Restoring Power after Storm to Take Months and Millions

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MIAMI, Fla., Sept. 4 — The scope of the crisis that faced the Florida Power & Light Company after Hurricane Andrew [on Aug. 23–24] knocked out electricity to more than 1.4 million customers and demolished mile after mile of its delivery network is best grasped in its particulars.

There was the several-mile stretch of 152d Avenue near Princeton that was choked off by dozens of steel-reinforced concrete utility poles that had crashed directly across traffic lanes. Installed just three weeks before, the 65-foot, $5,000 poles broke clean at the base and toppled in the storm.

There were the vast stretches of U.S. Route 1 that sounded like a washboard under car tires as drivers rattled over downed power lines that littered the roadway from Coconut Grove to Florida City, 40 miles to the south.

Perhaps most telling of all, there was a humming sound at the utility's Princeton substation, which usually pumps out power to about 20,000 people in south Dade county. Until today, it was reduced to drawing power for its own lights, air conditioner and coffee makers not from the maze of transmission lines that crisscrossed the skies overhead, but from that new friend to South Florida: a grinding, portable generator that could power only a fraction of the substation's own needs.

The power company itself was without power for the first 30 hours after the storm; some company buildings were dark for 12 days.

Most residents could not grasp the extent of the damage. They knew only one thing about the power company's troubles: when they flipped a switch, nothing happened.

Stone-Age Conditions

Radio announcers have joked all week about south Dade county having been thrust back into the Stone Age. But in some ways the adjustment was even harder than it sounded. In the Stone Age, no one ever counted on electricity to transform a slab of meat into a meal. And generators did not malfunction and blow out refrigerators, television sets and other fragile impedimenta of modern life. Nor did people fume at the suddenly miserable

interconnectedness of things, how everything—from the bank machines to the gas stations to the electric doors at local markets this week—responded to only one position: off.

For company officials focusing on the devastation south of Kendall Drive, the dimensions of the restart effort were overwhelming. "Basically, we have to rebuild a system that took us 50 years to put together," said Bob Marshall, the company's vice president for power distribution, speaking at the company headquarters after the lights went back on. "The only thing is, we've got to rebuild it in a matter of weeks."

Already, the company has restored about 90 percent of its service. But the last miles of this marathon will be hardest. Some devastated areas around Homestead have not even been surveyed for damage yet, though company officials are working on the assumption that destruction there was total.

Fragile, Makeshift Repairs

Today, more than 140,000 people in South Florida were still waiting for service. Some may have to wait two months or more.

Even then, all the usual safeguards and backup systems will not be in place for months, leaving the whole electrical system vulnerable to aggravating problems in even minor storms.

"Right now, we are building a fragile system," said Larry Taylor, vice president in charge of power delivery. He noted that South Florida's rainy season is just beginning and that power demands are at their peak, with temperatures routinely soaring into the 90's.

"It's like a house of cards," Mr. Taylor said. "A good lightning storm that would usually just leave you with a little flicker now will be able to black out a whole area."

The fierce summer squalls that stuck Florida last Saturday were a case in point, leaving some residents whose power had been restored in the dark for the second time in less than a week.

Getting the electricity back on is the power company's first priority, but it is hardly the only one; restoration of the entire system will not be completed for six months at least.

Once power is restored, workers must go back and examine bent poles and damaged equipment to see if they, too, must be repaired or replaced. "We've got one section that runs about six miles long where there is damage to every single pole," Mr. Taylor said. "That is 60 to 70 50-ton structures that are bent and twisted up. Some whole lines are all listing 5 to 10 degrees. There's miles of that. Some can stand for now, but we'll have to get to it later."

The cost of restoring service to the level of the day before Hurricane Andrew is not yet known. But it is clearly staggering.

$20 Million Deductible

"The only financial discussions that I have had so far have been about our insurance," James L. Broadhead, the utility's chief executive officer, said Thursday. "Other than that, so far we have just been in a war where the enemy is sending wave after wave of soldiers to the ramparts and we are just trying to beat them back. We just haven't had time to total anything up."

When the company does add up its losses, most will be probably be covered. Florida Power & Light is insured for $350 million against damage to its transmission and distribution systems. The damaged generating plants at Turkey Point and Cutler are covered for $6 billion. The utility's $20 million deductible will be paid from a $70 million storm fund kept for that purpose, Mr. Broadhead said.

Utilities' Largest Disaster

No crisis of this magnitude was ever planned for. None ever hit dead-on before. It was, by tallies of F.P.&L. officials, the largest natural disaster ever to challenge a modern utility company. The damage extended over three counties and included everything from wooden poles to transformers to the heavily damaged oil and nuclear plants at Turkey Point and oil-powered generators at Cutler along the coast.

Preliminary surveys indicate that the company will need almost 10,000 new transformers, at an average cost of $650 each, to replace those twisted, bent and battered in winds that reached 150 miles an hour. At least 18,000 wooden utility poles are already on order at costs that range from $140 to $1,000 each. Concrete poles take longer to manufacture, and will not be used in the first phases of the repair work. The ceramic sleeves that insulate the wires from the poles were shattered, cracked and broken. Nearly 180,000 of them, at $30 each, will be needed, too. Then the company needs more than 6.6 million feet of power lines, at 26 cents a foot. Another 2.6 million feet of lower grade wire will be needed for reconnecting houses to poles.

Repairs to the company's generating plants at Cutler and Turkey Point should take six months or more. C.O. Woody, a senior vice president in charge of power generation, said a 400-foot chimney at one of the Turkey Point oil plants was damaged beyond repair and would take six months and "several million dollars" to reconstruct. It was razed today in a controlled explosion. A second chimney also showed a hairline crack last week, and company officials were reviewing whether that chimney also need to be demolished and rebuilt. In the meantime, crews were starting to clean up a thin coat of oil that had spewed over the entire site when an oil tank ruptured at the height of the storm.

Anxiety About Nuclear Plant

The larger generating plants at Turkey Point, where the hurricane's eye passed directly overhead, suffered extensive damage, too. Though the two nuclear plants at the site survived with only "cuts and bruises," said Jerry Goldberg, the president of F.P.&L.'s nuclear division, they also are not expected to be back in operation for nearly six months as crews replace damaged security cameras, downed fences, battered warehouses and demolished offices and office equipment.

Restarting the complex will depend, too, on the emotional condition of the employees, Mr. Goldberg said. Explaining that about 80 percent of the utility's workers lost their homes in the storm, he said company officials wanted to be sure to take time to see that staff at the nuclear plant "could properly focus on their duties."

Though the nuclear plants at Turkey Point were shut down prior to the storm and escaped any significant damage, the hurricane did sent ripples of alarm through the nuclear industry. The storm knocked out all six communication links between the plant and the outside world, and for six or seven hours no one could get a message in or out. "We got one radio message out at about 7:30 that morning," said Mr. Goldberg, "but the silence caused a lot of apprehension in our offices and at the Nuclear Regulatory Commission."

Florida's weather, its geology and geography complicate an already complex task of reconstruction. The state gets more lightning than any other state in the nation, meaning more power surges and blackouts; the ground is a hard coral rock under a relatively thin layer of topsoil, making it difficult to drill holes for new poles; and because the state is a peninsula, supplies can come in only from the north, which causes traffic bottlenecks that slow relief supplies.

To make matters worse, the power company has had to deal with the same day-to-day privations, like closed gas stations, that have stretched everyone's patience.

"We've had 40 to 50 tractor trailers and at least 60 drivers working," said Dave Lindstrom, the company's manager of distribution and inventory services. "By mid-day Wednesday, we had delivery of over 12,000 poles alone. But all those trucks needed gas. And then the trucks in the field needed gas."

Of course, one reason there was no gas in south Dade county was because there was no power to pump it. So the company had to dispatch fuel trucks to Fort Everglades and leave drivers sitting in long lines, along with the police, the Red Cross and a variety of other emergency workers. "After waiting three hours or so to fill the tankers," said Mr. Lindstrom, "the drivers would go and get stuck in traffic for four hours."

By Friday, the company had more than 4,000 workers scouring the storm-ravaged area. But most of the crews were hired from neighboring states and

from other Florida utility companies, and they needed a place to sleep.

At the Princeton substation, which is usually the work center for 63 crew members, last week there were more than 300 people working. Moving them about was a logistical challenge itself, said Ana Garcia, a customer relations agent who had been deputized as a group supervisor for the duration. She explained that crews must be bused in from area hotels starting at 5 A.M.