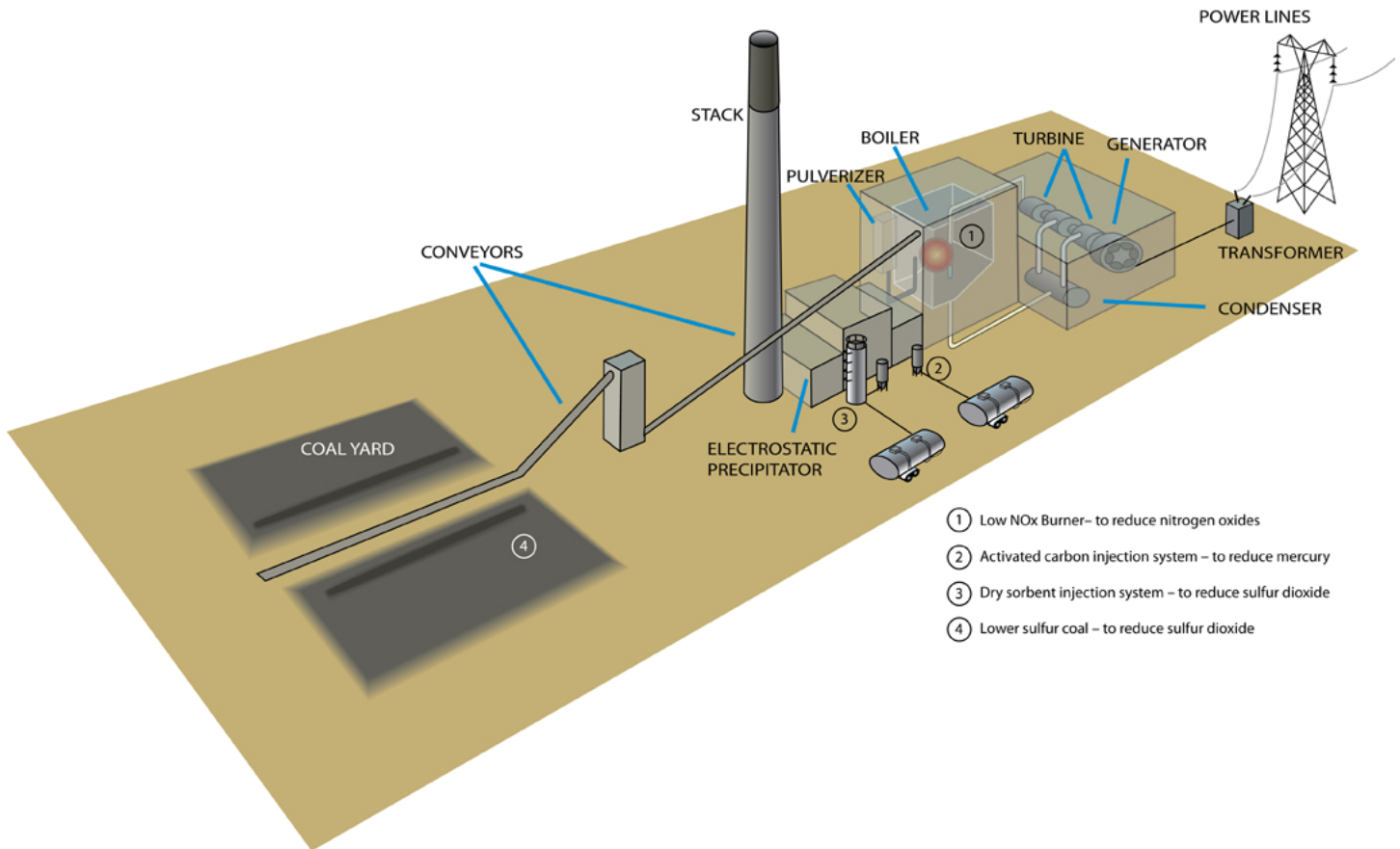


Boardman 2020 Plan: Emissions Control Retrofits



1. **Low-NOx Burners:** PGE installed new low-NOx burners and modified over-fire air ports on the Boardman Plant boiler in the spring of 2011. These replaced the original, first-generation low-NOx burners installed when the plant was constructed. The new burners and related modifications are expected to reduce the plant's emissions of oxides of nitrogen by about 50 percent.
2. **Activated carbon injection system:** Installed at the same time as the new burners, the ACI system is designed to capture mercury in the plant's flue gases, allowing it to be extracted using the plant's existing electrostatic precipitator – the device that already removes almost all of the ash and small particles from the plant's emissions. The ACI system is designed to reduce Boardman's mercury emissions by about 90 percent.
3. **Dry sorbent injection system:** Testing for this system will begin in the fall of 2011, in preparation for installation and operation beginning in 2014. DSI is new technology for use in removing sulfur dioxide from flue gases that works on the same principle as the ACI system for mercury removal – it injects a "sorbent" that binds with SO₂ molecules so that they can be extracted using the plant's electrostatic precipitator. The system will target a 67 percent reduction of permitted SO₂ emissions by 2014 and 75 percent by 2018.
4. **Lower sulfur coal:** Boardman has always operated using coal with relatively low sulfur content, compared to the coal used by many power plants in the eastern United States. As part of the 2020 plan, PGE plans to switch to coal with an even lower sulfur content, to help meet the reduced SO₂ limits specified in our revised operating permit in conjunction with the DSI system.