

Heat is on to find new energy sources

Cogeneration considered prime option

By LIV OSBY

Daily Record Staff Writer

With the cooperation of Mother Nature and some scrambling by energy officials, the region should escape a repeat of last summer when record heat and a series of mishaps strained power supplies.

The summer of '88, which saw more than 40 days of 90-plus temperatures in northwestern New Jersey, combined with increased development to create a record demand for energy.

When a couple of nuclear power plants unexpectedly closed as well, surprised energy officials were forced to take a hard look at the future of energy in New Jersey.

One response was a two-day conference of legislators and state and utility officials scheduled last week by Gov. Thomas H. Kean. Recommendations from that conference included elevating the state Board of Public Utilities to Cabinet-level status and making it responsible for energy planning in the state and expediting regulatory review.

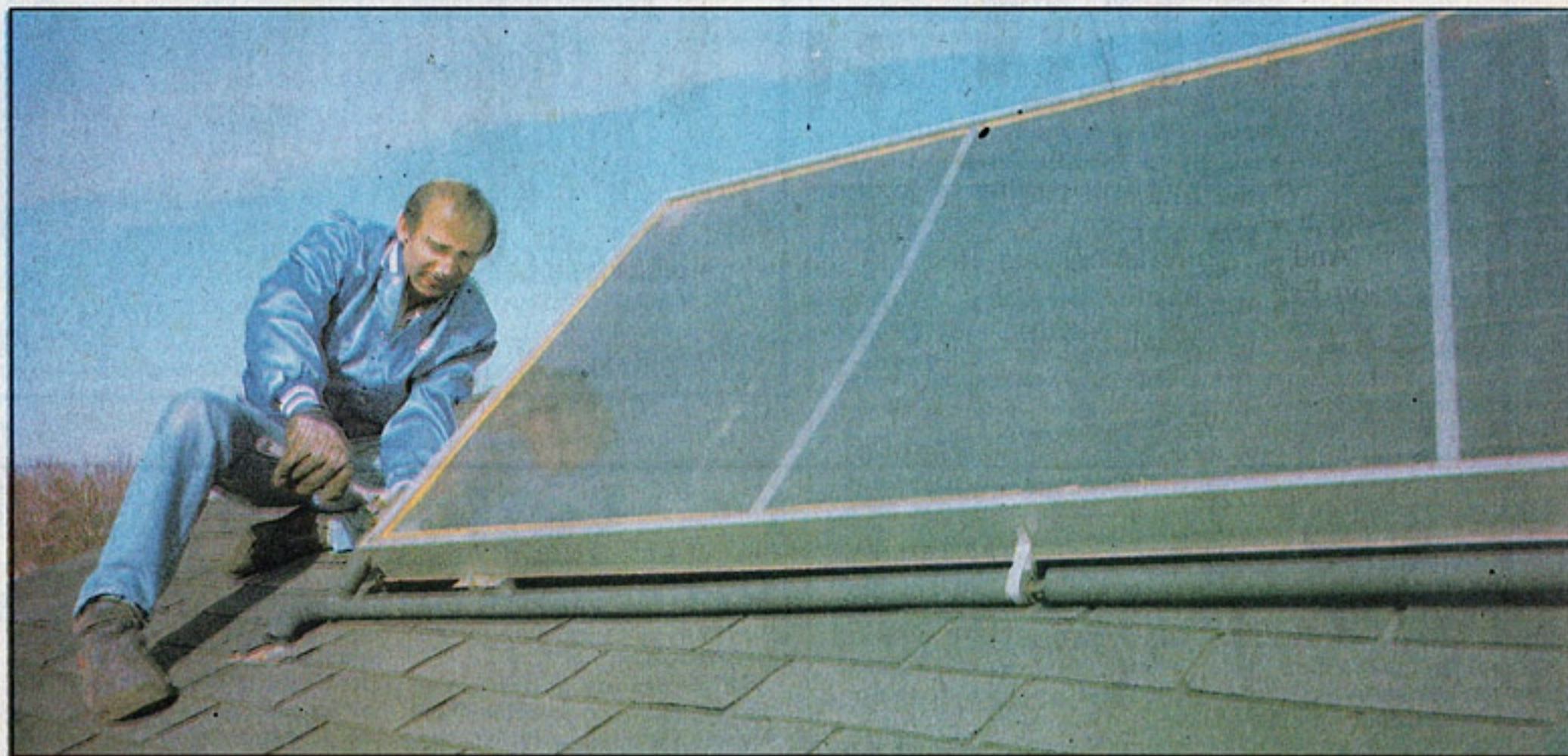
Tomorrow, industry leaders and scientists will continue to address energy concerns at the state's annual Energy Expo in Secaucus, where they will review New Jersey's existing power supplies and examine the status of alternative energy sources on the frontier.

The most promising of those alternatives, experts agree, is cogeneration, or using one fuel to power two processes, such as heat and mechanical energy. Expanding this technology could significantly reduce dependence on fossil fuels and nuclear power.

Many facilities produce the power and sell it to the utility, such as Hoffman-La Roche Inc. in Nutley, which sells to Morristown-based Jersey Central Power & Light Co.

Others, like Automatic Switch in

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Daily Record/JOHN BELL

Richard Bonte of Solar Living Inc. in Netcong adjusts solar panels on roof of David Baulier's home on Amendola Drive in borough.

Modest increase in rates forecast

By LIV OSBY

Daily Record Staff Writer

Susan Victor of Mount Olive is like many energy consumers: She thinks she pays too much for electricity but wants to be able to flip on a light switch or crank up the air conditioning without thinking about it.

"Last summer makes me nervous," said the computer marketing specialist, recalling the record heat wave that stretched the region's power supply to its limits. "But I want to be cool without having to worry about it."

Even so, Victor said, she'd be willing to pay more for cleaner, safer energy to ensure a bright future for her two sons. More money should be spent on solar research and development, she said, adding she doesn't believe nuclear power

is as cheap as proponents claim.

Dennis Baldassari, vice president of rates and treasurer for Jersey Central Power & Light Co., said energy costs have been stable during the past few years.

But he anticipates increases in large part because of the cost of closing, decontaminating and dismantling nuclear reactors.

"The cost of doing that is far in excess of what people thought," he explained. "Realistically, we're looking at \$200 million per plant, and we can't wait until the year before the plant is retired to begin to collect those moneys."

Nevertheless, Baldassari said the company's rate increases during the next five to 10 years should not exceed inflation if it remains at 4 to 5 percent. That's a far cry from

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JCP&L
energy
breakdown



Nuclear
54%



Coal
23%



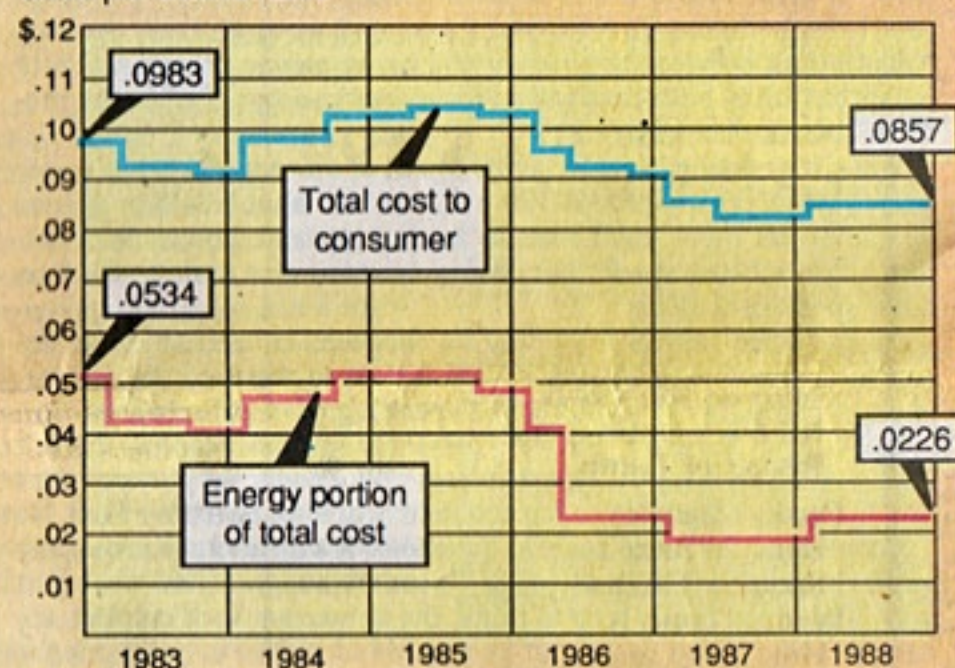
Oil
12%



Gas &
Hydro
11%

Average retail rates - January 1983 to December 1988

Cents per kilowatt hours



Daily Record/FRANK CECALA

Power

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Cedar Knolls, produce power for their own consumption.

"Cogeneration is the immediate future," said David Shadle, JCP&L's manager of cogeneration. "By the mid-1990s, it will be supplying 20 to 35 percent of our system requirements."

If cogeneration were used fully, it could produce some 400 megawatts a year and service about 300,000 residential customers, he said. JCP&L estimates it now serves 160,000 residential customers in Morris County.

Cogeneration also can increase use of waste fuels for power and delay the need for construction of new generating plants, he said.

Pfizer Inc. in Parsippany is among area companies practicing cogeneration. Heat produced as a byproduct of the pharmaceutical process is used to augment the company's electricity supply, Shadle said. Other cogenerating facilities include the Troy Hills Nursing Home in Parsippany and Fairleigh Dickinson University in Madison.

JCP&L was forced to reduce voltage twice last summer. It has found itself with some 25,000 new customers annually during the past few years because of booming development but with few plans for new generating plants.

It has asked the BPU for permission to embark on an annual bidding program that would allow it to purchase power at the lowest cost from cogenerators.

Further off on the frontier — at least 20 years away — is photovoltaics, the next step in solar energy. That process uses the sun to generate electricity directly, as in solar-powered calculators.

Researchers are studying whether it can be adapted to utilities. William Beecher, vice president of Chronar Corp., a Lawrenceville business involved in building the world's largest photovoltaic station in California, says it can.

"By the year 2010, solar energy can displace over 10 percent of fossil fuels," he said.

Skeptics argue that the process, which is expensive, will not attract utilities because the rate of return isn't great enough to warrant the investment.

"There's been a lot of progress in photovoltaics," said Dennis Baldassari, JCP&L's treasurer and vice president of rates. "But no way are we talking about large retail production of power in the near future. We haven't seen anything to suggest that it's time to jump in with a large investment."

'No fuel, maintenance'

Solar power may not be the answer for large-scale generation, but Richard Bonte, president of Solar Living Inc. in Budd Lake, says officials should think small. His business, even when increased development and the folding of other solar firms are taken into account, has quadrupled during the last three years.

"We manufacture collectors for heating liquids that are placed on the roof or the side of a house," he explained. "They heat hot water or swimming pools. Pools used to be 5 percent of our business. Now, they're almost half. More and more people see how much they can save because there is no fuel used and no maintenance."

The initial investment, which is about triple the cost of an average pool heating system, can be recouped in about three years, he said.

Bonte predicts the solar industry will begin booming as officials look for ways to meet requirements of the Clean Air Act.

"In a typical household, heating is 50 percent of the energy used and 30 percent is for hot water," he said. "Anything that can be done to reduce burning of fossil fuels will help."

About 30 percent of the carbon dioxide in the atmosphere can be attributed to utilities burning fossil fuels for energy, Beecher said.

Clark Ensley, who lives with his wife and four daughters in Roxbury Township, didn't switch to solar hot water heat and partial solar home heat for environmental reasons.

"I am a miser," he admits. "We went solar two years ago because the idea of getting something for nothing from the sun appealed to me. Before, everybody in the house was cold. They kept wanting to turn up the heat, which was set to 50 something. My family feels a lot more comfortable than we used to, and it's still at the same setting."

Southern exposure

The Ensleys installed five solar collectors on the roof, an extra large hot water storage tank in the basement and a glass sun room heat exchanger to blow hot air into the otherwise all-electric house.

"I would rather we had more sunshine around here, but for where we live it's about as good as can be expected," he said. "It gives me a warm feeling to know that on a sunny day we're saving money."

Bonte said if houses were built facing south with solar panels on the roof, the country could reduce fossil fuel use by 25 percent.

Another energy alternative on the horizon is thermal storage, which amasses energy produced

JCP&L service areas



Northern Area:

Includes all of Morris, Hunterdon and Warren counties, most of Sussex County, and parts of Mercer, Essex, Passaic, Somerset and Union counties

Southern Area:

Includes all of Monmouth and Ocean counties, and parts of Middlesex, Burlington and Mercer counties

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during off-peak hours for use as needed. Thermal storage reduces the need for large air conditioning compressors, saves money by taking advantage of off-peak rates and delays the need for new plants.

Operations that use most electricity during the day, such as banks, insurance companies, stores and schools, could benefit from thermal storage, said Richard A. Ingelido, senior engineering associate with Stone and Webster Engineering Corp. in Cherry Hill.

"A large building needs large air conditioning loads over short durations," he said. "They can make chilled water, or ice, during the hours that the building is not occupied and use a much smaller compressor to save on machinery, then use the ice bank built up during unoccupied hours. It's like the refrigerator that only makes ice at night."

"Thermal storage is beginning to look as though it has some merit," said Baldassari. "We are trying to get some larger customers to consider its use."

'No incentive'

Another alternative, superconductivity, won't be a practical for two decades. Scientists say utilities can use it because it can sustain direct current without losing power or generating any heat because there is no resistance.

But Thomas D. Schlabach, materials consultant for AT&T Bell Labs in Murray Hill, said plentiful oil supplies of the past several years have discouraged research into this alternative.

"There has been no incentive to explore an unproven technology," he said. "And utilities require an extremely high level of reliability, so they are conservative in their adoption of new technology."

For many years to come, however, consumers will get much of their energy from existing nuclear power plants. But it's unlikely new plants will be built, and the \$5 billion price tag for the inoperative Shoreham nuclear plant on Long Island is one reason why.

"Construction of new plants is technically feasible," said Carol Clawson, vice president of communications for the Parsippany-based General Public Utilities Nuclear Corp., which owns the Three Mile Island reactors. "But we question whether it's politically or economically feasible."

There also are hidden costs for radioactive waste disposal and the estimated \$200 million cost to close and clean up a plant. A recent nationwide newspaper poll revealed most Americans oppose new nuclear plant construction and that 79 percent believe existing plants should be more stringently regulated.

Heavy dependence

The success of any alternative energy source depends on whether it can be produced and provided efficiently and cheaply enough to make it worthwhile for the electric utilities.

"We absolutely will have to rely on combustion of fossil fuels to meet existing and future energy needs," said Baldassari, noting that cleaner technology must be fostered.

JCP&L, meanwhile, expects to have sufficient energy this summer. Its new combustion turbine generating plant in Forked River, which will provide another 80 megawatts, should be operational by June. The company also is increasing the flow of energy to customers, and all of its nuclear plants are expected to be working this summer.

Last year, one was unexpectedly shut down for refueling and another was shut down by Nuclear Regulatory Commission order.

"We don't think everything we saw last summer was weather-related," said Baldassari. "The summer played havoc on the peak demand, but there probably was more real load that we're just seeing. Vacancy rates, for instance, are going down. The system has grown very rapidly and the peak has grown more rapidly than we thought. But we believe that most of the demand for the next 10 years will be met. So we should be in better shape this summer."