

Population Growth Strains Power Facility

By DON L. NOEL

Much of Washington State's growth has taken place in the areas Puget Power serves. The state's growth in the 1960s was about twice the national rate of growth—Puget Power's growth was four times the national rate.

We outgrew both the rate of the state and the nation in the early '70s even though the recession slowed all growth.

In the last few years I have seen the economy of the area rebound significantly faster than the nation. Boeing figures prominently in the surge, but you must recognize that the economy is more diversified than it was 10 years or so ago.

Here is a factual example of growth. In the nine county, 4,500 square mile area Puget Power serves, we added more than 21,000 customers in 1976. At about 2.6 persons per household, this amounts to a net addition of 54,800 persons. More than 24,000 customers moved to our area in 1977. At 2.5 persons per household, this is a net addition of 60,000. In 1978, we added more than 29,000 customers for a net addition of 72,500. So, the net addition for the past three years adds up to approximately 186,300 new persons. We didn't go out and recruit the people. They just moved in and said to us, "Hook us up."

I want to call your attention to the effects population growth has on energy supply. I'd also like to point out at this juncture the simple fact that we don't create the energy demand, but we are responsible for providing the energy supply.

I'm afraid that I'll have to give you a little more background now so that you will be in a better position to judge for yourself the effect the energy market has on growth and conversely that growth has on energy.

Looking back to the late '40s, the '50s and the '60s, we recall that this region grew and prospered. Its electrical requirements were met out of our low-cost, abundant, hydroelectric resources—our river systems. As population increased and electric loads grew, dams were built on the region's rivers. No one really paid much attention to all this construction.

None of it was stopped for environmental, societal, regulatory, or other such reasons. As a matter of fact, the hydro projects constructed during all this period were looked upon as beneficial. After all, they did provide irrigation, flood control, recreation and abundant electric power to meet growing needs. But as we moved into the late '60s, we literally began to run out of rivers. The energy-producing hydroelectric sites had all been built on. Our resource sponge had been effectively squeezed dry.

As the availability of new hydro facilities came to an end, the utilities in the region began making plans to supplement hydro generation with new thermal plants. A "thermal plant" generates electricity by burning oil, natural gas, coal, or nuclear fuel and produces steam which is run through a turbine generator. Most other parts of the United States have always relied primarily on thermal generation to produce electricity. The Northwest is unique in its hydro resource.

The utilities knew that natural gas and oil were expensive and the supply story was clouded by international politics . . . at any rate, the Federal government said gas and oil should not be burned to make electricity. Our program was, therefore, designed to rely on the use of coal or nuclear-fueled thermal plants and conservation to provide for our future needs. Low-sulfur coal is abundantly available in the Montana-Wyoming area; while nuclear fuel afforded a safe, environmentally superior, low-cost generating source. All of the utilities in the region—public, private, and the Bonneville Power Administration—joined together in what we called the hydro-thermal plan. A program for the planned and coordinated construction of base-load thermal plants to meet future electrical demands of the region was created.

At this point you may be saying, "Listen to him. He's talking about all this new generation when all it really means is that people can buy more electric toothbrushes and hair curlers and other such stuff." But that's not the point. Increased use is not

what the program was all about. The real point of the program was, as I've indicated earlier, future growth in this region, growth in population and in the industries, businesses, homes, factories, schools, and farms that have to be added to serve the needs of those new people.

As the hydro-thermal program was developed by the utilities and we went ahead scheduling the new facilities to meet anticipated demands, we ran into an ever-threatening buzz saw: Environmental laws, state siting laws, continuing, almost daily changes in administrative policies, law suits, hearings, delays, and appeals. Our program slowly began to disintegrate into a disaster. Plants scheduled for operation to meet load requirements were delayed—in most instances they haven't even been started yet!

The first glimpses of what we were in for in the future came in 1973 and again in 1976. You remember that in the fall and winter of 1973-74 this region suffered from a drought. Electrical curtailments were instituted and brownout procedures were established, but not activated. And then the rains came and it appeared we were back in business as usual. Another drought occurred in the fall and winter of 1976-77. Similar curtailments were instituted. Ultimately the rains came again, and once more we were back in business as usual.

But were we really? What most people don't realize is that between 1973 and 1976 the region's utilities had brought new thermal generation on line—the Trojan Nuclear Plant, Colstrip 1 and 2 in Montana, and Jim Bridger 2 and 3 in Wyoming—a total of almost 3,000 megawatts (MW) of additional generating capacity. If those new sources of energy hadn't been brought into operation, this region would not have been able to carry its electrical loads when the second drought hit. During the second drought in December of 1976 more than 25 percent of this region's electrical requirements came from thermal generation. The most distressing part of the story, however, is that at least new thermal generation was on line in 1976 to