

PS
POWERSOURCE



ENVIRONMENTAL
FALL 2015 ISSUE

INTERNS & GOFER TURN 25 » AVIAN CONSERVATION » MILLION MWH OF GREEN POWER

from the CEO

On Aug. 3, the Environmental Protection Agency released its final carbon-emissions rule. As I've noted in the past, the draft plan did not take into account the nuclear units being built by Santee Cooper and its partner SCE&G. Santee Cooper currently owns 45 percent of the new nuclear units.

We are pleased the EPA heard concerns raised by us, the state's electric cooperatives, the local governments and chambers of commerce in Berkeley, Georgetown and Horry counties, and our 36,000 customers who asked for proper credit for nuclear. While we are still evaluating the impacts of the revised rule, it is fairer to South Carolina and Santee Cooper now.

In addition to the nuclear units, which will bring 2,200 megawatts of reliable and emissions-free electricity to the state's grid, Santee Cooper has been strategically and proactively working to reduce emissions through a number of initiatives. For example, we've closed four coal units, added renewables and provided customers with rebate-centered energy efficiency programs.

These efforts alone will allow Santee Cooper to reduce our emissions by a projected 37 percent by 2030. That's a big deal, and it reflects our long-term commitment to environmental stewardship as we continue to generate low-cost, reliable electricity.

We've reached some other significant milestones this year that also reflect our environmental stewardship. This summer, our Environmental Intern Program welcomed its 25th class of students, who learn an electric utility's role in balancing the generation, transmission, and distribution of electricity with environmental matters.

In July, our GOFER (Give Oil For Energy Recovery) program also marked 25 years, with more than 30 million gallons of used motor oil collected. Those 30 million gallons, which would have otherwise been discarded, have safely been converted into enough Santee Cooper electricity to power every average-sized home in the Palmetto State for 10 days. GOFER's statewide service helps us turn a potential environmental hazard into a source of electricity from which we all benefit.

We also celebrated the production of our 1 millionth megawatt hour of Green Power, which took place on Aug. 25. That's enough renewable energy to power more than 74,000 average-sized homes for a year.



Santee Cooper was the first utility in South Carolina to generate renewable Green Power 14 years ago when we opened the Horry County Landfill Generating Station, which produces electricity from methane gas created by naturally decomposing garbage. Now with more than 28 megawatts of Green Power capacity, Santee Cooper's Green Power portfolio has six landfill biogas stations, three solar arrays and one wind turbine.

We sell that Green Power, too, to customers who voluntarily sign up to purchase blocks each month. All Green Power sales support additional renewable energy resources throughout the state.

These are some of the ways Santee Cooper fulfills our mission to be the state's leading resource for improving the lives of all South Carolinians. They are legacies we can be proud of, and a foundation on which we will continue to build.

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PowerSource
is published by
Santee Cooper
Corporate
Communications.
It is printed and
distributed by
Santee Cooper
Corporate Print
and Mail.
Use of materials
is not authorized
without permission
of the editor.

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About the Cover

The Eurasian eagle-owl is native to Europe and Asia, but this one calls the Lowcountry its home. It's among the 120 birds on display at the Center for Birds of Prey in Awendaw.

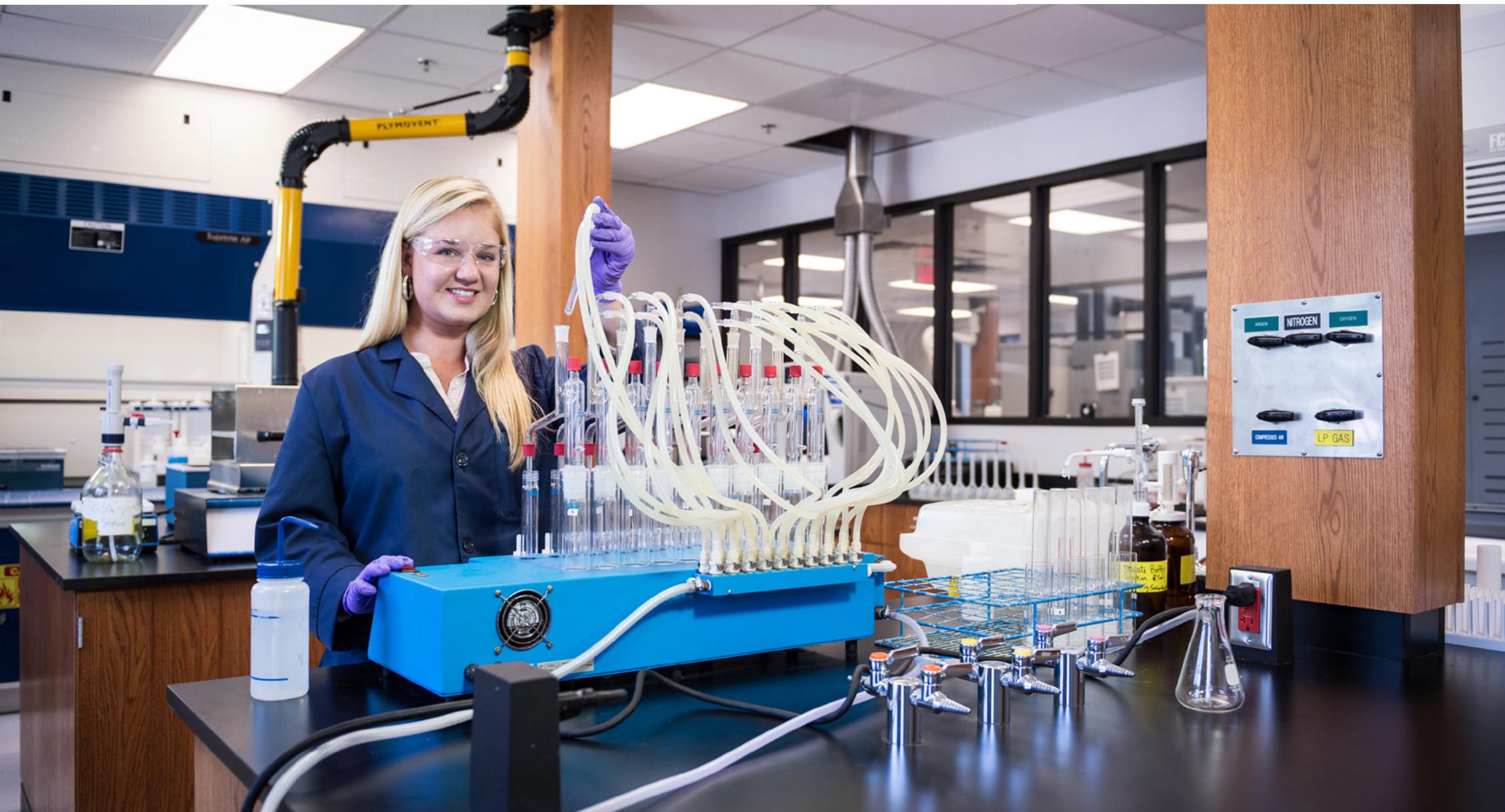


SANTEE COOPER'S ENVIRONMENTAL INTERN PROGRAM TURNS

By Benjamin Ollic
Corporate Communications Intern

Photography by Jim Huff and Benjamin Ollic





“What is Santee Cooper?”

In 1989, the state-owned electric and water utility posed this question to the people of South Carolina. Because its mission is to be the state’s leading resource for improving the quality of life for the people of South Carolina, Santee Cooper wanted to illustrate how it works on behalf of all South Carolinians, not just its customers.

As part of this effort, the Environmental Intern Program made its debut 25 years ago. This new internship gave bright, young South Carolinians from each congressional district an exciting, challenging and unique opportunity. Open to undergraduate students at South Carolina colleges and universities, Santee Cooper’s Environmental Intern Program offers a broader perspective of how power production and environmental stewardship were related.

Just as it did with the first group of students a quarter of a century ago, the internship program today continues to immerse the undergraduates in all aspects of Santee Cooper’s operations – from the generation, transmission and distribution of electricity, to the management of land, wildlife, and the Santee Cooper Lakes. It exposes the interns to the challenges and opportunities that come with providing affordable, reliable and environmentally-responsible power across South Carolina.



Page 5:

Damon Tunnell, a student at Clemson University, conducted particulate matter testing at Winyah Generating Station during his internship this summer.

Clockwise from top:

Kendall Blaine, who attends Clemson University, uses a distilling machine in the preparatory lab in the Analytical and Biological Services building.

Emma Coleman, an undergraduate at Clemson University, poses against a wind turbine blade at the Clemson University Restoration Institute’s Wind Turbine Testing Facility.

Clemson University student **Samuel Jones** samples groundwater near Cross Generating Station.

“One change I notice is how long it takes for the interns to speak of the company using ‘we’ instead of ‘Santee Cooper.’ After all, they become a part of the Santee Cooper family, and I enjoy seeing that change within them. This year, specifically, the interns were using ‘we’ before the first week was over.”

Cile Spivey, Administrator and Coordinator of the Santee Cooper Environmental Intern Program

Interns are tasked with everything from testing stack emissions to learning how to control mosquito populations. Department rotations during the 10-week summer training emphasize environmental stewardship efforts and include an inside view of Analytical and Biological Services, Property Management, Air and Water Quality, Vector Management, Combustion Coal Products and Waste Management, Investment Recovery, Old Santee Canal Park, Renewable Energy, and Right of Way Management.

The Environmental Intern Program, in which more than 250 students have participated, has had its share of changes since the first summer 25 years ago. As its administrator and coordinator for the past 17 years, Cile Spivey has been there for most of them.

Spivey is part cheerleader, part house mom and all heart. Her goals are to make the summer go smoothly for Santee Cooper employees who work with the interns and to guarantee the interns gain solid, real-world experience while developing key professional skills.

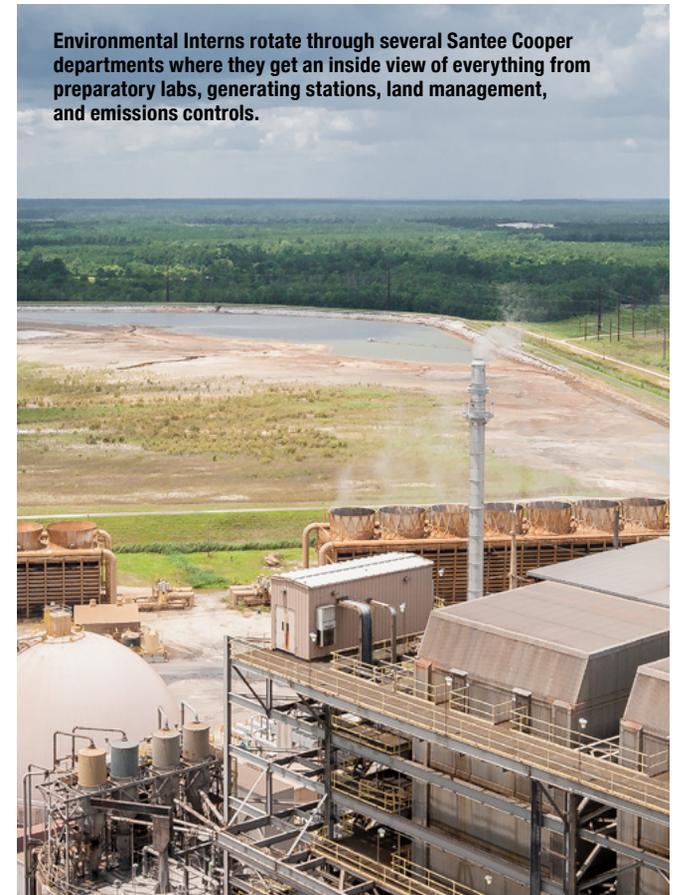
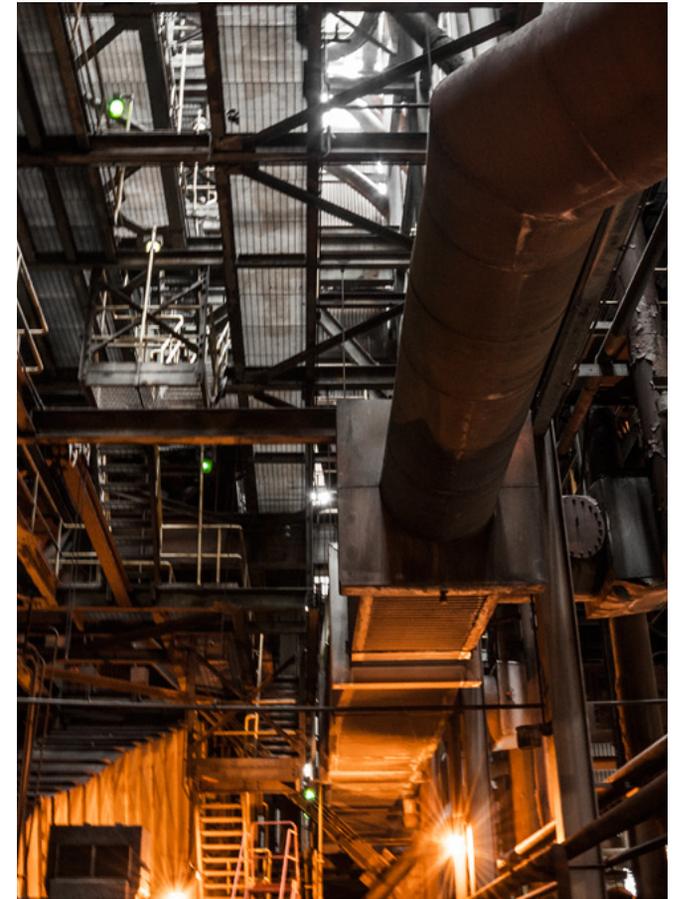
“I hope the students walk away with a greater appreciation for Santee Cooper and understand the balance in making business decisions. I see every business decision like a three-legged stool with the legs representing financial stability, operational needs, and environmental stewardship,” Spivey says.

Spivey says keeping that stool balanced is an important lesson for the students to learn. And while she watches for students to develop their business skills, she’s also watching to see when they feel like they’re part of the flock.

“One change I notice is how long it takes for the interns to speak of the company using ‘we’ instead of ‘Santee Cooper.’ After all, they become a part of the Santee Cooper family, and I enjoy seeing that change,” says Spivey. “This year specifically, the interns were using ‘we’ before the first week was over.”

There are many undergraduate internships that offer only modest professional-development opportunities in a realistic job environment. Santee Cooper’s Environmental Intern Program is different. The interns are placed on the front lines of Santee Cooper’s environmental stewardship efforts, and there is also a two-week orientation where they

At left, from top: “My passion is the environment, and I was astounded by what lengths Santee Cooper goes to in order to preserve the environment of South Carolina,” says Clemson University student Stephen Clements, who is preparing a coal sample in Analytical and Biological Services’ coal prep area. Claflin University student Kendra Barnes enjoys planting flowers at Old Santee Canal Park.



Environmental Interns rotate through several Santee Cooper departments where they get an inside view of everything from preparatory labs, generating stations, land management, and emissions controls.

Clockwise from top:

“Our days started early and ended late, but every minute was worth it,” says Claflin University student Quenton Jones, who is seen here working in a transmission right of way. Alex Golden, who attends the University of South Carolina, adds distilled water to a sample in the nutrients lab in Analytical and Biological Services. Lander University student Avery Wood gets the chance to drive one of Santee Cooper’s electric-hybrid cars.



are given a crash course in Santee Cooper’s overall business, including visits to the Cross and Winyah generating stations, tours of Lake Moultrie and headquarters in Moncks Corner, and firsthand looks at some of Santee Cooper’s renewable initiatives. In addition, the two-week orientation includes teambuilding exercises designed to reinforce the importance of communication, collaboration and problem-solving.

“Going through the orientation and my rotations, I was very surprised with the complexity involved in providing power and the amount of people it takes to have an effective company,” says Kendall Blaine, an intern who worked in Analytical and Biological Services, Property Management, and Right of Way Management. “Even though we come in contact with people from all types of geographical, educational and social backgrounds, we are able to appreciate and respect each other and use everyone’s strengths to work toward our common goal of providing affordable, reliable power to the people of South Carolina,” she adds.

Along with orientation and department rotations, the interns also conduct an extensive research project that they present to Santee Cooper President and CEO Lonnie Carter and other executives. Carter personally picks the research topic, and expectations are high. The interns must be prepared to support their conclusions and answer any questions.

Intern Quenton Jones says his experience this summer will help lead him to a career that appeals to the person he is now and the person he wants to be.

“I needed an internship that would expose me to a wide variety of possible career choices. I wanted to learn about myself and see the type of work that really sparks my interests,” Jones says. “The Santee Cooper Environmental Intern program did exactly that. It has helped me in many ways, including jumpstarting my career and showing me the importance of networking and the effectiveness of teamwork.”

FROM A BIRD'S EYE VIEW:

THE AVIAN
CONSERVATION
CENTER



By Kevin F. Langston

Photography
by Jim Huff

A turkey vulture approaches the Center for Birds of Prey's "vulture restaurant" where scraps from the bird enclosures are brought. Visitors can watch the vultures come and go from a nearby shaded viewing area.



Yellow-billed kite

Most people traveling along U.S. Highway 17 in Charleston County probably don't give more than a passing thought to the small town of Awendaw. But in recent years the coastal fishing community has become somewhat of a crossroads of conservation and culture.

Awendaw sits on the eastern edge of the Francis Marion National Forest and the western edge of the Cape Romain National Wildlife Refuge. It's home to the U.S. Fish and Wildlife Service's Seewee Visitor Center and Environmental Education Center, and the coastal terminus of the Palmetto Conservation Foundation's Palmetto Trail — where it intersects with the East Coast Greenway.

Awendaw is centrally located along the National Park Service's Gullah Geechee Cultural Heritage Corridor, an area which encompasses over 8.2 million coastal acres from North Carolina to Florida. Its remarkably ramshackle SeeWee Restaurant has become a required tourist stop, and the SeeWee Outpost's Awendaw Green is the area's musical focal point.

Perhaps slightly less visible and less known to locals, tourists and travelers is the Avian Conservation Center, which is secluded a few hundred yards from the bustling four-lane artery that links the glitz of the Grand Strand with the charm of Charleston.



Executive Director James A. Elliott gives a tour of the Countess Alicia Paolozzi Owl Wood.

The Avian Conservation Center is the only facility of its kind in the U.S. that combines science, education, research, medical care, captive breeding, and oiled-bird treatment. It has been a labor of love for Executive Director James D. Elliott, who founded the center in 1991 — a year before Awendaw was incorporated as a town.

"It began as the Charleston Raptor Center, which was a medical facility," Elliott says. "I'd learned that thousands of these birds were injured every year in South Carolina, but there was no place where they could get a professional level of care. There were many passionate and well-intentioned people doing the best they could, but avian medicine wasn't really available to these wild birds. So I got the harebrained idea to do something about it."

Among Elliott's earliest priorities was reaching out to Santee Cooper and other area utilities, foresters, veterinarians and people whose jobs would likely expose them to areas where they could observe wild birds in their natural habitat and possibly encounter some in need of medical care.

The Charleston Raptor Center was initially run from Elliott's own home, and it treated eight birds in its first year. Its name was changed in 1994 to the Center for Birds of Prey, and its caseload of injured birds began to annually exceed 100. The center was caring for over 350 birds annually by 2000, and the search began for a new location that could accommodate the growth.



Clockwise from left: Sarah Lisi with an injured great horned owl in the clinic.



This rough-legged hawk is among the 120 birds at the Center for Birds of Prey.

Sturdy leather gloves are used by staff to handle the birds.

Audrey Poplin gives visitors a close look at a yellow-billed kite.

This gate greets visitors at the Avian Conservation Center's new entrance off U.S. Highway 17.



Yellow-billed Kite

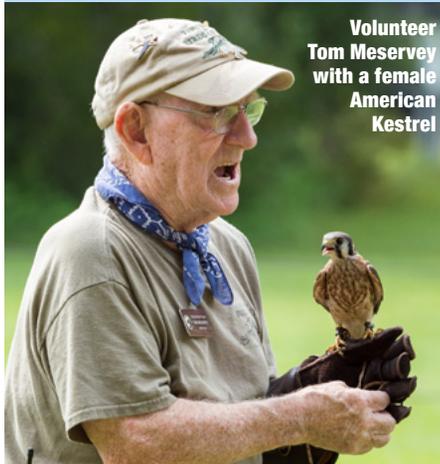
Marabou Stork



If you find an injured bird of prey, call the Center for Birds of Prey at (843) 971-7474, or visit www.thecenterforbirdsofprey.org/injured-birds.php.

Volunteer Tom Meservey with a female American Kestrel

Barred Owl



Harris's Hawk

Director of Education, Stephen Schabel, with a female Eurasian Kestrel



Ural Owl

Black Vulture

Peregrine Falcon



The family of Charleston attorney Joe Rice donated 152 acres of land located in Awendaw to the center, and work began on a new facility that included more than 18 display aviaries, the Avian Medical Clinic, and the Oiled Bird Treatment Facility.

In 2004, the Avian Conservation Center was established as the corporate identity to better reflect the facility's medical, educational, scientific and conservation initiatives. It is essentially the umbrella under which the Avian Medical Clinic and the Center for Birds of Prey operate. Its most visible component is the Center for Birds of Prey, which opened to the public in 2008 and offers weekly educational programming and flight demonstrations Thursdays through Saturdays.

The Avian Conservation Center is a 501(c)(3) organization that largely relies on private support from individual donors and businesses like Santee Cooper, SCE&G, The Beach Company, Cantey Technology, Charleston Magazine, The Post and Courier, and others.

"Treating injured birds is really just the beginning of what we do here," Elliott says. "There's a lot we can learn from a bird that is brought to the clinic: the nature of its injury, where the bird was found, what time of year the incident occurred. There is always a lesson there for us. A lot of these injuries could be avoided or minimized if we were better informed, and that is where the research and educational components come in."

Among its many research initiatives, the Avian Conservation Center is involved in monitoring the swallow-tailed kite population in South Carolina — where it is listed as an endangered species — and has earned a reputation as a leader in the national effort to preserve the bird. It established the South Carolina Coastal Hawk Migration Survey and also the Wildlife Toxicity Working Group, and it has seen its research published in scientific periodicals like the "Journal of Raptor Research," the "Journal of Wildlife Management," and the "Society of Environmental Toxicology & Chemistry Journal."

Much of the Avian Conservation Center's work begins at its medical clinic, where Debbie Mauney has been its director since 2012.

"I oversee the clinic's day-to-day operations. My most important job is taking care of the injured birds that come in," she says.

Mauney and an additional staffer are the clinic's only full-time employees and are supported by about 40 volunteers — many of whom are qualified to handle and care for the injured birds.

"We operate like any hospital," Mauney says. "We provide urgent care, rehabilitative care. Each bird gets its own chart, and everything is documented. We're open seven days a week, and staff is always on call to receive injured birds at any hour."

Most of the birds come from South Carolina, but the clinic has received patients from Georgia, Florida, and North Carolina. Most patients are birds of prey, but the clinic does not turn away a bird away if isn't a raptor.

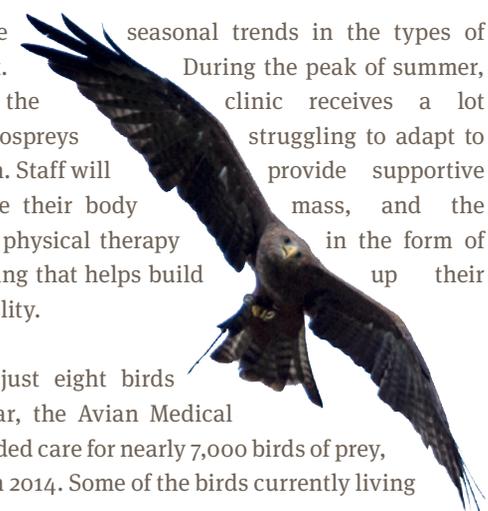
"We don't know where the next bird is coming from," Mauney says. "We rely heavily on a network of volunteers who are trained in handling and transporting them."

As with any medical facility, Mauney says it's difficult to gauge how many patients they average; there are some days when they may be caring for 25 birds and some when they may care for 90. What she can be certain of is how most birds end up at the clinic.

"Mostly, we deal with birds that are here because of negative human impact," she says. "Our most common injury is vehicular collision, but we also see a lot of gunshot wounds or injuries sustained from a bird getting snared in a fishing line. We see many birds with elevated levels of harmful contaminants in their blood and birds that are victims of habitat loss."

There also are seasonal trends in the types of patients they get. During the peak of summer, for example, the clinic receives a lot of juvenile ospreys struggling to adapt to life on their own. Staff will provide supportive care to increase their body mass, and the birds are given physical therapy in the form of flight conditioning that helps build up their muscles and agility.

Since treating just eight birds in that first year, the Avian Medical Clinic has provided care for nearly 7,000 birds of prey, including 600 in 2014. Some of the birds currently living





This page, clockwise from top left: Meghan Sparkman with a barred owl during a flight demonstration.

The “vulture restaurant” draws a crowd.

Director of Education, Stephen Schabel, observes one of the center’s bald eagles.



This page, clockwise from top: Director of Education, Stephen Schabel, speaks to a group of visitors during a flight demonstration. A Ural owl is weighed as part of a routine health examination. A young visitor pulls a rabbit lure for the Harris’s hawk during a flight demonstration. Avian Medical Clinic Director, Debbie Mauney, inspects an injured royal tern that was brought to the clinic.



From top:
A Harris's hawk takes off during a flight demonstration.

A yellow-billed kite takes food from the outstretched fingers of a staff member, demonstrating to visitors its precision and grace.



THE CENTER FOR BIRDS OF PREY
 4719 N Highway 17 | Awendaw, SC 29429
 (843) 971-7474 | www.thecenterforbirdsofprey.com
 Open 10 a.m. – 5 p.m., Thursday – Saturday
 \$15 for adults, \$10 for ages 6 – 16, free for children 5 and younger

and on display at the Center for Birds of Prey were patients with injuries too severe to allow for their reintroduction into the wild. Other birds come from programs where they are bred specifically for educational outreach.

This is where Stephen Schabel steps in. Schabel has been the director of education for the Center for Birds of Prey since 2003 where he oversees the care, husbandry, and training of its educational bird collection as well as the design and implementation of educational programs offered at its campus and in outreach programs throughout South Carolina.

Simply put, Schabel and his staff are tasked with taking the lessons gleaned from the center's research and treatment of injured birds and distilling them for the public. Over the years, they have taken their message to Old Santee Canal Park and Santee Cooper's headquarters in Moncks Corner.

"Part of our job is to make you care," Schabel says. "For example, we see a lot of birds that have been struck by cars. Why is this happening? Sometimes it could be roadkill that will attract a scavenger like a black vulture or an opportunistic feeder like the bald eagle. One way we can reduce these kinds of injuries is by not littering. Even something like an apple core or banana peel will attract a smaller animal to the side of the road, and its carcass will inevitably attract birds. By making that connection between our actions and their consequences, we hope people walk away with a greater appreciation and awareness of these animals."

The Center for Birds of Prey is home to 120 birds of prey, representing 49 species from around the world. Guided tours of the resident bird collection are offered twice daily, but visitors can also tour the aviaries at their own pace. The campus includes the Countess Alicia Paolozzi Owl Wood — home to owls from around the world — and open flying fields where resident birds of prey can be seen in free-flight demonstrating their unique adaptations, characteristics and behaviors.

These flight demonstrations have become one of the more popular and engaging educational tools in the center's kit. Demonstrations are held twice daily but can be taken into classrooms and other settings as standards-based lessons for elementary, intermediate, and high school students.



"We like to rotate the birds in our demonstrations, because our goal is for this to be a teaching experience and a learning experience," Schabel says. "We want to show what these birds do, and the best way to do that and to get people excited about conservation is to fly them in free-flight."

Schabel says it generally takes a month to train a bird to be comfortable with a public flying demonstration, "but you're never really finished training a bird. It's always learning something new about us and from us."

Schabel says they are deliberate about the birds they choose to fly in the demonstrations because some species can help them explain specific concepts and tell certain stories that best convey the Avian Conservation Center's underlying message, which is informed by its medical programs and research.

"We believe that if you pay attention to birds, they will tell you things that are valuable to you," Schabel says. "Birds are everywhere you go. They are very sensitive to their environment, and they are a good reflection for us in most cases. We have a cool opportunity here to help these birds and to tell their stories."

That message now reaches over 20,000 students and adults annually through the on-site and off-site educational programs, and the Center for Birds of Prey recently had its best July attendance since it opened to the public.

"The word is getting out, and that's been extremely gratifying," Elliott says.

When he started the Charleston Raptor Center in 1991, Elliott was especially excited about the opportunity to work so intimately with so many birds. That enthusiasm has not diminished, and today he's just as passionate for the individuals who've shared this 24-year journey with him.

"The people this kind of work attracts are amazing. We have just 12 paid staff positions here, and four of them are part-time. We have about 90 volunteers who help us with much of the day-to-day work, and some have been here for 12 years or more. They're just the darndest, most incredible group of people."



SANTEE COOPER'S
GOFER
Program
COLLECTS 30 MILLION GALLONS
IN 25 YEARS



By Willard Strong

Photography by Jim Huff

In light of today's heightened environmental awareness, it's difficult to reconcile what so many people did a generation or more ago to dispose of used motor oil.

There were some do-it-yourself oil changers who were lucky enough to have the corner filling station where they could properly dispose of their used oil. If you knew the proprietor, he might let you deposit the five or six quarts a into a 55-gallon drum.

But this was the era of a local businessman owning his station, selling name-brand gas and motor oil to loyal customers. It was typically a focal point in a town or city where a trustworthy mechanic would work on your car or truck, but that era has largely passed. Can you name a place like that today — a real service station?

If you were a farmer or grew up on a working farm, motor oil was usually purchased in bulk and after changing out the oil in the cars, pickup trucks and tractors, you ended up with lots of dirty oil, typically stored onsite. The truth is, a lot of used oil ended up on a farmer's dirt roads to keep the dust down.

The inconvenient truth is that much used motor oil disposal back in the day meant it was poured on the ground out behind a garage, in a driveway or in a ditch. Sadly, untold millions of gallons of used motor oil have been soaked up by the Palmetto State's soil, wetlands and waterways since Henry Ford's first 1908 Model T largely put America on wheels.

This year, it's worth noting that South Carolina's largest used motor oil collection effort, Santee Cooper's Give Oil for Energy Recovery (GOFER) program, has collected more than 30 million gallons of used motor oil as it celebrated its 25th birthday back in July. Those 30 million gallons, much of which would have otherwise been discarded, have safely been converted into enough Santee Cooper electricity to power every average-sized home in the Palmetto State for 10 days.

GOFER History

Santee Cooper began GOFER as a pilot program in April 1990 as a way to mark the 20th anniversary of Earth Day. Santee Cooper collected about 700 gallons of used motor oil in two days in Berkeley and Horry counties. Three months later, on July 30, the program formally began with a collection site in Moncks Corner beside Santee Cooper's corporate headquarters and another at Winyah Generating Station near Georgetown.

“For a quarter century now, Santee Cooper has offered our state's residents a solution for environmentally responsible used oil disposal,” says Pamela Williams, Santee Cooper's senior vice president of corporate services. “Santee Cooper is committed to environmental stewardship, and GOFER's statewide service

helps us meet our mission and turn a potential environmental hazard into a source of electricity from which we all benefit.”

GOFER went statewide in June 1991, which coincided with a state law that banned improper used-oil disposal, and Santee Cooper opened its 100th GOFER site in 1992. By 1994, there were GOFER sites in every South Carolina county, and that year the program topped 1 million gallons in annual collections for the first time. By the mid-1990s, the GOFER program was not only growing, but changing the way people thought about used oil since there were more opportunities to easily recycle it.

1 Gallon of Used Oil Can Spoil 1 Million Gallons of Water



“The importance of recycling used motor oil can’t be overstated. Every ounce of oil that is recycled is another ounce that is prevented from potentially contaminating our soil and water.”

Elizabeth Dieck, SC DHEC Director of Environmental Affairs

“When people take their used oil to a recycling center serviced by Santee Cooper's GOFER program, they can feel confident the used oil is being handled and recycled in a manner that is good for the environment and good for our state,” Williams says.

“The importance of recycling used motor oil can’t be overstated,” says Elizabeth Dieck, the S.C. Department of Health and Environmental Control's director of environmental affairs. “Every ounce of oil that is recycled is another ounce that is prevented from potentially contaminating our soil and water. And, just as importantly, this recycled oil generates power for homes and industry.”

Through the years, annual collections have routinely exceeded 1 million gallons and even occasionally, 2 million gallons.

The program’s rapid expansion in its early days was due to partnerships Santee Cooper forged with DHEC, the state’s electric cooperatives, and county recycling centers, where many GOFER tanks are located.

Santee Cooper has a fleet of four vacuum trucks and three tanker trailers that collect oil at 450 GOFER sites and from approximately 1,500 industrial and commercial operations, including farmers.

“South Carolina has one of the nation’s most comprehensive used motor oil recycling programs targeting do-it-yourselfers and it is exciting that the GOFER program has been a part of that program since its inception,” said Susan Jackson, manager of coal combustion products and waste management.

Riding with the GOFER Truck

Ernest Winningham is one of four GOFER drivers who ply the highways and byways of South Carolina picking up used oil. Thursday, July 13, was a typical day for the veteran Santee Cooper employee. He maneuvered his Kenworth big rig, capable of holding 4,000 gallons, from Moncks Corner to Goose Creek, Summerville, Edisto Beach and Charleston. From the Holy City, he headed to Santee Cooper's Winyah Generating Station where GOFER oil is offloaded and then converted into electric power.

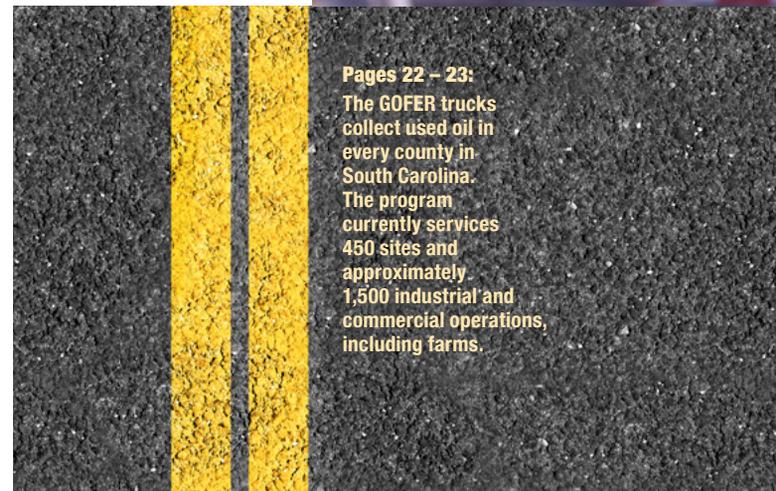
“I really enjoy what I do,” Winningham says. “Everyone is really nice, and they appreciate what Santee Cooper is doing.”

The first stop was Santee Cooper's Berkeley County Landfill Generating Station between Moncks Corner and Goose Creek. On this pickup 210 gallons were pumped into Winningham's rig in a matter of minutes. Berkeley County's Oakley recycling center yielded 490 gallons. Then it was on to the city of Goose Creek's site for 340 gallons, which included two public GOFER tanks that can hold about 400 gallons each.

Santee Cooper recently began picking up the city's oil used in 260 vehicles, including 90 police cars and 24 sanitation trucks. Mike Desmond, Goose Creek's fleet shop maintenance manager, says he's pleased to be doing business with Santee Cooper again.

When the price of crude oil declines, as has occurred this year, the price of used oil also falls. Marginal haulers who picked up for free then begin asking for a fee to collect oil. That can cause the GOFER Hotline to ring in Moncks Corner. Santee Cooper does not charge to pick up used oil, and a recent customer survey gave drivers and GOFER personnel extremely high marks for customer service.

“I'll be calling Santee Cooper for years to come,” Desmond says confidently.



Pages 22 – 23:
The GOFER trucks collect used oil in every county in South Carolina. The program currently services 450 sites and approximately 1,500 industrial and commercial operations, including farms.



Clockwise from top:
Ernest Winingham is one of four current GOFER truck drivers.

The late Santee Cooper Chariman John Rainey pours the first gallon of used oil into a GOFER collection tank on July 30, 1990.

The GOFER mascot helps educate customers of all ages about the importance of correct methods of recycling used oil.



The next stop is a private business, an automotive repair shop off U.S. Highway 17A in Summerville, a first-time pickup location. The proprietor had learned of the GOFER program by word of mouth. Sixty gallons was the haul and it may be a while before Winningham is back. That's OK; all the owner has to do is call to schedule a pickup.

It's then on to Charleston County's Bee's Ferry Landfill, where 350 gallons are pumped on board. Then to Edisto Beach for 320 gallons and another new stop, off Folly Road, and 170 gallons. After midday and with 2,895 gallons on board, Winningham heads for Winyah Station to unload.

Please Don't Trash GOFER Sites and Always Properly Dispose of Used Oil

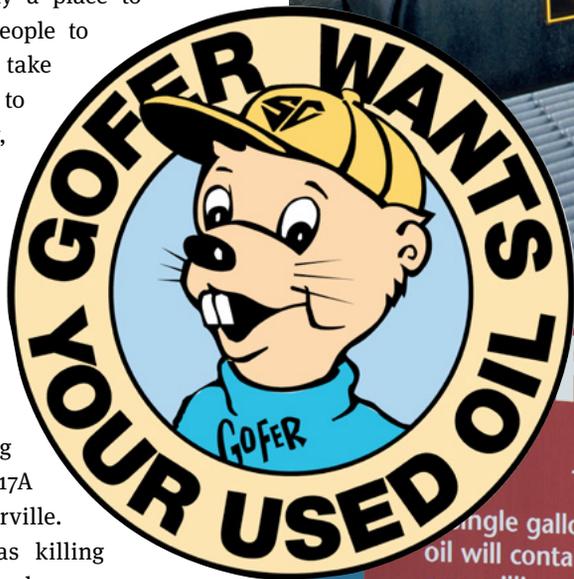
A GOFER driver's biggest headache? People trashing up a site with used oil bottles, rags, nasty oil filters, buckets and other assorted litter. There's usually a place to discard these items, so they ask people to take advantage of that and if not, to take your trash with you. In addition to Winningham, drivers Eddie Guerry, Thomas Hill and Bill Miller would appreciate it.

Improper used oil disposal, such as dumping, can result in a fine if you're caught. In the mid-1990s, a Berkeley County's code enforcement officer made a criminal case against a man who was caught illegally dumping used oil in a ditch near U.S. Highway 17A between Moncks Corner and Summerville. His alibi to the magistrate: "I was killing rattlesnakes." The judge was not amused.

The fact is, 1 gallon of used oil can pollute 1 million gallons of freshwater, contaminate soil and threaten wildlife. There is enough energy in 2 gallons of used oil to power the average South Carolina home for one day, so recovering this resource makes sense.

As the GOFER mascot says of used oil, "Don't dump it, GOFER it!"

To find a GOFER site near you, call the GOFER Hotline at (800) 753-2233 or go to www.scgofer.com for more information.



A WIN FOR THE ENVIRONMENT AND THE ECONOMY

By Willard Strong

Beginning in the 1970s, Santee Cooper has recycled fly ash and bottom ash, material that is created when coal is used as a fuel to generate electricity. Coal ash produced with the appropriate chemistry is valuable as a commercial product and sought by the cement industry as a key ingredient in the production of concrete.

Also during that timeframe, Santee Cooper began to implement scrubbing technology that produced a material called calcium sulfate, a chalky substance commonly known as gypsum. This also has commercial value because it's needed to produce wallboard. Gypsum was first produced at Cross Generating Station and later at Winyah Generating Station.

In 2008, American Gypsum began producing wallboard at its new manufacturing facility. The plant is next door to Winyah Station, one of the sources of American Gypsum's needed raw material. By utilizing Santee Cooper's gypsum in its wallboard production, this significant public-private partnership converts waste into a valuable building product that would otherwise be landfilled. It also has created jobs.

Nearly three years ago, Santee Cooper announced that its oldest coal-fired generation would be retired: two units comprising 302 megawatts at the 61-year-old Jefferies Generating Station; and both units totaling 166 MW at Grainger Generating Station in Conway, which entered service in 1966. That decision, however, yielded another question: What to do with the coal ash stored in ponds at these facilities?

In November 2013, Santee Cooper announced plans to utilize the coal ash from Grainger Station, Jefferies Station and Winyah Station. This utilization is called "beneficial use." Since then, more than 340,000 tons of ash from the retired Grainger Station's ash ponds and 191,000 tons from the ash ponds at Jefferies Station have been beneficially used.

In addition to beneficial use of coal ash from ponds, Santee Cooper continues to beneficially use dry fly ash, which comes directly from the generating units. In 2015 alone, Santee Cooper has beneficially used more than 144,000 tons of dry fly ash, which is fly ash that has not been sent to an ash pond or landfill. More than 33,000 tons of bottom ash has been beneficially used to make concrete blocks. The bottom ash is excavated from ponds at the Cross and Winyah stations and screened by Carolina PreStress in Lake City. Also, thus far in 2015, more than 275,000 tons of ponded ash has been reclaimed by Holcim, Giant, and The SEFA Group.

Earlier this year, The SEFA Group's \$40 million plant at Winyah Station entered commercial operation. It can recycle up to 400,000 tons of high-carbon fly ash annually on its 6.5-acre footprint. The facility uses a patented process, the Staged Turbulent Air Reactor or STAR. The SEFA Group is based in Lexington, S.C., and its product is utilized by the concrete industry. Fly ash improves the strength and durability of concrete, and every ton of coal ash used in concrete reduces carbon emissions by 1 ton.



Previous: Collection and processing of landfill gas, solar energy, and wind power helped Santee Cooper generate its one millionth megawatt hour of Green Power this year.

Think back to 1989 and the movie “Back to the Future Part II” that followed Marty McFly, Doc Brown and their time-traveling DeLorean to 2015. There were flying cars, self-drying clothes, auto-lacing shoes, and hoverboards.

While these fantastical conventions haven't come to pass yet, Doc and Marty could've stopped in Horry County on Sept. 4, 2001, to see some very real (and very cool) technology at work. This was the day Santee Cooper generated Green Power for the first time at the Horry County Landfill and began offering it to customers.

FLASH FORWARD TO AUG. 25, 2015, AND YOU'D ARRIVE ON THE DAY SANTEE COOPER GENERATED ITS 1 MILLIONTH MEGAWATT HOUR (MWH) OF GREEN POWER.

BACK TO THE FUTURE GENERATING 1 MILLION MEGAWATT HOURS OF GREEN POWER

By Susan Mungo Photography by Jim Huff



“Santee Cooper’s proactive efforts to diversify our generating portfolio with Green Power have made us a leader in the state when it comes to renewables,” says Marc Tye, executive vice president of competitive markets and generation. “Green Power helps us achieve our mission to be the leading resource for improving the quality of life for South Carolinians, and it offers a practical, affordable option for people throughout the state who want to be stewards of the environment.”

From Garbage to Gigawatts

It wasn’t a time-traveling car, but the Horry Landfill Generating Station was a first of its kind for South Carolina. In partnership with the Horry County Solid Waste Authority (HCSWA), Santee Cooper combined a landfill byproduct — methane gas — with creative technology to deliver a clean, renewable source of energy to customers.

It also solved a few issues for the Horry County Landfill.

“The process involved in producing Green Power from methane gas significantly reduces the odor that permeates from the landfill,” says HCSWA Assistant Director Mike Bessant, “which makes it much easier for us to keep the surrounding residents and businesses happy.”

Since September 2001, Santee Cooper has added Green Power landfill stations in Lee, Richland, Anderson, Georgetown and Berkeley counties. The methane gas that occurs naturally when garbage decays at these landfills is removed through extraction wells. A fuel skid draws the methane gas from the wells through an underground piping system, and the gas is then used to fuel the engines or turbines that generate Green Power.

A Cooperative Partnership

Horry Electric Cooperative and Santee Electric Cooperative were part of a pilot program where they began offering Green Power to their members alongside Santee Cooper in 2001. The electric cooperatives bordered Santee Cooper service areas, and their dedication to the project set the example for others to follow.

“Horry Electric is as committed to our Green Power project with Santee Cooper today as we were when we launched the program with them in 2001,” says James P. “Pat” Howle, executive vice president and CEO of Horry Electric. “Renewable energy projects add their electrons to the power supply for all of us in South Carolina. Working today to build up our supply of renewable energy sources will give us a more secure energy future. It’s the right thing to do for our members and the communities in which we all work and live.”

Today, Santee Cooper Green Power is offered by all of South Carolina’s electric cooperatives, as well as to customers of the Piedmont Municipal Power Agency (PMPA), the Bamberg Board of Public Works, and the city of Georgetown. Last year, customers purchased nearly 22,000 MWh of Green Power.

All Things Renewable

Methane gas is just one of the renewable resources that make up the Santee Cooper Green Power portfolio. It has also used wind and solar power to reach the 1 million MWh mark.

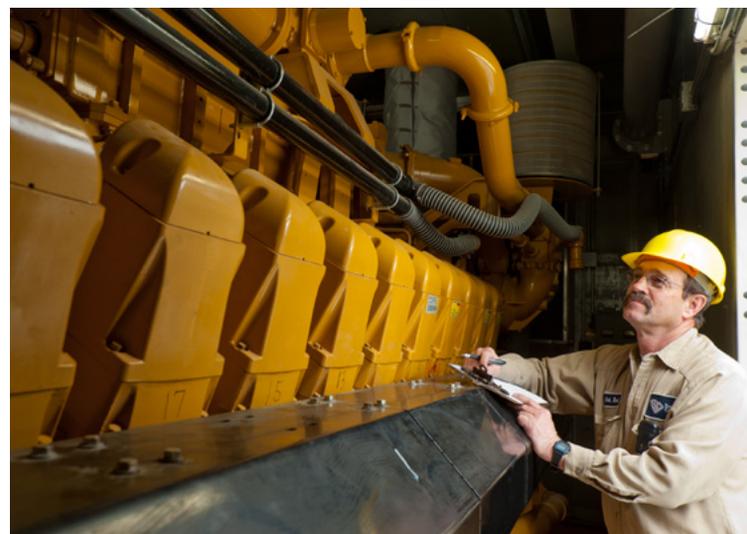
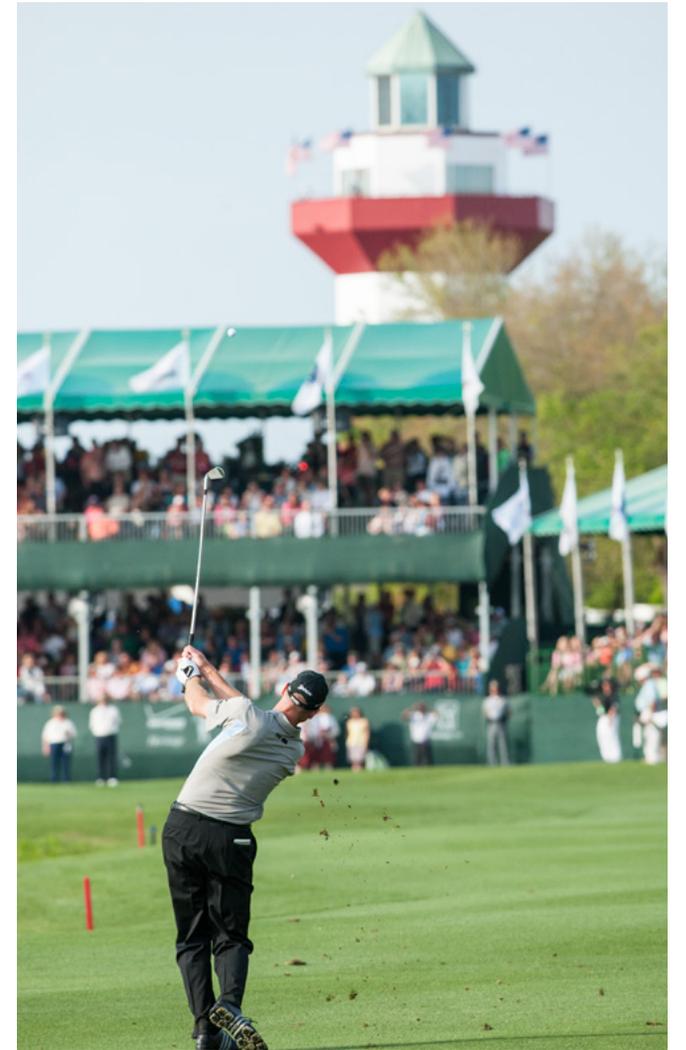
Santee Cooper and Coastal Carolina University dedicated South Carolina’s first Green Power solar station in 2006. Additional installations have been added at the Technical College of the Lowcountry in 2010, and the Grand Strand Solar Station in 2011.

Top, from left: A windmill that produces 2.4 kW of electricity; a replaced spark plug that helps keep Green Power turbines running efficiently; and the engines at the Richland County Landfill, which generate 100 percent renewable energy.

Bottom, clockwise from left: A flare from a unit at the Georgetown County Landfill; a bus picks up students at the Solar Pavilion on the campus of Coastal Carolina University; and Ronald Crosby, who maintains the Green Power equipment at Berkeley County Landfill, takes daily readings to make sure the engines run smoothly.



SANTEE COOPER GREEN POWER IS PRODUCED FROM CLEAN AND RENEWABLE SOUTH CAROLINA RESOURCES SUCH AS LANDFILL BIOGAS, SOLAR, AND WIND. EVERY MEGAWATT IS CERTIFIED BY GREEN-E ENERGY, MEANING IT MEETS STRICT AND SPECIFIC NATIONAL CONSUMER AND ENVIRONMENTAL STANDARDS. GO TO WWW.GREEN-E.ORG FOR MORE INFORMATION.



Clockwise from top left: A piping system carries methane gas to the units at the Lee County Landfill.

A golfer shows great form at the RBC Heritage golf tournament, a Green Power event on Hilton Head Island.

Arthur Chadwick and Andy Pope join the forces of Santee Cooper and the Horry County Solid Waste Authority to monitor the amount of methane and oxygen in the gas used to produce Green Power at the Horry County Landfill.



Clockwise from top right: Bobby Woodward performs maintenance on the fuel control valve at the Georgetown County Landfill. Students at Leslie M. Stover Middle School are joined by representatives from Santee Cooper, Kershaw County School District, and Fairfield Electric Cooperative to celebrate becoming a Green Power Solar School. An aerial view of the Horry County Landfill and the Green Power facility in the foreground where the first megawatt of Green Power was generated.

Santee Cooper also brought the first wind turbine, located in North Myrtle Beach, to the state's electric grid in 2010.

Combined, Santee Cooper's Green Power program has 28 MW of capacity and is part of a broader renewable energy portfolio with more than 130 MW online or under contract.

"Santee Cooper was a leader in the charge to bring Green Power to the state's grid and to the people of South Carolina more than a decade ago," says M. Anthony James, director of the South Carolina Office of Regulatory Staff's Energy Office. "I'd like to congratulate Santee Cooper on their commitment to Green Power and to the state."

You Make a Difference

Looking back on Santee Cooper's march to 1 million MWh of Green Power, the customers who support Green Power have played a critical role in the program's success. Because renewable energy is typically more expensive than traditional electricity, Santee Cooper offers Green Power at a premium to further grow its renewable-energy program without burdening customers.

Residential customers can voluntarily purchase Green Power in blocks of 100 kWh for \$3 each. Commercial customers can purchase blocks of 200 kWh for \$6 each, and industrial customers can buy 1,000 kWh for \$30 each. Even non-customers can buy Green Power tags to support the program.

Last year, over 1,680 Santee Cooper customers purchased Green Power. Among them are more than 230 Green Power Partners and Green Power Legacy Partners who purchase a greater portion of Green Power for their energy needs. Add to that the members who purchase Green Power from the electric cooperatives and through Santee Cooper's wholesale network, and you have a statewide group of individuals and businesses dedicated to supporting renewable energy.

Santee Cooper also offers renewable-energy sales for occasions as varied as small-town shindigs like the Loris Bog Off and the St. Stephen Catfish Festival, to larger events like the RBC Heritage golf tournament on Hilton Head Island and the Bojangles' Southern 500 at Darlington Raceway.

Lessons for the Future

All revenue from the voluntary sale of Green Power is fully reinvested into the future development of additional renewable resources and Green Power initiatives. One way sales are used



**FOR MORE INFORMATION
ON SANTEE COOPER
GREEN POWER,
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[WWW.SANTEECOOPER.COM/
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is through the Solar Schools program, which currently has 27 demonstration solar projects teaching sixth graders about renewable energy at middle schools around the state.

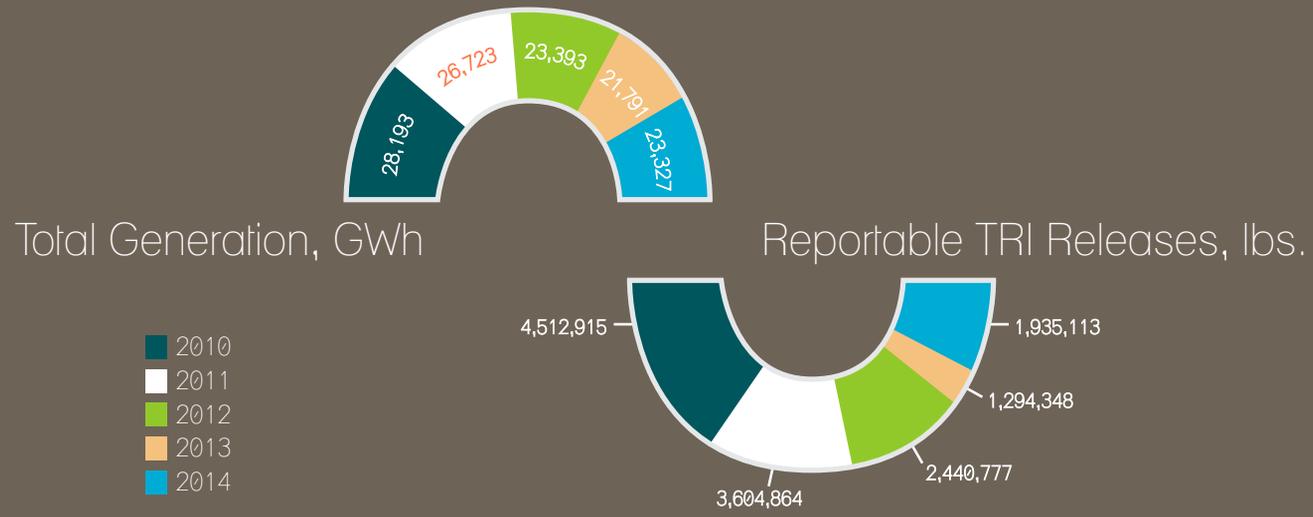
Each school is equipped with a 2-kW solar array and a specialized curriculum that meets the standards required for sixth grade math and science.

"This program allows students to learn the importance of energy, but it also encourages them to think about issues the world is facing with electricity. Students are engaged in hands-on activities that allow them to discover the possibilities and current limitations of renewable energy," says Brandy Incorvia, administrator of educational programs for Santee Cooper.

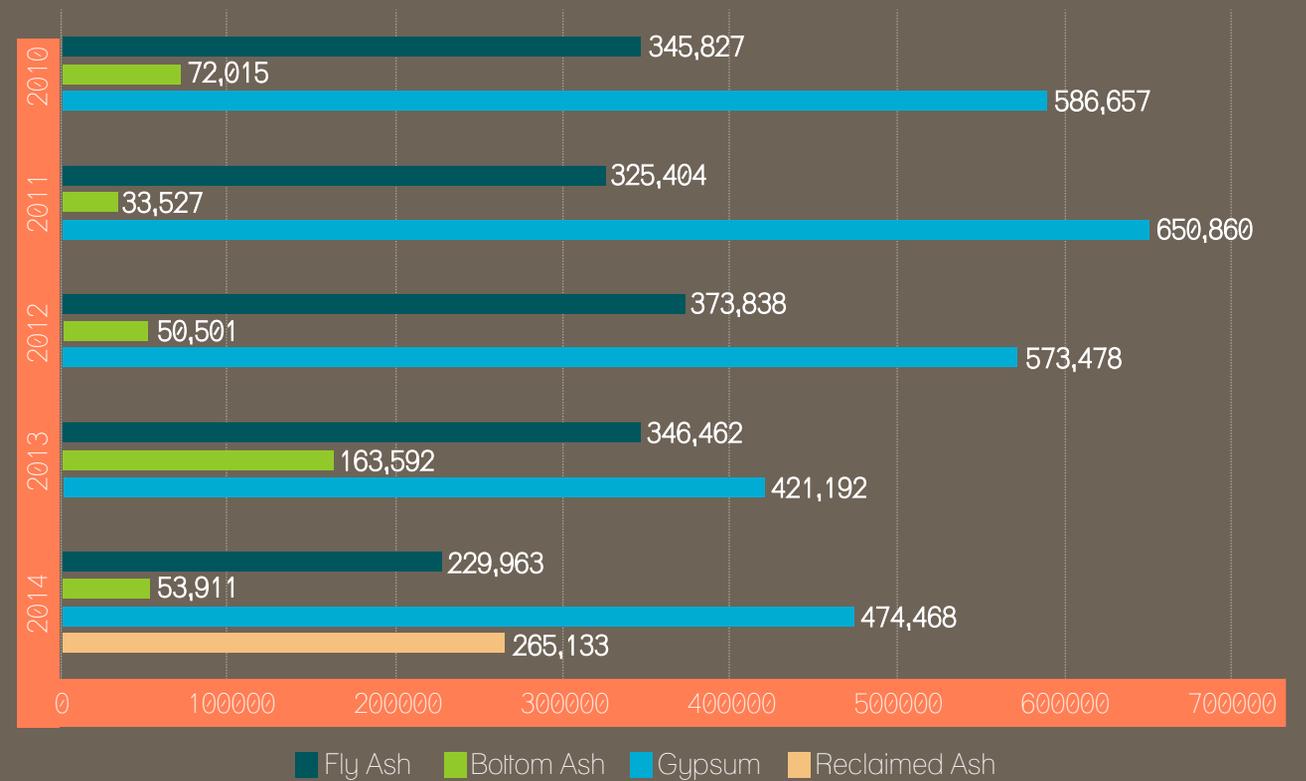
Santee Cooper remains committed to further development of its Green Power portfolio.

"Our team is continually looking for opportunities and projects that meet the requirements of our program," says Steve Spivey, manager of renewable energy. "We have several projects on the drawing board that will not only generate additional renewables, but will also continue to educate South Carolinians about renewable energy."

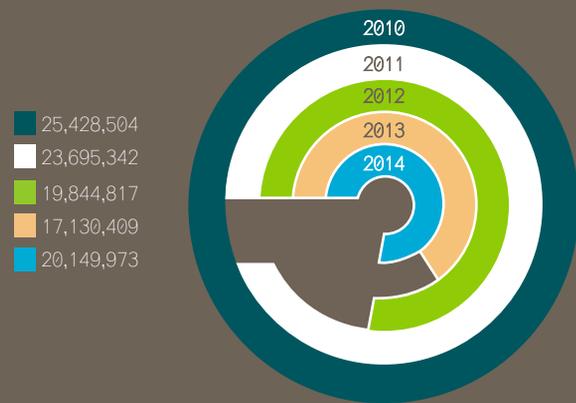
Environmental Performance



Coal Combustion Products Utilization, Tons



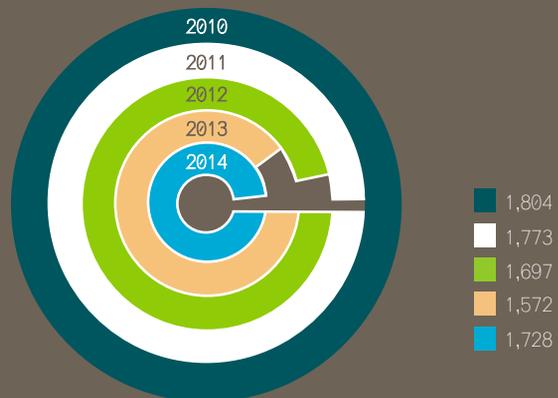
CO₂ Emissions, Tons



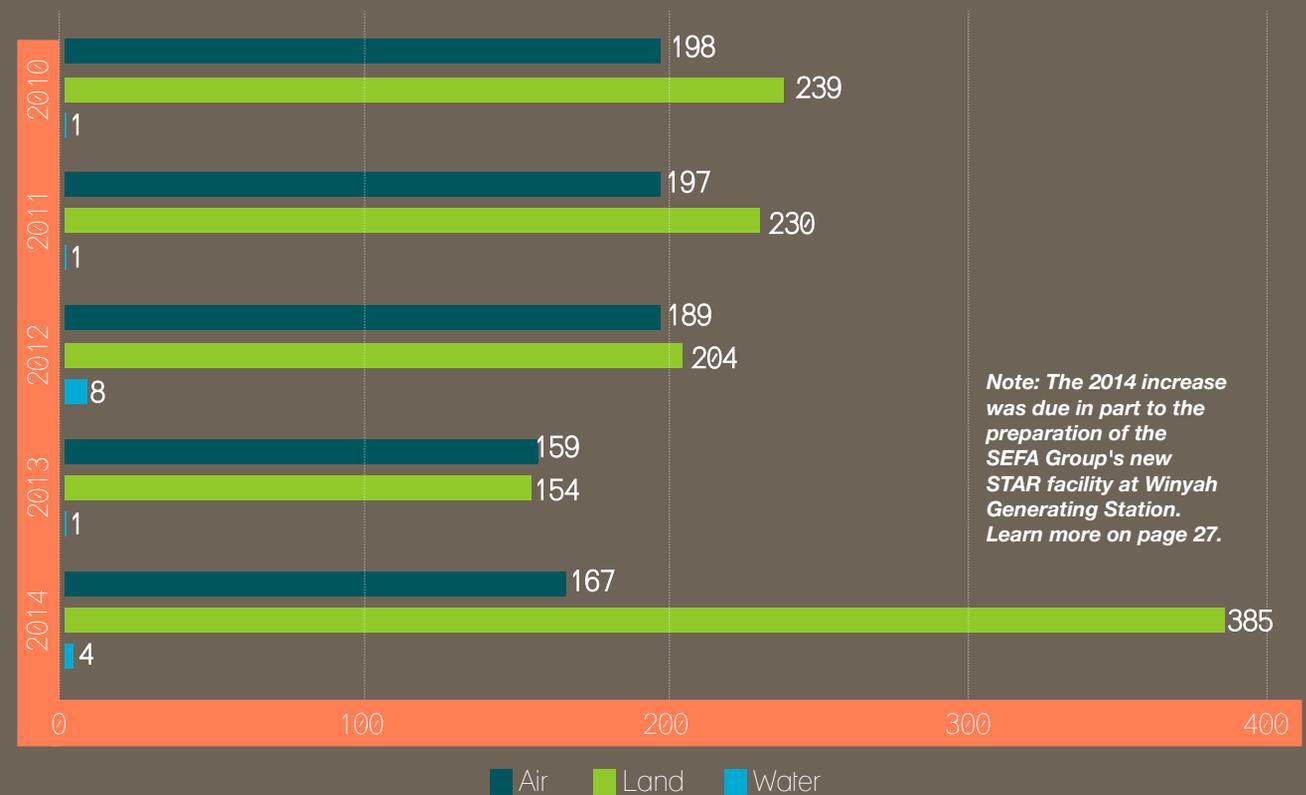
SO₂ and NO_x Emissions, lbs./MWh



CO₂ Emissions, lbs./MWh



Total Mercury Releases, lbs.





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