

# HURRICANE HUGO DAMAGE<sup>1</sup>

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South Carolina Electric and Gas Company (SCE&G) is the principal subsidiary of SCANA Corporation, a diversified holding company. SCE&G generates and sells electricity in central and southern South Carolina.

Hurricane Hugo, which swept through South Carolina on September 21, 1989 with sustained winds of 135+ mph, gusts of 175+ mph and a storm surge of 19+ feet, was the single greatest natural disaster ever to strike the state and SCE&G. It cut a 90 mile path through three major Carolina cities, causing an estimated \$5.9 billion in property damage and leaving 50,000 people homeless. The barrier islands, it is predicted, won't recover for five years. Especially hard hit were shrimping communities.

Hugo also damaged over 6.7 billion board feet of timber on 4.4 million acres of timberland in 23 South Carolina counties, which is three to four times the annual harvest. For comparison, timber damage from Hugo exceeds the combined damage caused by Hurricane Camille (1.2 billion bf), Mount St. Helens (2.2 billion bf) and the Yellowstone Fires (1.5-2.0 billion bf). This represents 36 percent of the forest land in the state including the Francis Marion National Forest which was extensively damaged with 75 percent of the marketable trees estimated to be on the ground. Early estimates valued this timber conservatively at \$1.04 billion. Forestry officials estimated that 25 percent of the downed timber could be salvaged by volume and only 10 percent by value. As of May 29, 1990 about 57 percent of the goal of 625 million cubic feet of timber had been salvaged, mostly pine sawtimber. Pine sawtimber salvage is nearly complete because of wood deterioration due mainly to insects and fungi.

Funding sources for the timber industry to recover from Hugo are not promising. Although the Federal Emergency Management Agency has earmarked \$7 million, with up to \$25 million possible, for forest fire protection, nothing is given in relief to landowners. The state Budget and Con-

trol Board estimated that \$4.7 billion of the \$5.9 billion in Hugo losses is recoverable through insurance and other assistance. Of the unrecoverable amount, 76 percent relates to the forestry community.

For SCE&G, seventy percent of our 427,000 customers were left without power including 115,000 in Columbia, 130,000 in Charleston, and 55,000 in other districts. Three major power plants were left inoperable. Power was non-existent east of I-95. Other utilities and their percentage customers out of service include Carolina Power and Light-15%, Duke Power-45%, Electric Cooperatives-73%, and South Carolina Public Service Authority-99%.

Several factors which hampered the recovery effort included acres of flattened forest and woodlands, impassable roads and bridges, piles of debris from the storm and others' clean up efforts, curfews, and poor weather including 9 inches of rain the first week after Hugo requiring the use of track vehicles. On a daily basis, rooms were needed for over 3,000 people, and even these had no lights or water, a fact that assisting crews should be reminded of before leaving home. Flashlights and batteries were at a premium, if available, days before Hugo struck. Crews worked during daylight hours. They ate breakfast at central locations before being bused to staging areas. Box lunches were carried to the field. After returning to their staging area, personnel were bused to central locations for dinner and then to their hotel. Trucks were fueled overnight at the staging areas. To complete the process, laundry service and even portajohns were provided.

Initial estimates for power restoration were 30+ days. However, power was fully restored to those who were able to receive it by Monday, October, 9, eighteen days after Hugo struck. Damage to SCE&G was \$47 million. That included 1 cooling tower, 400 transmission structures, 5000 distribution poles, 570 spans (53 miles) of transmission conductor, 12,000 spans (570

1. Presented at the annual conference of the International Society of Arboriculture in Toronto, Ontario in August 1990.

miles) of distribution conductor, 14,000 service drops, 1900 distribution transformers, and 11,745 street lights. This was accomplished, with no major accidents, by 4703 personnel and 1325 vehicles from 15 states and 48 utility and contract companies, including 680 contract tree personnel.

SCE&G provided free bus service for one week and 800,000 pounds of dry ice to the public. Generators and propane were provided in critical areas, billing and credit action were suspended, and employees donated \$56,000 for relief.

Trees took the full force of Hugo's winds. Many pines simply snapped off above ground, while many hardwoods were windthrown. Some windthrows appeared to be pulled out of the ground while others appeared to be pushed into the ground. Some windthrows were facilitated by construction damage. Many other trees had severe limb damage with limbs often doubled back from the wind. Interestingly, very few trees requiring topping under power lines were windthrown as well as trees in decline from construction damage or improper trimming. Trees that were thinned before Hugo also fared well.

At SCE&G danger trees were a high priority for three to six months after Hugo, especially leaning, dead or dying trees. Many trees, especially pines, are just now dying with the hot summer temperatures and drying soil conditions.

Perhaps one service professional arborists could provide immediately after such a disaster is public service announcements to educate the public on an appropriate time frame for tree maintenance. Obviously, trees on homes must be removed or the home at least secured from further damage due to weather. However, simply cleaning one's yard is hardly a priority. Even private tree pruning isn't necessary for probably a year. In fact, it's easier to specify pruning after damaged limbs' leaves have turned brown or not foliated in the spring confirming damage. People seemed to be in a frenzy to clean up or prune their trees, often paying exorbitant prices for less than professional work, partly to ensure getting their debris picked up. "Tree cutters" appeared from everywhere. Builders couldn't locate subcontractors who were reportedly making fast bucks "cutting trees." As a result, chainsaw accidents

soared. One hospital reported a few days after Hugo that 90% of its emergencies were chainsaw related. There was at least one kickback incident that resulted in the death of a chainsaw operator.

Many trees will survive Hugo with proper pruning. For SCE&G, Hugo will affect line clearance trimming for some time. Trimming records for 1989 and 1990 are proving difficult to interpret and apply to future cycles. Questions arise regarding lower budget requirements due to the number of trees destroyed by Hugo. However, very few trees located directly under power lines and requiring periodic pruning were windthrown. Many of the windthrown trees were not close enough to power lines to even have required trimming. It appears that danger tree removal, increased customer requests and accelerated brush growth in previously canopied areas will offset the reduced workload from windthrown trees.

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