

## **Power Supply Planning is an Ongoing Process**

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Meeting demand. Maintaining a 15% reserve margin. Potential carbon legislation. Unpredictable fuel markets. Heat rate comparisons and capacity factors. Buying power from the grid. Possible renewable portfolio standards.

These and many other considerations are always a part of future planning for any electric power provider. Predicting the future is never an easy task, but it is vital to understand all available options in order to continue meeting consumer demand with economical and reliable generating resources.

South Mississippi Electric commissions a Power Supply Options Study (PSOS) approximately every eighteen months to two years to assist with long range resource strategy and planning. Unlike some utilities that have seen consumer loads decline within their service areas, SME's Members are projecting increases in peak demand and overall usage. While the rate of growth for some Members has slowed somewhat over the past two years, the combined system load for all Members continues to increase by about two percent annually.

"Determining when and how to add new generation involves hundreds of variables," said Steve McElhaney, operations and planning director. "Predicting our load growth and subsequent generation needs is the first step, and we do that annually with our power requirements study. Once we have those projections, we begin to examine how much additional capacity we will need in a given timeframe and look at possible resources and costs to meet that load.

"We have been fortunate over the years to have used power purchases to meet a significant portion of our generation needs. Going forward, however, we believe it is important to have more control over our own resources. We will always rely to some degree on outside resources – all utilities do – but we know the Association will have to build new resources in upcoming years to have the ability to control our destiny."

The most recent PSOS analysis confirmed what has been known for some time – that SME will need new generation resources sometime around 2015. That will be in addition to the projects that are already underway, including the Moselle Repower Project, which will add 150MW to the fleet in 2012, and the Grand Gulf Uprate Project, which will add approximately 18MW in the same timeframe.

Any new carbon regulations that might be passed by Congress make the future for coal units difficult to predict. With few new coal-fired plants being built in the region – Plum Point, which will provide SME with 200 MW when it begins operations later this year, being an exception – natural gas-fired resources seem to be the most viable near-term option.

"The study indicates that the current trend in the region is toward gas-fired facilities," said System Planning Manager Alan Wilson, who supervised the study. "Coal gasification technology is improving and the predictions call for more gas to be produced in the U.S. and Canada for the upcoming years. Of course, committing to natural gas units, especially for meeting base load and intermediate needs, means accepting exposure to the volatility of fuel costs.

"Whether we build gas units to own and operate ourselves or plan to purchase gas-fired generation through power purchase agreements or from the open market, some portion of our future generation

will have to be met with natural gas. What we would like to do, if possible, is continue to develop a variety of resources that retain our fuel flexibility. But between now and 2027, we will need to add nearly 1,000MW of generation resources, so without question some portion of that will be gas-fired.”

One factor that might reduce or slow the need for new resources slightly is to find ways to reduce or manage demand at the consumer level. The PSOS indicates that the need for new generation might be pushed back by a year or two if effective demand management programs are established. Efforts are underway now to determine cost-effective options that would be acceptable to and effective for residential consumers, as well as for industrial and commercial facilities.

The study used computer models to look at literally hundreds of scenarios to determine possible power supply options. The costs of constructing different types of facilities, as well as long term operational costs, were primary considerations.

“We continually look for the most economical options, but there are so many variables and assumptions associated with trying to make those determinations,” McElhaney said. “We are looking for long term solutions. As it turned out, the Kemper County IGCC project was not an option for SMEPA at the time the study began, so it was not included. This may be a viable option, however, because over the life of the plant the low fuel costs help to balance out the high construction costs.”

The PSOS did include options ranging from nuclear and coal to natural gas and renewables, as well as the effects that demand-side measures might have on reducing load. Results suggested that under all the scenarios that were considered, a combination of new gas-fired resources is the best fit for SME’s future capacity and energy needs. It projects that the Association will need to add two to three 330MW combined cycle facilities over the next fifteen years, which will require finding sites as well as financing.

Meeting any new federal or state requirements to use renewable resources will undoubtedly create additional costs. The study determined that in order for SME to have 20% of its generation come from renewables by 2020 – a level included in Congressional discussions – would call for developing significant biomass and solar facilities. With combined-system energy sales of more than ten million MWH by 2020, in order to reach those percentages SME might have to consider developing more than 150 rooftop solar arrays suitable for big box retail stores (more than 100,000 square feet), as well as more than 200MW of biomass facilities.

The bottom line is that it will cost several billion dollars over the next twenty years to keep up with load growth, meaning that making the right decisions for the future will continue to be a major component of SME’s mission of providing the South’s best value for safe and reliable energy.

*Editor’s note: The 2009 PSOS was based on the 2007 annual Power Requirements Study (PRS), which was the most recent PRS submitted to and accepted by RUS at the time the PSOS was initiated. More recent PRS projections have indicated slightly lower demand and energy growth on the system, which could be reflections of yearly weather patterns and the recent economic recession. The results of the PSOS are consistent with long-term trends and projections required to plan for SME’s generation needs.*