

currents

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G R A N D R I V E R D A M A U T H O R I T Y



Counting on GRDA...

When the great state of Oklahoma turned 100 years old last November, every Oklahoman had reason to celebrate. As the spotlight shined on our state's first century of challenges and achievements, we were all reminded that we are part of something special here in Oklahoma.

This is a state of tremendous diversity, abundant natural resources and unlimited potential, and 100 years worth of Oklahoma history has certainly proven that Oklahomans know how to put those assets to work. However, the very fact that we do put them to work — via a strong Oklahoma work ethic — is the cornerstone to the success our state has ever, or will ever have. In fact our state motto — *Labor Omnia Vincit* (Labor Conquers All Things) — could also be our action plan for the future. And why not? When we work hard, and work together, great things can be accomplished.

As Chief Operating Officer of the Grand River Dam Authority, I am proud to be a part of an organization that exists because of that philosophy. When GRDA's founding fathers created this organization in 1935, they understood that hard work and cooperation, coupled with Oklahoma resources, could create a true Oklahoma success story. I believe today that GRDA has even exceeded their expectations.

For proof, look no further than mainstreet in Oklahoma's public power communities served by GRDA. These are communities that own and operate their own electric distribution system and buy wholesale electricity from GRDA at the lowest rates in the region. Because of those low rates, the local utility can also keep its rate low, while collecting revenues to fund other city services and promote economic growth. Streets, parks, police and fire protection all benefit from the economic engine of public power in Oklahoma.

In fact, during 2007, 14 municipal electricity customers signed new 35-year contracts with GRDA. In doing so, they've put their confidence in GRDA; that it will be their provider of low-cost, reliable power that carries them well into Oklahoma's next century.

Of course they count on GRDA because of the history of service they've known. In fact, the majority of GRDA's public power partnerships have been in place for over 50 years, and combined, those partnerships equal over 600 years of public power benefits in Oklahoma.

While that is an impressive history, the future is even more exciting. Those municipal customers chose GRDA again because they did the research and decided our rates, and our relationship was vital for them to continue to thrive. At GRDA, we are ready to work alongside them in the years to come. After all, that's what public power, and Oklahoma, is all about: working together to make life better.

Thank you,

Michael Kiefner
Chief Operating Officer



Michael Kiefner
Chief Operating Officer
Grand River Dam Authority

Cover photo: A frosty view of water vapor rising from GRDA's Coal Fired Complex in Chouteau. Photo taken by Charles Barney, GRDA's Assistant General Manager of Thermal Generation.

GRDA, Municipal Customers Extend Beneficial Partnerships

Three credit rating improvements — and one credit rating upgrade — since March 2005. The lowest electrical rates in the region. A reputation for reliable, customer-focused service. And a history of beneficial public power partnerships, most of which are over half a century old.

The Grand River Dam Authority feels those are some of the reasons why customer confidence in the electric utility is running very high these days. So high in fact, by the end of 2007, 14 of GRDA's 16 wholesale municipal electric customers had signed new 35-year contracts, counting on GRDA to be their power supplier for many years to come.

"We appreciate the great confidence these communities have placed in GRDA to be their power supplier and public power partner for decades to come," said GRDA Chief Executive Officer Kevin Easley. "Negotiating this new long term contract was a complicated process, but we feel the same way most our customers do; it's beneficial to both parties."

The new long-term contract benefits wholesale customers because they are insured that GRDA's low-cost reliable electricity will continue to power their communities at cost-of-service rates. In turn, GRDA's low cost power insures a revenue stream for these municipals.

"The electric power GRDA provides benefits the municipal customers we serve by providing them a product at a low price that they can in turn sell to their customers," said GRDA Superintendent of Revenues Jennifer Weatherford. "This source of revenue for the municipality is not only a benefit for that community, but the surrounding area as well."

That benefit is at the very core of the public power ideal of local ownership and local control. In fact, the 35-year contract extension between GRDA and its public power partners mirrors national trends. Since 1997, 20 new public power utilities have been formed in the United States (17 of those formed from former investor-owned utility areas) while only two public power utilities have been taken over by for-profit entities, according to the American Public Power Association.

"...our customers' dedication to public power partnerships also reinforces that GRDA is power for progress in Oklahoma."

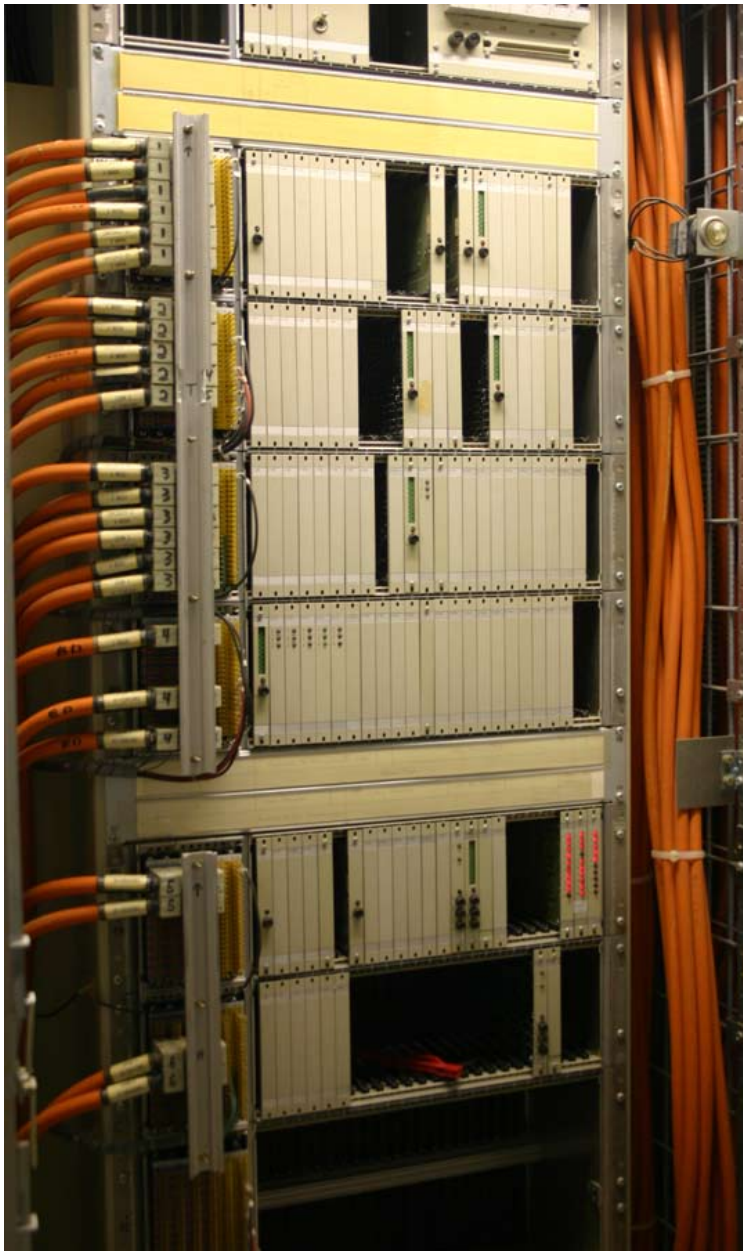
Stanley Day is the general manager of the Tahlequah Public Works Authority (TPWA), one of the municipal utilities that has partnered with GRDA for over 50 years and recently signed the new contract. Public power's affects on his community are obvious, he said.

"I see the benefits of public power everyday and TPWA is a wonderful, big asset to the community," said Day. Those benefits help spur economic development in Tahlequah, which is among Oklahoma's fastest growing communities. Tahlequah is also the seat of Cherokee

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Setting an industry standard...

CFC team replaces control system in record time



Ask the personnel at the Grand River Dam Authority Coal Fired Complex (CFC), and they will admit there was nothing routine about the schedule for the Unit 2 maintenance outage in the fall of 2007.

After all, completing six weeks of work in three weeks is far from routine. And while the successful completion of scheduled maintenance outages has been the standard at the GRDA CFC since the late 1980s, it's not everyday that such an effort sets a new standard for the entire power plant industry.

Thus, when CFC personnel and contractors installed a new turbine generator control system on Unit 2 in half the time it has ever taken at any similar power plant, the 2007 outage earned a very special place in CFC history.

"It was a rather aggressive time schedule," admitted GRDA Mechanical Engineer John McClure.

He would know. McClure was one of several CFC staffers involved in the earliest stages of project planning, some of which began several years ago.

"Planning for the actual work began about a year ago, said McClure, "but the real planning for this [control system upgrade] started about five years ago."

Unit 2 was constructed in the early 1980s and GRDA knew by the early 2000s — after 20 years of operation — that system upgrades would be the focus of future outages.

"The existing system was old," said McClure. "Parts were hard to find and it was becoming less and less reliable."

However, because scheduled maintenance is typically done on a tight schedule, CFC personnel also knew the work would have to be well-planned and executed.

“Plans were detailed basically down to every nut and bolt that needed to be torqued or checked or tightened,” said CFC Plant Superintendent Dan Hudnall. “Maps and legends were also created to identify where all the thousands of wires would be connected.”

Of course, for such extensive work, every craft that would have any kind of role in the project had to be at the planning table from the very beginning, added Hudnall.

“Really, the planning involved every craft at the power plant. Every group was involved in this in some manner.”

That included Unit 2 Electrical Superintendent Chris Walker and his crew. Because the project involved the installation of new voltage regulation equipment, his team spent a lot of time installing conduit and wiring.

“We did a lot of work and put in a lot of long hours to get it done on time,” said Walker. His crew also replaced the unit’s obsolete excitation equipment during the three-week outage.



Left: Vince Foley, Vice-President of Alstom Power, Inc. accepts a resolution from GRDA CEO Kevin Easley. Alstom technicians helped GRDA complete the upgrade project during the three-week schedule.

Above: Shift Superintendent Warren Day, Control Room Operator Stephen Duwel and Alstom Engineer Marius Lipowski participate in operator training for the new turbine control system.

Opposite page: A portion of the obsolete BBC Turbine Generator Control System, installed in the early 80s.

“Overall, it was an outstanding project,” said McClure. “Really, the planning involved every craft at the power plant. Every group was involved in this in some manner.”

While planning was a key to the success of the record-setting project, CFC staffers said cooperation was also a must. Whether it was warehouse personnel or the GRDA Purchasing Department insuring supplies were there when needed, or plant operators lending a hand to maintenance personnel during the outage, this outage, like all others, required “all hands on deck.”

CFC Superintendent of Instrumentation and Control (I&C) Steve Howe said that cooperation was evident throughout the outage.

“To accomplish [I&C tasks] required assistance from machinists doing modifications on existing equipment,” said Howe. “We also had mechanics do upgrades on the existing hydraulic controls. We also had help from the Communications Department with a lot of our fiber optic communications links.”

GRDA’s Information Technology (IT) Department also played a critical role, added Howe. “We had help from the IT Department on diagnostic connections to the new system that allowed the vendor, Alstom, to be able to remotely help us with troubleshooting during critical online problems we would run in to.”

Of course, even before all those new components could be installed, a plan had to be in place to insure all old components were removed properly, and completely. For Unit 2 Senior Powerstation Electrician John Ladd, that meant paying much attention to the details.

“We planned and identified all the cables that were going to stay and those going away,” said Ladd, about a project that is easier said than done when you realize a power plant contains miles of control and electric cables. Then, once the old ones were finally removed, checking the new ones was also a long, detailed process.

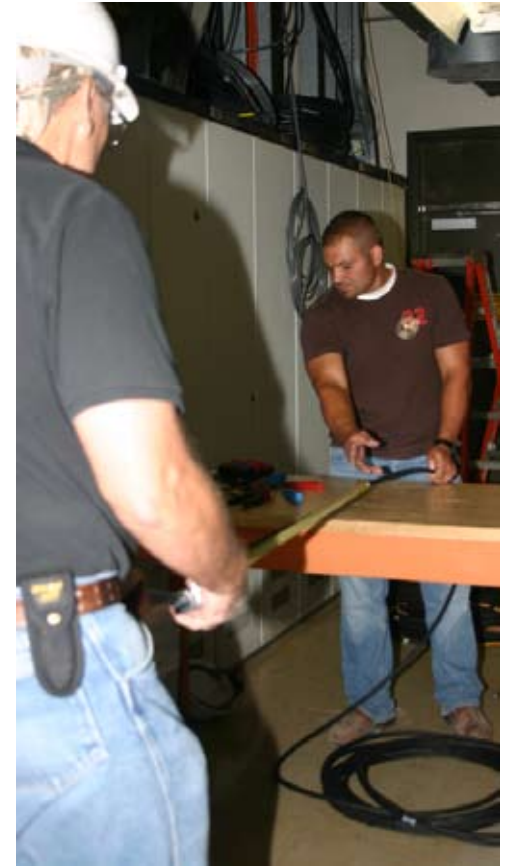


“It was pretty lengthy,” said Ladd. “We had to go through all the trips and all the alarm points. Basically, it was a full system checkout.”

When all was said and done, the efforts of GRDA personnel received high praise from representatives for the project vendor, Alstom. Jerry Kopczynski served as Alstom’s project manager at the CFC and admitted that, even as a self-proclaimed optimist, he had his doubts when he first heard about the scope of work and the timetable for completion.

“I had worries about the size, scope, coordination and mostly the very short outage time,” said Kopczynski. However, from his first meeting with GRDA personnel, he said he was impressed with the focused effort he witnessed. “I was pleasantly surprised by how much confidence the GRDA management had for me.”

According to CFC staffers, that confidence only existed because of proper planning, teamwork and experience; three things that have always carried the GRDA CFC throughout its years of service to the state of Oklahoma. Along the way, allowing GRDA to maintain its reputation as Oklahoma’s low-cost, reliable power supplier.



Above: Roger Smith and Robert Ladd take measurements for new cabinetry for the new turbine generator control panel.

Left: A portion of the miles of cables removed from the turbine generator control system.

Partners in purchase of Redbud Power Plant

The Grand River Dam Authority announced Monday, January 21, that it will partner with Oklahoma Gas and Electric Company (OG&E) and the Oklahoma Municipal Power Authority (OMPA) to purchase the natural-gas fired Redbud Power Plant near Luther, Oklahoma.

GRDA will be a 36 percent interest owner in the 1,200-megawatt facility, which translates into approximately 400 MW of additional generation for the Authority. OG&E will own 51 percent and OMPA will own the remaining 13 percent. Total sale price for the plant is \$852 million.

Kelson Energy, Inc., a Maryland holding company, awarded the bid to the three Oklahoma utilities after taking competitive bids for Redbud and four other power plants.

For GRDA, the additional generation will be added to an already beneficial mixture of 1,480 MW of coal and hydroelectric generation. GRDA owns a two-unit coal-fired power plant near Chouteau as well as hydroelectric generation at Pensacola Dam (Grand Lake, Langley); Robert S. Kerr Dam (Lake Hudson, Locust Grove) and the Salina Pumped Storage Project (W.R. Holway Reservoir, Salina).

“It is no secret that GRDA has been aggressively seeking new generation options for over two years,” said GRDA Chief Executive Officer Kevin Easley. “Power demands within our existing customer loads have grown steadily since the 1990s. This new acquisition will help us meet those demands as well as plan for the future.”

Easley also cited the location of the Redbud plant (near the western edge of GRDA’s service area) and the partnership with other Oklahoma-based utilities as other benefits of the Redbud acquisition.



An aerial view of the Redbud Power Plant (Luther, Okla.).

OG&E serves retail customers across a 30,000 square mile service area in Oklahoma and Arkansas with a total generating capacity of 6,200 MW.

OMPA, like GRDA, is a state governmental agency that transmits and delivers electricity to 35 Oklahoma cities and towns that own their own electric systems.

GRDA customer spotlight...

Allied Bearings; providing unmatched service

Webster defines a bearing as a “housing for a moving part”. The bearing supports the sliding or rotating part. This is exactly what Allied Bearings has been doing in the Mid America Industrial Park (MAIP) since 1975, supporting and serving the growing industrial community.

The 73-year old bearing supply company based in Tulsa, is an authorized distributor for most of the oldest and best known names in ball and roller bearing manufacturing as well as manufacturers of products in the power transmission/motion control and related specialty fields.

The MidAmerica Industrial Park location (a Grand River Dam Authority customer) was opened on September 1, 1975 to serve the manufacturing industry and has not moved from its original site. The last 32 years have brought changes in the Industrial Park but Allied Bearings has remained constant.

“The big thing that brought us here was the foundry. We did a bearing survey of the foundry in 1974; they opened in ’75 and then we came down.” said Jim Hamilton, branch manager.

Hamilton has worked for Allied since 1964, excepting two years of military service. He opened the Pryor branch, which was store #5, and promptly exhibited Allied’s philosophy by tailoring his inventory to the needs of the industries in MAIP.

“We stock for people. We have an incredible inventory here and if we don’t have it here, we will have it in Tulsa. Our inventory in Tulsa exceeds that of all our competitors in Tulsa put together. I would say the home office has 90 percent of the stuff I order in stock,” said Hamilton. “Our computer is set up with minimum and maximum on the quantity we stock. If we sell out one day, replacement parts come automatically from Tulsa the next day.”

Having a home office so close is also advantageous for Allied’s customers. If a part is needed badly, with little time to wait, Allied Bearings can and will drive to Tulsa themselves and pick up the needed part.

“The other day Randy (Dorsey) went out and looked at a situation, went to Tulsa and got the part. He came back and fixed it for them,” said Hamilton. “We can’t be touched for service.”

Since the inception of the supply company, Allied Bearings has been focused on “building a reputation as a reliable supplier of bearing, oil seals, chain, v-belts, and other power transmission items as required for your maintenance programs.”

A strong commitment to service and inventory has guided Allied Bearings Supply Company through incredible growth, the company now has eight locations and 60,000 square feet of floor space. A recent certification to ISO 9002 standards speaks of their commitment to quality.

Consistently offering unmatched service to its customers has also contributed to Allied Bearings success and corresponds to the growing number of industries they serve.



Left: Allied Bearings is located in the MidAmerica Industrial Park.

Right: Jim Hamilton, Branch Manager, Connie Hamilton, Secretary and Randy Dorsey, Inside Sales. (Not pictured: Vicky Nichols).

“We have a good relationship with GRDA...Sometimes the electric bill here is less than mine at home,” said Hamilton.

Their customer base now includes the pulp and paper industry, coal and gas fired electric utilities, the aggregate industry, including cement manufacturing. They service machine tool manufacturing, the food products industry, foundry operations, fertilizer manufacture, roofing felt and saturation mills, carbon filtration products for the clean water industry along with the paint and sealing products industry.

“We have a good working relationship with our customers and we are very trustworthy. Some don’t even ask prices, they’ll just call and order knowing that our prices are very competitive,” said Hamilton. “We even have some purchasing agents that have keys to our back door if they need something after hours.”

The Pryor office employs four, including Hamilton. His wife, Connie has been the secretary for 27 years. Randy Dorsey has been with the company for a total of nine years and Vicky Nichols, who does the delivering, has been working there for eight years. The dedication of these employees exemplifies Allied Bearing’s commitment to the MAIP.

Grand River Dam Authority shares in that same commitment and dedication to their customers. GRDA’s primary power generation facilities are located on-site at MAIP, and the GRDA Transmission and Engineering Headquarters is just down the road, so the GRDA response to the needs of MAIP industries is the same as Allied Bearings; quick and accurate.

“We have a good relationship with GRDA, they have been fine to work with,” said Hamilton. “Sometimes the electric bill here is less than mine at home.”



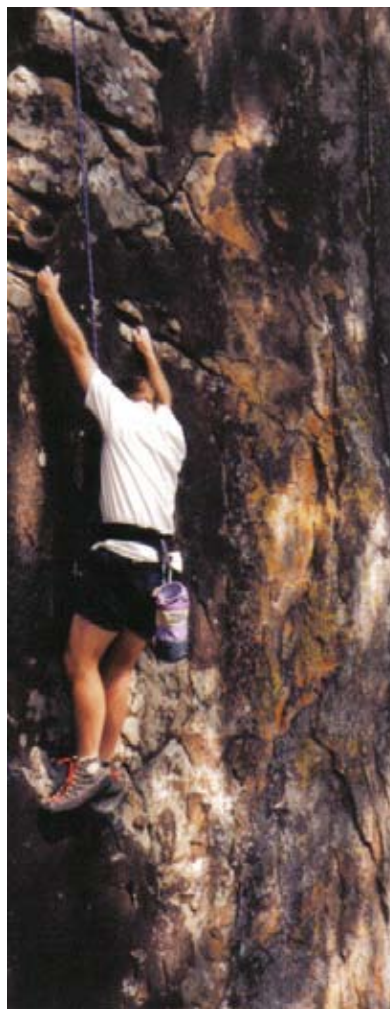
GRDA employee spotlight...

Climbing *mountains;* healing *hearts*

Identifying a problem comes natural for Randy Chitwood, senior mechanic in fleet services. Alternating between working at the GRDA Coal Fired Complex and Transmission garages, Chitwood has been involved in maintaining and repairing service vehicles and equipment for over 24 years.

Determining how to fix the problem is a challenge that he enjoys and seeing the equipment returned to service is rewarding for the easy going father of five. He approaches life thoughtfully with the same philosophy-- where there is a problem, there must be a solution and he makes time to be a part of it. Randy volunteers at least four to five hours per week and at times as much as 15 hours with several different community organizations as well as his church.

“I grew up watching my parents and grandparents who were always doing something for someone. There weren’t any community type clubs there then but they were always helping people and it made an impression on me,” he explained. “If you want to make things better, you need to know what’s going on and you can find out by being involved in community groups.”



Originally from Gallup, New Mexico, he moved to the area 31 years ago. As a child, Randy spent a lot of time in his father’s auto shop. Curiosity of how something worked caused him to take apart his toys before he played with them; fortunately he possessed a natural talent for putting them back together. After high school, he attended OSU Okmulgee Tech, graduating with an Associate Degree in Diesel Technology.

“My dad always had a shop and I was always there. I liked to see how something worked and to see if I could make it work better. I fixed a lot bikes, mine and my friends,” he said.

Desiring to raise a family, he eventually settled into the Pryor community. Appreciating the small town atmosphere and values, he considered it to be just the sort of place that where he would like to raise his children.

When his daughter was born with a serious heart defect that required surgery, Randy experienced the frustration of trying to understand the technical language of the doctors, nurses and brochures. Thankfully his daughter recovered from the surgery, and is now a freshman at Rogers State University. Many parents would have walked away quietly, just grateful to have a happy ending. However, Randy wanted to make it easier for other parents facing the same difficult situation, so he created the Healing Hearts support group in 1990.

“There is a lot of anxiety, it starts out as ‘What do you do? Where do you go?’ You need information written in a language you can understand. We can help people get answers to the questions they have in a way they understand, it seems to help.”

His oldest son was diagnosed with the same condition not quite a year later, but due to the education Randy received during his daughter's diagnosis, he was prepared, he knew what he was facing and he knew and trusted the doctors. His son outgrew the aortic stenosis and is now serving his country in the United States Air Force.

In the beginning, the group held Valentine's Day parties and a long summer day in the park for the children and families but now it has grown to include a summer camp specifically for children with heart problems. Each year, the Shepherd's Fold Ranch in Avant, OK hosts the CHAMP Camp-Children with Heart Anomalies have Much Potential.

"They are great to work with. The first year we had the camp we had only 12 or 15 kids total, but this year we had 56 resident campers and 12 to 14 day campers."

As his children have grown, Randy's volunteering efforts have largely been concentrated on them and their interests. He donned a striped, quirky hat and read to the students on Dr. Seuss Day at Jefferson Elementary school for several years in a row. His love of the whimsical books is apparent, and coupled with his ability to do the voices- he quickly became a favorite with the kids. He has already accepted the invitation to read on Dr. Seuss Day 2008.

His involvement in the Boys and Girls Club began when his children joined in 2002. Anytime the Club needs an extra hand, Randy is there to help whether it is driving the kids to competitions, helping out with homework during Power Hour or just being there to play games. In 2005, he became one of the few voted VIP (Very Important Parent) in 2005 by the kids in the club.

"I help out when they need it. I had been looking for someplace for my kids to go and so we went and I hung around for a while and thought it was a good place to be," he said. "I do volunteer year round. I think the benefit is in just seeing the looks on the kids faces, it is rewarding. Maybe all it takes is just 30 seconds of undivided attention and the weight is gone, they feel better. I hope I am making a difference."



His pride in their participation in U21 is mirrored by his passion against drunk driving.

"ROCMND started U21; it's a group of kids that speak out against under-age drinking. They speak to groups, legislators, anyone who will listen. I

have a real problem with drunk driving. I lost my 18-year-old sister-in-law due to a 19-year-old drunk driver. I have worked indirectly with the Governor's Task Force through my kids and ROCMND," he said.

Randy has been a member of St Mark's for over 25 years. He has taught Sunday school there for 15 years though now he primarily substitutes, filling in where he is needed. He also prepares meals for the kids and pitches in on the clean up after an event. One thing that has remained is the annual rock climbing weekend where he takes on average 20 kids rock climbing in the Wichita Mountains. Rock climbing has been a part of his life since he was a kid; he now shares the parallel spiritual application of climbing mountains with the teenagers.



Describing it as a spiritual weekend, Randy believes that the kids can gain confidence by conquering the face of the rock and that experience equips them with the knowledge that they can conquer anything they face in life. The view from the top can be inspiration enough to climb the next one.

Above: Randy takes a short climb during a break at a Boy Scout weekend camp at Zink Ranch, north of Sand Springs.

Top: (l to r) Jay, April, Michael, Lita and Hope (Randy's children) celebrate Michael's Air Force Basic Training graduation at Lackland AFB in San Antonio, Texas.

Opposite page: Scaling Giraffe Wall at Robbers State Park in Wilburton.



Nearing the top of Mt. Scott in Wichita Mountains near Lawton.

Growing up in New Mexico, Randy scaled the Sandia Mountains in Albuquerque, once in Oklahoma; he turned his attention to the Wichita Mountains and soon after, Robber's Cave in Wilburton. He traveled to Wyoming for a vacation and, while he was there, decided to climb Devil's Tower and then went on to South Dakota to climb at Needles National Park.

"It's sounds funny but it's how I relax. I like being out in nature and it's just me and the mountain. I have to figure out how I am going to climb this, how I'm going to get to the top." he said.

Randy also enjoys antelope hunting and is currently working on restoring a Baja Volkswagen, with plans of eventually restoring his 1957 Chevy pickup.

Working at GRDA has expanded Randy's volunteering opportunities. Through GRDA's involvement in the Mayes County Crisis Plan, he joined the Mayes County Emergency Management team and for the last three years he has been assisting with the Local Emergency Planning Commission (LEPC).

He also volunteered to help when GRDA set up the ROPES course poles for the Thunderbird Youth Academy. He eventually become a certified ROPES instructor and at one time was facilitating three to four groups per year.

"It's nice to work at a place where it's not all just about the bottom line. GRDA has the resources and uses them helping communities."

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County, which was listed as the third-fastest growing county in the 2000 census. Delaware County, home to the majority of GRDA's Grand Lake was ranked first, while Rogers County, where GRDA serves the county seat of Claremore, was ranked second.

"The GRDA mission has always been to provide low-cost reliable power and to be an economic development partner in the region," said Easley. "The track record speaks for itself, but our customers' dedication to public power partnerships also reinforces that GRDA is power for progress in Oklahoma."

Day, who also serves as chairman of the GRDA Municipal Customer Group, echoed that sentiment.

"I've made a recommendation to each member of the municipal customer group to make recommendations to their boards and councils to execute this long term contract," Day told the GRDA Board at its October 2007 meeting. "We believe this is a great partnership."

Providing the best power to customers...

Of course, reaching the new agreement came after two years of negotiations and research. During that time, the customer group hired

its own consultant to review the GRDA agreement and to determine if any other power suppliers could meet or exceed the advantages of GRDA. In the end, the partnerships that have spurred growth, development and economic success in these communities for 50 years, is the same partnership they are counting on for the next 35.

"We studied other utility providers and found that GRDA is the only feasible option to serve our load and provide an appropriate cost," said Claremore Assistant City Manager Matt Mueller when the contract was presented to the Claremore City Council in December 2007. That council gave the contract unanimous approval.

"When we considered the length of the contract, we did look at other municipal and private providers," said Mueller, "but GRDA was the best deal for Claremore. With GRDA, we feel we have the ability to work together to provide the best power to customers."

Meanwhile, other municipal utilities are also counting on the public power partnership to help them meet their objectives.

"Our mission is to be the premier city owned utility company in Oklahoma," said Mike Doublehead, general manager of Stilwell Utilities, another GRDA municipal customer. "We want to provide dependable and reliable electricity to the city of Stilwell and our partnership with GRDA helps us to do that."

In Cushing, where GRDA Director Steve Spears (municipal customer representative) serves as city engineer and assistant city manager, the bottom line is that low-cost, reliable electricity still provides the greatest benefits to citizens.

“Profits from electrical sales have stayed in the community,” said Spears, “and allowed the city to provide a better quality of life for its citizens by utilizing these funds to support such things as parks, youth and community center, senior citizens center and the police and fire departments.”

In October 2007, Standard & Poors’ moved GRDA’s credit rating from “BBB+” to “A-”. It culminated a string of credit rating outlook improvements, one each from S&P, Moody’s and Fitch, dating back to March 2005. It was also reinforcement for GRDA, and its customers, that the utility was becoming more financially stable, and ready to meet the future needs of its customer base. Like the new 35-year contracts, it was viewed as win-win.

“I think this is an historic upgrade for GRDA,” said Mannford Trustee Mickey Dodson, “and I think Mannford will see the benefits as well. Our electric system is a major asset to our community, and when our supplier gets this kind of good news, we get to share in that success with GRDA. Being public power partners benefits both parties.”



Counting on each other...

Of course, as the GRDA Municipal Customer Group worked together in 2007 on beneficial long-term contract with GRDA, they also strengthened their ties to each other. And in a year in which Mother Nature put a real strain on electric lines and poles, strong partnerships were necessary to get the power on again.

“Each individual member knows if you have a problem, one of us, if not all, are there to provide any member of the group assistance,” said Day. “[The Municipal Electric Systems of Oklahoma] has and is continuing to make sure all MESO cities have mutual aid contracts in place so we can provide assistance to other cities.”

Following last January’s ice storm, the Pryor Municipal Utility Board (MUB) needed a lot of help to repair the damage to its distribution system all over town. Fortunately, a lot of help — in the form of crews from other GRDA Municipal Customer Group utilities — was available. Tahlequah, Collinsville, Miami, Mannford, Stilwell and Siloam Springs (Arkansas) all sent help. Then, during the December 2007 ice storm, other hard-hit municipals, like Collinsville also benefitted from the help of their public power partners.

“It is very important for public power communities to work together,” said MUB General Manager Gary Pruet. “Mutual aid works.”

Counting on future partnerships...

For GRDA and its wholesale municipal customers, 2007 may be remembered as the year in which they reinvested in their futures and re-established historic, beneficial partnerships. By signing 35-year contracts, customers have made it clear that GRDA is their provider of choice, and vital to their communities success for many years to come. As GRDA signed the contracts, it has made it clear it will strive to fulfill its reputation as the lowest-cost, reliable power supplier and its mission to be a powerful economic development partner for the state that created it to be just that.

Mueller summarized the new agreement and strengthened partnerships.

“This 35-year contract is beneficial to both parties,” he said. “It secures customers for GRDA, which helps them with long-term planning. And for municipal customers, its very good to have a solid contract and a good commitment within a utility industry that could change drastically over the next few decades. This contract helps protect all these municipals from those changes, and allows us to focus on moving ahead, while continuing our beneficial partnership with GRDA.”

Above: (l to r) Micah Keeling, Lance Sellers and Ron Pryor of Stroud Electric Crew taken as an appreciation of employees during Public Power Week 2007.

Another day in the sub making it happen...

Providing protection; isolating faults

The Grand River Dam Authority Relay Department plays an integral role in the transmission of electricity across GRDA's 24-county service area to GRDA's customers. Just as a relay runner seamlessly passes the baton to a teammate so as not to interrupt the circuit, the relay department works within GRDA's transmission team to ensure the power is safely protected and reliably transferred.

"We provide maintenance and testing of protective relays, instrument transformers, and protective system batteries on GRDA's transmission system," said James Cornett, Relay Superintendent.

The purpose of the protective relays being placed in the substations is to protect the feeders, bus, transformers, breakers, instrument transformers, or any other related equipment connected to the substation bus or feeders. Simply put, the protective relays are basically electrical fault detectors protecting different areas in a substation, on a line, or in a generating facility. During these times of increasing standards and high speed operations, properly calibrated relays help ensure reliability to GRDA's public power systems.

The relays provide protection and ensure that external faults such as lightning strikes, equipment failures or internal faults such as short circuits will not lead to more serious and expensive damages. Outages, with considerable financial losses, can occur when a line, transformer or generator are not removed from service when necessary. The quick recognition and isolation of the damaged area is aided by an interruption device such as a breaker which prevents unwanted power flow to the faulted location.

"We have seen everything from snakes to tractors, birds to excavators, squirrels to dump-trucks and cats to raccoons, which have caused transformer and line trips," said Cornett.



Above: (From front) Grant Mennecke, Luke Swift and Keith Kerns look over blue prints while working on a project at GRDA's Coal Fired Complex.

Left: (From left) Jamie Eby and Grant Mennecke cutting conduit to upgrade the 69 kV system at Pensacola.

Far left: Kyle Elam pulling cables at the Pensacola Substation during the upgrade.

The relays and related substation equipment provide vital station data via Supervisory Control and Data Acquisition (SCADA) to the system operators at the Energy Control Center (ECC). The real time information received allows set up of operating procedures while monitoring power flow, substation alarms, and system voltage of each substation site.

Currently, the department has a total of nine relay personnel with over 134 years of combined experience at GRDA. During times of transition in the ECC and Engineering Departments, the field crews stepped up and took added responsibility as required. Relay technicians are one of the first responders to any situation that requires immediate action or any event that compromises the reliability along the 2,000 miles of transmission line connecting to over 230 substations and customer interconnects. The relay department uses experience and data collected from relays to help restore power or inform the appropriate personnel of the problem.

During tornados, ice storms or any other events that involve line operations, the relay and other transmission departments are able to assist the system operators in getting the power back on to the customers. This is accomplished by sectionalizing the damaged portion of the line by manually switching or operating the equipment that may not be able to be operated by the ECC. This allows feeders or transformers to be re-energized, at least from one direction.



“If there is a problem at a substation, we are one of the first ones there,” Cornett explained. “We determine the problem, and relate this to the ECC and other departments needed for the call out. Our response time is very important to us, always trying to keep the interruptions of customer service to a minimum.”

The relay department also works with the substation department in performing the maintenance and testing program for GRDA and municipal substations. The Relay Department has divided the GRDA service area into three parts: North, South and West.

“We try and send the same crews each time to establish a good working relationship and good communication with customers and city officials, which makes it easier,” said Cornett.



By dividing the area and striving to send the same crew to that area, the technicians are performing valuable public relations.

The Southwestern Power Pool (SPP) and the North American Electric Reliability Council (NERC) prescribe compliance standards for GRDA's maintenance and testing program. Currently, the relays at GRDA's substations are tested on a five-year cycle, with under-frequency relays tested alternately every two years and one-half of the relays tested every year. Under-frequency relays allow

automatic load shedding, during times of system frequency decay or excessive overload conditions. This is done to save other portions of the power grid from a possible blackout or cascading power interruption. By avoiding excessive overloading and stabilizing frequency, ECC can then quickly restore power to GRDA's control area.

As of September 21, 2007, GRDA's ECC, SCADA, and Relay Departments have recently completed testing of a new Manual Load Shedding Plan. That is another NERC standard requirement, which was designed to provide load relief and minimize the probability of a transmission system collapse.

Hydro generation plants located at Kerr Dam, Pensacola Dam and the Salina Pumped Storage Project have approximately 100 generator relays at each facility which are tested and maintained yearly by the relay department. The relays at the Coal Fired Complex, (CFC), nearly 400 in all, must be tested and maintained during the yearly outages in either spring or fall.

“During the scheduled outages, relays and trip functions on lockouts are tested. We also verify trip tests on transformers, alarms, and event recorder points. We basically test all relay related equipment while the CFC units are down,” said Cornett.

“Our response time is very important to us, always trying to keep the interruptions of customer service to a minimum,” said Cornett.



To remain in compliance with SPP and NERC standards, the relays protection system maintenance and testing program is well documented. New relay testing software and test equipment has raised the level of consistency ensuring accurate and properly applied engineer settings, that is determined best for both GRDA and the customer needs. Testing and maintenance records are entered into a relay designated file server for future reference and easy access.

The SPP and NERC review audits are on an alternating three year schedule. The reviews or audits allow GRDA to show proof that it is complying with the testing and maintenance program and keeping on schedule. The audits are a complete inspection of the reliability of GRDA's electrical protection system and its components.

Technicians also test and maintain 72 transformer regulator controls yearly and conduct annual battery testing for GRDA facilities and substations as well as municipal and Northeast Oklahoma Electric Cooperative, Inc. customers. They are also involved in any new substation construction and checkout — from the beginning to the end — until the project is completed and the equipment is energized.

In between testing, maintenance and trouble calls the relay department is also focusing on completing projects to modernize GRDA's aging relay system. The new relays provide fault magnitude and distance to the fault with pinpoint accuracy, thus aiding GRDA linemen in finding fault locations while centralizing their crews on one location instead of the whole power line. This cooperative process allows for a quicker repair when possible.

Cornett considers it a privilege to work with so many different departments and sums it up by saying, “It's never boring. To quote another GRDA veteran Ralph Birkenfield: At GRDA, we don't work with employees, we work with professionals.”

“We go home and take a real sense of accomplishment, especially after employees work hard and it is acknowledged by our customers who sometimes go the extra mile by reporting to our Transmission management their satisfaction with GRDA getting the power flowing again,” he said.

Left: Stacey Thornton upgrading relays at the Chelsea Substation.

Right Top: Several Transmission crew members were helping with restoration efforts in Keetonville after December's ice storm.

Far Right: Chester Rothhammer, Cushing Crew Superintendent surveys the ice storm damage around Keetonville.

One last '07 icy blast...

Ice Storm Damages GRDA System

Though separated from the January '07 ice storm by 11 months, the December '07 storm was like the sequel to a bad movie we hoped to never see. Plunging thousands into the dark and cold while causing millions of dollars in damages across the affected areas, the storm was the final exclamation point on the story of Oklahoma's harsh 2007 weather.



For the Grand River Dam Authority, round two delivered as many icy blows as January's round one. Under the weight of ice, power lines and structures fell at various locations all across the system. That led to an extensive GRDA restoration effort that began even before the storm had moved out of the area.

"On December 9 we received calls from the cities of Skiatook and Collinsville (both GRDA municipal customers). They wanted help with our systems so we sent some crews over," said GRDA Superintendent of Powerline Maintenance and Vegetation Management Gary Cupp. "Then our system really started to take some hits around two or three in the morning on December 10, so we called everybody in."

While problems were scattered at several locations across GRDA's system, the greatest damage was concentrated along Feeder 86, a high-voltage transmission line running from a substation in the Mid-America Industrial Park to one in Claremore. Feeder 13, from Collinsville to Osage, also sustained heavy damage.

"Lines are constructed to handle extra weight besides the weight of the conductor itself," said Cupp, "but when the ice builds up, you really have no idea of how much extra weight there will be. If something's going to give, its going to find the weak spots, and it always does during an ice storm."

With memories of January still fresh on their minds, GRDA personnel fanned out across the system to put the pieces back together. That included not only the powerline maintenance crews, but also substation, relay, metering, welding, warehouse and garage personnel.

"Guys were working long hours, sometimes from 6 AM to midnight, and that can take its toll, not only on men but also equipment, so we always had our mechanics out there with us as well," said Cupp.

Because of the warmer weather prior to the ice storm, Cupp said they had much more mud to deal with in December than they had back in January. "The ground was warm when this hit, so everywhere you went you had to take a bulldozer with you (to pull in other equipment). Then you'd wade through the mud."

There was plenty of mud, and line damage, between Collinsville and Osage as GRDA and contractor crews spent several days rebuilding Feeder 13. In that area, nearly 60 H-frame structures fell under the weight of the ice. Because the line is a major supply feeder for substations utilized by Verdigris Valley Electric Cooperative, crews worked round the clock to get the structures back in place. On Monday, December 17, GRDA was able to energize one portion of the rebuilt line and by the afternoon of Wednesday, December 19, all GRDA feeds to customers were back in service.

"Overall it came together really well," said Cupp. "All the departments here worked together. Considering the damage we had sustained, we were very pleased with the results of restoration efforts."



From ice storm to ice storm and everything in between...

Looking back on 2007

January-February



A frozen mess...

There were many photos taken in the aftermath of the January 2007 ice storm that showed tremendous damage in the hardest hit areas. However, from GRDA's perspective, this shot –of twisted metal inside the Highway 412 Substation ---is a pretty good illustration of just how much damage was left in the storm's aftermath.

Gathering input...

Three little letters –SMP –accounted for a lot of activity in 2007. Actually, the SMP (shoreline management plan) for Grand Lake was, understandably, a hot topic at several public meetings conducted by GRDA early in the year. GRDA encouraged input at five public meetings held around the Grand Lake area, in Tulsa and Oklahoma City. Turnout was good for all the meetings, including the first one in Cleora, which is featured right.



March-April

Expanding communications...

GRDA's Mike Coile (left) and Bill Millsap played a large role in maintaining, and expanding the communications system during the year. In this shot, they are working on the new communications building that was placed at the Alum Bluff repeater site (south of Tahlequah).



Electricity and ecosystems education...

What do electric safety, water safety, hydroelectricity, ecosystems enhancement, environmental protection, and GRDA history all have in common? Those were just some of the topics that GRDA personnel were asked to speak about—to schools and civic groups—during 2007. GRDA continued to develop “speaker’s bureau” resources and educational programs in 2007 and the opportunities for public outreach should increase in 2008. It is a function that has involved many employees

from many different jobs within the Authority. At left, GRDA Lineman Brent Scott talks to junior high students about the tools of the trade for power line maintenance. At right, Kerr Dam's Bill Johnson gives a tour of the Kerr facility to Osage students and tells them about the benefits of GRDA hydropower.



May-June

Here comes the rain again...

June 2007 will go down as one of the wettest in history for this part of Oklahoma, and the entire summer will long be remembered for the heavy inflows of water that passed through the Grand River water shed, well into July. At right, Hydro's John Cook takes a pressure reading on the Salina Dike. During the highest elevations on Lake Hudson (over the July 4 holiday) GRDA hydro personnel monitored the dike (in the background) round-the-clock. It performed "under pressure" just as it was designed to do.



Rushing for brush...

On the shores of both Lake Hudson and Grand Lake (left) several volunteers turned out to help GRDA Ecosystems build hundreds of "spider block" artificial fish habitats. The "Rush For Brush" events were held twice at each lake in May and June. Area residents and fishermen joined GRDA in building a total of 815 brush habitats which exceeded GRDA's goal of 750. GRDA supplied the materials and the volunteers supplied most of the labor for the effort which is expected to be an annual event.

"I got caught wearing my life jacket"...

These were the kind of "traffic stops" the GRDA Lake Patrol were more than happy to make. During the summer months, the patrol worked to raise awareness about life jacket safety by presenting t-shirts to boaters "caught in the act" with their life jackets on. At right, Patrolman Derrick Bidleman hands out t-shirts to young Grand Lake boaters on Memorial Day.



July-August



Find out at GRDA.com...

Increased traffic to the GRDA web site (grda.com) was one of the goals of the GRDA billboard "Find Out" campaign which got underway in late 2006 and carried through 2007. GRDA Graphic Artist Karen Olinger designed the billboards for the campaign (including the one above) which were placed around the lakes and GRDA service area. Each design posed a different question (four in all): 1) Why did we build a dam?; 2) How do we flip your switch?; 3) How does fly ash make you fly and; 4) 70,000 acre playground. Got toys? Web surfers visited grda.com for the answers and to learn more about the Authority. The campaign was just another way to promote GRDA's "big picture" and educate the public about Oklahoma's most powerful resource.

Tour season another success...

When all was said and done, 7,000+ visitors took advantage of the free tours of historic Pensacola Dam during the Summer of 2007. Other special tours were also given to civic groups and schools during the year. This photo features the Leadership Miami Class taking one of those tours. GRDA Tour Guide Pat Hopper and Forrest Graham served as tour guides during the summer. Above, Forrest and Pat accept an award from the Grand Lake Association for "Outstanding Tourism Attraction" on behalf of the public tours at Pensacola Dam.



September-October

Public Power Week 2007...

GRDA celebrated Public Power Week 2007 in early October, along with its municipal customer communities across the state. Below, it takes this large crew of public power employees to insure that low-cost, reliable electricity is delivered to customers in GRDA's municipal public power community of Claremore. Of course, even as GRDA and its municipal customers celebrated public power in October, many of those customers were signing the new, 35-year contract with GRDA. In fact, by year's end, 14 of GRDA's 16 municipal customers had signed the long-term contract. That not only helps insure these communities will have a reliable source of low-cost electricity for years to come, but it also helps give GRDA a stable financial footing for the future.





November-December

Setting a new standard...

It really was a first for the industry. In fact, the GRDA Coal Fired Complex's record-setting installation of the new turbine generator control system on Unit 2 was so impressive that the manufacturer, Alstom, came to the facility after the project to recognize the achievement and present plaques to CFC employees.

Here we go again...

After January's ice storm many were hoping they would never again have to experience such a destructive weather event. Unfortunately, the winter of '07/'08 had other ideas. In late December, heavy ice and freezing again visited GRDA's service area, toppling structures and pulling down lines at several locations. The hardest hits areas were just north of Tulsa, where GRDA lost 55 structures along Feeder 13. At right, GRDA Transmission Department employees open the breakers inside the iced-over Skiatook East substation. GRDA Crews worked round-the-clock to put the pieces back together.



Saving customers \$2 million over first six months of 2008 ...

GRDA Board Approves New Power Cost Adjustment

As a group, contract customers of the Grand River Dam Authority will see an approximately \$2 million reduction in their electric bills during the first six months of 2008.

That is in comparison to the last six months of 2007 and comes a result of a new power cost adjustment (PCA) approved by the GRDA Board of Directors at a special meeting in December.

That new PCA is an adjustment of \$0.00375 per kilowatt-hour and amounts to the \$2 million in savings.

“The PCA is a calculation GRDA uses to make minor adjustments to base energy rates to reflect the actual cost of fuel used in electric generation” said GRDA Chief Financial Officer Carolyn Dougherty. GRDA has utilized the PCA since the early 1980s, making adjustments twice a year.

“We’re very pleased we were able to make an adjustment to save customers money during the first half of 2008,” said GRDA Chief Executive Officer Kevin Easley. “It is positive news for our customers, including those who have recently made long-term commitments to this beneficial public power partnership.”

Those include the 14 wholesale municipal customers that have signed new 35-year contracts with GRDA during 2007, added Easley.

“The strength of GRDA has always been its low-cost rates, a beneficial mixture of both hydro and coal generation, and of course, its long-term customer relationships.”



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