The Right Choice at the Right Time: Options for Electric Generation

What's most important to know?

Progress Energy Florida is committed to providing affordable, reliable electric service to its 1.6 million customers in Florida. The company maintains a diverse mix of power plant resources that help it meet that commitment even when fuel prices and supplies are volatile. As Florida's population and energy use continue to grow, Progress Energy is pursuing a balanced solution to meeting future demands. That solution includes a continued emphasis on energy efficiency and alternative sources of electricity, as well as investments in new power plants. Because power plants take years to plan and build, Progress Energy is evaluating options for new plants that will be needed in the future. Through careful planning and prudent investment, we are committed to ensuring that Florida has a safe, reliable and affordable source of electricity that will allow us to avoid the types of power outages experienced recently in other large states.

Choosing the right resource at the right time

There are three main types of large-scale electricity generation:

- **Baseload plants**, which typically run 90 to 100 percent of the time to meet the basic, constant customer demand for electricity every hour of every day. These are typically nuclear or coal-fired plants, because those fuel sources are most cost efficient. Natural gas is also used in some baseload plants.
- **Intermediate plants,** which generally run about 50-60 percent of the time to meet customer electricity demand that exceeds the basic, continuous level during the course of the day. These are generally natural gas-fired combined-cycle turbines or coal-fired plants.
- **Peaking plants**, which generally run less than 10 percent of the time or less to supply electricity during relatively short periods of heightened customer demand on the hottest and coldest days. These are typically natural gas- or oil-fueled combustion turbines that can cycle on and off quickly to stay in synch with customer demand fluctuations.

Progress Energy must continually evaluate needs with each type of generation to ensure the company's ability to meet growing customer electricity demand reliably, efficiently and cost-effectively, in order to maintain reasonable rates for our customers. The continuous evaluation of resource needs indicates the necessity of adding new baseload generation.

Top options for baseload power

For a large-scale, continuous, reliable supply of electricity ("baseload" generation), the most reliable and economical alternatives are nuclear and coal-fired plants. Natural gas-fired plants are also used in a variety of applications, though they are not as common for baseload generation.

- **Nuclear** energy relies on the plentiful resource of uranium and provides reliable electricity with the lowest fuel cost of all available baseload generation sources. Nuclear energy is environmentally friendly, producing no greenhouse gas or air emissions. Progress Energy operates one of the largest nuclear power programs in the United States.
- **Coal**-fired plants are a reliable and economical source of baseload generation. Coal is a plentiful fuel supply, and modern technology reduces emissions to ensure that coal-fired generation is accomplished in the most environmentally friendly manner possible.
- **Natural gas**-fired plants are environmentally friendly and less expensive to build than nuclear or coal-fired plants, but they're generally not used as baseload plants, because the cost of burning natural gas is significantly higher than other primary fuel sources.

Other generation sources

- **Wind power:** Wind can be a good source of energy and is plentiful in certain places. It is renewable and has no emissions. It also has low operating costs. However, it is not a viable resource in Florida for 24-hour, must-run (baseload) generation due to the unpredictability of wind. Wind generation also has a significant land requirement (estimated at 97 to 194 square miles for the capability of generating 1,000 megawatts of electricity – the size of a large baseload plant).
- **Solar technology:** Like wind, solar technology's benefits include availability and a lack of emissions. The sun is a renewable resource. Since the sun does not shine 24 hours a day even in the Sunshine State, solar power is not a viable option for baseload electricity generation. To generate 1,000 MW of electricity, the land requirement for photovoltaic panels would be nearly 20 square miles.
- **Biomass energy:** Biomass, in the renewable energy context, generally refers to agriculturally derived material that can be used as fuel. Progress Energy has recently signed an agreement to purchase the output from a power plant in central Florida that will burn a bamboo-like crop called E-grass. This form of generation is a critical part of the balanced solution to our future energy needs, but the cleared land requirement for a large-scale power plant (1,000 MW or more) would likely be prohibitive, particularly in a densely populated state such as Florida.

For more information, go to www.progress-energy.com/poweringthefuture

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