fPM size. However, even with these previous scrubber upgrades, operational changes and maintenance practices focused on fPM removal, the best single quarterly fPM compliance test the unit has achieved (not maintained) is 0.017 lb/mmBtu.

The upgraded system typically operates between 0.020 and 0.027 lb fPM/mmBtu. The average quarterly fPM compliance tests for 2022 was 0.022 lb/mmBtu. These rates are in compliance with the current limit of 0.030 lb fPM/mmBtu but would not be in compliance with the proposed MATS rule. The proposed MATS rule would reduce the fPM limit to 0.010 lb fPM/mmBtu.

Particulate Control Technology Discussion

Potential Particulate Control Options to Achieve New MATS fPM Limit

BMcD evaluated several options to reduce fPM at Colstrip. These options include dry/wet electrostatic precipitators (ESP) and baghouses/fabric filters (FF). The traditional location for a dry ESP or FF is between the air heater outlet and the scrubber. A wet ESP would be located after the scrubber systems while the flue gas is saturated. Colstrip Units have a feature that is uncommon at wet scrubbed United States power plants. After each scrubber vessel there is a reheat system that warms the flue gas approximately 60°F which results in a 'dry' (non-saturated) flue gas. This situation creates the opportunity to utilize an ESP or FF downstream of the scrubber provided that the reheat system is operational.

Burns & McDonnell (BMcD) discussed these different conditions with Southern Environmental Inc. (SEI) – an equipment supplier – and requested budgetary pricing for each option as SEI can supply all of these technologies. SEI indicated they believe that all of these options can achieve the proposed 0.010 lb fPM/mmBtu emission rate. However, guaranteeing that these rates can be continuously maintained at the stack is not certain for all technologies. We identify a few technological challenges to consider when evaluating these technologies below:

ESP/FF Located Upstream of Scrubber

If the fPM control device is installed upstream of the scrubbers, there is a question of whether the scrubbers will remove or re-introduce fPM into the flue gas. An ESP or FF upstream of the scrubber can be guaranteed to maintain 0.010 lb fPM/mmBtu at the particulate control device outlet. Nearly all of the fPM passing through the scrubber is particulate smaller than 2.5 microns ($PM_{2.5}$) as the scrubber is excellent at