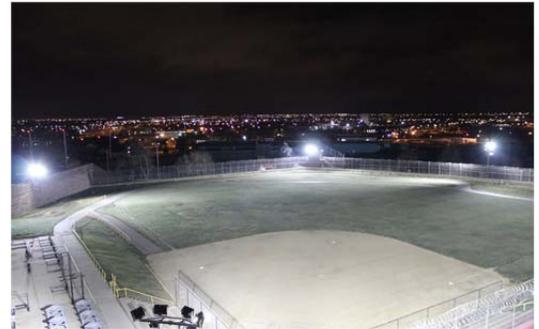


Facility Energy Conservation-Update
December 2017

In 2013, Governor Dennis Daugaard expressed interest in facility energy conservation in state government. After reviewing different means to accomplish this, statements of interest were sent out to interested engineering firms. Interviews were conducted and the state selected KFI Engineering to lead the project. In the summer of 2015, KFI performed an energy audit on each Department of Corrections campus, identifying possible energy opportunity credits. The Office of the State Engineer (OSE) provided \$3 million dollars to fund selected energy conservation measures. Projects were selected based on significant energy savings, or cost versus payback.

At the South Dakota State Penitentiary, mechanical, electrical and water consumption upgrades were completed. We replaced some boiler burners in the facility, replaced some air handling units with energy efficient systems, removed window air conditioning units and replaced them energy efficient split systems, insulated exposed steam piping, and did a steam trap inspection and replacement of faulty traps. On the electrical side, we replaced exterior lighting, both pole lighting and wall packs, and replaced interior lighting in the two Pheasantland Industries buildings. For water conservation, we changed landscaping to promote low to no water usage (see Xeroscaping under Corrections Connection), replaced flush valve diaphragms with lower gallons per flush, and modified control valves in the showers to provide water savings and reduce hot water usage. There were few projects at the Jameson Annex because it is a newer building and the continued upgrades have been made through Maintenance and Repair projects via OSE. When combined, the total energy conservation measures at SDSP equated out to a seven year simple payback (projected cost of project divided by the projected annual cost reduction).



A view of the new exterior lighting of the Penitentiary Recreation Yard.



A view of a new boiler at MDSP.

At Mike Durfee State Prison in Springfield, mechanical and electrical upgrades were made. The major issue there was the replacement of entire boilers. We also replaced steam control valves in Science Hall, insulated exposed steam piping, and did a steam trap and replaced faulty traps. Most of the exterior lighting was redone and lighting was replaced in the shops. We are also looking at completing two additional areas with funding that was left: the Armory and Library. We completed 12 total energy opportunity credits there with an eleven year simple payback. Most of the water issues there were addressed in a different project.

At the Women's Prison, there were fewer opportunities for energy savings because of the age of the facility. However, we did do some mechanical, electrical, and water upgrades with a six year simple payback. We adjusted air handling run times, replaced exterior lighting, and replaced some flush valve diaphragms to ones with a lower gallon per flush.

Substantial completion for all three campuses was completed in fall 2017. The projects provided the direct benefit of energy savings but we also gained additional benefits to include security enhancements, improved working conditions, and reduced maintenance requirements.