



Improvement Summary

Improvement Title: Installation of Fencing Systems at 3 Substations – TransGard Animal Fencing	Primary Contact:
	Prepared By:
	VP:
	Involved RC(s): 985, 209, 208
	Completion Date: 2007

Summarize the improvement effort

This project was submitted in 2001, an R&D project to protect animals and prevent animal caused substation outages. From 1995 – 2008 there were 67 animal caused outages. The 30 Substations now protected by TransGard Animal Fencing accounted for 44 of those outages, or 3.1 outages per year (prior to protection). Installation of the fences began in 2001 with an internal, PGE R&D grant and ran through 2007. The fencing systems have prevented animals from entering the substations. The average cost for installation was \$20,000.

The repair cost of these outages ranges from a low of (minor repairs) \$3,000 - \$3,500 to a conservative high of \$30,000 - \$35,000 (can be much higher).

What are the desired end results?

- Prevent animals from entering substations and causing outages.

What result(s) from the improvement can be measured?

- Animal caused outages at protected substations.
- Repair costs per year associated with animal caused outages.
- Avoided lost revenue based on historical animal caused outage duration and frequency

Measurable Change(s)	State Before Improvement	State After Improvement
	Date Measured: 1995 to 2008	Date Measured: 2009
Animal caused outages at protected substations	44	0
Repair cost per year (protected substations)	\$60,000/yr avg.	\$0
Avoided Lost Revenue (@ 9¢/kWh)	\$140,000	\$0

Other benefit(s)/advantage(s)

- None of these figures include money lost by customers during Substation outages. A 2004 study done by Lawrence Berkeley National Laboratory estimates that power outages and blackouts cost the U.S. about 80 billion dollars a year. It is also estimated that 98% of these costs are borne by commercial and industrial customers.
- Alternative measures to protect substation equipment averaged \$40,000. TransGard averaged \$20,000 per installation. For 30 substations, the cost savings would be \$600,000.
- Due to the effectiveness of the Transgard fencing and the obvious avoided cost value – a report of these results has been transmitted to the OPUC as part of PGE annual Service Quality Measurement Report and to PGE's insurance brokers to negotiate favorable rates.