

# Search for Solutions

*Keeping our energy reliable and affordable*



## Think Small

*Small generation opportunities may be part of the answer to providing for the country's future energy needs*

Big challenges—such as keeping energy reliable and affordable—often demand equally big solutions. However, sometimes thinking small is the answer.

All forms of electricity generation have a “small” component. Yet, not all energy sources are created equal, so the definition of small is relative. It is based on a project's generation capacity compared with large-scale facilities of the same fuel type.

For example, a hydroelectric turbine with a capacity of 10 megawatts (MW), or even as much as 30 MW, is considered small in comparison to large dams, such as Hoover Dam's 2,080 MW of capacity.

These projects can stand alone, which makes them ideal for remote locations, or can be piggybacked with existing generation facilities.

One example of small hydro operates at McNary Dam on the Columbia River. A retrofitted 10-MW hydro plant, jointly owned by Northern Wasco County PUD in The Dalles, Oregon, and Klickitat PUD, based in Goldendale, Washington, was built adjacent to the existing dam's fish ladder. It uses the ladder's attraction water to generate electricity.

Nuclear energy is seeing a resurgence in public opinion as proponents reassert its potential at a time when limiting carbon-based generation is a priority. Among the options being considered are small, self-contained nuclear “batteries” that could power small rural towns or industrial facilities. There are various

designs for these small nuclear plants, based on fuel derivative and cooling method, but few are in operation. In fact, there are none for commercial use in the United States. Most in operation are overseas, such as the four 11-MW units at the Bilibino co-generation plant in a remote corner of Siberia.

The last example illustrates that thinking small is not necessarily a panacea. Costs, risks and concerns exist for every generation source. In the case of nuclear, the obvious ones concern its radioactivity. Dealing with nuclear waste in the United States remains an unresolved and contentious debate. Also, small facilities lose the economies of scale enjoyed by larger projects.

The advantages of small generation exceed many of the potential disadvantages. It requires less capital to build small and has a smaller footprint than large-scale generation. In many cases, there is less red tape and regulation, and small projects can be built faster and start generating sooner.

There are many opportunities to build small, utility-scale power facilities. For example, the National Hydropower Association reports the United States has a huge, untapped potential for small hydro.

Similar opportunities exist for other sources of small generation, which is why thinking small is part of the solution to help keep our energy reliable and affordable. ■

### Remote Alaska village continues its pursuit of a nuclear ‘battery’

If there is such a thing as a typical Alaska village, Galena is it: small, remote, self-reliant. Situated along the Yukon River more than 250 miles west of Fairbanks, the village endures sub-zero winter temperatures and contends with sky-high electricity rates.

Village leaders can do nothing about the frigid temperatures, but in 2004 they did begin a process they hope will slash their electric rates from 56 cents per kilowatt-hour to 20 cents.

They want to go nuclear.

It all started when they were approached by Toshiba with the idea of a 10 megawatt, self-contained nuclear power plant with a 30-year “battery” life. It is dubbed the 4S, which stands for super-safe, small and simple.

Galena has filed reams of paperwork, including environmental impact and security studies. The effort now is nearing fruition, when all that remains is the go-ahead from the U.S. Nuclear Regulatory Commission. Word could come within the next two years.

Even at that, it could be years before Galena clears the final hurdles and replaces its diesel generators with a nuclear battery.

**ENERGY TIP:** Thinking even smaller can contribute to the country's energy goals, while at the same time saving you money. Residential wind, solar and geothermal energy systems installed on primary residences and second homes qualify for a 30-percent federal tax credit, with no upper cost limit, until December 31, 2016. For more information, visit [www.energystar.gov/taxcredits](http://www.energystar.gov/taxcredits).