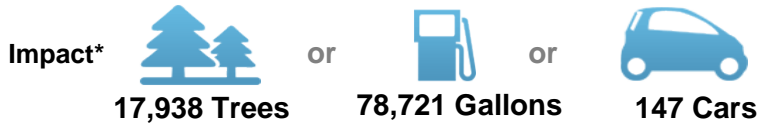


# MONMOUTH COLLEGE

## CASE STUDY



QUICK GLIMPSE	
Customer	Monmouth College
Measures Implemented	Replace steam-to-hot water heat exchangers with high efficiency condensing boilers to serve six buildings.
Total Project Cost	\$510,120.00
Estimated annual energy savings	131,949 Therms
Estimated annual cost savings	\$87,086.06
ActOnEnergy incentives received	\$151,463.36
Estimated Payback	4.1 years



### BASELINE

Established in 1853, Monmouth College is a private, four year liberal arts college in Monmouth, Illinois. The 112 acre campus was heated by one 300 HP and two 200 HP steam boilers. Each building's heating system was supplied steam from the campus boiler house through 50 year old partially insulated piping in underground tunnels. The steam pipes supplied steam to the steam-to-hot water heat exchangers in each building. The existing system was wasting 131,949 therms of natural gas annually.

### OUR SOLUTION

The solution was to replace the heat exchangers with high efficiency condensing boilers for each building, eliminate steam and condensate piping, saving energy. Ruyle designed the replacement of steam to hot water heat exchangers with 95%+ high efficiency condensing boilers for six buildings. Each system includes outdoor reset controls to control the water temperature to match the heating demand. Together, Ruyle and Monmouth College were able to shut down two steam boilers and eliminate the use of the inefficient steam and condensate piping in the tunnels.

### BENEFITS

Benefits of these project include reduced water treatment costs, shutting down two boilers in the main steam plant, reduced maintenance costs by eliminating steam traps, condensate receiver pumps, and deteriorating steam and condensate piping (3,000 lineal feet of pipe). Working with Ruyle and the Ameren Illinois ActOnEnergy program, Monmouth College was able to receive \$151,463.36 in incentives to help pay for the boiler projects. In addition, saving energy reduces operating costs and increases cash flow. Monmouth College has an estimated annual operating cost savings of \$87,086.06.



\* Project impact calculated using the EPA Greenhouse Gas Equivalencies Calculator

