Note on Replacing Coal with Gas or Solar for 2030

Prepared by Leonard Rodberg, September 2026

Barrett Walker has asked: With only about 8% of power generation coming from solar, and 35% from nuclear, doesn't it make sense for Georgia to initially install more solar capacity, rather than burn coal or build peaking natural gas plants?

Based on the earlier HELGA study, it might appear Georgia could reduce fossil fuel emissions by replacing coal plants, and proposed natural gas plants, with a mix of solar, battery storage, and later, additional nuclear power. I have compared, using HELGA, the options for eliminating the burning of coal in the short run, while a longer-run transition with more nuclear power takes place.

The general conclusion is that, while solar power (as always) sounds like an attractive alternative, because of its inherent low capacity factor and intermittency, it is not a practical alternative to the use of gas.

I took Georgia Power's Capacity Expansion Plan as the base scenario from which to compare these alternatives. According to that plan, coal power will be shut down in 2036. I examined what would be needed in order to shut them down in 2030.

The short answer is: To replace coal with gas would require installing an additional 1 GW of combined cycle gas turbines. To replace coal with solar and batteries would require an additional 12 GW of solar and 1.6 GW of batteries. The capital cost would be $1.6B for the gas turbines and $16B for the solar and batteries.

The reason for this discrepancy is that the coal is dispatchable, and the most economical way to replace it is to use dispatchable gas turbines. The solar is not dispatchable, and the dispatchable batteries are charged (by the solar) only when demand is low and the weather is good, so this is a very inefficient alternative.