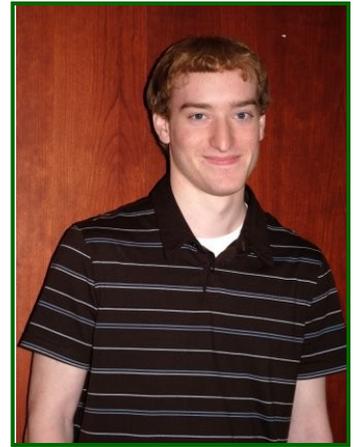


2011 Case Study

Kickapoo Tribe

Intern: Austin Weckwerth
Major: Mechanical Engineering
School: Kansas State University

Horton, Kansas



Company background

The Kickapoo Tribe in Kansas is a federally sovereign Indian tribe located near Horton, Kansas. The Kickapoo reservation covers a 30-square-mile area of land, which is home to 534 tribe members. The reservation has its own police and fire department as well as a community center, water treatment plant, health and dental clinic, convenience store, and casino. The Golden Eagle Casino currently employs 268 people from the surrounding area.

Project background

The intern began by touring the Golden Eagle Casino and the reservation and was given some initial projects to begin reducing the casino's environmental impact. The casino and parking lot lighting was the first project brought up in hopes of greatly decreasing electricity consumption of the casino. Also, the intern was asked to evaluate toilets and faucets in the restrooms of the casino to see if anything could be improved upon to reduce water consumption. There were a few appliances that were not Energy Star-qualified products, so the intern was asked to create a cost/benefit analysis of replacing them with Energy Star appliances. Furthermore, the intern was requested to look at the casino's waste to find ways of reducing or recycling some of it. After conducting a waste sort of the casino's waste, the intern found three ways to reduce solid waste and save both time and money.

Incentives to change

The Kickapoo Tribe is constantly looking for ways to be more environmentally friendly and create a more environmentally conscious community. One way to accomplish this is to make the Golden Eagle Casino leave less of an environmental footprint than ever before. In order to accomplish this, the Kickapoo Tribe decided to participate in the Pollution Prevention Institute's Internship Program during the 2011 summer. Their expectations of the intern were to find ways to decrease electricity and water usage as well

as reducing the amount of waste entering the waste stream. As utility costs continue to increase, the Kickapoo Tribe recognizes the importance of becoming more energy efficient and less wasteful.

Projects reviewed for E2/P2 potential

1. Casino lighting

There were many incandescent, halogen, and T12 fluorescent bulbs located throughout the Golden Eagle Casino. Suitable replacements for these inefficient bulbs were found and priced. By replacing these current bulbs with either compact fluorescent bulbs or T8 fluorescent lamps, a significant savings will be achieved. Potential savings for all the areas totaled 110,060 kWh and \$13,100 annually.

2. Casino lighting controls

Much of the Golden Eagle Casino's lighting could be controlled by use of timers or occupancy sensors, which would greatly reduce the casino's utility costs. These projects included changing the parking lot timer regularly, ensuring the bingo hall lights are off when not in use, and installing occupancy sensors in all offices and employee restrooms. Potential savings for all these projects were 267,525 kWh and \$34,849 annually.

3. Water conservation

To help reduce the amount of water used in the casino, low-flow toilet diaphragms and sink aerators were researched. By reducing the toilet diaphragms from 3.5 gallons per flush (GPF) to 1.6 GPF, and sink aerators from 2.2 gallons per minute (GPM) to 1.0 GPM, 9,877 kWh, 789,387 gallons of water, and \$2,836 can be saved annually.

4. Energy-saving appliances

There were two appliances found at the Golden Eagle Casino that were not Energy Star products. These were the electric water heater and kitchen ice maker. Alternative Energy Star products were researched and, if implemented, a potential savings of 5,364

kWh, 1,460 gallons of water, and \$593 can be achieved annually. However, due to the long payback period, these appliances should only be replaced with Energy Star products when the current appliances break and need replacing.

and plastic kitchen containers, and reducing the number of trash bags used were researched. Reducing the amount of waste not only reduces waste disposal fees but also decreases housekeeping's time spent emptying trash cans. A potential savings of 22.9 tons of waste and \$8,289 can be saved each year.

5. Solid-waste reduction

To reduce the Golden Eagle Casino's waste stream, installing Excel air dryers, recycling paper bingo cards

Summary of 2011 E2/P2 intern recommendations for Kickapoo Tribe

Project description	Annual estimated environmental impact	Annual estimated cost savings	Status
Casino lighting	110,060 kWh	\$13,100	Recommended
Casino lighting controls	267,525 kWh	\$34,849	Recommended
Water conservation	9,877 kWh, 789,387 gal	\$2,836	Recommended
Energy-saving appliances	5,364 kWh, 1,460 gal	\$593	Not recommended
Solid-waste reduction	22.9 tons of waste, -2,405 kWh	\$8,289	Recommended
Total savings *	789,387 gal, 385,057 kWh, 22.9 tons of solid waste	\$59,074	
GHG reductions *	283.1 metric tons CO₂e		

* Does not include projects that are "not recommended" or "further research is needed."