

Mr. Criswell
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removing larger particulates but not great at removing smaller particulates. If an ESP or FF is installed upstream of the scrubber, all of the PM entering the scrubber will be PM_{2.5} and the scrubber will do little to reduce the PM_{2.5} concentrations. Also, since the existing scrubbers use the alkalinity inherent to PRB fly ash as reagent to help remove SO₂, fly ash that is collected in the ESP/FF would have to be reintroduced to the scrubber for SO₂ removal and this fly ash could be re-emitted as particulate after the scrubber. Therefore, this evaluation has assumed that additional lime will be used in lieu of fly ash to control SO₂ emissions. This does not eliminate the risk the scrubbers could re-emit fPM but does reduce the risk.

Wet ESP

A wet ESP downstream of the scrubber can be guaranteed to maintain 0.010 lb fPM/mmBtu at the particulate control device outlet/stack inlet. However, the flue gas entering the scrubber must be saturated and the stack is not designed for wet flue gas. The flue gas would need to be captured prior to the existing reheat system, routed to the wet ESP and then either routed back to the existing reheat system or through a new reheat system and fan. Because of the complexity of the tie in and the fact the wet ESP and reheat system would need to be made out of high alloy to address corrosion; the cost estimate demonstrates this is the most expensive option.

ESP/FF Located Downstream of Scrubber

An ESP or FF downstream of the scrubber is expected to maintain 0.010 lb fPM/mmBtu. A FF can be guaranteed to maintain 0.010 lb fPM/mmBtu if the flue gas is maintained at least 30° above the dew point. This is critical because if the bags in the fabric filter become wetted for even a short period, the bags could be damaged catastrophically and fail to perform. This requirement could be challenging if there is an upset in the reheat system or any time steam may not be available.

An ESP can likely be guaranteed to maintain 0.010 lb fPM/mmBtu; however, there is some concern due to the fPM particle size in this location. ESP systems can remove PM_{2.5} and smaller particles. However, it is more difficult to remove the smaller particles than the larger particles. Further evaluation or testing maybe required for a guarantee to be provided. The advantage of a dry ESP in this location is a dry ESP is not as susceptible as a FF to wet flue gas conditions. The dry ESP cannot operate in saturated flue gas, and continuous operation in saturated conditions would damage

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