



Flexibility Offers Options

By not relying on a single source or provider of power, utilities can better respond to supply and market conditions

By Pam Blair

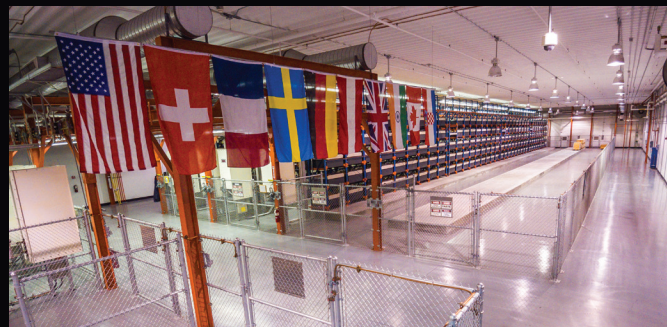
When a power plant suddenly trips offline during temperatures of 20 to 50 below zero, immediately restoring electricity can be a matter of life and death. This requires planning for the unexpected.

For Golden Valley Electric Association—an isolated utility based in Fairbanks, Alaska—it means not only having adequate resources to meet a winter peak load of more than 200 megawatts, but having a roughly 30% reserve of power always available as backup in case a power generation unit goes down.

“I can’t stress how big of a deal it is when things go south,” says John Kelly, GVEA’s gas turbine plant manager. “It doesn’t happen often, but when it does it keeps me up at night.”

Maintaining a diverse power supply portfolio is critical to providing reliable and cost-effective electricity in such a harsh environment, says Naomi Morton-Knight, GVEA’s environmental officer. Along with reliability and cost, the third component in decision-making is environmental impact. GVEA’s goal is to reduce carbon emissions 26% by 2030.

The single-largest source of power for GVEA is from the North Pole Power Plant, which has two 60-MW diesel units and one 60-MW naphtha (oil) combined-cycle unit. The co-op has two additional diesel plants; two coal plants; wind and solar farms; a hydro facility; and a battery energy storage system. It also buys power and has access to up to 70 MW of natural



Golden Valley Electric Association’s battery energy storage system provides 25 to 40 megawatts. It attracted international attention as the world’s most powerful battery at the time of its installation.

PHOTO COURTESY OF GVEA

gas-generated power, when available, transported through the Northern Intertie—a 97-mile transmission line extending south to Anchorage that John describes as “our extension cord.”

“With diversification comes reliability,” John says. “We have an older fleet. We are not only looking at where we need to be today, but where we need to be tomorrow and 50 years from now, while maintaining reliability and keeping rates fair and reasonable.”

Naomi notes that a big component to diversification is transmission line upgrades to better interconnect the Railbelt—the area from Fairbanks through the Kenai Peninsula that encompasses

the most populous areas of Alaska. Because the infrastructure improvements are cost-prohibitive for a single utility, GVEA and other utilities along the Railbelt are working with the state.

“Economies of scale are important for capital investment,” John says. “It’s not about what Golden Valley can do, or what’s best for me, but what’s best for the entire Railbelt.”

Going Green Before It Was Trendy—or Required

Although it doesn’t face such harsh weather or an isolated power grid, Klickitat PUD in Goldendale, Washington, has invested in various sources of power since the 1990s.

“It started with our commissioners, particularly Dan Gunkel and Randy Knowles,” says Mike DeMott, director of power and finance for KPUD. “They brought a private business long-term feel to a public entity, with outside-the-box thinking.”

In 1995, KPUD worked with neighboring Northern Wasco PUD, based in The Dalles, Oregon, to place a 10-MW turbine generator in one of two fish ladders at McNary Dam. The entities evenly split the output, which currently costs about half the price of electricity supplied by the Bonneville Power Administration.

The next venture generated electricity from methane collected at Roosevelt Regional Landfill. To boost revenues, commissioners authorized retrofitting the H.W. Hill facility to produce renewable natural gas in 2018, selling the output under long-term contracts.

KPUD also has a 3% take from the Packwood hydro project and a 13% share in the White Creek wind project—an 89-turbine development constructed beginning in 2006.

To facilitate delivery of wind energy, KPUD built and owns a 230-kilovolt transmission line that is paid for by those using it.

“We are a big service area with a really small number of customers,” Mike says. “We have lots of line and infrastructure, with a small number of customers to spread that cost around. If we were just cost-based, with no additional sources of revenue, our rates would be substantially higher.”

Mike—who has been with the utility about 12 years—says commissioners faced public scrutiny, with some of KPUD’s 10,000 consumers asking why a little utility would take on so much debt.

“It’s not normal,” says Mike, who previously worked as a banker. “The numbers do get spooky, but the scale is relative. If you have a \$100,000 house, you might borrow \$70,000 against it. A utility with \$100 million in assets might borrow \$70 million.”

Each challenge comes with opportunity, Mike says.

“Assets run their course over time,” he adds. “We could run the combustion turbines at the landfill gas plant for power generation, but there is more value in RNG (renewable natural gas) right now. We may need to pivot.”

KPUD also has the option to rely on BPA to supply 100% of its power and market its own generation assets.

“We will do the right thing for our ratepayers,” Mike says, noting commissioners, management and staff always try to make financial decisions with their consumers’ pocketbooks in mind. “It’s prudent to be long on our supply options rather than short. That allows us to be proactive instead of reactive. It’s to our benefit and our ratepayers to have options.” ■



Healy Power Plant was built on top of a mine rich in low-sulphur coal. That provides fuel reserves easily tapped into if the Northern Intertie goes down and Golden Valley Electric Association loses access to the natural gas pipeline. PHOTO COURTESY OF GVEA



ABOVE: The H.W. Hill renewable natural gas facility produces more than 18 million gallons of renewable transportation fuel a year. OPPOSITE PAGE: White Creek is the largest public power-initiated wind project in the United States. Klickitat PUD owns a 13% share of the 68 average megawatts output annually. PHOTOS COURTESY OF KPUD