

“Although carbon capture is an established process in some industry sectors (i.e., when applied to acid gas recovery units in the gasification and chemicals industries), it has not been commercially demonstrated in the power generation sector in baseload or full stream applications. Post combustion capture has only been demonstrated on small slip streams for limited periods.

Six projects developed since 1978 (AEP Mountaineer, First Energy R.E. Burger, AES Warrior Run, AES Shady Point, IMC Chemicals, and WE Energy Pleasant Prairie) have demonstrated small scale post combustion carbon capture on slip streams diverted from the exhausts of coal-fired boilers. Three other larger scale CCS demonstration projects on coal-fired boilers (Basin Electric in North Dakota, NRG Energy in Texas, and AEP in West Virginia) have been proposed through the USDOE’s Clean Coal Power Initiative; however, none of these facilities are operating, and, in fact, they have not yet been fully designed or constructed. In addition to these post combustion capture applications for coal-fired boilers, Northeast Energy Associates conducted CO₂ capture to produce 320 to 350 tpd CO₂ using a Fluor Econamine FGSM scrubber on 15 percent of the flue gas from its 320 MW natural gas combined cycle facility in Bellingham, Massachusetts, from 1991 to 2005.

Although these projects indicate small-scale CO₂ capture is technically feasible for coal-fired boilers and natural gas combined cycle turbines, it does not support the availability of full-scale CO₂ capture on the 602 MW combined cycle power block at the plant, which would be more than an order of magnitude larger than any of these CO₂ capture projects. Furthermore, small scale projects that capture CO₂ to produce a commodity for soda ash production and for the food and beverage industry are not applicable to the plant, since the markets for CO₂ in the Midwest can be readily met by grain ethanol plants. Finally, while CO₂ capture technology may be available, the obstacle to CCS is sequestration. Given the limited deployment of only slipstream/demonstration applications of CO₂ capture and issues associated with carbon sequestration discussed previously in CO₂ BACT analysis for the AGR Unit CO₂ vent, the Illinois EPA does not consider CCS to be a technically feasible technology for the combustion turbines.”

(excerpt from pages 48-49 of Illinois EPA Project Summary document related to GHG BACT permitting process Taylorville, IL coal gasification project PSD permit application)