2	13.4
19 TOTAL PUBLIC SALES	8481.3	8617.3	8755.3	8898.9	9030.9	9181.0	9331.4	9477.0
INVESTOR-OWNED UTILITIES								
20 SALES	10451.1	10654.8	10866.1	11070.7	11261.9	11492.9	11735.5	11970.5
21 TRANSMIS & DISTRIB LOSSES	1097.4	1118.7	1140.9	1162.4	1182.5	1206.8	1232.2	1256.9
22 SYSTEM LOAD	11548.5	11773.5	12007.0	12233.1	12444.4	12699.7	12967.7	13227.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	21630.1	21970.3	22320.7	22669.6	22993.6	23375.8	23769.5	24150.5
26 TOTAL REGIONAL FIRM LOAD	23432.2	23804.4	24188.7	24571.8	24926.3	25343.6	25774.5	26191.5
27 DSI ALUM TQ LOAD	696.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	70.9	70.8	71.1	71.2	71.2	71.2	71.2	71.2
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	766.9	766.8	767.1	767.2	767.2	767.2	767.2	767.2
31 TOT DSI T Q TRANS LOSSES	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	24378.1	24750.3	25134.8	25518.0	25872.5	26289.8	26720.7	27137.7

1990 Draft Long-Term Regional Forecast
High Case - Price Effects - Calendar Year
(Average Megawatts)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3349.3	3459.5	3565.0	3674.1	3768.5	3870.9	3964.0	4055.6	4146.2	4241.5	4332.5	4418.9
2 DISTRIBUTION LOSSES	140.7	145.3	149.7	154.3	158.3	162.6	166.5	170.3	174.1	178.1	182.0	185.6
3 SYSTEM LOAD	3490.0	3604.8	3714.7	3828.4	3926.8	4033.4	4130.5	4225.9	4320.4	4419.7	4514.4	4604.5
4 DSI ALUM FIRM LOAD	2160.5	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	316.8	315.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	278.5	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2477.3	2475.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2438.5	2401.0
8 TOT DSI FIRM TRANS LOSSES	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	63.6	62.6
9 BPA FEDERAL AGENCIES	144.5	143.3	141.7	142.8	143.9	144.9	145.8	146.7	147.5	148.4	149.2	150.1
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	161.7	164.7	167.5	170.5	173.1	176.0	178.5	181.1	183.6	186.2	187.7	189.1
12 ADDTL FEDERAL TRAN LOSSES	72.8	77.8	78.8	79.0	81.4	79.3	78.4	80.8	81.7	83.8	86.1	88.8
13 TOTAL FEDERAL FIRM LOAD	6413.7	6533.0	6646.0	6764.1	6868.6	6977.1	7076.6	7177.9	7276.6	7381.6	7443.7	7501.3
GENERATING PUBLIC UTILITIES												
14 SALES	3796.6	3921.6	4040.9	4164.4	4271.1	4387.0	4492.4	4596.1	4698.7	4806.4	4909.4	5007.1
15 TRANSMIS & DISTRIB LOSSES	243.0	251.0	258.6	266.5	273.3	280.8	287.5	294.1	300.7	307.6	314.2	320.5
16 SYSTEM LOAD	4039.6	4172.6	4299.5	4430.9	4544.5	4667.8	4780.0	4890.2	4999.4	5114.0	5223.6	5327.6
17 PUB RESIDENTL EXCHG--RPSA	354.5	366.5	374.2	381.2	388.8	399.0	406.1	413.0	422.4	432.0	441.0	449.6
18 PUB RESIDENTL EXCHG--ETCA	11.6	11.9	12.1	12.2	12.4	12.6	12.8	12.9	13.2	13.4	13.6	13.9
19 TOTAL PUBLIC SALES	7145.9	7381.1	7605.9	7838.5	8039.6	8257.9	8456.4	8651.6	8844.9	9048.0	9241.8	9426.0
INVESTOR-OWNED UTILITIES												
20 SALES	8814.4	9102.6	9383.6	9668.1	9928.6	10186.1	10409.7	10679.5	10946.1	11236.7	11511.2	11793.8
21 TRANSMIS & DISTRIB LOSSES	925.5	955.8	985.3	1015.1	1042.5	1069.5	1093.0	1121.3	1149.3	1179.9	1208.7	1238.3
22 SYSTEM LOAD	9739.9	10058.4	10368.9	10683.3	10971.1	11255.6	11502.7	11800.8	12095.4	12416.6	12719.8	13032.2
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	18829.5	19349.5	19854.5	20372.8	20835.6	21312.4	21735.4	22201.3	22662.0	23156.7	23588.4	24018.7
26 TOTAL REGIONAL FIRM LOAD	20373.2	20944.0	21494.4	22058.3	22564.3	23080.5	23539.3	24049.0	24551.4	25092.3	25567.1	26041.0
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	105.8	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	92.5	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	825.8	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	812.5	800.0
31 TOT DSI T Q TRANS LOSSES	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.2	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	21379.5	21949.5	22499.9	23063.9	23569.8	24086.0	24544.9	25054.5	25556.9	26097.8	26559.8	27020.9

	2003	2004	2005	2006	2007	2008	2009	2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	4514.0	4619.0	4727.0	4832.8	4937.7	5042.3	5153.4	5264.2
2 DISTRIBUTION LOSSES	189.6	194.0	198.5	203.0	207.4	211.8	216.4	221.1
3 SYSTEM LOAD	4703.6	4813.0	4925.5	5035.8	5145.1	5254.1	5369.8	5485.3
4 DSI ALUM FIRM LOAD	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	241.0	241.0	241.0	241.0	241.0	241.0	241.0	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0
8 TOT DSI FIRM TRANS LOSSES	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6
9 BPA FEDERAL AGENCIES	150.5	151.1	151.9	152.5	153.2	153.8	154.3	154.8
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	191.7	194.6	197.6	200.5	203.4	206.2	209.3	212.3
12 ADDTL FEDERAL TRAN LOSSES	90.1	92.9	96.6	101.1	104.0	106.1	108.8	111.1
13 TOTAL FEDERAL FIRM LOAD	7604.8	7720.5	7840.5	7958.7	8074.5	8189.1	8311.4	8432.6
GENERATING PUBLIC UTILITIES								
14 SALES	5114.7	5233.6	5355.7	5475.5	5594.2	5712.5	5838.3	5963.7
15 TRANSMIS & DISTRIB LOSSES	327.3	334.9	342.8	350.4	358.0	365.6	373.6	381.7
16 SYSTEM LOAD	5442.1	5568.5	5698.5	5825.9	5952.2	6078.1	6211.9	6345.4
17 PUB RESIDENTL EXCHG--RPSA	459.0	469.4	479.8	490.6	500.5	510.6	521.3	533.0
18 PUB RESIDENTL EXCHG--ETCA	14.1	14.4	14.6	14.9	15.1	15.3	15.6	15.9
19 TOTAL PUBLIC SALES	9628.7	9852.6	10082.7	10308.2	10531.9	10754.8	10991.7	11227.9
INVESTOR-OWNED UTILITIES								
20 SALES	12100.1	12427.8	12766.5	13107.3	13457.8	13827.3	14191.9	14540.7
21 TRANSMIS & DISTRIB LOSSES	1270.5	1304.9	1340.5	1376.3	1413.1	1451.9	1490.1	1526.8
22 SYSTEM LOAD	13370.6	13732.7	14107.0	14483.5	14870.9	15279.2	15682.1	16067.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	24528.1	25080.3	25650.0	26216.9	26791.8	27384.8	27987.0	28572.4
26 TOTAL REGIONAL FIRM LOAD	26597.4	27201.7	27826.0	28448.1	29077.6	29726.4	30385.4	31025.4
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
31 TOT DSI T Q TRANS LOSSES	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	27577.3	28181.6	28805.8	29428.0	30057.5	30706.2	31365.3	32005.3

1990 Draft Long-Term Regional Forecast
Low Case - Price Effects - Operating Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	2890.7	2879.3	2873.2	2871.2	2873.4	2883.6	2900.1	2912.9	2921.0	2927.4	2933.4	2941.5
2 DISTRIBUTION LOSSES	121.4	120.9	120.7	120.6	120.7	121.1	121.8	122.3	122.7	123.0	123.2	123.5
3 SYSTEM LOAD	3012.1	3000.3	2993.9	2991.8	2994.1	3004.7	3021.9	3035.3	3043.7	3050.4	3056.6	3065.0
4 DSI ALUM FIRM LOAD	1920.3	1795.3	1596.8	1379.0	1107.6	1027.0	1027.0	1027.0	1027.0	992.9	770.7	569.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2020.3	1895.3	1696.8	1479.0	1207.6	1127.0	1127.0	1127.0	1127.0	1092.9	870.7	669.0
8 TOT DSI FIRM TRANS LOSSES	52.7	49.4	44.2	38.5	31.4	29.4	29.4	29.4	29.4	28.5	22.7	16.9
9 BPA FEDERAL AGENCIES	143.8	144.5	141.9	142.2	143.3	144.4	145.3	146.2	147.2	148.0	148.8	149.6
10 USBR	67.3	67.4	67.3	67.4	67.4	67.4	67.5	67.5	67.5	67.5	67.7	67.8
11 FEDERAL TRANSMIS LOSSES	137.2	133.6	128.2	122.5	115.4	113.8	114.3	114.6	114.9	114.2	108.6	103.0
12 ADDTL FEDERAL TRAN LOSSES	59.1	61.8	61.7	57.0	56.7	57.1	49.3	49.7	48.9	47.8	47.7	47.8
13 TOTAL FEDERAL FIRM LOAD	5439.8	5303.0	5089.8	4859.8	4584.5	4514.4	4525.3	4540.3	4549.1	4520.8	4300.0	4082.2
GENERATING PUBLIC UTILITIES												
14 SALES	3276.7	3264.0	3257.0	3254.7	3257.2	3268.8	3287.6	3302.0	3311.2	3318.4	3325.1	3334.2
15 TRANSMIS & DISTRIB LOSSES	209.7	208.9	208.4	208.3	208.5	209.2	210.4	211.3	211.9	212.4	212.8	213.4
16 SYSTEM LOAD	3486.4	3472.9	3465.5	3463.0	3465.7	3478.0	3498.0	3513.3	3523.1	3530.7	3537.9	3547.6
17 PUB RESIDENTL EXCHG--RPSA	307.0	304.9	303.9	298.8	297.3	297.4	298.3	297.1	297.4	298.1	298.6	299.2
18 PUB RESIDENTL EXCHG--ETCA	10.1	10.0	9.8	9.6	9.5	9.4	9.4	9.3	9.3	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6167.4	6143.3	6130.2	6125.9	6130.6	6152.4	6187.7	6215.0	6232.2	6245.8	6258.5	6275.8
INVESTOR-OWNED UTILITIES												
20 SALES	7587.8	7580.3	7553.4	7520.0	7495.4	7476.7	7476.8	7478.4	7494.7	7479.6	7492.7	7496.3
21 TRANSMIS & DISTRIB LOSSES	796.7	795.9	793.1	789.6	787.0	785.1	785.1	785.2	786.9	785.4	786.7	787.1
22 SYSTEM LOAD	8384.5	8376.2	8346.5	8309.5	8282.4	8261.8	8261.9	8263.6	8281.6	8265.0	8279.4	8283.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16166.6	16010.9	15769.7	15514.4	15224.3	15148.0	15184.4	15214.0	15248.6	15213.8	15018.3	14818.4
26 TOTAL REGIONAL FIRM LOAD	17490.7	17332.1	17081.8	16812.3	16512.6	16434.2	16465.2	16497.3	16533.8	16496.5	16297.3	16093.3
27 DSI ALUM TQ LOAD	640.3	598.5	532.3	459.8	369.1	342.0	342.0	342.0	342.0	330.8	257.0	183.0
28 DSI NON-ALUM TQ LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	673.3	631.5	565.3	492.8	402.1	375.0	375.0	375.0	375.0	363.8	290.0	216.0
31 TOT DSI T Q TRANS LOSSES	17.6	16.4	14.7	12.8	10.4	9.8	9.8	9.8	9.8	9.5	7.6	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	18340.5	18139.0	17820.8	17477.0	17084.1	16978.0	17009.0	17041.0	17077.6	17028.7	16753.9	16473.9

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
SMALL & NONGEN PUBLIC UTILS									
1 SALES	2949.1	2961.8	2978.8	2992.6	3008.5	3025.4	3042.0	3059.4	3067.6
2 DISTRIBUTION LOSSES	123.9	124.4	125.1	125.7	126.4	127.1	127.8	128.5	128.8
3 SYSTEM LOAD	3073.0	3086.2	3103.9	3118.3	3134.8	3152.4	3169.7	3187.9	3196.4
4 DSI ALUM FIRM LOAD	569.0	569.0	569.0	569.0	569.0	569.0	569.0	569.0	569.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0	669.0
8 TOT DSI FIRM TRANS LOSSES	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
9 BPA FEDERAL AGENCIES	150.4	150.7	151.5	152.3	152.8	153.5	154.0	154.6	155.1
10 USBR	67.8	67.8	67.8	67.8	67.8	67.9	68.0	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	103.3	103.6	104.1	104.5	104.9	105.4	105.9	106.4	106.6
12 ADDTL FEDERAL TRAN LOSSES	47.3	46.8	47.2	49.3	50.4	50.0	49.3	50.4	50.4
13 TOTAL FEDERAL FIRM LOAD	4090.7	4104.1	4123.5	4141.3	4159.8	4178.3	4196.0	4216.4	4225.7
GENERATING PUBLIC UTILITIES									
14 SALES	3342.8	3357.3	3376.5	3392.1	3410.1	3429.2	3448.0	3467.8	3476.9
15 TRANSMIS & DISTRIB LOSSES	213.9	214.9	216.1	217.1	218.2	219.5	220.7	221.9	222.5
16 SYSTEM LOAD	3556.8	3572.2	3592.6	3609.2	3628.4	3648.7	3668.7	3689.7	3699.4
17 PUB RESIDENTL EXCHG--RPSA	299.8	300.9	302.3	303.6	305.0	306.3	307.7	309.1	310.8
18 PUB RESIDENTL EXCHG--ETCA	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6292.0	6319.1	6355.3	6384.7	6418.6	6454.5	6490.0	6527.2	6544.5
INVESTOR-OWNED UTILITIES									
20 SALES	7495.1	7512.7	7540.8	7558.1	7580.9	7607.5	7643.7	7670.4	7718.9
21 TRANSMIS & DISTRIB LOSSES	787.0	788.8	791.8	793.6	796.0	798.8	802.6	805.4	810.5
22 SYSTEM LOAD	8282.1	8301.6	8332.6	8351.7	8376.9	8406.2	8446.3	8475.8	8529.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	14834.3	14879.3	14944.4	14991.9	15049.1	15112.4	15184.7	15249.2	15315.6
26 TOTAL REGIONAL FIRM LOAD	16109.6	16157.8	16228.7	16282.1	16345.1	16413.2	16491.0	16561.8	16634.4
27 DSI ALUM TQ LOAD	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0
28 DSI NON-ALUM TQ LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
31 TOT DSI T Q TRANS LOSSES	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	16490.3	16538.5	16609.3	16662.8	16725.7	16793.8	16871.6	16942.5	17015.1

1990 Draft Long-Term Regional Forecast
Medium-Low Case - Price Effects - Operating Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	2993.8	3014.4	3038.1	3064.5	3094.8	3130.8	3171.1	3206.6	3236.2	3263.2	3289.6	3315.3
2 DISTRIBUTION LOSSES	125.7	126.6	127.6	128.7	130.0	131.5	133.2	134.7	135.9	137.1	138.2	139.2
3 SYSTEM LOAD	3119.6	3141.0	3165.7	3193.2	3224.8	3262.3	3304.3	3341.3	3372.1	3400.3	3427.8	3454.5
4 DSI ALUM FIRM LOAD	1979.8	1904.7	1797.8	1654.3	1491.5	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	165.3	171.3	139.0	139.3	139.4	140.1	140.3	140.9	141.1	141.6	142.1	142.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2145.1	2075.9	1936.8	1793.5	1630.9	1579.1	1579.3	1579.9	1580.1	1580.6	1581.1	1581.1
8 TOT DSI FIRM TRANS LOSSES	55.9	54.1	50.5	46.7	42.4	41.2	41.2	41.2	41.2	41.2	41.2	41.2
9 BPA FEDERAL AGENCIES	143.8	144.5	141.9	142.2	143.3	144.4	145.3	146.2	147.2	148.0	148.8	149.6
10 USBR	67.3	67.4	67.3	67.4	67.4	67.4	67.5	67.5	67.5	67.5	67.7	67.8
11 FEDERAL TRANSMIS LOSSES	143.3	142.1	139.0	136.0	132.6	132.3	133.5	134.5	135.3	136.1	136.8	137.6
12 ADDTL FEDERAL TRAN LOSSES	61.7	65.4	66.3	62.2	62.8	63.9	56.7	57.7	57.3	57.0	57.5	58.1
13 TOTAL FEDERAL FIRM LOAD	5680.8	5636.4	5517.0	5394.4	5261.7	5249.4	5286.6	5327.0	5359.5	5389.5	5419.6	5448.6
GENERATING PUBLIC UTILITIES												
14 SALES	3393.9	3417.3	3444.0	3474.0	3508.2	3549.0	3594.7	3634.8	3668.3	3698.8	3728.7	3757.7
15 TRANSMIS & DISTRIB LOSSES	217.2	218.7	220.4	222.3	224.5	227.1	230.1	232.6	234.8	236.7	238.6	240.5
16 SYSTEM LOAD	3611.1	3636.0	3664.5	3696.3	3732.8	3776.2	3824.8	3867.4	3903.1	3935.5	3967.3	3998.2
17 PUB RESIDENTL EXCHG--RPSA	318.0	319.2	321.3	319.0	320.2	322.9	326.2	327.1	329.5	332.4	334.9	337.3
18 PUB RESIDENTL EXCHG--ETCA	10.5	10.4	10.4	10.3	10.2	10.2	10.3	10.3	10.3	10.3	10.3	10.4
19 TOTAL PUBLIC SALES	6387.8	6431.7	6482.1	6538.4	6603.0	6679.8	6765.9	6841.4	6904.5	6962.1	7018.3	7073.0
INVESTOR-OWNED UTILITIES												
20 SALES	7809.9	7885.4	7936.8	7974.2	8022.0	8073.4	8136.3	8199.2	8280.1	8327.4	8402.9	8465.2
21 TRANSMIS & DISTRIB LOSSES	820.0	828.0	833.4	837.3	842.3	847.7	854.3	860.9	869.4	874.4	882.3	888.8
22 SYSTEM LOAD	8630.0	8713.4	8770.1	8811.4	8864.3	8921.1	8990.6	9060.1	9149.5	9201.8	9285.2	9354.1
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16734.0	16785.0	16744.9	16695.6	16646.7	16724.1	16874.3	17014.1	17159.4	17265.6	17398.7	17516.6
26 TOTAL REGIONAL FIRM LOAD	18101.9	18165.8	18131.5	18082.2	18038.8	18126.6	18282.0	18434.5	18592.1	18706.9	18852.2	18980.8
27 DSI ALUM TQ LOAD	660.0	634.9	599.3	551.6	497.5	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	55.1	57.2	46.3	46.3	46.4	46.7	46.8	47.2	47.2	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	715.1	692.1	645.5	597.9	543.9	526.7	526.8	527.2	527.2	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	18.6	18.0	16.8	15.6	14.2	13.7	13.7	13.7	13.7	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	18994.6	19034.9	18952.9	18854.7	18755.9	18826.0	18981.6	19134.4	19292.0	19406.9	19552.2	19680.8

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
SMALL & NONGEN PUBLIC UTILS									
1 SALES	3339.1	3369.7	3406.6	3443.1	3482.1	3522.7	3564.7	3608.2	3629.5
2 DISTRIBUTION LOSSES	140.2	141.5	143.1	144.6	146.2	148.0	149.7	151.5	152.4
3 SYSTEM LOAD	3479.3	3511.2	3549.6	3587.7	3628.4	3670.6	3714.5	3759.8	3781.9
4 DSI ALUM FIRM LOAD	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	142.1	142.1	142.2	142.3	142.3	142.3	142.8	142.8	142.8
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	1581.1	1581.1	1581.2	1581.3	1581.3	1581.3	1581.8	1581.8	1581.8
8 TOT DSI FIRM TRANS LOSSES	41.2	41.2	41.2	41.2	41.2	41.2	41.3	41.3	41.3
9 BPA FEDERAL AGENCIES	150.4	150.7	151.5	152.3	152.8	153.5	154.0	154.6	155.1
10 USBR	67.8	67.8	67.8	67.8	67.8	67.9	68.0	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	138.2	139.1	140.1	141.1	142.2	143.3	144.5	145.7	146.3
12 ADDTL FEDERAL TRAN LOSSES	58.1	58.2	59.0	62.0	63.6	63.9	63.8	65.8	65.8
13 TOTAL FEDERAL FIRM LOAD	5475.0	5508.0	5549.2	5592.3	5636.0	5680.5	5726.6	5775.8	5799.0
GENERATING PUBLIC UTILITIES									
14 SALES	3784.6	3819.3	3861.0	3902.4	3946.6	3992.5	4040.2	4089.4	4113.1
15 TRANSMIS & DISTRIB LOSSES	242.2	244.4	247.1	249.8	252.6	255.5	258.6	261.7	263.2
16 SYSTEM LOAD	4026.8	4063.8	4108.2	4152.2	4199.2	4248.0	4298.7	4351.1	4376.3
17 PUB RESIDENTL EXCHG--RPSA	339.5	342.4	345.8	349.4	353.1	356.7	360.6	364.7	367.8
18 PUB RESIDENTL EXCHG--ETCA	10.4	10.4	10.5	10.6	10.6	10.7	10.8	10.8	10.9
19 TOTAL PUBLIC SALES	7123.7	7189.0	7267.6	7345.6	7428.8	7515.1	7604.9	7697.6	7742.5
INVESTOR-OWNED UTILITIES									
20 SALES	8525.1	8609.3	8712.7	8810.3	8915.2	9022.3	9141.4	9253.4	9352.1
21 TRANSMIS & DISTRIB LOSSES	895.1	904.0	914.8	925.1	936.1	947.3	959.8	971.6	982.0
22 SYSTEM LOAD	9420.2	9513.2	9627.5	9735.4	9851.3	9969.7	10101.3	10225.0	10334.1
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17628.1	17777.8	17960.8	18137.3	18325.8	18520.1	18730.2	18935.5	19079.6
26 TOTAL REGIONAL FIRM LOAD	19102.0	19265.0	19464.9	19659.9	19866.5	20078.2	20306.6	20531.9	20689.4
27 DSI ALUM TQ LOAD	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	527.3	527.3	527.3	527.3	527.3	527.3	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	19802.0	19965.0	20165.0	20360.0	20566.6	20778.3	21006.7	21232.0	21389.5

1990 Draft Long-Term Regional Forecast
Medium Case - Price Effects - Operating Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	4897.6	4908.2	4997.4	5080.1	5125.4	5168.6	5238.5	5277.3	5323.6	5382.1	5436.3	5489.9
2 DISTRIBUTION LOSSES	205.7	206.1	209.9	213.4	215.3	217.1	220.0	221.6	223.6	226.0	228.3	230.6
3 SYSTEM LOAD	5103.3	5114.3	5207.2	5293.4	5340.7	5385.7	5458.6	5498.9	5547.2	5608.2	5664.6	5720.4
4 DSI ALUM FIRM LOAD	2178.8	2136.3	2110.3	2046.9	2005.9	1988.7	1980.0	1980.0	1980.0	1980.0	1980.0	1980.0
5 DSI NON-ALUM FIRM LOAD	235.4	269.3	198.3	198.8	199.3	200.2	200.8	201.7	202.8	203.8	204.3	204.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2414.2	2405.6	2308.7	2245.8	2205.2	2188.8	2180.8	2181.7	2182.8	2183.8	2184.3	2184.3
8 TOT DSI FIRM TRANS LOSSES	79.1	78.8	75.6	73.5	72.2	71.6	71.4	71.4	71.5	71.5	71.5	71.5
9 BPA FEDERAL AGENCIES	200.3	200.3	196.9	197.4	198.9	200.3	201.6	202.8	203.8	206.1	206.4	207.7
10 USBR	93.7	93.7	93.8	93.7	93.8	93.9	93.9	94.0	94.0	94.2	94.3	94.4
11 FEDERAL TRANSMIS LOSSES	257.7	257.7	257.5	258.2	258.6	259.6	261.8	263.1	264.8	267.0	268.9	270.8
12 ADDTL FEDERAL TRAN LOSSES	151.0	121.8	113.0	111.3	108.7	107.5	95.9	96.6	95.1	90.0	91.2	90.0
13 TOTAL FEDERAL FIRM LOAD	8220.1	8193.3	8177.1	8199.8	8205.9	8235.8	8292.5	8337.1	8387.8	8449.3	8509.7	8567.6
GENERATING PUBLIC UTILITIES												
14 SALES	4818.9	4832.1	4900.2	4967.6	5033.5	5090.7	5153.0	5209.2	5264.3	5320.2	5373.8	5427.3
15 TRANSMIS & DISTRIB LOSSES	308.4	309.2	313.6	317.9	322.1	325.8	329.8	333.4	336.9	340.5	343.9	347.3
16 SYSTEM LOAD	5127.3	5141.3	5213.8	5285.5	5355.6	5416.5	5482.8	5542.6	5601.2	5660.6	5717.8	5774.7
17 PUB RESIDENTL EXCHG--RPSA	517.6	517.4	526.3	526.6	528.0	530.8	536.5	536.1	539.8	545.9	551.1	556.2
18 PUB RESIDENTL EXCHG--ETCA	16.6	16.5	16.6	16.6	16.4	16.4	16.5	16.4	16.4	16.5	16.6	16.7
19 TOTAL PUBLIC SALES	9716.5	9740.2	9897.5	10047.6	10158.9	10259.3	10391.5	10486.5	10587.9	10702.3	10810.1	10917.2
INVESTOR-OWNED UTILITIES												
20 SALES	11393.9	11667.7	11814.6	11928.9	12041.3	12164.4	12300.8	12439.4	12616.9	12766.1	12937.4	13092.8
21 TRANSMIS & DISTRIB LOSSES	1196.4	1225.1	1240.5	1252.5	1264.3	1277.3	1291.6	1306.1	1324.8	1340.4	1358.4	1374.7
22 SYSTEM LOAD	12590.2	12892.8	13055.2	13181.5	13305.6	13441.7	13592.4	13745.5	13941.7	14106.5	14295.9	14467.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0
25 TOTAL REGIONAL FIRM SALES	24001.4	24290.4	24494.6	24696.4	24881.1	25089.8	25351.6	25587.4	25868.5	26135.4	26415.6	26679.4
26 TOTAL REGIONAL FIRM LOAD	26120.6	26410.5	26629.1	26849.7	27050.1	27277.0	27550.6	27808.3	28113.7	28399.4	28706.3	28992.8
27 DSI ALUM TQ LOAD	726.0	712.1	703.5	682.4	668.5	662.9	660.0	660.0	660.0	660.0	660.0	660.0
28 DSI NON-ALUM TQ LOAD	105.9	89.8	66.1	66.5	66.7	66.8	66.9	67.2	67.7	67.9	68.3	68.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	831.9	801.9	769.6	748.9	735.2	729.7	726.9	727.2	727.7	727.9	728.3	728.3
31 TOT DSI T Q TRANS LOSSES	27.3	26.3	25.2	24.5	24.1	23.9	23.8	23.8	23.8	23.8	23.8	23.8
32 OTHER INTERRUPTIBLE LOAD	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0	178.0
33 TOTAL REGIONAL LOAD	27157.8	27416.6	27601.9	27801.1	27987.4	28208.5	28479.3	28737.2	29043.2	29329.2	29636.4	29922.9

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
SMALL & NONGEN PUBLIC UTILS									
1 SALES	3511.6	3547.8	3588.3	3630.1	3673.5	3716.4	3760.0	3804.3	3825.8
2 DISTRIBUTION LOSSES	147.5	149.0	150.7	152.5	154.3	156.1	157.9	159.8	160.7
3 SYSTEM LOAD	3659.0	3696.8	3739.0	3782.6	3827.8	3872.5	3917.9	3964.1	3986.5
4 DSI ALUM FIRM LOAD	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0
5 DSI NON-ALUM FIRM LOAD	184.1	184.1	184.3	184.5	184.6	185.0	185.1	185.1	185.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2135.1	2135.1	2135.3	2135.5	2135.6	2136.0	2136.1	2136.1	2136.1
8 TOT DSI FIRM TRANS LOSSES	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7
9 BPA FEDERAL AGENCIES	150.4	150.7	151.5	152.3	152.8	153.5	154.0	154.6	155.1
10 USBR	67.8	67.8	67.8	67.8	67.8	67.9	68.0	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	157.4	158.4	159.5	160.7	161.9	163.1	164.3	165.5	166.1
12 ADDTL FEDERAL TRAN LOSSES	65.0	65.5	66.7	69.7	71.7	72.1	72.3	74.4	74.4
13 TOTAL FEDERAL FIRM LOAD	6234.8	6274.3	6319.9	6368.7	6417.5	6465.2	6512.6	6562.7	6586.2
GENERATING PUBLIC UTILITIES									
14 SALES	3971.5	4012.3	4058.1	4105.3	4154.3	4202.8	4252.0	4302.0	4325.9
15 TRANSMIS & DISTRIB LOSSES	254.2	256.8	259.7	262.7	265.9	269.0	272.1	275.3	276.9
16 SYSTEM LOAD	4225.6	4269.1	4317.9	4368.1	4420.2	4471.8	4524.1	4577.4	4602.8
17 PUB RESIDENTL EXCHG--RPSA	357.1	360.5	364.3	368.4	372.5	376.4	380.4	384.5	387.7
18 PUB RESIDENTL EXCHG--ETCA	11.0	11.0	11.1	11.2	11.2	11.3	11.3	11.4	11.5
19 TOTAL PUBLIC SALES	7483.0	7560.1	7646.5	7735.5	7827.8	7919.2	8011.9	8106.3	8151.7
INVESTOR-OWNED UTILITIES									
20 SALES	9570.0	9695.3	9838.8	9976.6	10117.1	10257.0	10408.7	10545.3	10657.7
21 TRANSMIS & DISTRIB LOSSES	1004.8	1018.0	1033.1	1047.5	1062.3	1077.0	1092.9	1107.2	1119.0
22 SYSTEM LOAD	10574.8	10713.3	10871.9	11024.1	11179.4	11334.0	11501.6	11652.5	11776.7
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	19586.3	19789.0	20019.9	20247.7	20481.1	20713.7	20958.7	21190.4	21348.6
26 TOTAL REGIONAL FIRM LOAD	21215.2	21436.7	21689.7	21940.9	22197.1	22451.0	22718.3	22972.6	23145.7
27 DSI ALUM TQ LOAD	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0
28 DSI NON-ALUM TQ LOAD	61.4	61.4	61.5	61.5	61.5	61.5	61.5	61.5	61.5
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	711.4	711.4	711.5	711.5	711.5	711.5	711.5	711.5	711.5
31 TOT DSI T Q TRANS LOSSES	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	22104.2	22325.7	22578.7	22829.9	23086.2	23340.0	23607.4	23861.7	24034.8

1990 Draft Long-Term Regional Forecast
Medium-High Case - Price Effects - Operating Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3178.3	3254.0	3322.3	3389.6	3455.5	3525.3	3599.7	3667.2	3727.1	3784.0	3839.3	3893.8
2 DISTRIBUTION LOSSES	133.5	136.7	139.5	142.4	145.1	148.1	151.2	154.0	156.5	158.9	161.2	163.5
3 SYSTEM LOAD	3311.8	3390.6	3461.8	3531.9	3600.6	3673.4	3750.9	3821.3	3883.7	3942.9	4000.6	4057.3
4 DSI ALUM FIRM LOAD	2150.6	2123.1	2123.0	2123.0	2097.5	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	269.1	278.3	246.9	247.2	247.3	248.0	248.3	248.8	249.1	249.4	249.8	212.2
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2419.7	2401.4	2369.9	2370.2	2344.8	2335.0	2335.3	2335.8	2336.1	2336.4	2336.8	2299.2
8 TOT DSI FIRM TRANS LOSSES	63.1	62.6	61.8	61.8	61.1	60.9	60.9	60.9	60.9	60.9	60.9	60.0
9 BPA FEDERAL AGENCIES	143.8	144.5	141.9	142.2	143.3	144.4	145.3	146.2	147.2	148.0	148.8	149.6
10 USBR	67.3	67.4	67.3	67.4	67.4	67.4	67.5	67.5	67.5	67.5	67.7	67.8
11 FEDERAL TRANSMIS LOSSES	155.6	157.2	158.1	160.0	161.2	162.9	164.9	166.8	168.5	170.0	171.6	172.1
12 ADDTL FEDERAL TRAN LOSSES	66.8	72.1	73.9	71.3	72.7	74.1	67.9	70.1	70.4	70.8	72.2	74.1
13 TOTAL FEDERAL FIRM LOAD	6165.0	6233.3	6273.0	6343.0	6389.9	6457.2	6531.8	6607.6	6673.2	6735.7	6797.6	6820.1
GENERATING PUBLIC UTILITIES												
14 SALES	3603.6	3689.2	3766.5	3842.8	3917.3	3996.3	4080.6	4156.9	4224.7	4289.0	4351.6	4413.3
15 TRANSMIS & DISTRIB LOSSES	230.6	236.1	241.1	245.9	250.7	255.8	261.2	266.0	270.4	274.5	278.5	282.4
16 SYSTEM LOAD	3834.2	3925.3	4007.6	4088.7	4168.0	4252.1	4341.7	4423.0	4495.1	4563.5	4630.1	4695.7
17 PUB RESIDENTL EXCHG--RPSA	337.5	344.6	351.4	352.8	357.5	363.6	370.3	374.1	379.5	385.4	390.9	396.2
18 PUB RESIDENTL EXCHG--ETCA	11.1	11.2	11.3	11.3	11.4	11.5	11.7	11.7	11.8	12.0	12.1	12.2
19 TOTAL PUBLIC SALES	6781.9	6943.1	7088.8	7232.3	7372.7	7521.6	7680.3	7824.2	7951.8	8073.0	8190.9	8307.1
INVESTOR-OWNED UTILITIES												
20 SALES	8287.8	8513.5	8684.5	8837.8	8990.2	9145.8	9321.9	9493.8	9681.7	9830.5	10014.7	10189.6
21 TRANSMIS & DISTRIB LOSSES	870.2	893.9	911.9	928.0	944.0	960.3	978.8	996.8	1016.6	1032.2	1051.5	1069.9
22 SYSTEM LOAD	9158.0	9407.4	9596.4	9765.8	9934.2	10106.1	10300.7	10490.6	10698.3	10862.7	11066.3	11259.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17880.5	18249.9	18532.4	18829.9	19098.4	19394.3	19730.2	20047.4	20364.3	20635.4	20938.8	21193.1
26 TOTAL REGIONAL FIRM LOAD	19337.2	19745.9	20056.9	20377.4	20672.1	20995.4	21354.2	21701.2	22046.6	22341.8	22673.9	22955.3
27 DSI ALUM TQ LOAD	716.7	708.0	708.0	708.0	699.5	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	89.8	92.6	82.3	82.3	82.3	82.6	82.8	83.0	83.2	83.3	83.3	70.8
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	806.4	800.6	790.3	790.3	781.8	778.6	778.8	779.0	779.2	779.3	779.3	766.8
31 TOT DSI T Q TRANS LOSSES	21.0	20.9	20.6	20.6	20.4	20.3	20.3	20.3	20.3	20.3	20.3	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	20323.6	20726.4	21026.8	21347.3	21633.3	21953.2	22312.4	22659.5	23005.1	23300.4	23632.5	23901.0

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
SMALL & NONGEN PUBLIC UTILS									
1 SALES	3948.4	4007.9	4072.2	4138.3	4202.9	4269.1	4339.6	4409.0	4442.8
2 DISTRIBUTION LOSSES	165.8	168.3	171.0	173.8	176.5	179.3	182.3	185.2	186.6
3 SYSTEM LOAD	4114.2	4176.2	4243.2	4312.1	4379.4	4448.4	4521.8	4594.1	4629.4
4 DSI ALUM FIRM LOAD	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	212.4	212.3	212.5	212.6	212.7	213.0	213.3	213.3	213.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2299.4	2299.3	2299.5	2299.6	2299.7	2300.0	2300.3	2300.3	2300.3
8 TOT DSI FIRM TRANS LOSSES	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
9 BPA FEDERAL AGENCIES	150.4	150.7	151.5	152.3	152.8	153.5	154.0	154.6	155.1
10 USBR	67.8	67.8	67.8	67.8	67.8	67.9	68.0	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	173.6	175.3	177.1	178.9	180.7	182.5	184.5	186.4	187.3
12 ADDTL FEDERAL TRAN LOSSES	74.9	75.7	77.5	81.1	83.5	84.4	85.2	88.0	88.0
13 TOTAL FEDERAL FIRM LOAD	6880.4	6945.1	7016.6	7091.9	7163.8	7236.7	7313.7	7391.5	7428.2
GENERATING PUBLIC UTILITIES									
14 SALES	4475.0	4542.4	4615.2	4690.0	4763.1	4838.1	4917.9	4996.4	5034.2
15 TRANSMIS & DISTRIB LOSSES	286.4	290.7	295.4	300.2	304.8	309.6	314.7	319.8	322.2
16 SYSTEM LOAD	4761.4	4833.2	4910.5	4990.2	5067.9	5147.8	5232.6	5316.2	5356.3
17 PUB RESIDENTL EXCHG--RPSA	401.5	407.3	413.5	420.0	426.2	432.4	439.1	445.7	450.3
18 PUB RESIDENTL EXCHG--ETCA	12.3	12.4	12.6	12.7	12.8	13.0	13.1	13.2	13.4
19 TOTAL PUBLIC SALES	8423.4	8550.4	8687.3	8828.3	8966.0	9107.2	9257.4	9405.4	9477.0
INVESTOR-OWNED UTILITIES									
20 SALES	10363.7	10555.8	10765.7	10969.8	11167.9	11376.1	11621.0	11854.9	12024.9
21 TRANSMIS & DISTRIB LOSSES	1088.2	1108.4	1130.4	1151.8	1172.6	1194.5	1220.2	1244.8	1262.6
22 SYSTEM LOAD	11451.9	11664.2	11896.1	12121.7	12340.5	12570.6	12841.2	13099.7	13287.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	21484.7	21804.0	22151.9	22497.9	22834.1	23184.7	23580.7	23963.2	24205.3
26 TOTAL REGIONAL FIRM LOAD	23273.7	23622.4	24003.3	24383.7	24752.2	25135.0	25567.5	25987.3	26252.0
27 DSI ALUM TQ LOAD	696.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	70.9	70.8	71.0	71.1	71.2	71.2	71.2	71.2	71.2
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	766.9	766.8	767.0	767.1	767.2	767.2	767.2	767.2	767.2
31 TOT DSI T Q TRANS LOSSES	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	24219.6	24568.2	24949.3	25329.8	25698.4	26081.2	26513.7	26933.5	27198.2

1990 Draft Long-Term Regional Forecast
High Case - Price Effects - Operating Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3293.9	3405.2	3512.9	3620.0	3721.2	3820.3	3917.9	4010.1	4101.2	4194.1	4287.4	4376.0
2 DISTRIBUTION LOSSES	138.3	143.0	147.5	152.0	156.3	160.5	164.5	168.4	172.2	176.2	180.1	183.8
3 SYSTEM LOAD	3432.3	3548.2	3660.4	3772.0	3877.5	3980.7	4082.4	4178.6	4273.4	4370.3	4467.4	4559.8
4 DSI ALUM FIRM LOAD	2160.5	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	307.5	314.3	315.8	316.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2468.0	2474.3	2475.8	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2401.0
8 TOT DSI FIRM TRANS LOSSES	64.4	64.5	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	62.6
9 BPA FEDERAL AGENCIES	143.8	144.5	141.9	142.2	143.3	144.4	145.3	146.2	147.2	148.0	148.8	149.6
10 USBR	67.3	67.4	67.3	67.4	67.4	67.4	67.5	67.5	67.5	67.5	67.7	67.8
11 FEDERAL TRANSMIS LOSSES	160.0	163.2	166.1	169.1	171.9	174.6	177.3	179.8	182.4	184.9	187.5	188.0
12 ADDTL FEDERAL TRAN LOSSES	70.1	76.3	79.5	77.9	80.5	82.5	76.9	80.0	81.3	82.7	84.9	87.8
13 TOTAL FEDERAL FIRM LOAD	6341.6	6474.0	6591.0	6704.6	6816.6	6925.6	7025.4	7128.1	7227.8	7329.4	7432.2	7453.8
GENERATING PUBLIC UTILITIES												
14 SALES	3734.9	3860.9	3982.8	4104.1	4218.5	4330.6	4441.0	4545.4	4648.4	4753.6	4859.1	4959.3
15 TRANSMIS & DISTRIB LOSSES	239.0	247.1	254.9	262.7	270.0	277.2	284.2	290.9	297.5	304.2	311.0	317.4
16 SYSTEM LOAD	3973.9	4108.0	4237.7	4366.7	4488.5	4607.7	4725.2	4836.3	4945.9	5057.9	5170.1	5276.7
17 PUB RESIDENTL EXCHG--RPSA	349.8	360.6	371.5	376.8	385.1	394.1	403.1	409.2	417.7	427.3	436.6	445.3
18 PUB RESIDENTL EXCHG--ETCA	11.5	11.7	12.0	12.1	12.3	12.5	12.7	12.8	13.0	13.3	13.5	13.7
19 TOTAL PUBLIC SALES	7028.8	7266.2	7495.7	7724.1	7939.7	8150.8	8358.9	8555.6	8749.6	8947.8	9146.5	9335.3
INVESTOR-OWNED UTILITIES												
20 SALES	8618.2	8956.3	9251.1	9526.2	9799.4	10056.0	10302.5	10547.3	10829.0	11079.4	11376.3	11655.5
21 TRANSMIS & DISTRIB LOSSES	904.9	940.4	971.4	1000.2	1028.9	1055.9	1081.8	1107.5	1137.0	1163.3	1194.5	1223.8
22 SYSTEM LOAD	9523.1	9896.7	10222.4	10526.5	10828.4	11111.9	11384.2	11654.7	11966.0	12242.8	12570.8	12879.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	18506.2	19088.6	19611.8	20115.9	20605.9	21074.7	21530.2	21972.5	22449.3	22898.7	23395.2	23789.1
26 TOTAL REGIONAL FIRM LOAD	20018.6	20658.7	21231.2	21777.8	22313.5	22825.3	23314.9	23799.1	24319.8	24810.0	25353.1	25789.9
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	102.5	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	822.5	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	800.0
31 TOT DSI T Q TRANS LOSSES	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	21021.6	21664.2	22236.7	22783.3	23319.0	23830.8	24320.4	24804.6	25325.3	25815.6	26358.6	26769.7

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
SMALL & NONGEN PUBLIC UTILS									
1 SALES	4466.8	4566.9	4673.3	4780.4	4885.7	4990.4	5098.3	5209.3	5264.2
2 DISTRIBUTION LOSSES	187.6	191.8	196.3	200.8	205.2	209.6	214.1	218.8	221.1
3 SYSTEM LOAD	4654.4	4758.7	4869.6	4981.1	5090.9	5200.0	5312.4	5428.1	5485.3
4 DSI ALUM FIRM LOAD	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	241.0	241.0	241.0	241.0	241.0	241.0	241.0	241.0	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0
8 TOT DSI FIRM TRANS LOSSES	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6
9 BPA FEDERAL AGENCIES	150.4	150.7	151.5	152.3	152.8	153.5	154.0	154.6	155.1
10 USBR	67.8	67.8	67.8	67.8	67.8	67.9	68.0	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	190.5	193.2	196.2	199.1	202.0	204.9	207.8	210.9	212.3
12 ADDTL FEDERAL TRAN LOSSES	89.5	91.5	94.5	99.3	102.9	105.1	107.2	111.1	111.1
13 TOTAL FEDERAL FIRM LOAD	7553.5	7662.9	7780.6	7900.7	8017.3	8132.3	8250.4	8373.7	8433.0
GENERATING PUBLIC UTILITIES									
14 SALES	5062.1	5175.4	5295.9	5417.0	5536.2	5654.7	5776.9	5902.5	5963.7
15 TRANSMIS & DISTRIB LOSSES	324.0	331.2	338.9	346.7	354.3	361.9	369.7	377.8	381.7
16 SYSTEM LOAD	5386.1	5506.7	5634.9	5763.7	5890.5	6016.6	6146.6	6280.2	6345.4
17 PUB RESIDENTL EXCHG--RPSA	454.3	464.3	474.6	485.3	495.6	505.6	516.0	526.8	533.7
18 PUB RESIDENTL EXCHG--ETCA	14.0	14.2	14.5	14.7	15.0	15.2	15.4	15.7	15.9
19 TOTAL PUBLIC SALES	9528.8	9742.3	9969.3	10197.4	10421.8	10645.1	10875.2	11111.7	11227.9
INVESTOR-OWNED UTILITIES									
20 SALES	11947.6	12267.9	12604.0	12939.4	13285.5	13641.7	14018.3	14369.1	14606.9
21 TRANSMIS & DISTRIB LOSSES	1254.5	1288.1	1323.4	1358.6	1395.0	1432.4	1471.9	1508.7	1533.7
22 SYSTEM LOAD	13202.1	13556.1	13927.4	14298.0	14680.4	15074.1	15490.2	15877.8	16140.6
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	24275.7	24809.8	25373.6	25937.9	26508.9	27089.2	27696.5	28284.5	28639.0
26 TOTAL REGIONAL FIRM LOAD	26321.7	26905.6	27522.9	28142.4	28768.3	29403.0	30067.2	30711.8	31098.9
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
31 TOT DSI T Q TRANS LOSSES	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	27301.6	27885.5	28502.7	29122.3	29748.1	30382.8	31047.1	31691.6	32078.8

1990 Draft Long-Term Regional Forecast
Low Case - Price Effects - Fiscal Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	2887.3	2877.5	2872.3	2871.3	2874.6	2887.3	2904.3	2915.0	2923.0	2928.7	2935.2	2943.7
2 DISTRIBUTION LOSSES	121.3	120.9	120.6	120.6	120.7	121.3	122.0	122.4	122.8	123.0	123.3	123.6
3 SYSTEM LOAD	3008.6	2998.3	2993.0	2991.9	2995.4	3008.6	3026.3	3037.4	3045.8	3051.7	3058.5	3067.4
4 DSI ALUM FIRM LOAD	1904.8	1748.8	1540.8	1325.2	1050.0	1027.0	1027.0	1027.0	1027.0	949.7	694.4	549.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2004.8	1848.8	1640.8	1425.2	1150.0	1127.0	1127.0	1127.0	1127.0	1049.7	794.4	649.0
8 TOT DSI FIRM TRANS LOSSES	52.3	48.3	42.9	37.2	30.0	29.4	29.4	29.4	29.4	27.5	20.9	16.9
9 BPA FEDERAL AGENCIES	144.1	144.3	141.4	142.4	143.6	144.7	145.5	146.4	147.3	148.3	148.9	149.8
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	136.8	132.5	126.9	121.2	114.1	113.9	114.4	114.7	114.9	113.2	106.8	103.1
12 ADDTL FEDERAL TRAN LOSSES	59.1	61.8	60.8	57.0	56.7	55.0	49.3	49.6	48.5	47.8	47.9	47.8
13 TOTAL FEDERAL FIRM LOAD	5420.7	5253.1	5030.2	4805.0	4527.1	4516.6	4530.0	4542.7	4550.9	4478.2	4224.2	4084.9
GENERATING PUBLIC UTILITIES												
14 SALES	3273.2	3262.0	3256.1	3254.8	3258.5	3272.8	3292.0	3304.2	3313.3	3319.8	3327.0	3336.6
15 TRANSMIS & DISTRIB LOSSES	209.5	208.8	208.4	208.3	208.5	209.5	210.7	211.5	212.0	212.5	212.9	213.5
16 SYSTEM LOAD	3482.7	3470.8	3464.5	3463.1	3467.1	3482.2	3502.7	3515.7	3525.3	3532.2	3539.9	3550.2
17 PUB RESIDENTL EXCHG--RPSA	306.0	304.6	302.8	297.8	296.8	297.7	298.1	296.7	297.6	298.2	298.7	299.3
18 PUB RESIDENTL EXCHG--ETCA	10.0	9.9	9.7	9.5	9.4	9.4	9.4	9.3	9.3	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6160.6	6139.5	6128.4	6126.1	6133.2	6160.1	6196.3	6219.2	6236.3	6248.5	6262.1	6280.4
INVESTOR-OWNED UTILITIES												
20 SALES	7594.7	7572.7	7544.3	7515.1	7489.8	7475.6	7475.4	7479.5	7490.7	7484.1	7493.2	7495.2
21 TRANSMIS & DISTRIB LOSSES	797.4	795.1	792.1	789.1	786.4	784.9	784.9	785.3	786.5	785.8	786.8	787.0
22 SYSTEM LOAD	8392.1	8367.8	8336.4	8304.2	8276.3	8260.5	8260.4	8264.8	8277.2	8269.9	8279.9	8282.2
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16151.5	15952.6	15702.3	15456.2	15164.0	15154.8	15191.7	15219.6	15248.7	15178.1	14946.4	14822.2
26 TOTAL REGIONAL FIRM LOAD	17475.5	17271.6	17011.1	16752.4	16450.5	16439.3	16473.0	16503.2	16533.4	16460.4	16224.1	16097.2
27 DSI ALUM TO LOAD	635.1	582.9	513.7	441.9	349.8	342.0	342.0	342.0	342.0	316.5	231.5	183.0
28 DSI NON-ALUM TO LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TO LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	668.1	615.9	546.7	474.9	382.8	375.0	375.0	375.0	375.0	349.5	264.5	216.0
31 TOT DSI T Q TRANS LOSSES	17.4	16.1	14.3	12.4	10.0	9.8	9.8	9.8	9.8	9.2	7.0	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	18320.0	18062.6	17731.1	17398.7	17002.2	16983.1	17016.8	17047.0	17077.2	16978.1	16654.5	16477.9

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	2950.7	2966.4	2982.5	2995.6	3013.1	3029.0	3046.4	3063.4
2 DISTRIBUTION LOSSES	123.9	124.6	125.3	125.8	126.5	127.2	127.9	128.7
3 SYSTEM LOAD	3074.6	3090.9	3107.7	3121.4	3139.6	3156.2	3174.4	3192.1
4 DSI ALUM FIRM LOAD	549.0	549.0	549.0	549.0	549.0	549.0	549.0	549.0
5 DSI NON-ALUM FIRM LOAD	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	649.0	649.0	649.0	649.0	649.0	649.0	649.0	649.0
8 TOT DSI FIRM TRANS LOSSES	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
9 BPA FEDERAL AGENCIES	150.5	150.8	151.7	152.4	152.9	153.6	154.3	154.6
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	103.3	103.7	104.2	104.6	105.1	105.5	106.0	106.5
12 ADDTL FEDERAL TRAN LOSSES	47.0	46.8	47.6	49.6	50.5	50.1	49.5	50.4
13 TOTAL FEDERAL FIRM LOAD	4092.2	4109.2	4128.0	4144.9	4165.0	4182.3	4201.2	4220.7
GENERATING PUBLIC UTILITIES								
14 SALES	3344.5	3362.1	3380.4	3395.3	3415.0	3433.0	3452.7	3472.0
15 TRANSMIS & DISTRIB LOSSES	214.0	215.2	216.3	217.3	218.6	219.7	221.0	222.2
16 SYSTEM LOAD	3558.6	3577.3	3596.7	3612.6	3633.5	3652.7	3673.7	3694.2
17 PUB RESIDENTL EXCHG--RPSA	299.9	301.3	302.6	303.9	305.4	306.6	308.1	309.9
18 PUB RESIDENTL EXCHG--ETCA	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
19 TOTAL PUBLIC SALES	6295.2	6328.5	6362.8	6390.9	6428.0	6462.0	6499.1	6535.4
INVESTOR-OWNED UTILITIES								
20 SALES	7495.7	7518.1	7544.4	7561.6	7587.2	7615.3	7649.2	7676.6
21 TRANSMIS & DISTRIB LOSSES	787.0	789.4	792.2	794.0	796.6	799.6	803.2	806.0
22 SYSTEM LOAD	8282.7	8307.5	8336.5	8355.6	8383.8	8414.9	8452.4	8482.6
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	14838.3	14894.3	14955.7	15001.8	15065.0	15127.8	15199.7	15263.6
26 TOTAL REGIONAL FIRM LOAD	16113.5	16174.0	16241.3	16293.1	16362.3	16429.9	16507.3	16577.5
27 DSI ALUM TO LOAD	183.0	183.0	183.0	183.0	183.0	183.0	183.0	183.0
28 DSI NON-ALUM TO LOAD	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
29 DSI HANNA TO LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
31 TOT DSI T Q TRANS LOSSES	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	16494.2	16554.6	16621.9	16673.7	16743.0	16810.5	16887.9	16958.1

1990 Draft Long-Term Regional Forecast
Medium-Low Case - Price Effects - Fiscal Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	2998.0	3020.1	3043.7	3071.7	3102.7	3140.3	3180.8	3214.0	3243.3	3269.5	3296.3	3321.2
2 DISTRIBUTION LOSSES	125.9	126.8	127.8	129.0	130.3	131.9	133.6	135.0	136.2	137.3	138.4	139.5
3 SYSTEM LOAD	3123.9	3147.0	3171.5	3200.7	3233.1	3272.2	3314.4	3349.0	3379.5	3406.9	3434.7	3460.7
4 DSI ALUM FIRM LOAD	1949.4	1889.1	1760.3	1621.5	1454.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	165.7	164.8	139.2	139.3	139.5	140.1	140.4	141.0	141.3	141.7	142.1	142.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2115.1	2053.9	1899.5	1760.8	1593.5	1579.1	1579.4	1580.0	1580.3	1580.7	1581.1	1581.1
8 TOT DSI FIRM TRANS LOSSES	55.2	53.6	49.6	45.9	41.6	41.2	41.2	41.2	41.2	41.2	41.2	41.2
9 BPA FEDERAL AGENCIES	144.1	144.3	141.4	142.4	143.6	144.7	145.5	146.4	147.3	148.3	148.9	149.8
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	142.7	141.7	138.2	135.4	131.9	132.6	133.7	134.7	135.5	136.2	137.0	137.7
12 ADDTL FEDERAL TRAN LOSSES	62.0	65.7	65.5	62.3	63.0	62.0	56.9	57.7	57.1	57.2	57.7	58.3
13 TOTAL FEDERAL FIRM LOAD	5655.1	5619.9	5483.6	5369.1	5232.5	5258.0	5297.4	5335.2	5367.0	5396.8	5427.1	5455.3
GENERATING PUBLIC UTILITIES												
14 SALES	3398.3	3423.3	3450.0	3481.6	3516.7	3559.1	3605.0	3642.6	3675.7	3705.5	3735.7	3763.9
15 TRANSMIS & DISTRIB LOSSES	217.5	219.1	220.8	222.8	225.1	227.8	230.7	233.1	235.2	237.1	239.1	240.9
16 SYSTEM LOAD	3615.8	3642.4	3670.8	3704.4	3741.7	3786.9	3835.7	3875.7	3911.0	3942.6	3974.8	4004.8
17 PUB RESIDENTL EXCHG--RPSA	317.8	319.9	321.0	318.7	320.5	323.9	326.6	327.3	330.3	333.0	335.5	337.8
18 PUB RESIDENTL EXCHG--ETCA	10.4	10.4	10.3	10.2	10.2	10.3	10.3	10.2	10.3	10.3	10.4	10.4
19 TOTAL PUBLIC SALES	6396.2	6443.4	6493.7	6553.3	6619.4	6699.4	6785.8	6856.6	6919.0	6975.0	7032.0	7085.1
INVESTOR-OWNED UTILITIES												
20 SALES	7836.1	7896.9	7944.5	7985.5	8034.2	8087.4	8148.8	8214.8	8290.5	8347.4	8416.8	8477.7
21 TRANSMIS & DISTRIB LOSSES	822.8	829.2	834.2	838.5	843.6	849.2	855.6	862.6	870.5	876.5	883.8	890.2
22 SYSTEM LOAD	8658.9	8726.1	8778.6	8824.0	8877.8	8936.6	9004.4	9077.4	9161.0	9223.9	9300.5	9367.9
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	16738.9	16786.0	16726.4	16689.5	16638.1	16758.1	16907.0	17045.3	17184.5	17298.9	17426.5	17541.5
26 TOTAL REGIONAL FIRM LOAD	18109.7	18168.5	18113.0	18077.5	18031.9	18161.4	18317.5	18468.4	18619.0	18743.3	18882.4	19008.0
27 DSI ALUM TQ LOAD	649.9	629.7	586.8	540.8	485.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	55.3	55.0	46.3	46.3	46.5	46.7	47.0	47.2	47.2	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	705.2	684.7	633.1	587.1	531.5	526.7	527.0	527.2	527.2	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	18.4	17.9	16.5	15.3	13.9	13.7	13.7	13.7	13.7	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	18992.3	19030.0	18921.6	18838.9	18736.3	18860.8	19017.3	19168.3	19318.9	19443.3	19582.4	19708.0

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3344.9	3378.7	3415.4	3452.0	3492.1	3532.3	3575.3	3618.5
2 DISTRIBUTION LOSSES	140.5	141.9	143.4	145.0	146.7	148.4	150.2	152.0
3 SYSTEM LOAD	3485.4	3520.7	3558.9	3597.0	3638.7	3680.6	3725.5	3770.5
4 DSI ALUM FIRM LOAD	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0	1439.0
5 DSI NON-ALUM FIRM LOAD	142.1	142.1	142.3	142.3	142.3	142.3	142.8	142.8
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	1581.1	1581.1	1581.3	1581.3	1581.3	1581.3	1581.8	1581.8
8 TOT DSI FIRM TRANS LOSSES	41.2	41.2	41.2	41.2	41.2	41.2	41.3	41.3
9 BPA FEDERAL AGENCIES	150.5	150.8	151.7	152.4	152.9	153.6	154.3	154.6
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	138.4	139.3	140.3	141.4	142.5	143.6	144.8	146.0
12 ADDTL FEDERAL TRAN LOSSES	57.9	58.4	59.5	62.3	63.8	64.1	64.3	65.8
13 TOTAL FEDERAL FIRM LOAD	5481.0	5518.1	5559.4	5602.2	5647.1	5691.1	5738.7	5786.8
GENERATING PUBLIC UTILITIES								
14 SALES	3790.7	3828.9	3870.4	3911.8	3957.1	4002.6	4051.4	4100.3
15 TRANSMIS & DISTRIB LOSSES	242.6	245.0	247.7	250.4	253.2	256.2	259.3	262.4
16 SYSTEM LOAD	4033.3	4074.0	4118.1	4162.1	4210.3	4258.8	4310.6	4362.7
17 PUB RESIDENTL EXCHG--RPSA	340.1	343.3	346.7	350.4	354.0	357.7	361.7	366.2
18 PUB RESIDENTL EXCHG--ETCA	10.4	10.5	10.5	10.6	10.7	10.7	10.8	10.9
19 TOTAL PUBLIC SALES	7135.6	7207.6	7285.8	7363.8	7449.1	7534.9	7626.7	7718.8
INVESTOR-OWNED UTILITIES								
20 SALES	8540.4	8630.5	8734.7	8832.3	8940.5	9048.5	9166.1	9279.6
21 TRANSMIS & DISTRIB LOSSES	896.7	906.2	917.1	927.4	938.8	950.1	962.4	974.4
22 SYSTEM LOAD	9437.1	9536.7	9651.8	9759.7	9879.3	9998.6	10128.5	10254.0
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17655.4	17817.9	18001.2	18177.6	18371.8	18566.2	18776.9	18982.9
26 TOTAL REGIONAL FIRM LOAD	19131.5	19308.8	19509.3	19704.0	19916.7	20128.5	20357.9	20583.5
27 DSI ALUM TQ LOAD	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
28 DSI NON-ALUM TQ LOAD	47.3	47.3	47.3	47.3	47.3	47.3	47.3	47.3
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	527.3	527.3	527.3	527.3	527.3	527.3	527.3	527.3
31 TOT DSI T Q TRANS LOSSES	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	19831.5	20008.8	20209.4	20404.1	20616.8	20828.6	21058.0	21283.6

1990 Draft Long-Term Regional Forecast
Medium Case - Price Effects - Fiscal Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3089.3	3111.1	3156.0	3208.2	3245.9	3281.7	3320.1	3352.9	3387.8	3421.4	3454.1	3487.0
2 DISTRIBUTION LOSSES	129.8	130.7	132.6	134.7	136.3	137.8	139.4	140.8	142.3	143.7	145.1	146.5
3 SYSTEM LOAD	3219.1	3241.8	3288.6	3343.0	3382.2	3419.5	3459.5	3493.8	3530.1	3565.0	3599.1	3633.5
4 DSI ALUM FIRM LOAD	2149.6	2095.7	2068.3	1999.0	1975.8	1953.3	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0
5 DSI NON-ALUM FIRM LOAD	212.7	229.3	179.2	179.3	179.3	180.4	181.2	181.7	182.7	183.5	183.9	183.9
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2362.3	2324.9	2247.5	2178.3	2155.2	2133.8	2132.2	2132.7	2133.7	2134.5	2134.9	2134.9
8 TOT DSI FIRM TRANS LOSSES	61.6	60.7	58.6	56.8	56.2	55.6	55.6	55.6	55.6	55.7	55.7	55.7
9 BPA FEDERAL AGENCIES	144.1	144.3	141.4	142.4	143.6	144.7	145.5	146.4	147.3	148.3	148.9	149.8
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	151.6	151.3	150.4	150.0	150.5	150.9	151.9	152.9	153.9	154.8	155.8	156.7
12 ADDTL FEDERAL TRAN LOSSES	64.7	69.2	69.4	66.6	67.5	66.7	62.2	63.4	63.1	62.8	63.7	65.0
13 TOTAL FEDERAL FIRM LOAD	6009.2	5998.9	5964.6	5947.7	5966.3	5983.0	6018.8	6056.6	6095.5	6133.0	6170.2	6207.6
GENERATING PUBLIC UTILITIES												
14 SALES	3506.8	3540.9	3584.5	3628.8	3671.0	3711.3	3754.7	3791.9	3831.1	3869.0	3906.0	3943.2
15 TRANSMIS & DISTRIB LOSSES	224.4	226.6	229.4	232.2	234.9	237.5	240.3	242.7	245.2	247.6	250.0	252.4
16 SYSTEM LOAD	3731.3	3767.5	3813.9	3861.0	3906.0	3948.9	3995.0	4034.5	4076.3	4116.6	4156.0	4195.5
17 PUB RESIDENTL EXCHG--RPSA	327.4	329.5	332.9	332.9	335.3	338.5	340.9	341.4	345.1	348.5	351.6	354.7
18 PUB RESIDENTL EXCHG--ETCA	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.8	10.9	10.9
19 TOTAL PUBLIC SALES	6596.2	6652.0	6740.6	6837.0	6916.9	6993.0	7074.8	7144.8	7218.9	7290.4	7360.1	7430.2
INVESTOR-OWNED UTILITIES												
20 SALES	8257.6	8417.4	8529.1	8616.3	8705.5	8802.5	8907.8	9015.3	9142.9	9249.7	9368.0	9482.0
21 TRANSMIS & DISTRIB LOSSES	867.0	883.8	895.5	904.7	914.1	924.3	935.3	946.6	960.0	971.2	983.6	995.6
22 SYSTEM LOAD	9124.7	9301.3	9424.6	9521.1	9619.6	9726.8	9843.1	9961.9	10102.9	10220.9	10351.7	10477.6
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17607.5	17786.0	17905.9	18021.4	18168.6	18321.4	18507.8	18686.7	18890.2	19070.4	19259.7	19444.7
26 TOTAL REGIONAL FIRM LOAD	19045.1	19247.6	19383.1	19509.7	19671.9	19838.7	20037.0	20233.1	20454.7	20650.6	20857.8	21060.8
27 DSI ALUM TQ LOAD	716.2	698.8	689.3	666.2	658.6	650.8	650.0	650.0	650.0	650.0	650.0	650.0
28 DSI NON-ALUM TQ LOAD	95.8	76.5	59.8	59.8	59.8	60.3	60.4	60.5	61.0	61.3	61.4	61.4
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	812.0	775.3	749.2	726.0	718.4	711.1	710.4	710.5	711.0	711.3	711.4	711.4
31 TOT DSI T Q TRANS LOSSES	21.2	20.2	19.5	18.9	18.7	18.5	18.5	18.5	18.5	18.5	18.6	18.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	20037.3	20202.1	20310.8	20413.7	20568.0	20727.3	20924.9	21121.1	21343.2	21539.4	21746.8	21949.7

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3519.5	3557.5	3598.4	3640.3	3684.2	3726.5	3770.9	3814.8
2 DISTRIBUTION LOSSES	147.8	149.4	151.1	152.9	154.7	156.5	158.4	160.2
3 SYSTEM LOAD	3667.3	3706.9	3749.5	3793.2	3838.9	3883.0	3929.3	3975.0
4 DSI ALUM FIRM LOAD	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0	1951.0
5 DSI NON-ALUM FIRM LOAD	184.2	184.1	184.5	184.5	184.6	185.0	185.1	185.1
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2135.2	2135.1	2135.5	2135.5	2135.6	2136.0	2136.1	2136.1
8 TOT DSI FIRM TRANS LOSSES	55.7	55.7	55.7	55.7	55.7	55.7	55.7	55.7
9 BPA FEDERAL AGENCIES	150.5	150.8	151.7	152.4	152.9	153.6	154.3	154.6
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	157.6	158.6	159.8	160.9	162.2	163.3	164.6	165.8
12 ADDTL FEDERAL TRAN LOSSES	65.0	65.8	67.2	70.2	72.0	72.4	72.7	74.4
13 TOTAL FEDERAL FIRM LOAD	6243.4	6285.1	6331.5	6380.1	6429.5	6476.3	6525.0	6573.9
GENERATING PUBLIC UTILITIES								
14 SALES	3979.8	4022.6	4068.8	4116.1	4165.6	4213.4	4263.5	4313.1
15 TRANSMIS & DISTRIB LOSSES	254.7	257.4	260.4	263.4	266.6	269.7	272.9	276.0
16 SYSTEM LOAD	4234.5	4280.1	4329.2	4379.5	4432.2	4483.1	4536.4	4589.1
17 PUB RESIDENTL EXCHG--RPSA	357.9	361.5	365.3	369.5	373.5	377.4	381.5	386.0
18 PUB RESIDENTL EXCHG--ETCA	11.0	11.0	11.1	11.2	11.3	11.3	11.4	11.5
19 TOTAL PUBLIC SALES	7499.3	7580.1	7667.2	7756.4	7849.8	7940.0	8034.4	8127.8
INVESTOR-OWNED UTILITIES								
20 SALES	9597.2	9723.3	9871.7	10006.1	10151.3	10289.9	10441.1	10575.1
21 TRANSMIS & DISTRIB LOSSES	1007.7	1020.9	1036.5	1050.6	1065.9	1080.4	1096.3	1110.4
22 SYSTEM LOAD	10604.9	10744.3	10908.2	11056.7	11217.2	11370.3	11537.4	11685.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	19630.0	19837.2	20073.9	20298.2	20537.5	20767.4	21013.9	21241.7
26 TOTAL REGIONAL FIRM LOAD	21262.8	21489.4	21748.9	21996.4	22258.9	22509.7	22778.7	23028.5
27 DSI ALUM TQ LOAD	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0
28 DSI NON-ALUM TQ LOAD	61.4	61.4	61.5	61.5	61.5	61.5	61.5	61.5
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	711.4	711.4	711.5	711.5	711.5	711.5	711.5	711.5
31 TOT DSI T Q TRANS LOSSES	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	22151.8	22378.4	22638.0	22885.4	23147.9	23398.7	23667.8	23917.6

1990 Draft Long-Term Regional Forecast
Medium-High Case - Price Effects - Fiscal Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3197.3	3270.6	3338.0	3406.2	3471.4	3543.1	3617.3	3682.0	3741.3	3797.5	3852.6	3906.9
2 DISTRIBUTION LOSSES	134.3	137.4	140.2	143.1	145.8	148.8	151.9	154.6	157.1	159.5	161.8	164.1
3 SYSTEM LOAD	3331.6	3407.9	3478.2	3549.2	3617.2	3691.9	3769.3	3836.7	3898.5	3957.0	4014.4	4070.9
4 DSI ALUM FIRM LOAD	2149.6	2123.0	2123.0	2121.5	2090.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	271.8	272.1	247.2	247.2	247.3	248.1	248.3	248.9	249.2	249.5	240.5	212.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2421.3	2395.1	2370.2	2368.7	2337.3	2335.1	2335.3	2335.9	2336.2	2336.5	2327.5	2299.3
8 TOT DSI FIRM TRANS LOSSES	63.2	62.5	61.8	61.8	61.0	60.9	60.9	60.9	60.9	60.9	60.7	60.0
9 BPA FEDERAL AGENCIES	144.1	144.3	141.4	142.4	143.6	144.7	145.5	146.4	147.3	148.3	148.9	149.8
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	156.1	157.4	158.5	160.4	161.4	163.3	165.4	167.2	168.8	170.4	171.7	172.5
12 ADDTL FEDERAL TRAN LOSSES	67.4	72.6	73.4	71.5	73.0	72.5	68.3	70.3	70.3	71.0	72.5	74.5
13 TOTAL FEDERAL FIRM LOAD	6187.9	6244.7	6289.0	6359.6	6399.9	6475.0	6551.2	6623.9	6688.5	6750.8	6802.8	6834.7
GENERATING PUBLIC UTILITIES												
14 SALES	3623.6	3706.7	3783.1	3860.3	3934.1	4015.1	4099.2	4172.5	4239.7	4303.3	4365.6	4427.0
15 TRANSMIS & DISTRIB LOSSES	231.9	237.2	242.1	247.1	251.8	257.0	262.3	267.0	271.3	275.4	279.4	283.3
16 SYSTEM LOAD	3855.5	3943.9	4025.2	4107.3	4185.9	4272.1	4361.6	4439.6	4511.0	4578.7	4645.0	4710.4
17 PUB RESIDENTL EXCHG--RPSA	339.1	346.5	352.1	353.5	358.7	365.6	371.5	375.0	381.2	386.8	392.3	397.5
18 PUB RESIDENTL EXCHG--ETCA	11.1	11.3	11.3	11.4	11.4	11.6	11.7	11.8	11.9	12.0	12.1	12.3
19 TOTAL PUBLIC SALES	6820.9	6977.2	7121.1	7266.5	7405.5	7558.2	7716.6	7854.5	7981.0	8100.8	8218.2	8333.9
INVESTOR-OWNED UTILITIES												
20 SALES	8356.2	8552.5	8719.5	8875.7	9024.7	9186.0	9360.0	9534.1	9715.0	9876.0	10053.2	10228.9
21 TRANSMIS & DISTRIB LOSSES	877.4	898.0	915.5	931.9	947.6	964.5	982.8	1001.1	1020.1	1037.0	1055.6	1074.0
22 SYSTEM LOAD	9233.6	9450.5	9635.1	9807.6	9972.3	10150.6	10342.8	10535.2	10735.1	10913.0	11108.8	11302.9
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	17990.0	18316.5	18599.6	18900.6	19158.6	19471.5	19804.9	20118.5	20427.0	20709.2	20995.5	21259.6
26 TOTAL REGIONAL FIRM LOAD	19457.1	19819.1	20129.3	20454.6	20738.1	21077.6	21435.6	21778.7	22114.7	22422.5	22736.5	23028.0
27 DSI ALUM TQ LOAD	716.3	708.0	708.0	707.5	697.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	90.5	90.6	82.3	82.3	82.3	82.7	82.9	83.1	83.2	83.3	80.2	70.8
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	806.8	798.6	790.3	789.8	779.3	778.7	778.9	779.1	779.2	779.3	776.2	766.8
31 TOT DSI T Q TRANS LOSSES	21.1	20.8	20.6	20.6	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	20444.0	20797.5	21099.2	21423.9	21696.8	22035.6	22393.8	22737.1	23073.1	23381.1	23691.9	23973.8

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	3961.7	4023.3	4087.9	4154.5	4217.8	4286.0	4356.6	4425.5
2 DISTRIBUTION LOSSES	166.4	169.0	171.7	174.5	177.1	180.0	183.0	185.9
3 SYSTEM LOAD	4128.1	4192.3	4259.5	4329.0	4395.0	4466.0	4539.6	4611.3
4 DSI ALUM FIRM LOAD	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0	2087.0
5 DSI NON-ALUM FIRM LOAD	212.4	212.3	212.5	212.6	212.7	213.2	213.3	213.3
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2299.4	2299.3	2299.5	2299.6	2299.7	2300.2	2300.3	2300.3
8 TOT DSI FIRM TRANS LOSSES	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
9 BPA FEDERAL AGENCIES	150.5	150.8	151.7	152.4	152.9	153.6	154.3	154.6
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	174.0	175.7	177.4	179.3	181.0	182.9	184.9	186.8
12 ADDTL FEDERAL TRAN LOSSES	74.8	76.1	78.2	81.6	83.8	84.8	85.7	88.0
13 TOTAL FEDERAL FIRM LOAD	6894.7	6962.1	7034.2	7109.7	7180.3	7255.4	7332.7	7409.1
GENERATING PUBLIC UTILITIES								
14 SALES	4489.2	4558.8	4631.8	4707.1	4778.9	4856.0	4935.8	5013.8
15 TRANSMIS & DISTRIB LOSSES	287.3	291.8	296.4	301.3	305.8	310.8	315.9	320.9
16 SYSTEM LOAD	4776.5	4850.5	4928.2	5008.4	5084.7	5166.8	5251.7	5334.7
17 PUB RESIDENTL EXCHG--RPSA	402.9	409.0	415.0	421.8	427.7	434.2	440.9	447.9
18 PUB RESIDENTL EXCHG--ETCA	12.4	12.5	12.7	12.8	12.9	13.0	13.2	13.4
19 TOTAL PUBLIC SALES	8450.9	8582.1	8719.6	8861.6	8996.7	9142.1	9292.4	9439.3
INVESTOR-OWNED UTILITIES								
20 SALES	10404.9	10600.5	10812.3	11016.2	11211.9	11430.8	11674.0	11908.8
21 TRANSMIS & DISTRIB LOSSES	1092.5	1113.1	1135.3	1156.7	1177.2	1200.2	1225.8	1250.4
22 SYSTEM LOAD	11497.5	11713.6	11947.6	12172.9	12389.2	12631.1	12899.8	13159.2
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	21553.6	21880.6	22230.9	22577.6	22909.1	23274.6	23669.0	24051.0
26 TOTAL REGIONAL FIRM LOAD	23348.6	23706.2	24090.0	24471.0	24834.2	25233.3	25664.3	26083.0
27 DSI ALUM TQ LOAD	696.0	696.0	696.0	696.0	696.0	696.0	696.0	696.0
28 DSI NON-ALUM TQ LOAD	70.9	70.8	71.0	71.1	71.2	71.2	71.2	71.2
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	766.9	766.8	767.0	767.1	767.2	767.2	767.2	767.2
31 TOT DSI T Q TRANS LOSSES	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	24294.5	24652.0	25036.0	25417.1	25780.4	26179.5	26610.4	27029.2

1990 Draft Long-Term Regional Forecast
High Case - Price Effects - Fiscal Year
(Average Megawatts)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
SMALL & NONGEN PUBLIC UTILS												
1 SALES	3320.4	3431.1	3538.0	3646.3	3745.0	3844.7	3940.3	4032.3	4123.3	4217.5	4309.4	4397.0
2 DISTRIBUTION LOSSES	139.5	144.1	148.6	153.1	157.3	161.5	165.5	169.4	173.2	177.1	181.0	184.7
3 SYSTEM LOAD	3459.9	3575.3	3686.5	3799.5	3902.3	4006.2	4105.7	4201.6	4296.5	4394.6	4490.3	4581.7
4 DSI ALUM FIRM LOAD	2160.5	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	312.3	314.5	316.0	316.0	316.0	316.0	316.0	316.0	316.0	316.0	297.3	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2472.8	2474.5	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2476.0	2457.3	2401.0
8 TOT DSI FIRM TRANS LOSSES	64.5	64.5	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.1	62.6
9 BPA FEDERAL AGENCIES	144.1	144.3	141.4	142.4	143.6	144.7	145.5	146.4	147.3	148.3	148.9	149.8
10 USBR	67.4	67.4	67.3	67.4	67.4	67.5	67.5	67.5	67.5	67.6	67.8	67.8
11 FEDERAL TRANSMIS LOSSES	160.8	163.9	166.8	169.7	172.5	175.2	177.9	180.4	182.9	185.5	187.6	188.5
12 ADDTL FEDERAL TRAN LOSSES	70.9	77.1	79.2	78.4	81.0	81.0	77.5	80.3	81.4	83.1	85.5	88.2
13 TOTAL FEDERAL FIRM LOAD	6375.8	6502.4	6617.3	6733.4	6842.7	6950.5	7050.1	7152.3	7251.5	7355.1	7437.3	7476.9
GENERATING PUBLIC UTILITIES												
14 SALES	3762.8	3888.3	4009.3	4132.0	4243.6	4356.4	4464.7	4568.8	4671.8	4778.3	4882.3	4981.5
15 TRANSMIS & DISTRIB LOSSES	240.8	248.8	256.6	264.4	271.6	278.8	285.7	292.4	299.0	305.8	312.5	318.8
16 SYSTEM LOAD	4003.7	4137.2	4265.9	4396.4	4515.2	4635.2	4750.4	4861.2	4970.8	5084.1	5194.8	5300.3
17 PUB RESIDENTL EXCHG--RPSA	352.3	363.7	373.3	378.6	387.1	396.8	404.8	410.9	420.2	429.8	438.9	447.6
18 PUB RESIDENTL EXCHG--ETCA	11.6	11.9	12.1	12.2	12.4	12.6	12.8	12.9	13.1	13.4	13.6	13.8
19 TOTAL PUBLIC SALES	7083.3	7319.4	7547.3	7778.3	7988.6	8201.1	8404.9	8601.1	8795.1	8995.7	9191.7	9378.5
INVESTOR-OWNED UTILITIES												
20 SALES	8708.5	9025.5	9312.9	9594.1	9860.9	10117.0	10352.6	10609.3	10882.7	11153.1	11438.8	11718.9
21 TRANSMIS & DISTRIB LOSSES	914.4	947.7	977.9	1007.4	1035.4	1062.3	1087.0	1114.0	1142.7	1171.1	1201.1	1230.5
22 SYSTEM LOAD	9622.9	9973.2	10290.8	10601.4	10896.3	11179.3	11439.6	11723.3	12025.3	12324.2	12639.9	12949.4
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	18656.0	19211.1	19724.9	20238.2	20716.5	21186.2	21626.5	22080.4	22548.5	23020.7	23484.4	23896.0
26 TOTAL REGIONAL FIRM LOAD	20182.3	20792.7	21353.9	21911.3	22434.2	22945.0	23420.1	23916.8	24427.7	24943.3	25452.0	25906.6
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	104.3	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0	98.8	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	824.3	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	825.0	818.8	800.0
31 TOT DSI T Q TRANS LOSSES	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.4	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	21187.1	21798.2	22359.5	22916.8	23439.7	23950.5	24425.6	24922.3	25433.2	25948.8	26451.1	26886.5

	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
SMALL & NONGEN PUBLIC UTILS								
1 SALES	4489.9	4592.4	4699.7	4805.9	4911.0	5015.7	5125.2	5236.1
2 DISTRIBUTION LOSSES	188.6	192.9	197.4	201.8	206.3	210.7	215.3	219.9
3 SYSTEM LOAD	4678.5	4785.3	4897.1	5007.7	5117.3	5226.4	5340.4	5456.0
4 DSI ALUM FIRM LOAD	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0	2160.0
5 DSI NON-ALUM FIRM LOAD	241.0	241.0	241.0	241.0	241.0	241.0	241.0	241.0
6 DSI HANNA FIRM LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 TOTAL DSI FIRM LOAD	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0	2401.0
8 TOT DSI FIRM TRANS LOSSES	62.6	62.6	62.6	62.6	62.6	62.6	62.6	62.6
9 BPA FEDERAL AGENCIES	150.5	150.8	151.7	152.4	152.9	153.6	154.3	154.6
10 USBR	67.8	67.8	67.8	67.8	67.9	67.9	68.1	68.1
11 FEDERAL TRANSMIS LOSSES	191.1	193.9	196.8	199.7	202.6	205.5	208.5	211.5
12 ADDTL FEDERAL TRAN LOSSES	89.7	92.1	95.5	100.0	103.4	105.8	107.8	111.1
13 TOTAL FEDERAL FIRM LOAD	7578.5	7690.9	7809.8	7928.7	8045.1	8160.2	8280.1	8402.3
GENERATING PUBLIC UTILITIES								
14 SALES	5086.5	5202.4	5323.8	5444.0	5563.0	5681.5	5805.2	5930.7
15 TRANSMIS & DISTRIB LOSSES	325.5	332.9	340.7	348.4	356.0	363.6	371.5	379.6
16 SYSTEM LOAD	5412.0	5535.4	5664.5	5792.4	5919.0	6045.1	6176.8	6310.3
17 PUB RESIDENTL EXCHG--RPSA	456.8	467.0	477.4	488.2	498.2	508.3	518.9	530.2
18 PUB RESIDENTL EXCHG--ETCA	14.1	14.3	14.6	14.8	15.1	15.3	15.6	15.9
19 TOTAL PUBLIC SALES	9576.4	9794.8	10023.4	10249.8	10474.0	10697.2	10930.4	11166.8
INVESTOR-OWNED UTILITIES								
20 SALES	12019.6	12341.1	12679.9	13017.1	13366.3	13728.8	14099.1	14449.3
21 TRANSMIS & DISTRIB LOSSES	1262.1	1295.8	1331.4	1366.8	1403.5	1441.5	1480.4	1517.2
22 SYSTEM LOAD	13281.6	13637.0	14011.3	14383.9	14769.8	15170.3	15579.5	15966.5
23 IOU RESIDENTIAL EXCHANGE	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0
24 COLOCKUM	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0
25 TOTAL REGIONAL FIRM SALES	24395.3	24935.6	25503.8	26068.2	26642.1	27228.5	27832.8	28419.8
26 TOTAL REGIONAL FIRM LOAD	26452.2	27043.2	27665.6	28285.0	28913.9	29555.6	30216.3	30859.1
27 DSI ALUM TQ LOAD	720.0	720.0	720.0	720.0	720.0	720.0	720.0	720.0
28 DSI NON-ALUM TQ LOAD	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
29 DSI HANNA TQ LOAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 TOTAL DSI TOP QTL LOAD	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
31 TOT DSI T Q TRANS LOSSES	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
32 OTHER INTERRUPTIBLE LOAD	159.0	159.0	159.0	159.0	159.0	159.0	159.0	159.0
33 TOTAL REGIONAL LOAD	27432.1	28023.1	28645.4	29264.9	29893.8	30535.5	31196.2	31839.0