Tiers of Trust

Associated Electric Cooperative Inc.

By Jennifer Ailor

50 years
1961 - 2011
a powerhouse for members

THE 1960s

Associated Electric Cooperative Headquarters built in 1964.

1960, fall
Though Associated was not yet incorporated, its principals were engaged in multiple negotiations that had produced draft contracts between what would become Associated and the Southwestern Power Administration, between the future Associated and investor-owned utilities, between these companies and SWPA, and between the future Associated and each of the G&Ts.

1961, February 8
Fifteen incorporators sign articles of incorporation to create Associated Electric Cooperative Inc.

1962, March 28
During a Springfield ceremony, the soon-to-be Associated and three western Missouri investor-owned utilities sign draft contracts that give the IOUs access to generation excess from Bull Shoals and Table Rock lakes beyond Associated's needs.

1962, May 28
Neil Adams is hired as Associated's first general manager, serving until June 1971.

1962, July 25
The U.S. Department of the Interior grants final approval to form Associated.

1962, August 1
Associated officially begins operations with five employees.

1962
Associated assumes the contracts between the G&Ts and the Southwestern Power Administration, paving the way for generous credits, transmission access and control over hydropower in Missouri.

1965
Associated builds its first transmission line, a 1.5-mile tie line between M&A Electric Power Cooperative and Union Electric.

1966
Associated's first coal-fired power plant, Thomas Hill Unit 1 at 180 MW, begins operating.

1968
Associated, the city of New Madrid and Noranda Aluminum Inc. work together to clinch a deal to bring an aluminum smelter to southeast Missouri; the plant begins operating in 1970 and continues for 33 years as Associated's largest customer.

1969
Thomas Hill Unit 2 goes on line, adding 303 MW.

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THE 1970s

From left, New Madrid Power Plant and Noranda Aluminum Inc.

1970
The 1970s was an era of extra-high-voltage transmission construction, beginning with the 40-mile line connecting New Madrid with Lutesville financed by the first Rural Electrification Administration loan for a 345-kV line.

1971, December
The short-lived Federated Electric Cooperative was incorporated to finance New Madrid Unit 2 but was never needed and was merged into Associated in 1975.

1972, October
New Madrid Power Plant's first unit of 600 MW goes on line.

1973, May
Gerry Diddle becomes Associated's general manager, serving until February 1992.

1974
The 345-kV St. Louis-to-Tulsa line, also called the MO-KAN-OK line, is built, the first of Associated's interregional extra-high-voltage ties.

1974
Associated partners with Public Service Co. of Oklahoma to build the Black Fox Nuclear Project during a time when the power industry saw nuclear in its future.

1974
O.B. Clark joins the board, becoming president in 1981 and serving until June 2009, the longest tenure for a board president.

1977, June 1
The 600-MW New Madrid Power Plant Unit 2 goes on line.

1977
Two 22.5-MW oil turbine peaking units at Unionville Power Plant go on line.

1978
Associated enters the coal business, buying Bee Veer and Prairie Hill mines near Thomas Hill Power Plant from the Peabody Coal Co. and begins operations in 1980.

1979, January
Associated negotiates with the Rural Electrification Administration for the largest loan guarantee in the history of the rural electrification program: $1.4 billion (Associated's own investment in its system at the time was only $311 million) to pay for Thomas Hill Unit 3, Black Fox Nuclear Project and its new mining operation and to offset double-digit interest rates in the late 1970s.

Late 1970s
Negotiations begin for a three-utility deal to build the first 500-kV line in Missouri, connecting New Madrid Power Plant with a 500-kV line owned by Arkansas Power & Light; the line is finished in 1984, the first such line financed by the Rural Electrification Administration.

Associated has continued to invest in its resources to serve member systems, including its integrated transmission system and diversified generation resources, clockwise from top on the front cover, the New Madrid Power Plant and coal train; high-voltage transmission lines at New Madrid Power Plant; the Bluegrass Ridge Wind Farm in northwest Missouri; and

on the back cover, the combined-cycle natural gas Chouteau Power Plant.

Produced by Member Services and Corporate Communications

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Associated Electric Cooperative is part of a three-tiered system united by the common purpose of serving electric cooperative members with affordable and reliable electricity.

Associated is owned and operated by six generation and transmission cooperatives (G&Ts) that formed it in 1961 to provide the G&Ts a wholesale power supply.

These six G&Ts are owned by 51 distribution cooperatives in Missouri, southeast Iowa and northeast Oklahoma. These local cooperatives are owned by about 875,000 member-consumers.

Statewide organizations – the Association of Missouri Electric Cooperatives, the Iowa Association of Electric Cooperatives and the Oklahoma Association of Electric Cooperatives – are an important part of this cooperative family.

Associated is headquartered in Springfield, Mo., and operates power plants in Missouri, Oklahoma and Arkansas.

"Tiers of Trust"

This book is a sequel to "Win-Win," the first informal history of Associated chronicling its first 35 years from 1961 to 1996. "Tiers of Trust" is a continuation of that history from 1996 to 2011 and recognizes the cooperative's dedication to its members for 50 years.

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Section 1

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Preface

From left: Col. William G. Kratz, Associated board President John Buck, Associated General Manager Neil Adams and U.S. Sen. Ed Long dedicate Thomas Hill Unit 1.

"It feels to me like an extended family, the Associated family. There's just a different feeling working with cooperatives."

– Jeff Davis
Missouri Public Service Commission

Associated Electric Cooperative Inc. was never meant to be. Or at least what it came to be. The uneasy alliance that led to its incorporation in 1961 is well documented in "Win-Win," an earlier account of Associated that covered its first 35 years. The colorful and powerful range bulls of those years – Truman Green, Mike Boudreaux and Fay Martz, among others – had their share of shouting matches, profanity and deal making as they staked out their turf and strove mightily to protect their interests. The generation and transmission cooperatives of the 1960s and 1970s did not always trust one another and waged wars of power around the boardroom table. But they wanted less expensive electricity for their rural members, initially from federal hydroelectric projects, and the only way to do that with economies of scale was through an Associated.

Like the planets around the sun, these distrustful G&Ts gradually fell into orbit, held there by economic forces of gravity – and a growing trust.

At the time, there was no vision of the Associated of 2011. No clue that it would become a super G&T recognized for its financial strength, savvy leadership and low-cost delivery of reliable power to 875,000 end-of-the-line members. Instead, this cash-starved cooperative was focused on paying the bills for its ambitious plans to build generation and transmission. Bob Stagner, who served on the board from 1969 to 2001 representing M&A Electric Power Cooperative, recalled that as cash came in, the bill at the bottom of the pile was paid. In those years, Associated was a sorry candidate for future greatness.

Nevertheless, Associated not only survived, it thrived. By the mid-1990s, it had stabilized and matured. The range bulls were gone, replaced with equally smart and assertive board members but ones who favored different tactics. They were now united in trust, recognizing that what was good for Associated would be good for the G&Ts, the distribution cooperatives and, most importantly, the members at the end of the line. In fact, serving the member sometimes struggling to pay a $100-a-month utility bill has remained the defining mission of Associated.

And so we arrive at 1996, the beginning of this 15-year history that completes the story of Associated's first 50 years. Some of the characters in the story carry over from "Win-Win," but new faces emerge. Clearly, the threads of values, mission and commitment from the first 35 years continue to bind. But fresh ideas and bold initiatives have produced a powerhouse defined by its tiers of trust. That trust has been shaped person by person up, down and between the tiers and beyond to suppliers, financiers, other utilities, Wall Street, regulators, even politicians. The result is something not seen very often in the corporate world.

Jeff Davis of the Missouri Public Service Commission, whose grandfather served for decades on the board of Pemiscot-Dunklin Electric Cooperative, put it this way: "It feels to me like an extended family, the Associated family. There's just a different feeling working with cooperatives. … The fact that every one of your neighbors is a member, and every one is a shareholder, well, people tend to treat their neighbors better than people you don't know."

Trust. Tiers of trust. This is that story: Associated Electric Cooperative 1996-2011.

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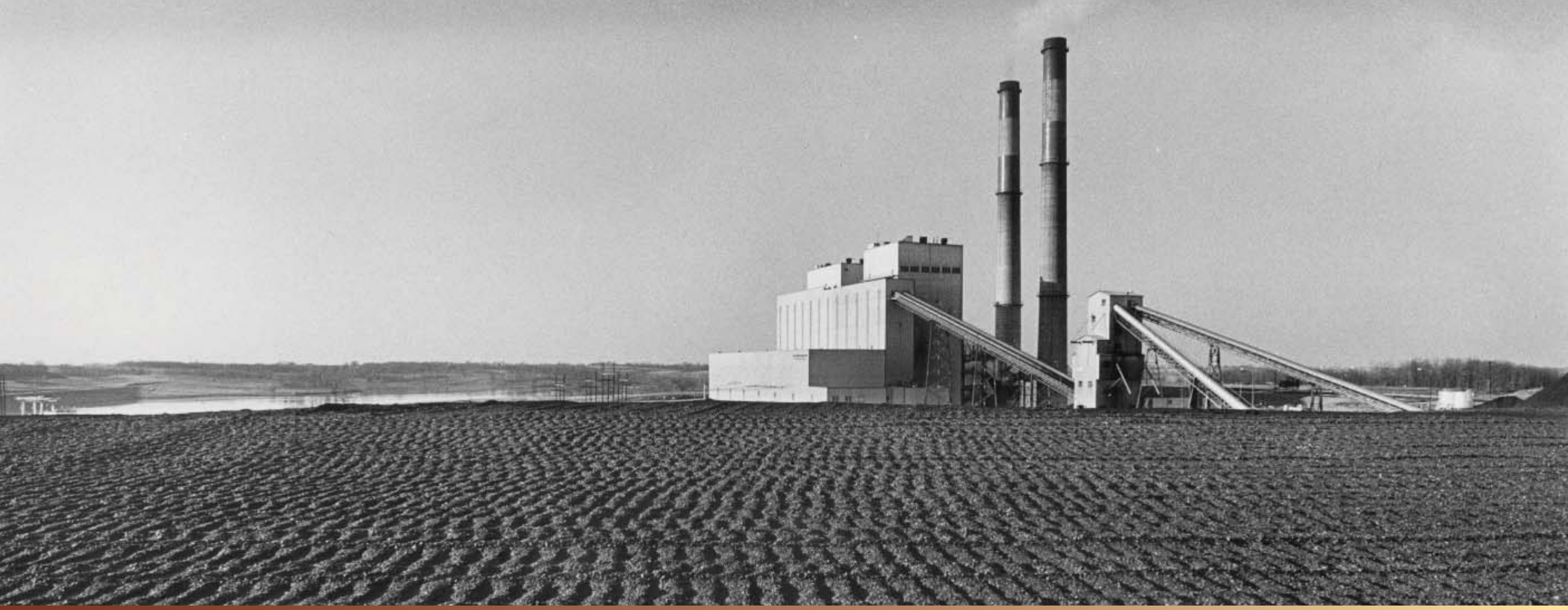


Power through progress and progress through power ... a win-win

The formation of a new generation and transmission cooperative in February 1961 was not unique, but its structure was. Nowhere else was there a three-tiered system of distribution cooperatives owning G&T cooperatives owning a super G&T. Associated Electric Cooperative Inc. in Springfield, Mo., was the first.

It happened because rural Midwesterners needed low-cost electricity, and the Southwestern Power Administration had plenty of it. Associated was formed, with a nod of support from neighboring investor-owned utilities that also wanted some of that electricity, to bring that affordable hydropower to the homes of member-owners. The leaders responsible for molding Associated were focused on bringing light and modern conveniences into the homes of rural families. But in the process they also created an organization that would stand out in the power industry, particularly among cooperatives.

The early years were tough. Initially, there were no assets. Finding millions of dollars to build plants and lines was not easy but was risky. There were territorial power struggles within the boardroom of Associated. Colorful and forceful G&T managers kept the interests of their G&T members in the forefront, especially during initial discussions of power plant construction locations and relinquishing control of existing generation facilities.

Other influential personalities included its three board presidents: John Buck, Rudie Slaughter and O.B. Clark. Neil Adams and Gerry Diddle, Associated's general

By the time this photo was taken in 1971, Associated had constructed its first two coal units totaling 483 megawatts at the Thomas Hill Energy Center to meet members' energy needs. Photo courtesy of the Association of Missouri Electric Cooperatives (AMEC).

Neil Adams, former Associated general manager.

managers in its early decades, were others. Another was Jim McNabb, Associated's first chief engineer and the man who envisioned and created one of the most integrated high-voltage transmission systems of its time. They and many other staff members, board members and advisors slowly, sometimes painfully, built a company of trust, cooperation and collaboration. "Win-Win," Associated's chronicle of its first 35 years, describes those dynamics.

Associated got its start in the high-voltage 1960s. During that decade, Americans mourned the assassination of President John Kennedy, the Vietnam War raged, and the civil rights movement swept the nation. Associated got busy building generation and transmission infrastructure and forging critical strategic alliances with neighboring utilities, as well as lenders, suppliers and contractors. Among the early strategic partners were the Rural Electrification Administration (now the Rural Utilities Service), Tennessee Valley Authority, Union Electric Co. of Missouri (now Ameren Missouri), Public Service Co. of Oklahoma (now part of American Electric Power), Middle-South Utilities (now Entergy Corp.) and the Southwestern Power Administration.

In 1965, Associated constructed its first transmission line, a 1.5-mile connection between the Idalia substation and Stoddard in southeast Missouri that tied the M&A Electric Power Cooperative system to Union Electric Co.'s upgraded 161-kilovolt line. Though short, the line improved reliability and demonstrated how Associated could work with neighboring utilities to benefit both systems.

Associated became much more than a transmission cooperative during that period, however. On the generation side, the construction of Thomas Hill Power Plant in north-central Missouri in 1966, and then the addition of the power plant's Unit 2 in 1969 and Unit 3 in 1982, became an anchor for the future growth of Associated's generation assets.

Down in southeast Missouri, Associated and regional political interests clinched a deal in 1968 to bring Noranda Aluminum, a large Canada-based aluminum smelting company, to southeast Missouri. The company needed electricity – a lot of it. New Madrid Power Plant was the solution, and any excess electricity could be sold to neighboring utilities. The plant went on line in 1972. Together, it and Noranda brought much-needed jobs to that region.

Baby boomers surged into the 1970s' workforce. The Vietnam War ended, and President Richard Nixon resigned. The nation celebrated its bicentennial. The Organization of Petroleum Exporting Countries orchestrated an energy crisis. The Clean Air Act became law.

In the cooperative world, members' energy needs soared from 1970 to 1978 – as high as a 12 percent increase in 1970, 14 percent in 1972 and nearly 13 percent in 1975. Demand rose by double digits those years too. To build more units and add more line, Associated had to borrow heavily, in the process developing a reputation of solid and strategic business decision-making. It became a business that other cooperatives, utilities and related businesses wanted to partner and work with.

In 1970, one of Associated's biggest transmission projects began – a 345-kV, 350-mile transmission line from Tulsa to St. Louis that became the backbone of its network. That was the first of four big out-of-state transmission lines and ties that secured Associated's place as a super G&T within the Midwest.

As related in "Win-Win," some leaders within the industry said Associated, with its transmission network, was the envy of the Midwest. The construction of critical transmission lines, interconnections and the establishment of strategic partnerships with neighboring utilities and agencies continued into the 1970s and beyond.

High inflation and interest rates made procuring affordable financing for new projects more challenging. The Rural Electrification Administration, the federal lending agency for electric and telephone cooperatives, also had first lien on all Associated property it had financed. That was likely to hamper financing the construction of a proposed second unit at New Madrid. Associated took the creative approach, forming a sister company, Federated, to

secure financing without REA. Ultimately Federated was not needed and was dissolved. New Madrid Unit 2 came on line in June 1977.

In 1974, Associated partnered with Public Service Co. of Oklahoma to build the Black Fox Nuclear Project. After the Three Mile Island incident in 1979, the project was stopped, leaving a $120 million loss for Associated.

While nuclear was not in the mix, Associated did diversify its generation fuel mix with the addition of two 22.5-megawatt oil turbine peaking units. The Unionville Power Plant came on line in 1977 following a fire that caused extensive damage to the coal-fired Missouri City Generating Station owned by NW Electric Power Cooperative.

About the same time, Associated expanded its New Madrid plant with a second unit in 1977. It also acquired Bee Veer and Prairie Hill coal mines near Thomas Hill and began the daunting task of upgrading them, to the tune of millions of dollars. In the late 1980s, Associated purchased a third mine, NEMO, located near the same area.

The 1980s began with the eruption of Mount St. Helens. An assassination attempt on President Ronald Reagan failed. The Berlin Wall and the Soviet Union collapsed. At Associated, growth slowed in the late 1970s and early 1980s but picked up again during the second Reagan administration. Associated added a third Thomas Hill unit. The cooperative learned the mining business and continued to build critical transmission lines. Associated negotiated a beneficial new contract with SWPA in 1981, lasting for 20 years. In 1984, Clarence Cannon Dam went on line in Northeast Missouri Electric Power Cooperative territory. First conceived in the 1960s, the 58-MW peaking hydropower plant on Mark Twain Lake was built by the U.S. Army Corps of Engineers and operated by SWPA, with Associated transmitting the hydropower over its system.

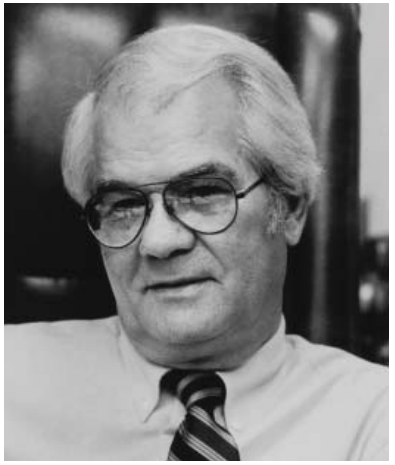
The 1990s began with a war in the Persian Gulf and a new U.S. president. Congress passed amendments to the Clean Air Act, and energy companies like Enron began pushing for wholesale deregulation of transmission. At Associated, Gerry Diddle handed the leadership baton in 1991 to Jim Jura. Construction was completed on another major "backbone" transmission line, the 101-mile Missouri-Iowa-Nebraska-Transmission (MINT) Agreement. In mid-1993, a long-anticipated 161-kV line spanned the Mississippi River from New Madrid to Tiptonville, Tenn., connecting Associated to TVA. Overall growth accelerated after a slight dip during the first Bush administration.

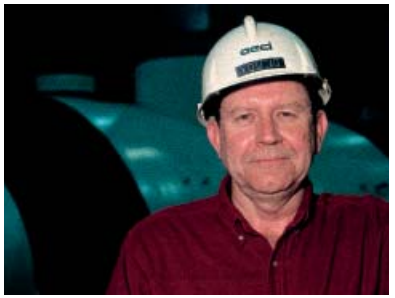
The effects of the Clean Air Act Amendments rippled through the system. As this "decade of the environment" unfolded, new regulations meant Associated had to find a way to cut sulfur dioxide emissions. Converting to low-sulfur Wyoming coal from high-sulfur coal at Thomas Hill and from Illinois coal at New Madrid by 1995 helped cut the SO_2 emissions, but the downside was closing Prairie Hill Coal Mine in 1993 and terminating 330 employees, members of United Mine Workers of America. Laid-off miners and their families owed a great deal of gratitude to local UMWA President John Bruno. Described as level-headed and, most of all, fair-minded, Bruno grasped the mine's disadvantageous economic realities. His pragmatism helped negotiate the severance packages the board was prepared to deliver.

Over time, about 425 employees involved in mining operations lost their jobs. Association of Missouri Electric Cooperatives offered its support during the mine closing process by helping communicate with members about the difficult mine issues through an insert in AMEC's statewide Rural Missouri publication.

CEO Jim Jura initiated Associated's Excel Employee Recognition Program in 1993, providing a way for employees to nominate and recognize peers who excelled in their jobs and communities.

Employee excellence: Learning to burn low-sulfur coal was no easy task. Employees rallied to the challenges, excelling year after year in solving problems and improving efficiency. Billy Young, operations superintendent at New Madrid Power Plant, helped pull together diverse work groups in 1996 to address some of the conversion problems, earning an Excel award in the process. On Sept. 12, 1996, the plant's Unit 2 set an all-time continuous run record of 2,814 hours.

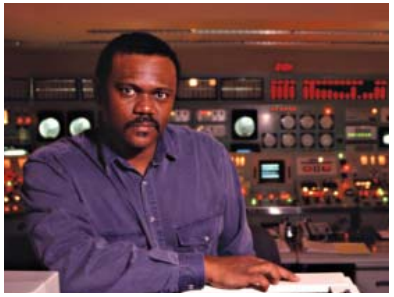




From top: Gerry Diddle, former Associated general manager;

John Bruno, former Associated mine employee and local UMWA president; and

Billy Young, former operations superintendent at New Madrid Power Plant.



Clockwise from top left: Joe Hicks, Power Production staff;

construction of rotary car dumper in July 1994 at Thomas Hill Energy Center is part of $200 million conversion to low-sulfur coal at both coal plants; and

construction of a tower for 161-kV transmission line across the Mississippi River in 1993 connects Associated and the Tennessee Valley Authority.

Joe Hicks, a control room operator at Thomas Hill Energy Center in 1996, was another. Burning the new coal resulted in high reheat temperatures that reduced Unit 3's efficiency. Hicks methodically researched and experimented to find a more effective way to operate water lances to satisfactorily reduce temperatures. As a result, the unit doubled the length of time it could operate without a load reduction.

By the end of 1995, Associated was indeed a super G&T. Its generation mix was coal and hydropower, as well as purchased power contracts with Entergy. The transmission lines of Associated and the six G&Ts traversed nearly 8,000 miles. Some 543,000 members in two states were accustomed to low-cost, reliable electricity. The names and faces of Associated's leaders were known throughout the cooperative world, among investor-owned utilities and energy companies, in the halls of Congress and on Wall Street. The uneasy alliance of the G&Ts in 1961 was now a solid union ever mindful of end-of-the-line users.

Over 35 years, Associated mastered the art of win-win, making the best of events out of its control, seeking fairness, doing the right thing, always striving for benefits to member-owners. That colorful, fast-paced, exceptional story of Associated's first 35 years is detailed in "Win-Win." This book, "Tiers of Trust," picks up the history in 1996.

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Taking stock

It was a very good year. By the end of 1996, Associated had just arranged to enter the natural gas business, had its first power marketer working on day-ahead transactions and had entered a whole new world of financing options beginning with the New York bond markets. Members were beginning to benefit from Associated's 17 percent wholesale rate drop – a benefit of the painful mine closing in 1993.

Enron was flexing its muscles. It had influenced passage of the Energy Policy Act of 1992. Now, in 1996, as the Federal Energy Regulatory Commission's Order 888 opened up the transmission lines of investor-owned utilities, Enron would try to bully utilities, including Associated, into energy deals. How would Associated's response to these overtures – and to the opportunities created by Order 888 if Associated chose to open its own prized transmission system – affect the three-tiered system?

A 1996 snapshot

Entering 1996, Associated boasted of being the second lowest-cost wholesale G&T provider, reporting 2.7 cents per kilowatt-hour with 10 million megawatt-hour member sales.

Power marketing was sweeping through the utility industry, whose transmission lines were now open to virtually all. Marketers made agreements to buy and sell power with a number of utilities that would become trading partners. Among them were Duke Power Corp., the

Associated donated 117 acres from its NEMO mine in 1999 for a cemetery to meet the needs of veterans and their families in north-central Missouri, where Associated operates Thomas Hill Energy Center. Located in north Randolph County, yet close to Macon County, the Missouri Veterans Cemetery at Jacksonville began offering interment services in 2003. The cemetery was built under the guidelines of Missouri House Bill 832, crafted in 1996, and state legislators credited Associated board member Don McQuitty as being instrumental in accomplishing the Jacksonville veterans cemetery.

From top: Bernie Nichols, Power Production staff; and

Angie Vire, former Associated employee.

Southern Companies and Oklahoma Gas and Electric. These interchange agreements opened up additional markets for Associated extending to the Atlantic seaboard.

New records were set: Outage rates at Thomas Hill Energy Center and New Madrid Power Plant hit an all-time low, falling below the industry average of nearly 5 percent. And the winter of 1995-1996 saw a new all-time peak of 2,844 megawatts in February. Unlike some utilities, Associated proved through the years it had both winter and summer peaks.

Associated's economic development department introduced programs to promote energy audits at the distribution level, provide training to handle and keep key accounts and assist with funding community development foundations.

A television campaign reminded rural consumers of what they had: not just low rates but distribution cooperatives with state-of-the-art technology and professional service better than anyone else.

Associated launched its first website as a tool to improve communication with members.

A companywide efficiency improvement plan continued in its second year and involved employees in identifying areas for cutting costs and improving performance. It was a program CEO Jim Jura would use to light a fire in a corporate culture complacent with the status quo for too long. He understood that the new shockingly competitive world of wholesale and retail energy marketing would require a different paradigm among the old staid utilities.

Employee excellence: Bernie Nichols, an instrumentation technician at Thomas Hill Energy Center in 1996, was one of many Associated employees who embraced the efficiency initiative. He contributed by revitalizing the plant's safety committee and joining the plant's benchmarking team. Another was Angie Vire, administrative assistant to Jim Jura, who helped streamline budgeting methods through a budget process review team.

Kilowatt-hour sales kept growing among all the G&Ts. Sho-Me Power Electric Cooperative at 2.9 billion kWh, Central Electric Power Cooperative at 2.3 billion and KAMO Power at nearly 2 billion were the fastest growing G&Ts, reflecting the demographics of the region, with rural farming counties in the north generally losing population to urban clusters, lake country and southwest Missouri. Ten years later in 2006, all the G&Ts had grown their kilowatt-hour sales, with KAMO the largest at 5.8 billion, Sho-Me at nearly 4 billion and Central at 3.3 billion. KAMO's growth was in part due to the addition of the nine Oklahoma distribution cooperatives admitted to Associated in July 1998. In spite of the different loads and growth rates among the G&Ts, they continued to "stick together" in bearing the costs of additional infrastructure needed by the larger G&Ts.

Ralph Shaw, who represented Northeast Missouri Electric Power Cooperative on the Associated board from 1979 to 2004, expressed this "we're all in this together" sentiment. "Our common cause of providing low-cost, reliable power for rural areas carried on through [all the discussions and differences]. You knew it was there. You knew who was paying you," he said.

Associated and its six owner G&Ts' vast high-voltage transmission system boasted 5,573 miles of 69-kilovolt lines, 11 miles of 138-kV lines, 1,646 miles of 161-kV lines, 65.3 miles of 345-kV lines and 46 miles of 500-kV lines.

Jim Jura began his fifth year as general manager. Division directors were largely the old guard inherited from Gerry Diddle: Jim McNabb, now special assistant to the general manager; Gary Fulks, replacing McNabb in Engineering and Operations; Wes Ohrenberg, Accounting and Finance; Dave Stump, Human Resources; Max Cates, Marketing/Communications; and Bruce Stone, Power Production. Operating revenue increased 20 percent to an all-time high of $556 million compared to $464 million in 1995 – even with an average 17 percent rate cut that took effect in calendar year 1995.

O.B. Clark continued his tenure as board president, serving at the beginning of 1996 with Don Shaw, Central Electric Power Cooperative; Gary Voigt and

Arthur Carrier, KAMO Power; Bob Stagner and James Abernathy, M&A Electric Power Cooperative; Ralph Shaw and Maurice Happel, Northeast Missouri Electric Power Cooperative; Richard Arnold and James Steele, NW Electric Power Cooperative; and John Davis and Jerry Divin, Sho-Me Power Electric Cooperative.

Anchoring the generation fleet were the 1,200-MW New Madrid Power Plant, a 1,153-MW Thomas Hill Energy Center, two 22.5-MW oil-fired turbine generators in Unionville and Central Electric Power Cooperative's 68-MW Chamois Power Plant. The 1981 contract with Southwestern Power Administration provided as much as 519 MW of hydroelectric peaking power. Purchased-power contracts were another important supply source.

Six G&Ts, 40 distribution cooperatives in Missouri and three in southeast Iowa served nearly 543,000 members.

More than 600 employees worked at Headquarters, Thomas Hill Energy Center and New Madrid Power Plant.

Squeeze play: the heavy hand of government

Two pieces of federal legislation from the early 1990s shaped Associated's course in 1996 and beyond.

First, the 1990 Clean Air Act Amendments expanded the authority of the federal government and the Environmental Protection Agency over air quality, setting controls on 189 pollutants, including sulfur dioxide. Because of CAAA's severe limits on SO_2 emissions by 1995, Associated was faced with a choice: spend hundreds of millions to add scrubbers to its coal-fired units or switch to low-sulfur coal from the Powder River Basin of Wyoming. Fortunately, Associated had a good relationship with Peabody Coal, now Peabody Energy, and a contract that said Peabody had to supply "coal suitable to burn." For Associated that meant low-sulfur coal from the Powder River Basin.

The painful decision to close the Prairie Hill Coal Mine and terminate 330 employees belonging to the United Mine Workers of America was still fresh in 1996. The $200 million Associated spent in plant modifications to successfully burn low-sulfur coal and the additional $342 million to close the mine still hurt. But the human drama of the miners and their communities was only part of the story, albeit the one in the headlines. By ridding itself of high-cost mining, Associated was able to save its G&T owners about $60 million a year in fuel costs. Members also reaped the benefits for years of a favorable purchase agreement with Peabody Coal and rail transportation agreements with what are now BNSF Railroad and Union Pacific Railroad. Closing the mines contributed to a 17 percent reduction in Associated's wholesale rate to the G&Ts that took effect in 1995 and allowed Associated to avoid an increase in its wholesale power supply rate for years to come.

The human drama of the miners and their communities was only part of the story, albeit the one in the headlines.

CAAA was the first of the decade's legislative mandates to have far-reaching consequences for Associated. More was in store. The second heavy hand of federal legislation was the Energy Policy Act of 1992, which essentially deregulated the wholesale market. The act created a new breed of wholesale power marketers exempt from the Federal Power Act of 1935 and its regulations. Anybody with enough money – and Enron and other energy marketing companies had plenty of it – could buy generation and sell into the wholesale market. The only problem was the transmission system still functioned like a natural monopoly. Money to buy power might be in hand, but without access to transmission, there was no way to move the juice.

That would change in 1996 as the Energy Policy Act of 1992 paved the way for the Federal Energy Regulatory Commission's Order 888, a regulation that changed how utilities did business. Order 888 mandated the unbundling of electric services and the separation of utilities' marketing functions from their own system operations. While initially opposed by many utilities, Order 888 created

From top: Faced with the challenge of complying with 1990 Clean Air Act Amendments, Associated held public involvement meetings, inviting participation and opinions of Associated employees, union representatives, community and business leaders and member-consumers; and

Ralph Shaw, former Associated board member.

From top: Thomas Hill Energy Center, late 1990s; and

Rod Rupert, Power Production staff.

enormous opportunities that Associated quickly moved to take advantage of.

Employee excellence: Rod Rupert at Headquarters was one employee who helped Associated meet CAAA requirements. Considered an emissions monitoring expert, he applied his technical knowledge of continuous emissions monitoring and applicable regulations to complex projects such as installing monitoring equipment at the Thomas Hill, New Madrid and Chamois power plants.

Landmark initiatives define 1996

CAAA and the Energy Policy Act represented the long hand of Uncle Sam squeezing hard on the heart of Associated's generation plants and its transmission arteries. Associated made the best of these changes, and in other arenas, the cooperative boldly took the reins of change in hand. Entering the natural gas marketplace, establishing credit with the New York bond rating agencies and upgrading power marketing were three such landmark initiatives. Here are the highlights.

#1: A new generation addition: gas

In the gas boom days of the late 1990s, the Energy Information Administration projected that by 2010, gas-fired generation by utilities would overtake nuclear power as the nation's second largest source of electricity, with coal remaining the largest. In 1996, Associated made its first move into the new arena. Looking at the national trend toward gas, the resource planning department predicted Associated would have its own gas plant by 1999. Such a move would reduce the need for Associated's 1,000-MW purchased-power contract with what is now Entergy Power Corp. Some of that Entergy power went to meet baseload, but about half was turned around and sold. With growing member demand, however, Associated would need all that

> These ratings are especially important when one considers that the electric utility industry is shifting ... to a market-driven system. Associated's approach to management is a prototype for a utility ready to compete in a deregulated market.
>
> – Alen Spen
> Fitch Investors Service LP

power for its own members.

Before the year was out, Associated would indeed be in the gas business, shepherded by a dealmaker from outside Associated, Earl Gjelde. The result would be a fast-track entry into natural gas. In the summer of 1996, Associated partnered with PanEnergy Trading and Market Services LLC to build the 250-MW combined-cycle St. Francis Power Plant, designed by Siemens Energy and completed in 1999. Marketing contracts would reserve 125 MW for Associated's future needs, with the remainder sold on the open market and the profits split between PanEnergy and Associated.

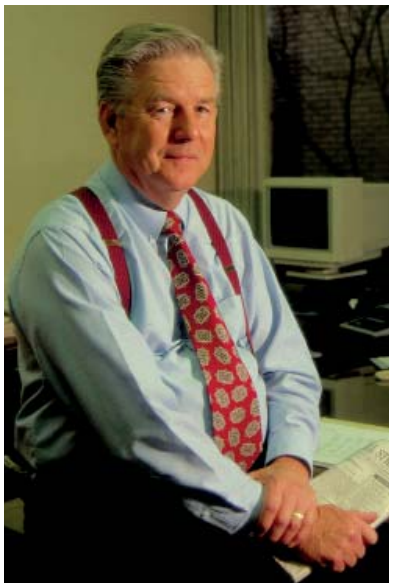
#2: New York, New York: the bond market

Equally strategic in 1996 was Associated's entry into the high-powered world of Wall Street bond ratings. Associated CEO Gerry Diddle actually paved the way in the late 1980s when he initiated an annual trek to New York to the bond rating agencies. Although virtually all of Associated's early financing came from the Rural Electrification Administration, now RUS, it was becoming clear that low-cost REA money might not be available in the future. So Diddle and the board began establishing credit in advance. As early as 1994, Standard & Poor's gave Associated a "whisper rating" of "strong A."

Under CEO Jim Jura, the effort to tell the Associated story to the bond rating agencies became more strategic. In 1996, the real deal occurred when Jura, Clark and Director of Accounting and Finance Wes Ohrenberg made presentations resulting in three high ratings: AA from Standard & Poor's Ratings Service, AA- from Fitch Investors Service LP and A1 from Moody's Investor Service. The result: these ratings allowed Associated to sell bonds in the open market on its own strong credit for the first time in its history.

Specifically, Associated refinanced at a 5.28 percent interest rate some $127 million of pollution control bonds issued in 1984, backed by a guarantee from the National Rural Utilities Cooperative Finance Corp., known as CFC, and carrying an 8.1 percent interest rate. That refinancing promised to save $50 million over the 17-year life of the bonds. Strong credit would be crucial for Associated to pay for enormously expensive environmental controls added to the coal-fired power plants and the costs of building a natural gas fleet.

Speaking as an analyst for Fitch in the 1996 Associated annual report, Alen Spen said, "These ratings are especially important when one considers that the electric utility industry is shifting … to a market-driven system. Associated's approach to management is a prototype for a utility ready to compete in a deregulated market."



Wes Ohrenberg, former Associated director of Accounting and Finance.

From top: Layne Morrill, Associated board member; and

Jim McNabb, former director of Engineering and Operations.

Part of the strategy in telling the Associated story to Wall Street was including board members in the meetings, presentations and discussions. Wall Street financial analysts could see the face of Associated's members and hear their stories from the rural heartland – something they weren't used to.

Board member Layne Morrill, representing White River Valley Electric Cooperative, KAMO Power and Associated, described one grueling trip to the East Coast rating agencies and lenders. It began in Washington, D.C., with a series of meetings with 12 to 15 lenders that lasted seven or eight hours. The next morning at 6 a.m., they boarded a plane for New York City for more back-to-back meetings and then a red-eye flight home. "The representatives [of the agencies and institutions] were not shy about asking questions," he remembered. "… They were perhaps surprised about these cooperative directors who were as knowledgeable as they were about the market and the financial condition of Associated and the G&Ts and the underlying distribution cooperatives."

#3: Putting a face on power marketing

As new energy titans like Enron forced wholesale markets to become more competitive, Associated moved to take advantage of opportunities for more aggressive off-system sales. Historically, Associated's active dispatch marketing operation sold power not needed by members to more than 20 major utilities, most of them neighbors. If a neighboring utility had surplus power, Associated would help find a market for it, buying the power, using its transmission lines to move it and reselling it to a third party. Conversely, Associated would help that same utility when it was in short supply. The dispatchers moved this short-term, hour-by-hour off-system trading, 24 hours a day, and did it very well.

But, as Gary Fulks, who became director of the Engineering and Operations Division in December 1996 and now on the Associated board representing Sho-Me Power Electric Cooperative, said, "Once we saw the development of a competitive wholesale market, we needed to begin developing a separate power marketing group like the Enrons of the world."

Order 888 made it clear that the volume of transactions would dramatically increase under deregulation and open access. Associated would need its own power marketing team to compete with the others. CEO Jim Jura recalled that his new special assistant Jim McNabb – by Jura's own description the person with the most power and influence at Associated – was uncomfortable with the idea at first. After all, Associated was making money from its dispatch sales and getting optimum return for members. And power marketing seemed too much like the trading floor of a stock exchange.

Jim McNabb's eventual endorsement was crucial, and in relatively short order, Associated did move into power marketing, assigning Renee Rigsby-Busiek, the Associated engineer who had proven to have the best understanding of selling on marginal costs, to the role of power marketer.

"Renee had the talent to work with different partners to develop relationships," Jura said. "It used to be generators dealing with generators. Then all these marketers came in as a result of Enron. We used to share and help each other out. Then it got very competitive. But we moved through all that … and Renee is the one who led us through that to new partnerships of trust."

As discussed further in the next chapter, Dennis Wright soon joined power marketing and became its team leader.

So went 1996. Order 888, the decision to build gas generation, entering the bond markets and the rise of power marketing made it a barnstormer of a year to open the last 15 years of Associated's 50-year history. Plenty of industry shakedowns and Associated shake-ups followed.

Clockwise from top left: In the late 1980s, Associated mined the slurry pond at the Bee Veer Mine, an innovative step that earned it a national Excellence in Surface Coal Mining and Reclamation Award;

(sidebar) receiving the U.S. Department of Interior Excellence in Surface Mining and Reclamation Award in 2007 are Associated staff, from left, Jim Rolls and Mike Giovanini, Mining Division; Kim Dickerson, environmental coordinator; Tom Watkins, manager of plant operations; and Duane Highley, director of Power Production; and

the 2007 national award was for Associated's transforming the Bee Veer slurry pond and mine into wetlands, woods and rolling pasture – a testament to its commitment to return land once mined to its original or better condition.

Innovation and reclamation: spinoffs from the mine closing

The closing of the Prairie Hill Mine had its highlights. Though 330 mine workers lost their jobs, member costs dropped, and Associated was able to comply with clean air standards by reducing sulfur dioxide emissions 90 percent. The switch to low-sulfur coal enabled Associated to accumulate more SO_2 allowances than it needed and sell them at a profit.

Employees put in thousands of hours to transition the plants at Thomas Hill and New Madrid to the low-sulfur coal. As a result of their innovation, Associated received the prestigious 1996 Powerplant Award for "successfully implementing the nation's most ambitious conversion to Powder River Basin low-sulfur coal for both environmental compliance and competitive positioning," according to the editorial director of Power magazine.

By 1996, nearly 100 former miners were busy reclaiming former mined land around the Prairie Hill, Bee Veer and NEMO mines. In that year, crews in the Thomas Hill Energy Center Mining Division were beginning to pull up the haul roads used by coal-hauling trucks and draglines and restoring them to county roads or country fields.

Mike Giovanini in the Thomas Hill Mining Division described where Associated was in 2011 and what the Mining Division's seven employees continued to work on. Originally, Associated held nearly 25,000 acres of land for mining. Not all this land was ever mined, but the acres that were mined were largely reclaimed by 2011, including 4,000 acres leased for hay production. Another 7,000 acres of never mined land is leased to farmers for pasture and row crops.

Reclamation involved recapturing unburned coal, cleaning up a slurry lake, removing a coal-washing preparation plant, planting about 2 million trees along waterways and ponds, reseeding, maintaining more than 100 ponds and their spillway pipes and monitoring water quality from 27 waste wells near the old mining pits used to dispose of fly ash and bottom ash. The crew still has about 800 acres around the old Prairie Hill Mine designated as a solid waste area. Its mining pits remain open to collect bottom ash and fly ash from the power plant and will be reclaimed once full.

"One of the things we've been tasked with in reclamation is to leave the land better than we found it, to improve the value of what we have," said Giovanini. An example was planting trees in areas with slopes to prevent erosion. "Now, we've basically switched from reclaiming so many acres a year as required by the law to taking care of what we have."

Giovanini and the Mining Division's legacy included the U.S. Department of Interior Office of Surface Mining's highest award in 2007 for its innovative reclamation of nearly 1,000 acres at the Bee Veer Mine into a mix of wildlife habitat, rolling pasture and wetlands. Also in 2007, Associated received the Kenes C. Bowling National Mine Reclamation Award from the Interstate Mining Commission for its exemplary reclamation of former mine land that exceeded state requirements. The Missouri Department of Natural Resources nominated Associated for this award.

Discussing replacement of the capacitor bank in the switchyard next to Associated's New Madrid Power Plant are, from left, John Farris, Associated board member and general manager of M&A Electric Power Cooperative, which maintains the switchyard; M&A transmission superintendent Elbert Osgood; and Jake Fisher, Associated and M&A board member.

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New Madrid Power Plant, 2009.

Chapter two

Shakedowns, shake-ups

Dynamic. Change focused. Cutting edge. Hardly terms to describe the power industry, right? But, in fact, the industry has always churned with change, and once-small utilities have morphed into powerhouses. Like Associated.

1996 to 2011 were like frontier days in the Old West. Issues, opportunities and events put tremendous pressure on Associated's management and directors to keep in the game as a relevant player, ahead of the game in terms of forecasting and follow-through and ahead of the curve in managing risk. The stories of these industry shakedowns and Associated shake-ups follow.

Enron stirs the pot

Deregulation was the most significant industry shake-down of the period with the widest repercussions for Associated. Because of transmission deregulation, Associated would develop its power marketing team; build a fleet of gas plants and the expertise to manage them; and enter a whole new world of financing.

The single biggest player in opening up the industry to competition was Enron. In effect, during the late 1980s and throughout the 1990s, Enron looked at the national transmission grid and said, let's turn this into a commodities market and make some money. Let's profit from moving energy around this grid. So Enron's very smart, very persuasive people talked Congress and the Federal Energy Regulatory Commission into deregulating first the wholesale natural gas and electricity markets and then the retail

O.B. Clark, former Associated board president.

markets, starting with the Energy Policy Act of 1992.

A February 1996 edition of Associated's employee magazine, Panorama, described Enron as the top natural gas and electricity wholesale marketer in North America. Then, with FERC's Order 888 – fomented by Enron, as CEO Jim Jura put it – Enron began pushing for deregulation of the retail electricity and natural gas markets. Enron's marketing spiel predicted a $300 billion a year market with deregulation of these two areas.

O.B. Clark, longtime Associated board president who retired in June 2009, remembered an invitation to a meeting in Florida hosted by Enron, which was aggressively courting all utilities. "A guy by the name of Skilling [later sent to prison for his financial misdeeds] spoke, and he said, 'We're going to sign up your customers. You might as well join us,'" Clark recalled.

> "We did a lot of business with Enron ... they wanted all the crumbs on the table – a greedy group of arrogant folks."
>
> – Gary Fulks
> Associated board member

Clark and Associated weren't terribly interested at the time in Enron's retail wheeling but recognized "the guy was serious." It was a wake-up call that retail electricity deregulation could be coming. It, of course, did in California, leading to the virtual collapse of the power industry there in 2000 and 2001.

The California crisis emphasized the importance of a cautious approach to deregulation. In 2001, the Missouri General Assembly was studying deregulation and industry restructuring. Frank Stork, general manager of the Association of Missouri Electric Cooperatives at the time, expected investor-owned utilities to push a bill deregulating their generation component. Pitted against them were the rural electric cooperatives that opposed a piecemeal approach to restructuring and deregulation. Eventually, Missouri, as well as Oklahoma and Iowa legislatures, would reject retail energy deregulation.

Gary Fulks, then director of the Engineering and Operations Division, remembered, "We did a lot of business with Enron and made a ton of money off of them – tens of millions of dollars. Thus, they were aware of our success in marketing short-term off-systems sales and continuously tried to encroach on our business. We tried to put several long-term deals together, but none of them were successful because they wanted all the crumbs on the table – a greedy group of arrogant folks."

To counter the industry's growing enthusiasm for retail wheeling, the National Rural Electric Cooperative Association came up with the idea of branding cooperatives under the Touchstone Energy Cooperatives label: keep customers' eyes focused on the good things cooperatives were doing for them so they wouldn't be tempted to look around for a new supplier. Associated signed on early as a regional partner in the endeavor, thus making it more affordable for the G&Ts and distribution cooperatives to join Touchstone if they chose.

Looking back on the power days of Enron, Jura remarked, "Enron came into the industry and had a political strategy that was very sophisticated. They went to state PUCs [public utility commissions] and local and state governments and started getting things changed by promoting the idea that large systems that had both generation and transmission would control the cost, and opening up the transmission would drive prices down and be much better for customers. … It became political very fast. It all sounded so good. But now that bell has rung, and the industry will never be the same."

Though Enron disappeared, the arm of FERC got longer. The power industry landscape would change in the first decade of the 21st century, populated by power marketing groups and regional transmission organizations. Utilities got bigger. And the layers of regulatory bureaucracy and control over generation and transmission assets increased as utilities flocked to the new RTOs. The Southwest Power Pool, for example, had about 15 member organizations in 1997. By 2011, it had 62 in nine states.

Meanwhile, Associated studied the options in the new competitive markets and deliberated. Its planners and strategists perhaps did a little crystal-ball gazing. The result was something different, an approach that so far has kept Associated in the game and as independent as possible for the benefit of its members.

As Jura recalled, "Political and economic forces were used to try to starve us into joining an RTO." But Associated resisted. As a member of SPP, Associated watched that entity move in the RTO direction – and chose not to participate. On Oct. 31, 1997, Associated gave notice to SPP that it was withdrawing, along with Entergy Power Corp., the utility tightly interconnected with Associated and its source for backup reserves. At the same time, it announced its plan to join the Southeastern Electric Reliability Council, later renamed SERC Reliability Corp.

"Leaving the Southwest Power Pool was difficult for me when we did it," Jura reflected. "I was chairman of the board. It occurred in the days when Enron was very active. Enron had placed very competent people on these boards, but the whole emphasis was to change the policy of Southwest Power Pool to become more commercial. We wanted the emphasis to remain on reliability. I remember the meeting. All the other transmission-dependent people voted for it. We didn't.

"Some thought utilities needed to be big and have big balance sheets. Some G&Ts and many investor-owned utilities focused on getting bigger. In our case, we took a different approach," said Jura. "We decided we didn't need that. We could play in the markets, too, if we had good transmission and generation, a strong and flexible financial position and an ability to move quickly.

"… So we have been careful about how we have grown our system. We're not in an organized RTO, and it has served us well. … We proved we don't have to be big to reach markets if we have low costs, a strong and flexible financial position and strategic relationships with our counterparties."

Associated jumps in the market hot pot

One of the results of deregulation was the growth of power marketing. In the "old days," dispatchers did all the off-system buying and selling for Associated, making millions of dollars that helped Associated avoid rate increases for its members.

As Jim McNabb, director of the Engineering and Operations Division at the time, put it, "We sold an awful lot of power. … We'd buy from a neighboring investor-owned utility to the north and sell to a neighbor to the south. This was big business for us and had been all along."

FERC's Order 888 of April 1996 changed all that. Marketers augmented traditional trading partners, the volume of transactions grew, and a vast new market opened up. Order 888 required public utilities to make excess capacity on their transmission systems available to one and all for the same fee on a first-come, first-served basis. Though Associated was not under FERC's jurisdiction, a year later it decided to act as if it were and entered the new marketing game by opening up its transmission system.

The unbundling process began by reorganizing Engineering and Operations to separate transmission from power marketing. "We needed someone to deal with the market. Renee Rigsby-Busiek was a transmission engineer but was persuaded – and it took some persuasion – to put her into this area. She developed a market relationship with the so-called energy traders," recalled McNabb.

In the reorganized division, the transmission group began scheduling all power movement over Associated's lines, in effect renting the excess capacity in its

Gary Fulks, Associated board member and former director of Engineering and Operations at Associated.

"... We proved we don't have to be big to reach markets if we have low costs, a strong and flexible financial position and strategic relationships with our counterparties."

– Jim Jura
Associated's CEO

Clockwise from top: The simple-cycle Essex Power Plant;

combined-cycle Chouteau Power Plant; and

simple-cycle Nodaway Power Plant all came on line between 1999 and 2000, adding 811 megawatts of gas generation.

transmission lines. This included renting to Associated's power marketers, who were buying and selling excess power. The power marketers could reserve transmission space for their transactions, paying the same market-based transmission fee every other marketer was paying.

The new rules forbade any insider-sharing between Associated's transmission folks and the power marketers. To ensure everyone got the same information at the same time, dispatchers, now system operators, put available transmission capacity on the Internet through FERC's Open Access Same-Time Information System. OASIS allowed energy to be scheduled across multiple power systems. Now, power transactions could literally travel across the continent from point to point.

Power marketing was one of the responsibilities of David McNabb, Jim McNabb's son, who joined Associated in 1997 as manager of resource planning and operations. He remembered that the goal was to maximize the value of all Associated's assets, both generation and transmission, to lower member costs. The power marketers didn't have much time to get up to speed.

"The market got more predatory. … Marketers would come in and would try to nail you to the wall. … We had to learn how to handle these risks and exactly how to deal

with these types of people," David McNabb recalled.

"The credit risk became a much bigger factor. Can these people pay the bill?" He explained that some of the new marketing companies didn't own a single asset, yet could buy transmission service and control the markets. "You couldn't call someone at Enron and say you were in trouble. They were glad to hear you were in trouble. It was cutthroat."

Prices soared in 1999. In late July the power marketers saw spot market energy prices climb to $4,000 per MWh ($4 per kilowatt-hour). The addition of more than 500 MW of gas generation at Nodaway, Essex and St. Francis allowed Associated to bypass the market hot spots, saving about $10 million in reduced summer energy costs.

Prices went through the roof again in 2000, soaring to more than $2,000 a MWh on one hot spring day. Normal prices per MWh ranged from $20 to $50, with $100 the "bogey" for emergencies, according to Rigsby-Busiek. This time, though, backup reserves from other utilities weren't there. "We were trading 20 times the bogey, and numbers 40 and 50 times were being thrown around," she added. She remembered an emergency conference call with the board. "We needed guidance because we were committing the company to a lot of money. There wasn't time to get them all there. The guidance we got was to pay what it took to be a reliable power supplier. It affirmed support for our mission. But it was extremely stressful."

In spite of Order 888's initial rocky road, deregulation turned out to be a good thing for Associated. The result: millions and millions of dollars from power marketers selling Associated's excess low-cost coal power and system operators moving it through the Associated grid to buyers primarily in the South.

The electric power industry's new deregulated open market offered opportunities hard to ignore. That was the case for KAMO Power, one of Associated's G&T owners, when it went looking for a new power supplier for its Oklahoma cooperatives.

The rise of power marketing: through the eyes of Renee Rigsby-Busiek

"We could play in the markets, too, if we had good transmission and generation, a strong and flexible financial position and an ability to move quickly."

– Jim Jura
Associated's CEO

For decades, Associated's dispatchers sold surplus generation to neighboring utilities sealed with friendly, almost handshake-type contracts. They would routinely do split-savings type deals in which Associated might sell its less expensive generation to a utility whose generation was more expensive. Associated would make some money, which helped keep members' costs lower. The other utility would save some money. A win-win for all.

With the Energy Policy Act of 1992 and later Order 888, deregulation of transmission opened up the wholesale energy markets, creating opportunities for vast new deals. A new breed, the power marketer, appeared as the Enrons of the world began greedily gobbling up all the crumbs on the table. And so, in due course, it was apparent Associated needed its own power marketers. The early face of power marketing at Associated became Renee Rigsby-Busiek, an electrical engineer who joined Associated in 1991 by way of the University of Missouri-Rolla, now Missouri University of Science and Technology.

Part of her job in resource planning, she remembered, was to market that surplus generation that dispatchers had been doing at Associated for years.

"There wasn't a line where one day I was an engineer and the next I was in marketing. As an engineer, my first assignment for every day was to report to the dispatch center and to review operations. At some point in there [the early and mid-1990s] we had done some monthly deals, and some of us were doing some daily deals. I was told to see what I could do. And so I set up an Excel spreadsheet and began tracking purchases and sales that I made for our system. It was not envisioned to become a full-time job. I just was to spend a couple of hours a day doing it," she said.

Rigsby-Busiek had an office on the engineering third floor, and she floated between it and dispatch in the basement. But by "seeing what she could do," Associated discovered she could do a lot. In 1996, she became a full-time marketer in charge of short-term transactions. Later, Dennis Wright handled monthly and other long-term transactions and ran the power marketing team. Eventually, power marketing formally split from dispatch, now known as system operations, and the staffing gradually grew to 11 people working 12-hour shifts 24/7.

"So I started as an engineer and was told to see what I could do with marketing energy. I discovered I enjoyed it, was successful and helped our member-owners benefit from that significantly," Rigsby-Busiek said.

"Significantly" was an understatement. Over the next 15 years, Associated's members would benefit from billions of dollars of sales of surplus energy, enjoying some of the lowest electricity rates in the country. Sales would range from $230 million to $500 million a year.

Renee Rigsby-Busiek explains power marketing operations to Missouri Gov. Jay Nixon during a tour of Associated's Headquarters in 2009.

The rise of power marketing, continued

Rigsby-Busiek helped set the pace. Little wonder that Fulks described her as "the premier power marketer of the Midwest," based on comments by her peers in the industry.

Initially, all the trading was done on the phone. "I knew Associated's position, what units were available and approximately what our load was and so knew whether we were long or short. I would pick up the phone and call different counterparties and find out what their positions were and begin to put the pieces of the puzzle together. ... That Excel sheet I developed was a pretty crude tool to track who I had called and what I had done, and it became the documentation for the transactions," she said.

By the late 1990s, Rigsby-Busiek's job was made easier with electronic tagging, an electronic version of her simple spreadsheet that showed who generated megawatts and documented the transfer of ownership to different parties to the end user. In 1998, power marketing's technology advanced further with SPARX, an in-house tool developed to track deals, allow multiple people to use it simultaneously and show how much Associated owed from purchases and earned from sales.

Another change defining the job was the separation between power marketing and system operations. Though Associated was not under FERC's jurisdiction, which forbade any kind of insider trading of information between the old dispatchers and the new power marketers, "We did play it honest," Rigsby-Busiek said firmly. "We were always honest about not exchanging information." But it was not unusual for the two teams to eat lunch together. That later changed when new internal controls physically separated the two groups.

Associated's power marketers were honor bound to remember the members at the end of the line, who always received the lowest-cost power first. Sales were structured to avoid any negative impact on members. Because power marketers at Associated were not commissioned but salaried, they had no incentive to make short-term decisions that had long-term negative consequences. "Our whole philosophy is to support the vision and mission of providing reliable, low-cost service to our members," Rigsby-Busiek said. "It's a different philosophy than power marketers for investor-owned utilities. We really do work for our member-owners, and that is at the forefront of what we do down here."

KAMO joins the family

You might say the stars were perfectly aligned in 1997. Looking back on the process of admitting KAMO Power's nine Oklahoma cooperatives into the Associated system (its eight Missouri cooperatives were already served by Associated), some serendipity was certainly at work. Not that it felt that way at the time to key players like KAMO's executive vice president and CEO Chris Cariker toiling in the trenches of the process. In 1996, Cariker had just joined the Associated board but already had a dream of uniting all of KAMO under the Associated umbrella. And certainly Associated's management was ready to explore the possibility: having made the decision to develop gas generation, it would eventually have more capacity.

But how to pull it off?

"Being young and new to the board, my dream was to try to become part of the entire Associated family," Cariker said, admitting that the Oklahoma cooperatives really didn't know much about Associated, himself included. But they knew power from Associated was about 20 percent cheaper than the rates they were paying to the Grand River Dam Authority. In fact, as GRDA's highest-cost customer, KAMO simply couldn't continue ignoring the gap in costs between its Oklahoma and Missouri distribution cooperative members. The KAMO board directed Cariker to find alternative sources of power and to phase out purchases from GRDA over several years. So Cariker began to act. Though Associated had been the longtime power supplier for KAMO's Missouri cooperatives, KAMO wasn't prepared to automatically go with Associated. Instead it was going to search for the absolute lowest-cost supplier. That decision would later come close to turning Cariker's dream into a nightmare.

Not that all the Associated board members were very excited about admitting KAMO's Oklahoma co-ops. Some said it would never happen, in fact. And, indeed, as Jura pointed out, the board had rejected the overtures of many

other G&Ts and even one investor-owned utility wanting to join Associated. “During the years, we spent a fair amount of money on due diligence in making decisions on how fast we wanted to grow our system,” he recalled.

Cariker began making the rounds of the utilities. Not knowing that much about Associated, he started by introducing himself to Jura. Cariker found him open, honest and engaging. Then he met Jim McNabb and Gary Fulks of Engineering and Operations and liked what he saw. McNabb and Fulks agreed to run some studies to see how the economics looked. Associated would be obliged to take on the Oklahoma load of 500 MW but would benefit from KAMO’s 198-MW share of GRDA’s low-cost coal generation.

Jura advised Cariker to meet with each Associated board member personally, starting with John Davis, the often intimidating general manager of Sho-Me Power Electric Cooperative. “In those days, the board was all about politics, day in day out. … On my third day on the job, I faced John Davis. He started by saying, ‘What is it you’re here for?’ I replied, ‘I understand that if anything happens in Missouri, it has to come through your door,’” Cariker said.

As it turned out, Davis was receptive to KAMO’s joining Associated. Cariker continued with his rounds, and Fulks and crew began to run the numbers. McNabb jumped in to help facilitate board discussions and lend a hand to Cariker. KAMO’s contract with GRDA was the central problem. To get out of it required 12 months’ notice and payment for KAMO’s share of GRDA’s generation. McNabb – with his formidable negotiating skills and experience – became KAMO’s chief negotiator.

So KAMO backed out of its GRDA contract – without any replacement. Where would the power come from? Having talked with many utilities eager to add KAMO as a customer, Cariker was ready to issue a request for proposal (RFP) to the companies he had been courting and take the best offer. Associated would be one of the utilities approached – but just that, one of a pack.

“We were prepared to go to an RFP to 10 different entities, and we were going to visit each of them. Then, Mr. McNabb, treating me almost like a son, asked me what I was doing. Now, I had been told that if Jim ever asked, ‘Help me to understand how this is going to work,’ then I knew I was about to do something really stupid!” Cariker recalled with a laugh.

“So McNabb said, ‘How’s this going to play out. You’re getting ready to insult the Associated board. You don’t want to do that.’”

Cariker got it. KAMO dropped the RFP idea but still had no tangible plan for moving into Associated. Then a solution surfaced during a road trip from Springfield to KAMO territory. Fulks, Jim McNabb, David McNabb and staff engineer Ted Hilmes were discussing how to get KAMO into the system. Jim McNabb remembered the idea evolving during that car talk.

Fulks explained the final concept, “We used our

From top: GRDA power plant, Pryor, Okla.; and Chris Cariker, Associated board member.

Recognized by KAMO Power in 2007 are, from left, Associated staff David McNabb, Gary Fulks, Ted Hilmes and Jim McNabb.

Cariker grabbed the lifeline and somehow commandeered the votes on his board to accept the Associated offer.

production cost modeling program, made our best-guess assumptions for fuel cost and assumptions for load growth on projected cost of the Associated/KAMO Oklahoma costs. We came up with the net present value of the difference, which was the premium needed to keep the existing members whole. This was about $8.5 million of cash payments and $32.6 million of equity buy-in to be paid for by forgiveness of patronage capital allocations."

Cariker grabbed the lifeline and somehow commandeered the votes on his board to accept the Associated offer. Integration (official in July 1998) would bring 500 MW of new residential, commercial and industrial load to Associated. KAMO's 17 distribution cooperatives, including the nine in Oklahoma, serving 264,000 consumers in 43 counties in southwest Missouri and northeast Oklahoma, were finally under one roof. The new contract would save KAMO's Oklahoma customers more than $200 million over 10 years and would not increase KAMO's Missouri customers' rates. Associated also would gain 198 MW of coal generation by acquiring KAMO's share of GRDA – a very valuable asset, according to Jura.

Looking back, Cariker remembered what a difficult time it was personally. New to the KAMO board and the Associated board, he was handshaking with Associated board members, talking to Enron and other utilities and politicking with KAMO board members. Day to day, there were "some pretty gut-wrenching changes," he said, including watching KAMO's employment drop from 141 to 91 in eight months. But in the end, "It's been a wonderful relationship. Everything promised has happened exactly as planned."

Late in 2009, when KAMO paid the full debt load, making it a full-fledged member of the family, Cariker had a "quiet little celebration."

"It was a great feeling for the KAMO trustees and managers' group to know they had fulfilled an obligation that commenced in 1998. It is more gratifying to know that the original agreement was negotiated in a method that was a 'win-win' for both AECI and KAMO," Cariker said.

Water rights: the 2001 contract with Southwestern Power Administration

During 1996-2010, some old, not-so-satisfactory alliances improved. That was the case with Southwestern Power Administration, whose relationship with Associated was spruced up and revitalized with new contacts and a new contract.

Getting valuable hydroelectric power to rural Missouri was the catalyst that pushed the G&Ts to form Associated in 1961. The original contract between SWPA and the G&Ts predated Associated and was actually directed by the U.S. Congress, which was trying to expand federal hydroelectric projects to serve rural electric cooperatives. From SWPA's perspective, Associated was created to expand the federal system to get electric power delivery into Missouri.

But then, funding ran short to pay for transmission lines and thermal plants vital to the future of delivering affordable, reliable power to rural America. To keep these badly needed projects moving in Missouri, SWPA arranged to give credits on its invoices to the new Associated in return for Associated's building transmission and power plants.

Congress, though, wasn't happy with the arrangement and ended the credits. The 1981 contract between Associated and SWPA addressed the issue by replacing the credits with operational benefits: Associated would get significant control of five, later four federal hydroelectric projects and get more power, which resulted in more electrical power benefits to Associated. It was an advantageous deal for Associated for the next 20 years but one that created mounting conflicts and criticism.

"It was a long-standing bur under Southwestern's saddle," Donald Shaw, CEO and general manager of Central Electric Power Cooperative, said frankly. Shaw for years represented Associated on the Southwestern Power Resources Association Board, an organization of SWPA's customers.

Under the 1981 contract, Associated had significant operational control over federal hydroelectric plants at Table Rock Dam, Bull Shoals Dam, Stockton Dam, Truman Dam and Clarence Cannon Dam – even though those projects were owned and operated by the U.S. Army Corps of Engineers. Later, in 1994, Associated terminated the portion of the contract related to Truman Dam output when the pumpback feature did not develop as envisioned by both parties.

Flood control and recreation were other uses the Corps was required to provide water for. "So the recreational interests were in conflict with the power interests," said Jim McDonald, assistant administrator for corporate operations and chief operating officer for SWPA. The primary issue became the introduction of trout below the two dams at Table Rock and Bull Shoals. Trout need cold water with a certain percentage of dissolved oxygen to thrive. The explosion of commercial agricultural operations and suburban development in the area made things worse by compromising water quality and oxygen levels.

As Associated and SWPA approached the negotiating table in 1996, a lot was at stake. The new contract would have to be lived with from March 1, 2001 to 2016. McDonald, who would be SWPA's chief negotiator, said, "A lot of forces were out there that wanted to take away operational benefits."

Facing him on the Associated side of the table were Gary Fulks and Earl Gjelde, the rainmaker who also facilitated Associated's entry into natural gas generation.

As negotiations got under way, the Corps indicated that if the contract were renewed with Associated's retaining control over the four projects, the Corps would impose significant operation restrictions, restrictions completely unacceptable to Associated. A line in the sand had been drawn.

"So we knew the contract could not be renewed as is," related McDonald. "The basis for going into the negotiations was to place Associated on a system-type sale contract as all SWPA's other customers were on. That way we could balance out the competing needs throughout the entire federal system [of hydroprojects] …"

And that's what SWPA and Associated proceeded to do. In the old contract, Associated had 15-minute scheduling capability, meaning it was required to give only 15 minutes' notice to the projects for a draw on power. In the 2001 contract, that changed to notice on the previous day. "What that did was allow us to take all the schedules and plan the operation throughout the system," said McDonald.

Under the new contract, Associated received 478 MW of capacity and was guaranteed 1,200 full-load hours of peaking energy. Keith Hartner, who joined Associated in 1998 and represented Associated on the SPRA board during this period, explained, "If SWPA didn't have the water, they would have to make up the deficit with market-purchased capacity and energy. It could get shaky in dry years, but in wet years, that hydropower was tremendous."

That 478 MW of low-cost, emissions-free hydropower with its operating flexibility was 478 MW of more

From top: Jim McDonald, Southwestern Power Administration.; and

Don Shaw, Associated board member.

Table Rock Dam in southwest Missouri.

expensive gas that Associated didn't have to burn, he pointed out, to meet growing member load.

Beyond the 2001 contract, other water issues continued to create friction and discord. Hartner, director of Member Services and Corporate Communications, had joined Associated by invitation from Jura. Hartner had worked with Jura at Bonneville Power Administration, the large federal power marketing agency in the northwestern United States and a sister organization to SWPA. Don Shaw on the SPRA board saw the potential advantage of moving Hartner into a power position with SPRA.

"One day at a meeting in Little Rock with the Corps of Engineers, Don said to me, 'You ought to be taking my place on the board because of your Bonneville background,'" Hartner recalled. And so, in due course, Hartner joined the SPRA board, eventually serving as president.

Remembering his early interactions with the Corps, Hartner noted the corporate culture of the Corps simply didn't understand the impact on power generation of taking a main turbine down for maintenance during a high-demand period. As energy powerhouses like Enron pushed up prices, the Corps wasn't changing its practices to account for changes in the marketplace and the dollar value of the water it controlled.

"I knew we had to get a mind change," Hartner said. He would become instrumental in improving relations, primarily by encouraging common-sense communication. "We pointed out that the engineers at Table Rock Dam might benefit from knowing that Bull Shoals had the tools or spare parts they were looking for. Because it was organized like the Army, the communication was always straight up and down and didn't move sideways," he said.

But over time, the conversation Hartner started worked. "The Corps began to understand us, and we to understand them," said Hartner. "It worked out for the best."

Another of Hartner's contributions was an arrangement known as the Jonesboro Agreement. For 50 years, the Corps had always been short of money appropriated by Congress for not only building hydroprojects but for critical maintenance. Planning for maintenance funding for the Corps became an annual lobbying priority for SPRA.

While SWPA could not transfer money directly to the Corps to help with maintenance expenses, an SWPA customer, such as a municipality like Jonesboro, Ark., could. Hartner explained how the new agreement worked, so named for the Arkansas city that first facilitated a flow of funds to the Corps. Basically, Associated and SWPA worked out billing and crediting agreements that made it possible for Associated to send funds to Jonesboro for the purpose of funding a Corps maintenance project.

Hartner also was helpful in negotiating the White River Minimum Flow arrangement. In short, in 2004, the Corps was in the final stages of an agreement with the state of Arkansas about how much water to divert from Beaver, Table Rock, Norfork, Greers Ferry and Bull Shoals lakes for maintaining trout fisheries in the lower White River.

"Of course, the Corps wanted the water to come out of the power pool [portion reserved for power generation], and the power pool people were not willing to give," said Hartner. "They wanted the water for free."

He described the meeting that finally found a workable solution to the dilemma. "One Monday morning there was a meeting about the Corps report at Little Rock with Ted Coombes [SPRA's executive director], two people from Arkansas Electric, me and the Arkansas Fish and Game Commission people. We walked in, sat down and were looking at each other, with no one really saying much.

"The director of the game commission said, 'If there's nothing to talk about, then let's go home.' I didn't drive four hours to be sent home without talking! They had no idea what the people on my side had in mind, so I started talking. I pointed out that their big issue about more water in the White River didn't have to come from all the lakes, just from Bull Shoals and Norfork. The people from the commission sat up in their chairs. I knew I had their interest. And so we worked out a plan for diverting water from those two reservoirs and basically minimized the impact on power."

Hartner coordinated with Coombes who worked with Congressman John Boozman and staff to legislate the solution, providing enough water for power and enough water for fish out of the White River. It became law in the 2006 Energy and Water Development Appropriations Act.

Speaking in 2010, McDonald said, "The Associated and Southwestern relationship is better than it ever has been." He credited Jim Jura with making that happen. "He has staff in place we deal with on a regular basis who have that same philosophy. When you have that, it really improves the working relationship of the staff who then finds those opportunities daily to benefit both systems."

Under the 1981 contract, he explained, any favors to Associated would have been perceived as a detriment by the other competing interests. "We just couldn't do that," McDonald said.

But now that Associated is part of the total SWPA system, when help is needed by either party, arrangements can be made. "That is what Jim Jura has brought to Associated that was missing in the past. To me that's what has changed since 1996. We believe now we have more of a partner in working with Associated than we did in previous years," McDonald said.

Windy proposition results in a "we've never done this before" partnership

Water came first as a renewable energy source. Wind was second. The story of Associated's entry into wind power is described by Fulks as "a perfect storm" that began in 2005. The big money financier was John Deere Credit. The buyer and wholesale supplier was Associated. The transmitter was NW Electric Power Cooperative. The legislative liaison was AMEC. And the rainmaker was Tom Carnahan.

At the time, John Deere was hankering to invest in wind generation and looking for a place to install a bunch of Suzlon Energy wind turbines it had purchased. Carnahan, son of former Missouri Gov. Mel Carnahan, had quit his law firm after becoming interested in wind and the possibility of harvesting wind power in his home state.

Wind maps of the state made it clear: If there were money to be made from wind, it would be in northwest Missouri where the wind blew hardest. In the Associated family, that territory fell within NW's border. It just so happened that its CEO and general manager, Don McQuitty, was a former Missouri state legislator and a friend of the Carnahan family. McQuitty introduced Carnahan to Fulks, whose resource planning studies were used to develop an avoided cost (the marginal or incremental cost to the utility purchasing or generating the power itself) for the expected production from a 50-MW wind farm.

"I was aware Don was running NW, and I gave him a call. I told him we might do a wind project up there, and I think this might work," Carnahan related. "Initially, he was skeptical, as NW had a small wind turbine with Northwest Missouri State University and had tested the proposition of

From top: Keith Hartner, former director of Member Services and Corporate Communications; and

in October 2006, from left, are David A. Drescher, vice president of John Deere Credit, Tom Carnahan, Wind Capital Group, and Associated board President O.B. Clark announcing plans for two more 50-MW wind farms in northwest Missouri.

Bluegrass Ridge Wind Farm in northwest Missouri.

wind and was very skeptical about the numbers. What NW didn't know was that the new wind turbine technology was able to effectively capture wind in an area like northwest Missouri and make it affordable."

From the beginning, Carnahan realized the tremendous advantage NW and Associated had over other utilities he was talking to: transmission. Existing transmission lines were right where the proposed farms would go in. Without those lines and substations, Carnahan's dream would remain just that, an unaffordable pipe dream.

Carnahan remembered the skepticism he initially met everywhere he turned. For example, he said, "I went out in 2005 to a conference of wind energy experts. At dinner, one of the largest wind developers in the world looked at me and said, 'Son, you've got a lot of gumption. There's no way you'll build a project in Missouri.' It was a lot of fun when I saw him at the same conference later and said, 'You must not have heard about rural electric cooperatives.' It was a fun moment for me," he said, to tell the story of how the Missouri cooperatives took a bet on wind.

On the Associated side, there was much to consider as it deliberated buying into Carnahan's windy proposition. Among the factors to think about were surplus capacity of the gas units, Associated's many transmission interconnections, its desire to add more renewables to the generation mix, costs and finally transmission's open access.

Fulks challenged Carnahan to work with John Deere Credit to develop a project that Associated could buy at less than its anticipated avoided cost of production from its gas fleet. Carnahan remembered meeting with the Associated board in fall 2005. In December, the board committed to a 20-year agreement to buy all the power from the first of three wind farms being planned, starting with the 57-MW Bluegrass Ridge Wind Farm near King City. Fifteen months later, Missouri's first utility-scale wind farm, Bluegrass Ridge, was producing power. In rapid order, two additional 50-MW farms, Cow Branch Wind Farm and Conception Wind Farm, were announced and on line by early 2008. And in 2010, a fourth, the 150-MW Lost Creek Wind Farm, became the state's largest wind farm to date.

The initial announcement in 2006 brought huge accolades from Democrats and Republicans alike and recognition for Associated in spring 2007 as Wind Cooperative of the Year. The Missouri Department of Natural Resources nominated Associated for the award from the U.S. Department of Energy.

"My strategy with Associated was, and continues to be, to be open and honest and transparent and to approach everything in the spirit of partners. … So we looked at the opportunities, at the challenges, what do you think about this, and together we can do something that's never been done before! Associated agreed with that proposition and liked the John Deere involvement. The numbers were good, and so the project came together. But it would not have happened without leadership and looking forward," Carnahan said.

Carnahan was a lifelong customer of rural electric cooperatives. Having grown up on a farm outside Rolla, Mo., he had attended cooperative events as a kid. "I didn't understand the way the three-tiered system worked but definitely understood it was a strong system. … When I began talking about the wind deal, my first impression was these are people you can do business with, people you can do a deal with and a handshake with," he said. In those discussions and negotiations, "Associated showed me how to conduct business and transactions in an ethical way, how to form a partnership and how to get a deal. Those lessons will last forever."

Looking back, Carnahan admitted the Wind Capital/Associated relationship has matured a lot. The economics are different now, and the playing field has changed. Now, for example, Wind Capital has plenty of competitors for wind projects.

"We can't take our past relationship for granted. Associated remains a trusted partner, and those first wind farms were a highlight of my professional career. Associated opened its arms and made me part of the family.

"When the history of Associated is written," said

> “... My first impression was these are people you can do business with, people you can do a deal with and a handshake with.”
>
> – Tom Carnahan
> Wind Capital Group

At the dedication of the Bluegrass Ridge Wind Farm in fall 2007, from left, are Tom Carnahan of Wind Capital Group; Chris Bolick, Associated Engineering and Operations staff; and CEO Jim Jura of Associated.

Carnahan, “it will be that the wind decision was one of the most important decisions the board will have made. … The decision to test a hypothesis that wind power could work in Missouri, could benefit the communities and result in a cost-effective generation source and a clean energy source for Associated. I think it was a monumentally important decision.”

Jura, pausing to reflect on Associated’s wind story, said, “Don McQuitty’s working with Tom was a natural. … I have the highest regard for Tom and his accomplishments. It’s a remarkable story of what he put together.” Beyond the obvious renewable energy addition to Associated’s generation mix, “The wind farms were very good projects for us. We acquired a generation resource at a reasonable cost and gained PR and political value as the major wind purchaser in the state. And we made an investment in rural Missouri.”

Mixing in gas

Coal has been king of generation for all of Associated’s 50 years. Granted, from the beginning hydroelectric generation was part of the picture and was the catalyst that led to Associated’s formation. Hydropower contributed 519 MW of peaking power through the SWPA. And, yes, Associated partnered with Public Service Co. of Oklahoma and Western Farmers to plan the Black Fox Nuclear Power Project. Then in 1979, after the Three Mile Island accident quelled nuclear development in the U.S., Associated walked away from nuclear, costing members $120 million. That left Associated back in square one with coal as king, producing virtually all the electricity it generated.

But in the mid-1990s, the new wholesale generators led by Enron began building lower-cost gas-fired generation. The combination of more efficient combustion turbine technology and falling gas prices made gas more economical. The capital costs of building gas plants also were significantly less than for new coal plants and certainly for new nuclear plants. And so the industry began switching to high-efficiency, natural gas-fired combined-cycle units to

St. Francis Power Plant in southeast Missouri.

meet growing demand.

Associated made a deliberate, strategic decision to jump on the gas bandwagon – but the Associated way, minimizing risk and finding the right partners. For one, it didn't know a thing about generating electricity with gas. And it had no long-standing relationships with gas suppliers.

But Jura knew someone who did: Earl Gjelde, the senior executive at Bonneville Power Administration who hired Jura to work in its Washington, D.C., office. Gjelde later was instrumental in seeing Jura promoted to administrator of BPA and his moving to Associated. He remained a mentor. Gjelde worked in other capacities for the federal government, but now he was co-founder of The Summit Energy Group Limited, later known as The Summit Power Group Inc. Summit's other co-founder was Don Hodel, yet another former Bonneville administrator and later U.S. Secretary of Energy and Secretary of Interior. In their positions with Energy and Interior, Hodel and Gjelde had developed relationships with CEOs of all the major power equipment suppliers. Together, the two would open a lot of doors for Associated.

At the time, Hodel recalled, "There was a lot of pressure to use gas as a clean fuel. Gas turbines had dropped significantly in price and improved performance. So gas became a viable alternative to building coal and nuclear, which was almost impossible to build at that time. Gas also had the advantages of price and speed for which a project could be built. A gas plant could be built in three years, a huge difference just in terms of the interest paid during construction.

"Mr. Jura has always been innovative and a cutting-edge kind of leader. He could see what was happening, and he quite wisely decided this was the direction to go," Hodel continued.

In 1996, Summit was in discussions with Jim McNabb, Gary Fulks and Jura on a pump storage project. Aware of the superior gas equipment coming on the market, they discussed the new technology with Associated and how Summit might hook the cooperative up with some of its industry contacts. For example, Summit was helping German-based Siemens Power Systems get a toehold in the U.S. with its new state-of-the-art, highly efficient combined-cycle combustion turbine design.

Gjelde and Hodel also were helping PanEnergy, a major gas transportation company, develop a business plan for transitioning into the electric wholesale generator market. PanEnergy, as it turned out, had gas pipelines running through southeast Missouri, including through Glennonville, Mo., site of the future 250-MW combined-cycle gas turbine St. Francis Power Plant, which eventually expanded to 500 MW. By the time St. Francis went on line in 1999, PanEnergy, which handled more than 15 percent of the natural gas consumed in the United States, had merged with Duke Energy Corp., one of the country's largest investor-owned electric utilities. This strategic alliance would serve Associated well.

"Gjelde brokered the first combined-cycle unit for us. At that point on the board, there were still a lot who didn't trust natural gas. Earl was very, very pivotal to us making the investment in gas," Jura said. "When he brought us the PanEnergy connection, it fit with both our strategies. They really needed us; they wanted to get into the electricity trading business. What we needed was someone who understood gas transportation. That was PanEnergy. And we needed someone who understood gas operations. That became Siemens."

And so, Gjelde brought together PanEnergy/Duke with its gas and goal of getting into electricity, Associated with its electricity and desire to get into gas and Siemens with its brand-new technology and experience in operating gas plants. The original idea was that Associated would own, construct and operate the St. Francis Power Plant. As it turned out, the plant would be the first of several Associated plants to be built and operated by Siemens. PanEnergy would provide the natural gas for fuel. All the capacity would be dedicated to serve member load requirements. Any surplus energy could be sold by Associated and PanEnergy. As for Siemens, Gjelde was instrumental in getting 12-year warranties from Siemens so that Associated did not take undue technology risks.

This arrangement, Gjelde recalled, was highly unusual for a cooperative; the warranties would be arranged for other Associated gas plants as well. "It's been a good deal for everybody. It was a typical Associated deal where everybody wins," said Gjelde.

Not that such arrangements were easy to make. Jim McNabb, Associated's chief negotiator with PanEnergy, recalled how difficult it was to work out a contract with PanEnergy in that first gas deal. "It was an extremely complex contract arrangement with them. We spent hours and hours and hours preparing the board for how the contract would work. … The negotiations were tough because we didn't understand the nature of their business, and they didn't understand the nature of ours. We developed this arrangement with them that blended the expertise we had to run the power system with the expertise they had in marketing and supply of gas to facilities like this."

Gjelde, Jim McNabb, Fulks and others made many a trip to Milwaukee, at the time Siemens' North American headquarters, to negotiate a turnkey engineering, design, construction and operations contract for St. Francis with Siemens. Siemens, of course, was eager to build a first plant in the U.S. using its new German-engineered combustion turbine combined with a heat-recovery steam generator. The plant was designed with a 58 percent thermal efficiency, compared with a 38 percent thermal efficiency for a coal-fired plant.

When construction fell two weeks behind and with summer peaks approaching, Jura and Fulks remembered a "come-to-Jesus meeting" with Siemens, now located in Orlando. Gjelde, Hodel, CFO Mike Miller, Jura and Fulks made their case. As a result, Siemens added more workers

Gary Fulks, Associated board member and former director of Engineering and Operations at Associated.

From top: Charles Baile, former Associated board member, at the simple-cycle, dual-fuel Holden Power Plant, located in the service territory of Baile's generation and transmission cooperative, NW Electric Power Cooperative Inc.; and

Duane Highley, director of Power Production for Associated.

to complete the project on time. "Out of that meeting we got the project back on track," Jura said.

The gas deal, initiated in 1996, bore fruit in 1999 with the dedication of St. Francis Power Plant. It had been 17 years since Associated's last new generation plant, Thomas Hill Energy Center's Unit 3, was dedicated. In October 1998, construction began on the 107-MW Essex Power Plant, in November 1998 the 182-MW Nodaway Power Plant and in January 1999 the 522-MW Chouteau Power Plant, all using Siemens' turbines. In September 1999, Associated negotiated a second unit at St. Francis with Siemens and expanded the contract with Duke. All these new gas plants were operational between 1999 and 2001. In 2002, the 321-MW Holden Power Plant came on line to meet peak demands.

The next addition to the gas fleet came in 2007 with the dedication of the 580-MW, combined-cycle Dell Power Plant in northeast Arkansas. Dell's early history began when independent power producers like GenPower LLC were riding high. GenPower's plan was to build a merchant plant and make a killing. It hired a construction partner that was a unit of Enron and began to build in 2001. Then Enron went bust, and construction ended in 2002. Along came TECO Energy, which, like GenPower, saw the unfinished plant as an opportunity to make money. This time, the independent power market couldn't supply enough contracts and customers to make the plant viable. So once again Dell sat unfinished. TECO first offered Dell to Associated for several hundred million dollars. Too much, said Associated, and waited. But when TECO dropped the price, Associated snapped it up in 2005 for $75 million.

"It was an incredible bargain," said Duane Highley, director of the Power Production Division, who said the plant was estimated to be perhaps 70 percent complete at the time. In fact, it turned out to be more like 50 percent complete, and the final tab was a little over $200 million to complete the plant. Still, it was a steal for members, and today, said Highley, it would cost $600 million to $700 million to build a new Dell plant.

Another good deal for members was the $150 million RUS loan to finance construction at an average rate of 4.98 percent. Further modifications to Dell in 2010 would allow the plant to burn fuel oil, as well as natural gas, thereby increasing operating flexibility and reliability due to an on-site fuel source.

And so, within 10 years, Associated added 2,200 MW of gas capacity to its fleet, all through a relationship that began with rainmaker Earl Gjelde and his relationships forged with Siemens and PanEnergy/Duke.

Looking back, it's clear that the addition of combined-cycle gas generation gave Associated the ability to better compete in the new deregulated wholesale energy market and in 2010 gave it a hedge against expected climate change legislation. In the process, Associated added valuable institutional knowledge of the gas marketplace and the operation of gas plants. PanEnergy, then Duke, became important in building Associated's in-house knowledge of gas.

One of the key players in that effort was Kevin Smith, whom Jura described as "a wonderful guy, who died way too young, who I really believe was sent by God. He was just what we needed."

Smith, who had worked for Texaco for many years in oil and gas processing operations, was living in the Springfield area when he read a newspaper ad for a gas coordinator position at Associated. He became invaluable, helping Associated understand gas vernacular and participating with David McNabb and others in pipeline negotiations. A man with great capacity and knowledge, Smith died in 2002, shortly after he decided to retire at an early age. He was succeeded by Brian Ackermann, who continued to

develop Associated's in-house gas team.

David McNabb remembered how difficult those pipeline negotiations could be. "You would find yourself in a room, and they would have eight or 10 people, these guys who ran the numbers and folks who did the deal, and would want you to sign a piece of paper. We were really learning about these new worlds. … I think it went pretty well. We learned to buy commodity gas on a day-to-day basis," he said.

Duane Highley noted two results from Associated's gas buildup. One was a big change in jobs. Gas plants required far fewer employees for each MWh of generation. New Madrid Power Plant with about 200 employees had about the same capacity as Chouteau 1 and 2 with about 36 employees. Holden had two employees, Nodaway one and Essex only a part-time employee.

Highley pointed out that Headquarters' engineers stood ready and willing to staff these plants when necessary, driving to Holden near Kansas City, to cover on a weekend.

The second result was Associated reaped the benefit of using contractors to operate and maintain the gas plants, beginning with Siemens at St. Francis Power Plant. Primesouth LLC at Dell was another example. "We got economies of scale that we would never have realized ourselves," Highley said. "… By partnering with Siemens, which runs about 20 of these plants, we got the equivalent knowledge and much better efficiencies than we could have achieved by ourselves."

Goodbye, Noranda

Noranda Aluminum, the aluminum smelter literally over the fence from New Madrid Power Plant, was the customer that brought Associated to southeast Missouri.

As documented in "Win-Win," back in 1969, Missouri Gov. Warren Hearnes visited Associated to persuade the board to build a power plant in New Madrid to service the aluminum smelter that would soon be built there. The two plants would bring desperately needed jobs to southeast

Chouteau 2 locks in generation for a decade

Associated's gas expansion continued in 2011 with Chouteau 2 Power Plant coming on line, bringing enough capacity to meet members' energy requirements beyond 2020.

Chouteau 2 was déjà vu in two respects. First, like Dell Power Plant, an independent power producer, Caithness Energy LLC, bought equipment to build a merchant plant, the Big Sandy project in Kingman, Ariz. Its fatal flaw was failure to get a water permit. So the unassembled, new-in-the-box parts were stockpiled, later becoming a distressed asset attractive for Associated.

A 718,000-pound generator is lifted from rail sidings for placement on a trailer with 16 rows of 16 wheels, 256 in total, for transport to Associated's Chouteau 2 Power Plant under construction in Pryor, Okla.

And, second, Associated's friend, Earl Gjelde, was once again a helping hand. In fact, Gjelde had helped develop the Big Sandy project. When Caithness Energy gave him about three weeks to find a buyer, he first called Associated about the parts. Late in 2006, only weeks before the annual board retreat, Gary Fulks recalled Gjelde's call in which he described a plant almost identical to Chouteau 1. "Would you be interested in it?" Gjelde asked. "It depends on the price," answered Fulks.

It turned out the price was right: $43 million for a plant easily worth up to $200 million. Though Associated wasn't quite ready for more generation, it was too good a deal to pass up, and other hungry buyers were out there. Without time for an inspection, Associated took Siemens and Gjelde at their words that the equipment was in good shape.

The Associated board moved nimbly to approve the purchase, in fact, the very day it received the papers to sign, recalled Fulks, who would soon move to Sho-Me Power Electric Cooperative as its general manager. Not every utility could be so expeditious. Management did its job in keeping the 12 Associated directors well informed so they could judiciously weigh risk against opportunity. When opportunities such as that presented by Gjelde came along, the board could make a quick decision. That dexterity was a board hallmark, one contrasting with other G&Ts and the co-op reputation for moving initiatives slowly through the system. A bargain price and Associated's strong balance sheet also didn't hurt.

Associated leaned on its longtime friend, Siemens, for help with the project. It was the most complex undertaking between Siemens and Associated, according to Mike Bollenbach, district sales manager for Siemens, with nearly 40 years of involvement in Associated projects.

Craig Weeks, another spokesperson with Siemens Energy, told the story. "Using this equivalent equipment [same turbine equipment in Chouteau 1] allowed for faster licensing and allowed us to optimize on costs. … Our side got very excited about the project.

When moving the Chouteau 2 components from Arizona, including this generator, each rail car was monitored electronically and by personnel traveling with the train to ensure safe delivery.

Chouteau 2 locks in generation for a decade, continued

We could have sold Associated the newest and best, but the other was really good and basically leading-edge technology, and we've worked hard to make it economical. Together we found an end solution."

The project involved bringing 350 truckloads of mothballed, never-used equipment from Kingman to Pryor, Okla. On paper it looked like a viable project, but the details were daunting, requiring decisions to be made item by item – and there were thousands of items to be inspected, assembled and upgraded.

Chouteau 2 illustrated the importance of strategic relationships. Even though Siemens did not get the job of constructing the plant, it did sell the equipment to Associated. During construction, Duane Highley related how some difficulties, delays and extra expenses arose regarding engineering support for the equipment purchased from Siemens. A phone call and a trip to Siemens' office in Orlando produced results. "We were able to immediately get the project back on track," said Highley.

Another aspect of Chouteau 2 included construction of a 33-mile natural gas pipeline to serve the plant. The pipeline was completed by Enogex LLC, owner and operator of the pipeline, in summer 2010 and cost Associated $72 million – nearly $9 million under budget.

Financing for Chouteau 2 was as history-making as its origins: a $490 million RUS loan in 2010, perhaps the last of its kind in the country for a gas plant.

Due to growing pressure from environmental groups, the proposed federal fiscal year 2011 budget appeared to end RUS loans for fossil-fueled generation plants, including intermediate and peaking natural gas plants, as well as environmental upgrades to existing fossil-fueled power plants. The RUS loan was predicted to save members as much as $200 million in interest during the life of the 30-year loan.

Summing up Chouteau 2 in late 2010, Highley said the plant's projected final cost of $420 million was well under budget and at least $100 million to $200 million below the market cost of such a plant, a big savings for members.

"We got a new car for a used-car price," he said.

Missouri. In 1970, Noranda Aluminum contracted with Associated for a 125-MW load (growing to 465 MW by 2003).

In 2003, that long relationship ended. Now, one might think Associated would have fought hard to keep its largest customer of more than 30 years. But, in fact, energizing Noranda no longer was cost effective. Losing the smelter would free up 465 MW of low-cost generation capacity that the rest of the Associated system could put to good use.

But to cut loose Noranda required state legislation. Jeff Davis, now with the Missouri Public Service Commission but at the time a young lawyer working for Peter Kinder, the president pro-tem of the Missouri Senate, picked up the story.

Davis remembered Noranda representatives meeting with Kinder about plans to seek power elsewhere. The dialogue continued with Associated and the Association of Missouri Electric Cooperatives, and all parties were amicable to Noranda's switching to Ameren Missouri (at the time AmerenUE). Ameren had the power to supply the plant – the largest energy user in Missouri, requiring more electricity than a city the size of Springfield, Mo.

"This was right after Enron, and so the idea of deregulating a purchaser of electricity at the time to me didn't seem like a daunting task," Davis said. "After the meeting with Noranda, though, I looked at Kinder and said, "Boss, I'm not so sure about this … Kinder responded, 'Get it done,' and we did, and through working on that bill and with Associated and the IBEW and all the major utilities, that's how I got appointed to the commission."

Tom Voss, chair, CEO and president of Ameren Missouri, reflected on this first-of-its-kind agreement for a company to choose a different electricity supplier in Missouri. "That project was a win-win for Ameren Missouri, Associated, Noranda and the state of Missouri. … Associated did not want to tie up so much generation by serving Noranda – Ameren Missouri had the generation to serve the facility. This cooperation led to the smelter's choice to stay

in Missouri, saving more than 1,000 jobs and an annual payroll of $57 million. The facility continues to provide major economic support and stability to a 10-county region of southeast Missouri," he said.

Associated board member Don McQuitty, representing NW Electric Power Cooperative, put Noranda in perspective: "Cooperative members got more baseload generation at a price that was 25 years old. What a deal! What a wonderful thing for our members!"

Norborne: the plant that never was

Moving into the 21st century, member demand for Associated power was growing, and forecasts predicted a steady 2 percent or higher growth a year for the foreseeable future. Associated had built St. Francis, purchased Dell and constructed Chouteau 1. The board was beginning to talk about a second Chouteau power plant. The gas fleet was growing. Sure, Associated was interested in nuclear, but that wasn't feasible for a while. Clearly, Associated needed more baseload.

"The next baseload generation simply had to be coal," Chris Cariker of KAMO stated. In April 2005, Associated announced its plans to build a new coal plant.

The site was Norborne, Mo., a small farming community on the Missouri River about 60 miles east of Kansas City. The 660-MW plant was expected to be the cleanest, most efficient coal plant in the country at an initial estimated cost of $1 billion. It was seen as an economic boon to NW Electric Power Cooperative's Carroll County service area, bringing 139 full-time jobs when completed in 2013, with an annual payroll of more than $10 million, and a construction payroll of $400 million.

The process began to move forward. Associated applied for an affordable Rural Utilities Service loan – a traditional source of financing through the U.S. Department of Agriculture – to build the plant. The loan required an environmental impact statement, and in February 2007 RUS began gathering comments on its draft.

Associated invested in building good neighbor relationships with the Norborne community. As December 2007 unfolded, final plans for a major public relations campaign were in place, and the first ads were ready to roll. Associated anticipated an air permit from the Missouri Department of Natural Resources that would move the project forward.

The Norborne project was ready to move from the drawing boards to boots on the ground. "As we had worked on Norborne, the staff, led by Duane [Highley], had been going out and getting the best deals, getting permits. … We thought it was ready to go," said Jura.

But behind the scenes, things were turning sour. Cost estimates had skyrocketed and were still climbing. In 2006, the estimate for the plant and transmission leaped to $1.7 billion. RUS was facing pressure about lending for fossil-fueled plants. During a board meeting following the annual meeting of 2007 in Kansas City, two board members expressed their "serious concerns."

The big jump in cost was related to a glut of new coal plants across the world being built, escalating costs for materials and labor. But the real elephant in the room was the carbon question. Talk of a carbon tax or some type of carbon emissions regulation was gaining traction in Congress.

In February 2008, the board voted to delay indefinitely plans to build the plant, citing costs and carbon – just as DNR's air permit was granted. In April, Associated quietly requested DNR to rescind the Norborne air permit so that DNR would not have to defend the permit in court against a challenge from the Sierra Club. There was simply no point to incur the expense and effort.

The vote surprised Jura and others. "We swept up a lot of broken glass at the board table," said Jura.

Board member Don Shaw, who had been a cheerleader for the project, noted that the board waited until the last possible moment to commit to build the Norborne plant. Instead of saying, "We're going to build this plant and address carbon issues as they arise," some board members became more nervous about some of the downsides as the process dragged on, Shaw said.

From top: Jeff Davis, Missouri Public Service Commission; and

Scott Cochran, Associated Power Production staff, left, explains aspects of the Norborne project during one of many public meetings on the proposed coal plant.

Rural electric cooperative members, managers and staff, as well as local community supporters, comprise the majority of the crowd of about 280 attending the public hearing for the draft air permit in November 2007 for construction of the proposed Norborne coal plant in Carroll County, Missouri.

"There was a lack of fortitude among some of the members," he said. He pointed out that when the board in the late 1970s was deciding whether to build Thomas Hill Unit 3, Associated was capitalized at only about $500 million and yet applied for and got a $1 billion loan from REA – the largest in its history. "At Norborne, we were about $2 billion capitalized and I think we were going to spend about $2 billion, so one for one. That was only half as much as our predecessors took on. And yet this group couldn't get there. 'Oh, this is too much, too risky,'" Shaw said.

Retired board member Charles Baile who lived in the NW Electric service area, on the board at the time of the vote, was another who found the Norborne decision "most disappointing." But, he pointed out, "We still have the land at Norborne on the Missouri River." That land and other parcels around Thomas Hill Energy Center and in the northwest corner of the state, he said, could yet become sites for future generation plants.

Board member Fulks had a different view of Norborne, "We could have spent $2 billion on a plant that couldn't run. The risk was just so huge."

"We had worked for 36 months to get to that goal," added Cariker. "It was a gut-wrenching experience and the most divisive issue ever faced by that board." The vote by the board (to approve the Norborne project) was really a non-vote. Under Associated's bylaws, action of any kind required an 8-4 vote. The Norborne vote came in at 7-5, meaning at least one G&T split its vote.

"When the vote split, it became even more divisive," remembered Cariker. "To the point of almost being personal, borderline personal."

Layne Morrill, representing White River Valley Electric Cooperative and KAMO Power, was unable to attend that historic board meeting. He cast his vote in a conference call after having digested the latest cost escalations and the moving target of cost per kWh.

O.B. Clark, board president at the time, remembered going around the table for the vote. "That was a vote by 12 people who spent 12 months analyzing the project. … We won't know for a decade if it was the right decision," he said.

The Norborne decision precipitated the biggest rift in recent history between distribution cooperatives, G&Ts and Associated. Coal had always been king, and it was difficult for members to accept that it might be unseated. After the vote, the raw tension within the board was so visible that Jura approached the G&T managers, asking them to reconcile and get away from the personal attacks.

A self-described "thumper" for Norborne, Don McQuitty of NW Electric Power Cooperative met with Chris Cariker of KAMO Power, who had early on questioned the project. The two called for a meeting of the six G&T managers at the Lake of the Ozarks. From 2 to 7, they had a "soul cleansing" during which the managers spoke freely and passionately. One legitimate concern was whether Jura would stay. At the end of the day, they knew what they needed to do.

Later, Cariker remembered, "We marched into Jura's office and sat down. I think Jim was concerned. … but we basically expressed our personal assurance and confidence in him and said we were done with Norborne. We have healed, but it was a test to the six G&Ts and to Jim Jura."

Energy efficiency: the fifth fuel

In a speech he made at Bonneville Power Administration, Jim Jura called energy efficiency the fuel that tempered the region's thirst for power.

That was easy to say at Bonneville, which as a federal project had a clearly defined legal responsibility to make energy efficiency the highest priority. Keith Hartner, who followed Jura from Bonneville to Associated, described how, following the Three Mile Island shutdown of the nuclear industry, Congress viewed the Northwest with its hydropower as a strategic energy resource for the country. The problem was there wasn't enough capacity to meet demand, so energy efficiency was seen as a fix.

Jura was at Bonneville when the push for energy

Don Shaw, Associated board member.

"... It was a gut-wrenching experience and the most divisive issue ever faced by that board."

– Chris Cariker
Associated board member

Keith Hartner, former director of Member Services and Corporate Communications.

efficiency began, and Ralph Cavanagh, energy program co-director for the Natural Resources Defense Council, was a big player in the movement. He remembered that people were skeptical at first about energy efficiency, but "Jim was one of the early leaders who … had a personal enthusiasm for it. He took an unfamiliar idea and helped people assume ownership and made it appealing and helped a whole host of folks."

By the time Jura left Bonneville, energy efficiency was thriving there. Fast forward to Associated, and "He had the challenge of coming into a culture that didn't see energy efficiency as a resource. He helped people get comfortable with that. That was visible in 2007," said Cavanagh, remembering when he spoke that year at Associated's annual meeting.

"The thing he had to confront at Associated, and didn't have at Bonneville, was he was working there with a system with no coal in it. … He had to figure out what to do going forward in a world of coal and a world of carbon emissions and a world of climate change. He had to operate in a world of embedded skepticism. He went into a system that was wholly dominated by coal and in doing that has showed the rest of the cooperative world a different and better way forward," Cavanagh continued.

So Jura had to ease into energy efficiency at Associated. Not that the concept was foreign to the distribution cooperatives, some of which had been offering energy audits and rebates for appliances and ground-source heat pumps for years. But the idea of a uniform program producing results for the entire three-tiered system was brand new.

In 2006, as Associated looked ahead to a future of higher fuel costs and exploding costs for new plants, the time was right. Alternatives for holding the line on baseload demand needed to be explored. The days of surplus capacity and pushing sales were gone. New generation was just too costly to take on without first exploring alternatives. Hartner remembered, "Jim came to me, and he had talked to Ralph [Cavanagh], who had recommended a consulting firm. … Jim's point to them was, 'I would like to know the cost benefit analysis of what energy efficiency would be at 3 cents a kWh or anything under that.'"

Maybe, just maybe, a business case for energy efficiency might be made.

With Hartner, at the time a special assistant to Jura, as the project manager, Associated commissioned EnerVision Inc. of Atlanta to do an appliance saturation study in 2007. Basically, it was a home inventory that surveyed the demographics of the 51 distribution cooperatives to determine how many people were living where, what heat they used, what appliances they had. Once that information was in hand, consultants Clearspring Energy Advisors of Madison, Wis., ran it through various models to determine the most cost-effective offers to make for rebates.

In March 2008, Hartner presented the new Take Control & Save energy efficiency program to the G&Ts and distribution cooperatives, and a month later the program began.

The board approved $31 million in funding through 2013, with the energy savings expected to add up to nearly 2 million MWh by 2032. Through Take Control & Save, nearly 2 million compact fluorescent light bulbs would be distributed in the first two years. Members could sign up for energy audits and pilot projects, earn rebates for Energy Star appliances and get money back on heat pump installations.

"It happened so fast, and we were doing things by the seat of our pants," Hartner laughed.

Soon, every cooperative in the system was participating. By early 2011, Associated had spent just under $19 million for rebates, energy audits, CFLs and marketing studies. In addition, through Take Control & Save, in 2010, Associated partnered with three community action corporations to take advantage of federal stimulus grants to boost energy savings and cut utility costs in low-income homes served by cooperatives.

> "One way to look at it was energy efficiency was like a hedge. We're now down, but at some point that will change. We're still saving fuel costs, but energy efficiency is like a silent partner waiting to help. Costs are low now, but down the road when fuel prices go up, we'll be in place."
>
> – Keith Hartner
> former Associated director of
> Member Services and Corporate
> Communications

How did the shift in mindset from energy efficiency skepticism to acceptance occur within Associated? "Some board members were very progressive and saw the benefit and that it was the thing to do," said Hartner. Others more reluctantly participated in Take Control & Save. The shifting economics of fuel costs at the time helped change minds as well. In 2006, gas was projected to go up, and energy efficiency was trying to shave off the upper end of costs. In 2008, gas started going down.

"One way to look at it was energy efficiency was like a hedge. We're now down, but at some point that will change. We're still saving fuel costs, but energy efficiency is like a silent partner waiting to help. Costs are low now, but down the road when fuel prices go up, we'll be in place," Hartner said.

Doug Aeilts, CEO and general manager of Northeast Missouri Electric Power Cooperative and an Associated board member, noted, "We've had the mindset of selling electricity for so long and our rates have been so low … that it, energy efficiency, seems counterintuitive. But no one wants to be inefficient."

Dan Singletary, an Associated board member and CEO and manager of Howell-Oregon Electric Cooperative, said the excellent information provided by Associated staff to members about the benefits of energy efficiency has made the sales job easy. "They [customers] know the goal of Associated is to put off building generation and that … as end users they benefit from more efficiency," he said.

Rates a risin'

The 17 percent reduction in Associated's wholesale rate to the G&Ts that took effect in 1995 created huge stability for the three-tiered system at the same time Enron was creating chaos. Stable rates allowed Associated to take its time, to think through issues and see how they played out. True to its conservative gut, Associated's board did

From top: Douglas Aeilts, Associated board member; and

Dan Singletary, Associated board member.

John Farris, Associated board member.

"The fact that Associated went almost 20 years without raising rates is a phenomenal accomplishment."

– Jeff Davis
Missouri Public Service Commission

not rush to judgment and in the end remained true to the core mission of providing reliable, low-cost electricity to members.

As a result, people got comfortable with some of the lowest electricity rates in the country.

"The fact that Associated went almost 20 years without raising rates is a phenomenal accomplishment," said Jeff Davis of the Missouri Public Service Commission. "Most of that groundwork was laid before, but the fact is that 15 years or so were under Jura's leadership."

As early as 2003, the Associated board recognized rate increases would be necessary and began preparing members for the eventuality. In 2006, 2007, 2008 and 2009, Associated's wholesale rate increased a total of about 40 percent. That was the bad news, and it was tough to deliver to the distribution cooperatives and their members.

"Associated had enjoyed stable rates for so many years. But we saw prices increasing and needed to raise rates. The first few years were really tough," said John Farris, general manager of M&A Electric Power Cooperative and an Associated board member. He added that eventually members accepted the need for balance between reliability and competitive rates.

The series of back-to-back annual rate increases "was a challenge," said Aeilts, adding, "We came from a system where members were used to 20 years of stability and no changes."

What led to the rate increases?

First, fuel prices. The long and ever-present coal trains transported the most affordable fuel available to meet growing demand, but that didn't mean coal was cheap. From 1996 to 2006, Associated's cost for fuel per unit of generation increased 94 percent because of demand for low-sulfur coal, higher rail delivery costs and rising diesel prices. The price of natural gas also continued to be volatile, and Associated was using more of it to meet member demand. Even hydropower was more expensive, as a drought continued into 2006, draining Southwestern Power Administration's 17 reservoirs. SWPA announced a 7.3 percent rate increase effective February 2006 and prepared its customers for 20 percent to 25 percent increases beyond that.

Second, load growth. Members continued using more electricity, and more people joined cooperatives. Demand in the early years of the 21st century was growing at more than 2 percent a year, requiring about 100 more megawatts of capacity a year.

Third, environmental compliance costs were exploding. New emissions controls, including selective catalytic reduction equipment to control nitrogen oxides emissions on all three Thomas Hill Energy Center units, increased Associated's fixed costs by more than $30 million in 2009. To install the equipment to meet Clean Air Interstate Rule requirements would cost $426 million. Potential regulations for curbing carbon dioxide and mercury emissions also loomed in the future, creating uncertainties about even more costly environmental compliance. In one scenario, planners estimated the carbon tax for Associated could reach more than $100 million a year in 2015 and more than $200 million in 2020.

Finally, Associated's commitment to financial flexibility meant lenders and rating agencies expected the Associated board to have the stomach to raise rates. Rate increases would help ensure strong credit and access to vitally needed money for capital projects.

"Associated exhibited to the financial world its willingness to raise rates," said Mike Miller, retired CFO, who experienced the rate increases. "Because of events beyond our control, we had to raise rates, and we had the governing structure that said, 'Yes, we're willing to do that to remain financially strong.'"

A lender echoed that sentiment. "We look to see how willing the board is to raise rates to cover costs and to build up a cushion of patronage capital," said Nancy Doyle, a director in MetLife's Private Placements, Power & Energy, Strategic Investments division. The insurance company began lending long-term money to Associated in 2005.

Construction begins in summer 2006 to install selective catalytic reduction equipment on all three Thomas Hill units, a $426 million project, after the Environmental Protection Agency issues its Clean Air Interstate Rule in March 2005 with a one-year-earlier-than-expected compliance date. At the peak of the nearly three-year construction project was a workforce of 1,300 on 10-hour shifts, seven days a week. Associated was ready to comply Jan. 1, 2009, reducing systemwide nitrogen oxides emissions 90 percent.

In 2009, demand for electricity dropped throughout the U.S., including Associated's service territory, primarily because of the weak economy and higher rates. Associated members changed their behaviors and took advantage of Take Control & Save incentives to conserve electricity. As a result, Associated reduced its growth forecast to 1.5 percent annually through 2019.

After four straight years of rate increases, it also held the line on a fifth increase. It was a welcome break for members but one generally recognized as short-lived. Looming on the horizon was the possibility of more than $1 billion in costs for more environmental controls, more money for reliability compliance and potentially unknown millions for carbon emissions controls. Not a pretty picture and a forecast making for more painful board decisions ahead.

The environment: a costly commitment and investment

It's a Catch 22. Americans love electricity. And what's not to love. It's the juice that runs our phones and computers. It keeps us cool. It keeps us warm. It keeps us secure. Yet emissions from producing electricity – and driving cars – can harm the environment. And too much damage to the environment can compromise the very life we love.

Utilities thus have found themselves responding to the demand for more electricity from their customers while charged with complying with more and more environmental regulations, all of them costly. Associated was no different, committed to providing affordable electricity, playing by the rules and protecting the environment.

Through the years, O.B. Clark, former board president and cattleman, witnessed a slew of clean air and water

Brent Ross, Associated Power Production staff.

regulations affecting utilities – and Associated's compliance with them to the tune of $1 billion. He and the board never argued that regulation was unnecessary but were sometimes galled by the attitude of some regulators and legislators that landowners cared little about their land.

"The mentality of much environmental legislation assumes we in rural America are ravaging our land, air and water resources. In reality, wouldn't it be more reasonable to assume that since we live, work, worship and raise our children in this environment, we must depend on its care and continued productivity?" he asked.

"Not to care for that upon which we depend for our living, for the resources entrusted to us, is simply ridiculous. The best environmentalists are the people out there depending on that land."

A little history is in order. Beginning in the 1970s with the Clean Air Act passed during the Nixon years, regulations aimed at reducing harmful emissions such as sulfur dioxide and nitrogen oxides from coal-fired power plants took effect. Associated's compliance with these regulations and its commitment to environmental stewardship never wavered. But taking care of the environment came at a cost to members: $1 billion down by 2009 and the possibility of another $1 billion plus to go.

Since 1994, Associated had invested more than $1 billion to improve air quality, achieving 90 percent reductions in its systemwide SO_2 and NO_x emissions rates year-round. Associated actually made money on the sale of SO_2 allowances, selling more than 400,000 of them and generating revenue of $132 million, according to Brent Ross, manager of environmental, health and safety at Headquarters. EPA granted allowances to utilities and other facilities based on their emissions. Many utilities came up short, emitting far more than their allowances covered.

Associated, on the other hand, had allowances to spare, thanks to its early switch to low-sulfur coal and 90 percent reduction in SO_2 emissions.

According to Fulks, in the nation's first cap-and-trade market, allowances typically sold for an average of $120 to $150 per ton in 1996/1997, but on occasion Associated sold at the top of the market: $1,611 a ton was its high point. Gradually, though, court rulings and new EPA regulations with even tighter limits pushed prices down to about $5 a ton in mid-2010, signaling an end to the acid rain SO_2 cap and trade as Associated knew it.

> "The mentality of much environmental legislation assumes we in rural America are ravaging our land, air and water resources. In reality, wouldn't it be more reasonable to assume that since we live, work, worship and raise our children in this environment, we must depend on its care and continued productivity?"
>
> – O.B. Clark
> former Associated board president

While it lasted, though, said Fulks, "It was almost like stealing from the government. ... The whole allowance system was crazy, but we were able to manage it and capitalize on it and play by the rules – and make a lot of money."

Board member Don Shaw remembered describing the allowances in their heyday as "confederate money" to Mike Miller, CFO at the time. "I told Mike that it wasn't

real money and … to be very careful," he said. As it turned out, Shaw was right. Millions of dollars of paper assets disappeared with the resolution of another utility's legal challenge, bringing changes to regulations that reduced the value of the allowances.

Though the market had already collapsed for SO_2 allowances, in 2010 the sobering realization had sunk in among board members that another $1.4 billion might soon be needed to install scrubbers at the coal plants to further reduce SO_2 and mercury emissions. The reason: pending air quality EPA regulations on SO_2, mercury, particulates and other air emissions.

However, when EPA issued its draft rule in March 2011, the impacts on Associated were not as onerous as anticipated. Management was pleasantly surprised at what a difference a congressional election could make in perpetuating the uncertainty in the utility business. Many seats had changed in the U.S. House of Representatives the previous November, and the EPA's long-awaited rule appeared far more practical than expected. A final rule was due by the end of 2011. Associated's board and management would live with the uneasy feeling that another election in less than two years could change it all again.

Still unanswered as well at the end of 2010 was the issue of carbon regulation and taxation. The issue that contributed to the death of the Norborne project threatened the very existence of coal plants everywhere. By some estimates, a carbon tax could end up adding $100 a year in the early years, growing to $380 a year, to members' bills. The cheap miracle fuel of 50 years would no longer be affordable. The hit to Associated members could total between $400 million and $1 billion a year. Kuh-ching.

By 2011, the board would ask itself, "Given the pressures on coal, looking forward, what should we count on for an optimum mix of generating resources, and are we in a position to do that?"

A proud environmental record

Regardless of what future regulations it would face, no doubt about it, Associated had an impressive record of environmental compliance to celebrate. In 1998, the largest selective catalytic reduction equipment installation in the country began at New Madrid Power Plant. Housed in a 17-story building, the SCR would help Associated meet clean air standards in 2000. In 2002, a second SCR at the plant was commissioned, moving the plant from one of the highest NO_x-emitting plants in the country to one of the cleanest coal-based plants with cyclone burners. The $100 million investment in the New Madrid SCRs was designed to reduce NO_x emissions more than 90 percent.

In April 2003, Associated offered a green energy option to members. Triggered by an Iowa law mandating cooperatives offer an alternative energy purchase program beginning in 2004, Associated offered the option to its members in Missouri and Oklahoma as well. At the time, Associated's green energy came from biomass generated at Central Electric Power Cooperative's Chamois Power Plant and from hydropower through the Southwestern Power Administration and its 17 federal reservoirs. By spring 2007, Associated's green power also would include that generated by the first of four Wind Capital-developed wind farms in northwest Missouri.

Associated's collaboration with Wind Capital Group to buy all the wind power generated at the four wind farms for 20 years was another example of a bold environmental cue. No other utility in the state could claim that level of commitment to renewable energy. The U.S. Department of Energy recognized Associated as a wind pioneer, naming it the "2006 Wind Co-op of the Year" as a result of a nomination by DNR.

At New Madrid Power Plant, combustion air systems were modified to reduce NO_x formation and lower operating cost of the SCRs constructed in 2000 and 2002. The air flow modifications would cost about $8 million, reduce NO_x formation about 40 percent and be completed in spring 2007. Thomas Hill units were modified as well, so the total cost was more than $15 million.

As mentioned earlier, Associated received federal

Cow Branch Wind Farm in northwest Missouri.

From top: Kirk Clark, Engineering and Operations staff; and

Terry Richardson, former Power Production staff.

recognition in 2007 for its cleanup of the Bee Veer Mine.

Mid-2008, as Associated moved to finish new controls costing nearly a half billion dollars at Thomas Hill to comply with a 2005 EPA rule to further reduce nitrogen oxides (NO_x) emissions, the U.S. Court of Appeals for the District of Columbia Circuit struck down the rule, as well as the nation's first rule on mercury reductions. EPA was expected to issue another mercury rule in late 2011 to mandate mercury reductions by 2015.

The court sent the NO_x rule, the Clean Air Interstate Rule (CAIR), back to EPA to redo, although utilities still had to comply with CAIR until it was fixed. Its replacement, the Clean Air Transport Rule, was expected to have lower emissions limits and be in place for 2012.

So Associated forged ahead on the nearly three-year environmental controls project that added SCRs to all three units at Thomas Hill Energy Center. The achievement enabled Associated to meet the Clean Air Interstate Rule's January 2009 deadline and reduce its NO_x emissions rate 90 percent systemwide.

The $426 million project was a capital investment equivalent to $500 from each and every household served by Associated's member systems. During the height of the construction, 1,300 people worked two 10-hour shifts, seven days a week at times, including Kansas City and St. Louis labor union members contracted through Graycor and Enerfab, construction services providers.

In 2009 and 2010, Associated became the first electric utility in the country to experiment with refined coal produced using technology developed by Clean Coal Solutions LLC as a possible low-cost environmental solution to reduce mercury emissions by up to 90 percent. In late 2009, Associated and CCS completed a demonstration project at both coal plants using refined coal, followed by an agreement in summer 2010 with Goldman Sachs to supply refined coal to Associated for 10 years.

But there was more to Associated's environmental record than regulatory compliance, four wind farms and mining reclamation. Managing its carbon footprint began to shape Associated's future. In 2006, Associated became Missouri's first and only utility to join the Chicago Climate Exchange, a voluntary organization that traded credits for greenhouse gas emissions.

In late 2010 after it became apparent Congress was not going to take action in the short term on cap and trade, the Exchange announced it would no longer trade carbon credits, though it would continue to be a registry for trading activity. In other words, if a farmer wanted to capture methane, he could still register with the Exchange but trade in another market.

In the four years Associated participated in the Exchange, it sold credits for about 150,000 tons of carbon, according to Brent Ross. "We joined the Exchange to learn about the carbon markets, to learn about our carbon exposure and to make an investment in the process," he summed up. "We succeeded in reducing our baseload emissions during this time and in meeting all the requirements, and we basically broke even on the deal. But the real story is we have a much better understanding of the market, how to create offsets and the different organizations promoting them."

Associated, he said, would be in a good position if a carbon market came back. But with the change in the Exchange's purpose, Ross added, Associated's four-year experiment with the carbon market would end.

Plastic swimming pools and a credit card alert brought some levity to the carbon footprint effort. In the course of managing its carbon footprint, Don Shaw, Central Electric Power Cooperative's CEO and general manager and an Associated board member, related how he used Central's credit card to purchase some children's plastic swimming pools for a project in which the cooperative, Associated, Lincoln University of Missouri and Missouri University of Science and Technology collaborated to study whether algae could capture CO_2 from flue gas.

"I got a call from the credit card company alerting me to the fact that five kid pools had been charged to the Central account, and that it didn't look like a typical utility

purchase!" he said. The study, begun in 2008 as a six-to-nine-month study, was still ongoing in 2011.

In 2009, Associated signed on to a three-year research project on the feasibility of storing CO_2 underground in the shallow saline aquifer, the Reagan-Lamotte Sandstone Formation under much of Missouri. The pilot project looked at how much CO_2 could be injected into a shallow formation only 2,000 feet below the ground surface and how well it could be contained there. The project was funded through the U.S. Department of Energy and five utilities, including Associated. The Environmental Protection Agency and Missouri Department of Natural Resources provided regulatory oversight.

Thus, through proactive environmental endeavors like these, Associated continued to balance its responsibility to provide affordable, reliable electricity with environmental stewardship.

Spurring innovation

Associated's people as a rule have always excelled at their jobs. But Jura actively encouraged Associated's employees to innovatively solve problems, save time and improve safety. A suggestion program, benchmarking teams, process review committees, cross-functional teams and a peer-nominated Excel award program all stimulated responses from Associated's 600-plus workforce.

Their contributions were enormous. They did the research, planned the projects, put out bids, made the buys, got permits, negotiated contracts, made the handshakes and talked to legislators. They oversaw construction, kept up with compliance, wrote the software, maintained the network, kept the books, communicated with members. They swept the floors, drove the dozers, ran the plants and kept the coal coming. They sold power, sold transmission space, tested the air, monitored hazardous materials and planned outages. They kept aging plants humming, responded to emergencies and watched out for the safety of their buddies. They put in the long hours it often took to keep power flowing to members.

Carbon dioxide capture research using pools of algae is under way at Central Electric Power Cooperative's Chamois Power Plant in central Missouri.

As Jura put it, "It may be hard for a person pushing paper in Accounting and Finance to understand they're doing something important, that their work matters." But matter it did.

One example of innovation came from Thomas Hill's Kirk Clark, who found a solution to prevent water from freezing in the tripper room during washes. He suggested cutting a hole in the floor of a belt tightener room to allow heat to rise from the bunker room floor below into the tripper room. Clark later went on to supervise the power marketing team at Headquarters.

Terry Richardson, journeyman instrumentation technician specialist, suggested installing additional probes on a coal conveyor to save hours of manual cleanup time. Huge coal spills often resulted when chutes became plugged. Additional probes automatically tripped the belt.

Danny Smith, journeyman welder/mechanic, suggested

From top: Power Production staff members Richie Ivie; Harold Barks (retired); Jimmy King; and Tim Price.

purchasing a small MIG welder for making repairs in tunnels in the coal yard. The suggestion replaced moving a full-size welder down into the tunnels and dragging 400 feet of extension cord behind it.

At New Madrid, a maintenance crew found a way to resurface worn hammers and extend their useful lives at least twice as long, saving the cooperative about $1.7 million over 18 months. Eighty-seven hammers inside each coal crusher ground raw coal against a cage to crush it to the proper size for burning in the cyclone boiler units. Typically, they had to be discarded after about 700 hours of use and replaced at $93 a pop, plus downtime on the equipment.

Also at New Madrid, machinist/mechanics Richie Ivie and Harold Barks invented and made a tool to straighten water-lance tubes. These tubes, used to extend into the boiler to blow slag off furnace walls, cost up to $5,000 to replace once bent. The innovation saved the plant $200,000 a year.

Early in the new century, Headquarters' Howard Gugel in system operations spent about a year meticulously working through mind-numbing details to reconcile scheduled and actual energy deliveries between Associated and AmerenUE (now Ameren Missouri). In tracking down records to document transactions, he discovered a lack of checks and balances. Eventually, Gugel's persistence led to a refund of almost $6 million and a better tracking system.

In 2000, shift supervisor Jimmy King kept coal flowing to New Madrid Power Plant units after the only operational coal conveying system broke down. With the coal supply expected to run out hours before maintenance could fix the conveyor, King and his operations crew began feeding coal from the less full bunkers, reserving the full bunkers for later use, and simultaneously reduced load. The tactic worked: within 15 minutes of shutdown, the conveyor was back in business.

A persistent problem at Thomas Hill was solved in 2001 after years of experimenting with various methods of improving the precipitator's performance on Unit 3 after conversion to low-sulfur coal. Designed to handle high-sulfur coal, the precipitator had difficulty removing the necessary amount of ash from flue gas. Efficiency dropped, and at least weekly the precipitator had to be fixed. Plant chemist Tim Price led the effort to solve the problem, settling on injecting sulfur dioxide gas into the flue-gas stream. The solution helped eliminate the bulk of precipitator repairs for the short term.

The Business and Technical Services Division under Pat Mills counted down to Y2K, the anticipated Year 2000 software glitch that many believed would cause computers to malfunction. System operators and programmers worked for years to upgrade the energy management software that controlled dispatch, power marketing and energy accounting, as well as other software and equipment. Ultimately, Y2K was a nonevent, but the coding, testing and training were a testament to Associated's commitment to keep electricity flowing.

Shooting sponge balls through condensers to clean the tubes may sound like a crazy idea. But five years of testing under the supervision of Mike Statler at New Madrid Power Plant resulted in full implementation on both units in 2010 for an estimated annual savings of $4 million. Statler researched the cleaning system to remove Mississippi River silt from the condenser tubes that reduced their ability to cool steam to water before it is sent back to the boiler. His efforts garnered an Excel Award for Employee of the Year in a Technical Field.

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