

## Savage Squirrel Protection Team

**Sponsor:** River Falls Municipal Utility

**Sponsor's General Mission or Business Statement:** To bring the power to the people.

**Sponsor's Advisor, Title, and Phone Number:** Mike Kinney, Utility Commissioner, 715-307-2609

**Sponsor's Address:** 125 E. Elm Street River Falls, WI 54022

**University of St. Thomas School of Engineering Academic Advisor:** Dr. Christopher S. Greene

**Team Member Names:** Andre Trawick (ME), Brad Palm (ME), Cliff Burke (EE), Doryne Tunanuyke (EE), John Tushaus (ME), Mike Rouse (ME)

**Senior Design Clinic I-II (ENGR 480-1) 2007-8 Project Mission Statement:** To create a squirrel barrier that will prevent 100% of squirrel related outages for pole mounted transformers while remaining faithful to the customer requirements.

### Major Design Requirements:

1. Unit cost to manufacture = approximately \$10
2. Effectively prevent squirrels from causing phase to phase or phase to ground faults on transformers ranging from 5kVA to 50kVA
3. Meets NESC 2007 construction codes (60 mph wind, 3/4 ice, etc.)
4. Weighs less than ten pounds
5. No maintenance for 5 years
6. Animals can't disable it or circumvent it
7. Consistently installed correctly by lineman in under 15 min.
8. Doesn't obstruct access points for maintenance
9. Maintains necessary insulating characteristics and heat dissipation requirements of the system (i.e. minimum clearance distances for break-down voltages)

**Senior Design Project Summary:** The power transmission industry has experienced problems with wildlife causing overloads ever since the inception of the industry. Overhead transformers are often inundated with squirrels passing over them in order to find food. If a squirrel were to climb on the bushing (the object sticking out of the top of the transformer) and touch the live metal lead and the transformer lid simultaneously, the squirrel would be instantly electrocuted and would cause the breaker feeding power to the transformer to break the circuit in order to prevent damage to equipment. When the breaker flips, power transmission is halted. Power outages frustrate customers and force power companies to send linemen out to reset the breaker and repair any damage caused by the fault

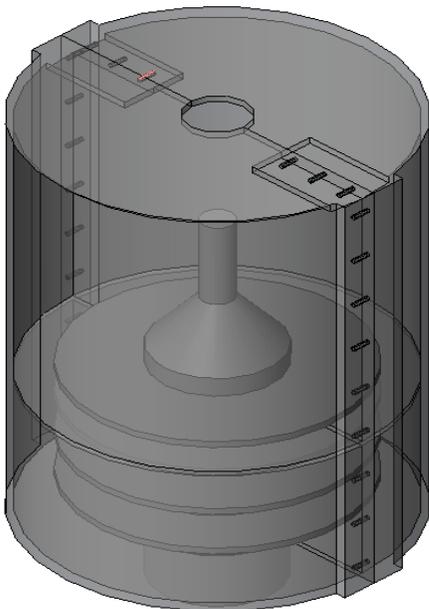


Figure 1- The Tommie Guard mounted on a transformer bushing.

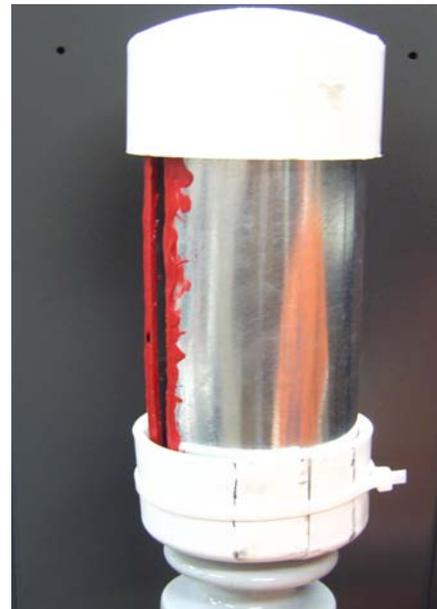


Figure 2- A Prototype of the Shock Stop capacitive barrier.