TIME-TESTED

ASSOCIATED ELECTRIC COOPERATIVE INC.

TWO THOUSAND TWENTY ONE • ANNUAL REPORT

Associated's history of continued service

1961: Fifteen incorporators sign articles of incorporation Feb. 6 to create Associated Electric Cooperative Inc. Operations began in 1962 with five employees. First board president is John E. Buck, serving 1961-1977.

1962: Associated's first general manager, Neil Adams, hired and works to June 1971.

1965: Associated puts into operation its first dispatch control center.

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

1969: Thomas Hill Unit 2 adds 303 MW. Construction of 286 miles of 161-kV transmission lines by Associated's owner G&Ts gets underway.

1970: Associated builds first 345-kV line, southeast Missouri, owned by a cooperative anywhere in the nation.

1972: New Madrid Power Plant's 600-MW Unit 1 goes on line.

1973: Gerry Diddle becomes Associated's general manager, serving members until February 1992 retirement.

1974: The 345-kV St. Louis-to-Tulsa line is the first of Associated's interregional extra-high voltage ties. Many more follow.

1977: New Madrid Unit 2 adds 600 MW.

1977: Rudie Slaughter is second board president, serving to June 1981, followed by O.B. Clark.

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

1982: Thomas Hill Unit 3, a 670-MW unit, comes on line.

1980s: Associated builds first 500-kV line in Missouri and the first to be financed by the Rural Electrification Administration. Associated's 45-mile portion runs from New Madrid to Arkansas border.

1988: Morgan-to-Flint Creek interregional, 345-kV tie constructed.

1991: Jim Jura hired as CEO, serves members nearly 25 years. Retires mid-2016.

1992: The 102-mile MINT line (Missouri-Iowa-Nebraska-Transmission agreement) with seven owners, including Associated, dedicated.

1993: Associated exits coal business, closing its mines to meet new environmental air regulations, and converts to low-sulfur coal.

1993: 161-kV connection with TVA that crosses the Mississippi River completed.

1995: Conversion to low-sulfur coal at both Thomas Hill and New Madrid power plants completed, reducing sulfur dioxide emissions 90% and allowing Associated to implement an average overall rate reduction of 17%.

1996: Associated's first entry into the bond market earns top-notch ratings of AA, AA- and A1 from S&P, Fitch and Moody's.

1996: Associated retires its 20-year-old GE 4020 computer, upgrading its dispatch center with state-of-the-art equipment.

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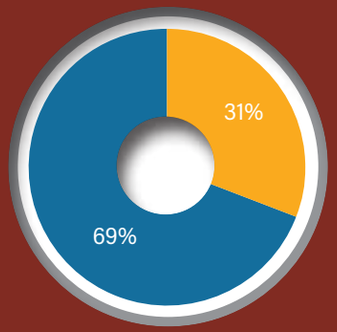
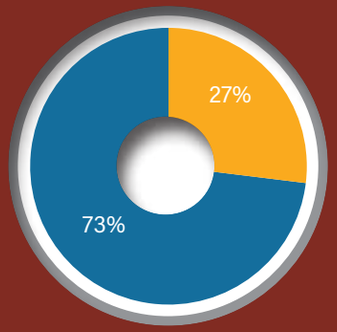
On the cover: Associated's 500-kV transmission lines near the Dell Power Plant

Associated's 2021 annual report was written, compiled and produced by the staff of Associated Electric Cooperative.
Editor: Linda Putman • **Graphic designer:** Glennon Scheid



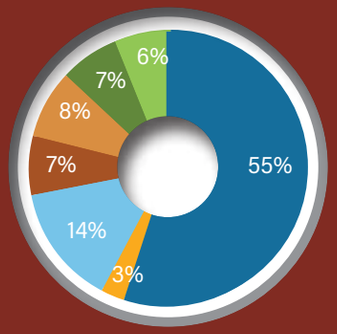
Kilowatt-hour sales (kWh in millions)

Members 19,455 Nonmembers 8,571



Operating revenue (dollars in millions)

Members $1,089 Nonmembers $396



Operating expenses (dollars in millions)

Generation operation $761 Contracted generation $43

Purchased power $187 Depreciation and amortization $97

Transmission $105 Generation maintenance $100

Administrative and general, taxes and accretion $83

2021 highlights

Financial (in thousands)	2021	2020	Increase (Decrease)	% Increase (Decrease)
Operating revenue	**$1,484,439**	$1,135,982	$348,457	30.7
Operating expenses	**1,375,686**	1,031,858	343,828	33.3
Interest expense on long-term debt (less interest capitalized)	**59,507**	63,769	(4,262)	(6.7)
Net nonoperating income	**2,704**	11,008	(8,304)	(75.4)
Net margin	**51,950**	51,363	587	1.1

Operational				
Energy sales (MWh)				
Members	**19,454,686**	18,734,107	720,579	3.9
Nonmembers	**8,571,278**	9,028,260	(456,982)	(5.1)
Member revenue per kWh sold (mills/kWh)	**55.97**	46.98	9	19.1
Peak hour member demand (MW)	**5,549**	4,369	1,180	27.0
Total nameplate capacity (MW)	**5,584**	5,703	(119)	(2.1)
Net generation (MWh)	**22,690,024**	23,325,319	(635,295)	(2.7)

In meeting its strategy of financial strength and flexibility, Associated:

- Recorded net margin that was above plan, even after managing costs of 2021 winter storm.
- Associated's board-approved rate discounts in 2021 totaled $36.5 million in revenue not required of its six owner transmission cooperatives.
- Returned $24.5 million in patronage capital to its six owners.
- Increased lines of credit to target of $750 million (from $600 million), and the cooperative had $0 outstanding on those lines of credit.
- Met with bond rating agencies, which affirmed Associated as one of the highest-rated G&Ts in the country.

See 2021 financial highlights section, Page 22.

Message from the president of the board and CEO and general manager

We sincerely appreciate the confidence and trust we continue to receive from our three-tiered system of members.

In 2021 the challenges were significant for our board, management and employees, including the COVID-19 pandemic, a polar vortex storm, an outage at New Madrid Unit 1 for repairs, a new U.S. president with an extremely aggressive climate change agenda, and a tornado late in the year that destroyed about 5 miles of Associated's 500-kV transmission line, including 17 transmission towers, in southeast Missouri.

Despite these challenges, Associated continued to meet its primary initiatives of providing reliable power 24/7 throughout the year and at affordable rates to our members.

In February, less than a week after Associated's official 60th anniversary date, we experienced one of the most severe winter storms to ever hit our system. This polar vortex (named winter storm Uri) covered a large portion of middle America, from the Canadian border to south Texas.

While most other utilities that are in regional transmission organizations (RTOs) experienced rolling blackouts, Associated's three-tiered system did not.

The storm tested many of our strategies developed and implemented through the years by our conservative, proactive board of directors, management and employees. This positioned Associated to weather the storm from both a reliability and financial standpoint. You could say that we passed the "reliability exam."

The silver lining with storm Uri is that we now have real-time data to support our position that the early retirement of fossil-fueled power plants creates significant reliability risk. Associated created a slogan, "three T's," to help our state legislators better understand the issue.

Overall, 2021 was one of our strongest financial performance years ever, if not for the six days of storm Uri. Nevertheless, we are keenly aware that the use of $130 million of deferred revenue and the suspension of the member discounts for March and April affected our members, but allowed Associated to meet its margin targets and maintain its strong credit ratings from the rating agencies.

We hope you know that we work hard to maintain our members' trust, because we feel that it is the cornerstone of our continued success as we head into the future.

"I remain proud to work with the Associated board of directors, who understand Associated's strategy and guide the management team to execute the plan."

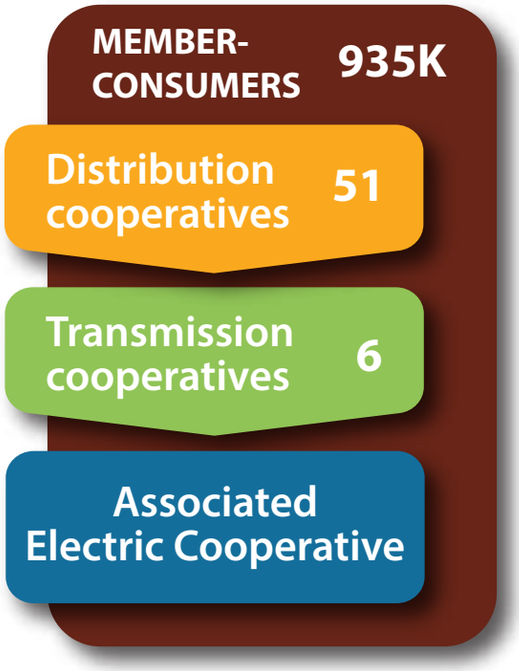
Emery O. Geisendorfer, president
Associated Electric Cooperative
Board of Directors

"The responsibility to lead this incredible workforce continues to be humbling and rewarding."

David J. Tudor
CEO and general manager

Stronger together

A united, cohesive system is a stronger system, and that strategy has served Associated Electric Cooperative and its owner transmission cooperatives well for six decades.



Associated was formed in 1961 by six regional transmission cooperatives and given the mission to provide an economical, reliable power supply and support services to those owners, which in turn serve 51 member distribution cooperatives. Collectively, this system brings electricity to more than 2.1 million member-consumers behind about 935,000 meters in Missouri, southeast Iowa and northeast Oklahoma.

Meeting that mission every day are an engaged board of directors, executive team and workforce of about 700 people at four main locations. Supporting the three-tiered system are three statewide organizations: the Association of Missouri Electric Cooperatives, the Iowa Association of Electric Cooperatives and the Oklahoma Association of Electric Cooperatives.

Associated's performance ensures confidence in the three-tiered system, which also is expressed with all-requirements contracts that member systems have extended through 2075. These contracts require Associated to provide all the energy needs of the system, and for member systems to get their power from Associated.

Cohesion is just one of the strengths that make Associated one of the top two highest rated G&Ts in the country: AA- by Fitch Ratings; Aa3 by Moody's Investors Service; and AA by Standard & Poor's Financial Services – all affirmed in 2021.

Reliability will require three T's

A Massachusetts Institute of Technology study released mid-2021 outlined the risks of escalating renewable energy too quickly, including reliability, energy price increases and price volatility.

Associated has long advocated for a balanced energy approach and is a member of MIT's Energy Initiative and the MIT Center for Energy and Environmental Policy Research.

"As a member-owned, member-governed wholesale power generation cooperative, we are alarmed by a rush to renewables without technologies available today to ensure reliable power at affordable prices. Our member-consumers clearly prioritize reliability and affordability in the electricity they depend on. We cannot sacrifice reliable electric supply or affordable rates," said CEO and General Manager David Tudor.

Scott Thompson, chief risk officer, worked with MIT on the study. "Significant operational challenges must be overcome, including attracting capital investment to build new renewable and nonrenewable generation, permitting of pipelines and generation interconnections. … Existing facilities also must operate reliably at much lower capacity factors, and this means adding flexibility to existing generation to meet new ramping needs and the curtailment challenges of overbuilt renewable generation."

Associated shared the study with its board, G&T and statewide leadership, National Rural Electric Cooperative Association, legislators, key strategic partners across the country and media. The message: A responsible transition requires recognition of three key issues:

Technology: It does not exist today to enable a quick paradigm shift to 100% renewables. Potential solutions are being studied but are not a reality today or near-term.

Transmission: The existing high-voltage transmission system was not designed to accommodate a rapid and significant influx of intermittent renewable energy. This roadblock can only be addressed with extensive and expensive upgrades to the existing transmission system.

Time: Both technology development that maintains reliable and affordable energy and the ability to move large volumes of renewable energy via transmission system investments will take significant time, which is not recognized in most of today's aggressive policy proposals.

Member governance directs strategy at Associated

Associated's board is comprised of chief executive officers from its six member-owner G&Ts, who bring utility and cooperative experience, complemented by six directors with experience ranging from farm and business owners to general managers of local electric cooperatives.

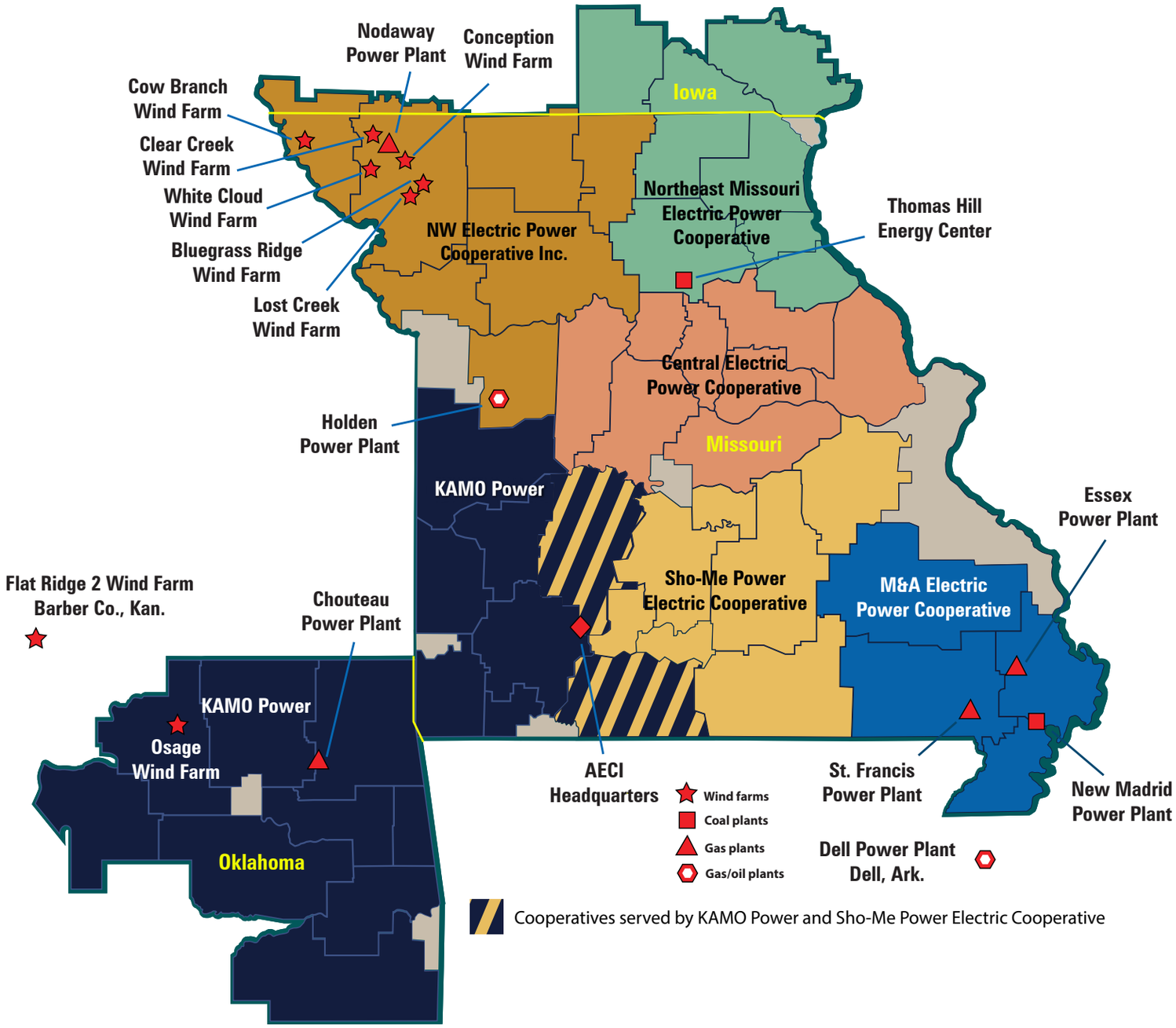
Associated Electric Cooperative's 12-member board is engaged and involved, setting the bar for member governance at its best. The board is comprised of, from left, seated, David L. McDowell, NW Electric Power Cooperative Inc.; John E. Hibdon, board secretary, KAMO Power; Emery O. "Buster" Geisendorfer, Associated's board president, Northeast Missouri Electric Power Cooperative; Thomas W. Howard and Christopher M. Turner, Central Electric Power Cooperative. Standing, from left, are Daryl R. Sorrell, M&A Electric Power Cooperative; John B. Killgore, vice president, NW Electric Power Cooperative Inc.; John T. Richards, Sho-Me Power Electric Cooperative; Douglas H. Aeilts, Northeast Missouri Electric Power Cooperative; John R. Bledsoe, treasurer, M&A Electric Power Cooperative; Theodore J. Hilmes, KAMO Power; and Dan A. Singletary, Sho-Me Power Electric Cooperative.

Strong leadership serves members

Strong leadership has always been key to Associated's success, as well as succession planning to ensure the cooperative does not miss a beat in serving members. That strategy was well displayed in 2021 when Chief Financial Officer David McNabb announced his retirement after 25 years with the cooperative. A search for his replacement followed and concluded with the selection of Meredith Roberts, vice president and controller at Associated.

In photograph are, seated, from left, Shawn P. Calhoun, senior vice president and chief human resources officer; David J. Tudor, CEO and general manager; and senior vice presidents Kenneth S. Wilmot, chief operations officer; Meredith T. Roberts, chief financial officer; and standing, from left, Scott E. Thompson, chief risk officer; Roger S. Clark, chief commercial officer; Brian A. Prestwood, general counsel and chief compliance officer; Joseph E. Wilkinson, chief member relations officer; Brent W. Bossi, chief information officer; and David W. McNabb, chief financial officer from 2006-October 2021 who then served as special advisor to the CEO until retirement in January 2022. Associated also presented McNabb its peer-nominated Distinguished Service Award during its Excel employee recognition event in early 2022 for his contributions to Associated.

Three-tiered system serves members' power supply needs



Associated serves six G&Ts that provide power to 51 distribution co-ops in three states

Central Electric Power Cooperative – Jefferson City, Missouri

• Founded in 1949 • 34 counties served • 1,700 miles of line energized

- Boone Electric Cooperative – Columbia, Missouri
- Callaway Electric Cooperative – Fulton, Missouri
- Central Missouri Electric Cooperative Inc. – Sedalia, Missouri
- Co-Mo Electric Cooperative Inc. – Tipton, Missouri
- Consolidated Electric Cooperative Inc. – Mexico, Missouri
- Cuivre River Electric Cooperative Inc. – Troy, Missouri
- Howard Electric Cooperative – Fayette, Missouri
- Three Rivers Electric Cooperative – Linn, Missouri

KAMO Power – Vinita, Oklahoma

• Founded in 1941 • 51 counties served • 2,901 miles of transmission line owned and maintained

- Barry Electric Cooperative – Cassville, Missouri
- Barton County Electric Cooperative Inc. – Lamar, Missouri
- Central Electric Cooperative – Stillwater, Oklahoma
- Cookson Hills Electric Cooperative Inc. – Stigler, Oklahoma
- East Central Oklahoma Electric Cooperative Inc. – Okmulgee, Oklahoma
- Indian Electric Cooperative Inc. – Cleveland, Oklahoma
- Kiamichi Electric Cooperative Inc. – Wilburton, Oklahoma
- Lake Region Electric Cooperative Inc. – Hulbert, Oklahoma
- New-Mac Electric Cooperative Inc. – Neosho, Missouri
- Northeast Oklahoma Electric Cooperative Inc. – Vinita, Oklahoma
- Osage Valley Electric Cooperative Association – Butler, Missouri
- Ozark Electric Cooperative – Mt. Vernon, Missouri
- Ozarks Electric Cooperative Corp. – Fayetteville, Arkansas
- Sac Osage Electric Cooperative Inc. – El Dorado Springs, Missouri
- Southwest Electric Cooperative – Bolivar, Missouri
- Verdigris Valley Electric Cooperative Inc. – Collinsville, Oklahoma
- White River Valley Electric Cooperative Inc. – Branson, Missouri

M&A Electric Power Cooperative – Poplar Bluff, Missouri

• Founded in 1948 • 18 counties served • 1,141 miles of line energized

- Black River Electric Cooperative – Fredericktown, Missouri
- Ozark Border Electric Cooperative – Poplar Bluff, Missouri
- Pemiscot-Dunklin Electric Cooperative – Hayti, Missouri
- SEMO Electric Cooperative – Sikeston, Missouri

Northeast Missouri Electric Power Cooperative – Palmyra, Missouri

• Founded in 1948 • 33 counties served • 1,004 miles of line energized

- Access Energy Cooperative – Mt. Pleasant, Iowa
- Chariton Valley Electric Cooperative Inc. – Albia, Iowa
- Lewis County Rural Electric Cooperative – Lewistown, Missouri
- Macon Electric Cooperative – Macon, Missouri
- Missouri Rural Electric Cooperative – Palmyra, Missouri
- Ralls County Electric Cooperative – New London, Missouri
- Southern Iowa Electric Cooperative Inc. – Bloomfield, Iowa
- Tri-County Electric Cooperative Association – Lancaster, Missouri

NW Electric Power Cooperative Inc. – Cameron, Missouri

• Founded in 1949 • 32 counties served • 1,726 miles of line energized

- Atchison-Holt Electric Cooperative – Rock Port, Missouri
- Farmers' Electric Cooperative Inc. – Chillicothe, Missouri
- Grundy Electric Cooperative Inc. – Trenton, Missouri
- North Central Missouri Electric Cooperative Inc. – Milan, Missouri
- Platte-Clay Electric Cooperative Inc. – Kearney, Missouri
- United Electric Cooperative Inc. – Maryville and Savannah, Missouri
- West Central Electric Cooperative Inc. – Higginsville, Missouri

Sho-Me Power Electric Cooperative – Marshfield, Missouri

• Founded in 1941 • 26 counties served • 1,840 miles of line energized

- Crawford Electric Cooperative Inc. – Bourbon, Missouri
- Gascosage Electric Cooperative – Dixon, Missouri
- Howell-Oregon Electric Cooperative Inc. – West Plains, Missouri
- Intercounty Electric Cooperative Association – Licking, Missouri
- Laclede Electric Cooperative – Lebanon, Missouri
- Se-Ma-No Electric Cooperative – Mansfield, Missouri
- Southwest Electric Cooperative – Bolivar, Missouri
- Webster Electric Cooperative – Marshfield, Missouri
- White River Valley Electric Cooperative Inc. – Branson, Missouri

Time-tested, member-approved

Sixty years of mission-driven preparations were tested during six days in early 2021, illustrating again why Associated Electric Cooperative was created with the mission to provide a reliable, affordable power supply to its six owner transmission cooperatives and their 51 member distribution cooperatives.

Settling in the weekend of Feb. 13, winter storm Uri rocked a large part of the country, bringing into question the reliability of the bulk electric system in some parts of the nation.

Associated saw the storm coming and prepared to reliably serve member load throughout the storm. No service interruptions occurred due to Associated's many strengths, 60 years in the making, that have stood the test of time:

- Diverse, flexible generating assets.
- Resilient high-voltage transmission system, strategically interconnected, that is owned and maintained by Associated's six transmission owners.
- Strong, strategic alliances and working relationships.
- Independence as its own balancing authority.
- Strong and flexible financial position.
- Member governance with an engaged board of directors.
- Conservative and proactive risk management.
- Talented, dedicated leadership and employee workforce focused on members.

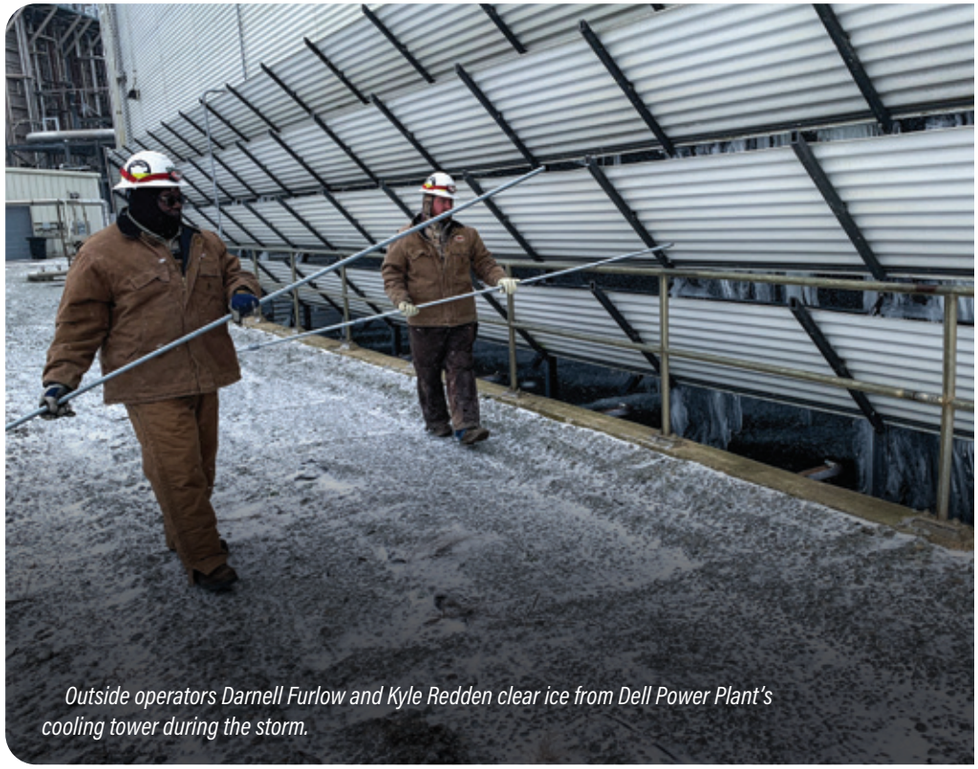
Communication lines run throughout

Key to Associated's comprehensive response to any challenge is good communication. Communication was early and often during the storm, from power plants to energy marketing and system operations, as well as throughout the three-tiered system and with neighboring entities and strategic partners.

- Leadership met daily with Associated's board during critical days of storm Uri.
- Member systems were informed of conditions and of any action needed.
- Associated and G&T operations staff talked daily.
- Financial lenders and rating agencies were informed of significant financial impacts, and staff confirmed Associated's ability to serve member load, remain financially solid and avoid any impact on its ratings.

Before and throughout the storm, energy portfolio marketing staff bought transmission capacity and imported available firm power to ensure reliability and reduce costs.

After the storm, Associated thoroughly assessed its performance and took steps to further shore up reliability for members, from reviewing equipment issues to transmission congestion, gas pipeline contracts, capacity needs, training and lines of credit.



Outside operators Darnell Furlow and Kyle Redden clear ice from Dell Power Plant's cooling tower during the storm.

"Our members' generation and transmission assets performed well during this event. When most other utilities around us were implementing rolling blackouts, our teams of employees across the three-tiered system maintained and prioritized member reliability during this life-threatening cold weather."

***David Tudor**, CEO and general manager*

Associated also promptly responded to the FERC and NERC joint inquiry into the operations of the bulk electric system during the storm and met with Missouri government officials, trade associations and others on the need to keep reliability at the forefront as the push to all renewable generation continues.

Member system sets three highest all-time peaks

Associated and its owners' transmission system remained heavily loaded with system load staying above 5,000 MW for 33 consecutive hours during the storm. The system set three all-time peaks:

- 5,266 MW on Feb. 14.
- 5,549 MW on Feb. 15.
- 5,494 MW on Feb. 16.

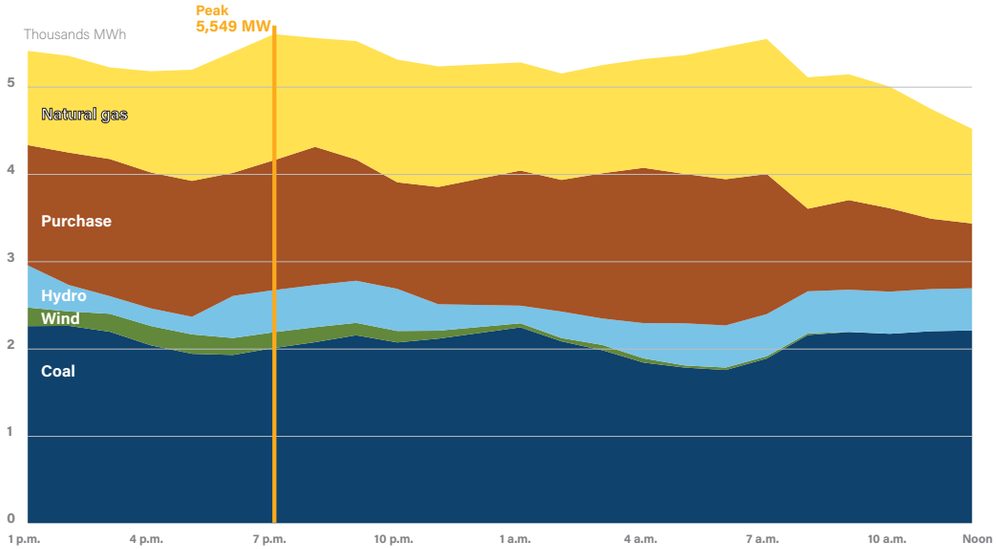
Associated's previous all-time peak was 5,104 MW set in January 2018.

Feb. 15-18, member systems were asked to conserve energy. Feb. 19, Associated issued an all-clear message and thanked member distribution cooperatives for their efforts to reduce energy use, helping to avoid rolling blackouts.

"Our member systems have established the relationships and communication channels with their members to keep them informed of the situation," said Joe Wilkinson, chief member relations officer. "Then, when the time came and we needed member-owners to conserve energy to help with the peak, the co-ops issued requests, and member-owners responded. The support for their co-ops has been amazing, and they played a significant part in keeping our system online."

Resources serve members during the storm

Feb. 15 midday to noon Feb. 16, with all-time peak set Feb. 15



Winter storm Uri stretched from Canada to south Texas, bringing subzero temperatures, heavy snowfall and ice as far south as Houston, Texas. In its service area, Associated experienced temperatures as low as – 20 F. Wind chill factor made it - 40 F at its northernmost Missouri plant.

The storm taxed transmission facilities, natural gas processing facilities and gas supply. Natural gas and energy prices skyrocketed. Gas in Oklahoma settled at a historic high Feb. 18 of $1,193/mmBtu, for example.

ERCOT, MISO and SPP implemented rolling blackouts. Millions of customers lost power. Lives were lost due to the severe cold and blackouts in Texas. Nationwide, damages were estimated at $195 billion, and analysis of the event and corrections continue.

In this photo at New Madrid Power Plant during winter storm Uri, an orange glow comes from a quartz light surrounded by an orange fire retardant blanket. The lights generate heat, and the blanket contains that heat to keep a small, localized area of equipment, such as transmitters, warmer.

Time-tested strategy: Financial strength and flexibility

Associated's financial strength and flexibility have served it well in times of opportunity and in times of challenge. 2021 was no different. Associated weathered the costs of winter storm Uri, as well as managed associated risks and market challenges throughout the year.

The financial impact of the 2021 winter storm was about $175 million, including natural gas, purchased power and RTO and transmission fees.

Meeting in special session during the storm, the board reviewed and approved plans to address the costs, including use of $130 million in deferred revenue funds and temporary suspension of the member rate discount.

Other tools in place at Associated were adequate liquidity, long-term relationships with lenders and the Rural Utilities Service, and strong credit thresholds with counterparties.

Natural gas prices during the event were more than 100 times what is normally traded, creating greater emphasis on credit limits and exposures (See charts Page 15.).

Energy Risk Management staff worked closely with energy marketing staff during the event, monitoring conditions and preparing daily cost estimates of the storm. This also allowed energy marketers to focus on reliability.

For months after the storm, Energy Risk Management reviewed all transactions that occurred, identified discrepancies, and with the help of legal staff disputed invoices and requested refunds and payments.

Due in large part to Associated's strategy and staff's work to inform and communicate with the three bond rating agencies, all three affirmed Associated's top ratings in 2021. This was significant confirmation in a year that included Associated's largest single-month financial loss due to the storm.

Storm Uri was just one event in a year of solid performance:

- Strong working relationships led to another year of successful insurance placements in a difficult market with increasing scrutiny on coal generation.
- Staff also started the process of reimbursement from the Federal Emergency Management Agency for storm damages in December to a large portion of Associated's 500-kV transmission line in southeast Missouri.
- The Accounting and Finance Division also played a significant role in meeting the challenges of the COVID-19 pandemic, including procurement of supplies and FEMA process and reimbursement.

See 2021 financial highlights section, Page 22.

Associated keeps members' rates affordable, stable

Associated continues to provide member-owners a stable, competitive power supply, evident by its average member revenue per MWh. Among its tools to keep member rates stable are deferral and recognition of revenue as determined by the board of directors.

In this chart, green bars reflect actual costs of wholesale power to six owner G&Ts; yellow line represents revenue Associated recorded to cover its costs. The 2021 gap was covered by Associated's recognizing deferred revenue.

Associated deferred revenue 2017-2020, decreasing average member revenue per MWh. In 2021, the board approved recognition of $130 million of that deferred revenue to help pay 2021 storm costs and protect member systems from an unexpected, significant rate increase. Nonmember energy sales, as well as other measures, also helped mitigate storm costs for members, keeping their average cost at $49.28 per MWh in 2021.

Energy marketing makes the most of members' resources

Associated's energy portfolio marketing staff constantly works to make the most of diverse generation and transmission assets not needed to serve member systems. This helps produce nonmember sales margin, which lowers members' costs.

Their work is closely coordinated with staff in Energy Risk Management and Power Production, where employees adjust operations and maintenance schedules with member load and market conditions.

2021 net marketing activity was about $54 million above budget, excluding winter storm Uri costs. Nonmember sales revenue includes bilateral sales, structured transactions, sales to regional transmission organizations and short-term market opportunities.

"With respect to power, our geographic location and vast interconnections with neighboring entities allow us to take advantage of pricing spreads that can exist between areas experiencing different weather patterns, such as importing from one location and exporting to another with higher prices."

***Michael Denning**, manager of energy marketing*

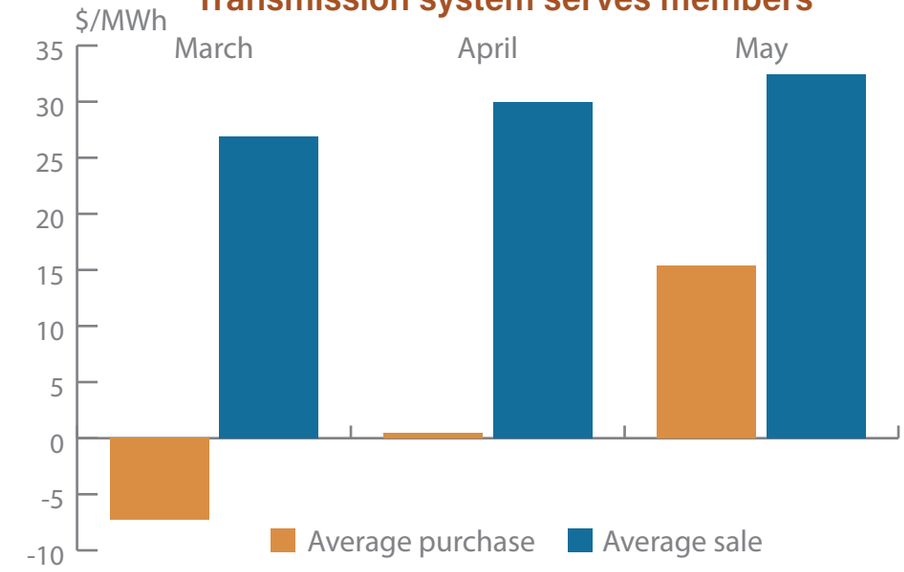
Intrahour energy exchange would optimize resources

Associated also completed the structure and technology procurement, as well as obtained FERC approval, for the Southeast Energy Exchange Market. SEEM is a partnership with other utilities to create a centralized, regionwide intrahour energy exchange. The goals of SEEM are to lower costs to customers, optimize diverse energy resources and improve reliability and resiliency of the transmission grid. Staff expects the Southeast exchange market to begin in late 2022.

Generating units flex with changing conditions

Associated has improved the flexibility of its coal and gas units, enabling them to operate at lower minimums and ramp up or down more quickly to meet changing conditions, such as the influx of its own contracted wind energy or that from neighboring entities. In 2021, a team furthered studies and identified a sustainable ramp rate for the coal plants. New Madrid units were able to operate at reduced loads of 170 MW, down from previous minimum loads of 300 MW. The ramp rate on Unit 1 significantly improved to 6.5 MW/minute with completion of the controls upgrade, enabling it to better complement wind energy, hydropower and gas resources.

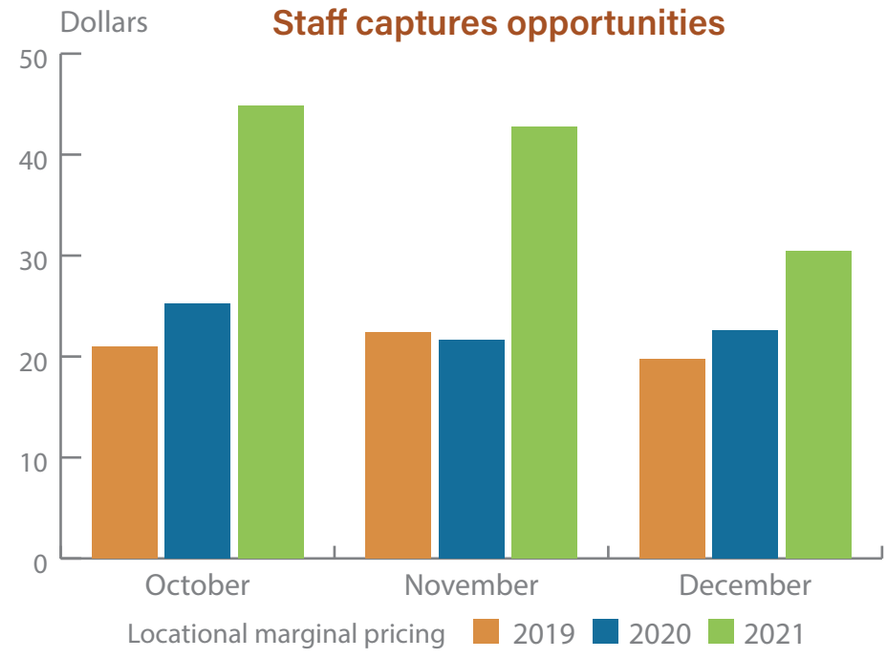
Transmission system serves members



Above: *Shoulder seasons offer opportunities, like from March to May 2021 when Associated imported less expensive power out of MISO to sell to other entities. When MISO experiences congestion in some areas due to high levels of wind energy, it acts to alleviate that congestion by using price signals that can even result in negative energy pricing.*

Below: *Higher gas and energy prices ahead of the winter and less coal capacity on the grid in 2021 created opportunities to sell Associated's generation not needed for members. Locational marginal pricing (LMP) represents cost to buy and sell power at different locations within wholesale electricity markets.*

Staff captures opportunities



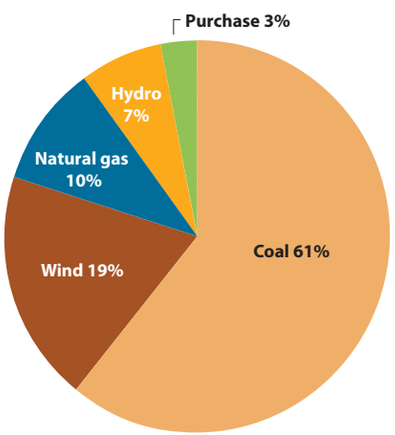
Balanced portfolio ensures reliable, affordable power supply

There is strength and reliability in balance, a time-tested strategy Associated has followed in developing diverse generation resources that include coal, natural gas, hydropower and wind energy.

Poised with such resources, Associated pivoted in 2021 to meet several challenges, including winter storm Uri; high natural gas prices; coal conservation; maintenance outages; controlling operations and maintenance expense; construction and engineering projects; and managing wind energy on its system.

"The Associated team has a laser focus on controlling costs in both the routine plant operations and maintenance as well as the capital costs, so that we are able to continually deliver low cost to our members," said Ken Wilmot, senior vice president and chief operations officer.

In 2021, cross-divisional teams planned for Associated's future generating resources to ensure reliability, achieving an expanded integrated resource planning process; new analysis techniques for carbon reduction contingency modeling and costs; evaluation of utility solar for the system and potential sites; and transmission investments and interconnection requests.



2021 member load resources

Among coal fleet highlights:

Associated's coal fleet served members well in 2021, a year when natural gas prices remained high following the February storm.

- New Madrid units 1 and 2 had their longest runs between boiler cleanings, 361 days and 384 days, respectively, a longtime initiative to improve availability of units and reduce costs.
- The Thomas Hill Energy Center achieved a record capacity factor of 81.9%, running more due to higher natural gas prices.
- Net heat rate was 9,858 Btu/kilowatt-hour, which was significantly reduced from 2020, illustrating continuing efficiency efforts while improving ramp rates and dealing with wet coal and lower-than-expected coal stockpiles.

Among gas fleet achievements:

Above-budget natural gas prices in 2021 meant Associated relied on its other resources, reducing overall gas fleet generation; however, the gas fleet ran reliably, setting its fourth highest generation record at 8,476,643 MWh.

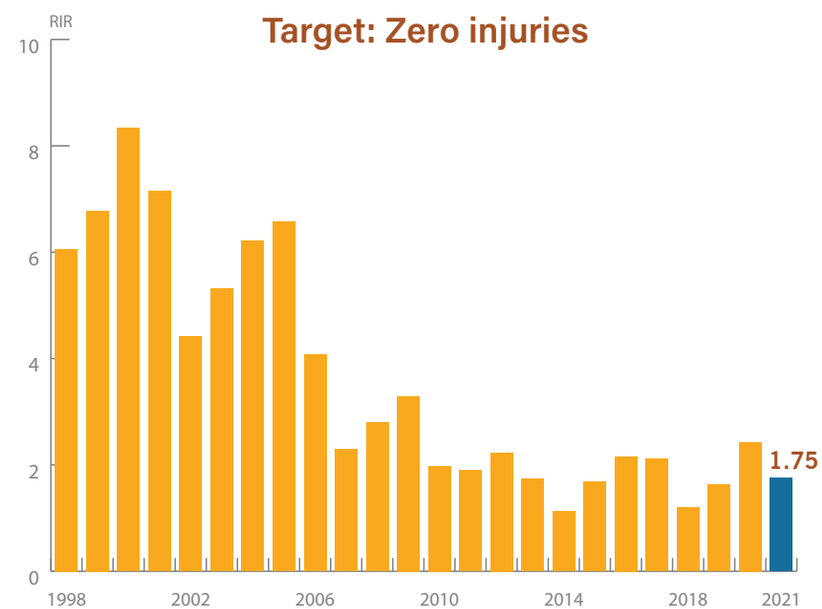
- Overall gas fleet availability factor was 90%.
- 97% starting reliability (1,340 out of 1,382 starts).
- The Dell Power Plant ran for a continuous 77 days, and the year saw only two days without a gas unit online. Before 2018, the Dell plant ran less than 5% of the time. The Dell plant is able to dispatch into the MISO market, offering additional flexibility for members and nonmember energy sales.

Safety comes first

Always putting safety first, in 2021 environmental, health and safety staff completed lockout, tag-out procedures to all locks, versus tags, at the gas plants for implementation in 2022. This followed conversion at the coal plants in 2020. New software also was implemented to issue LOTO, hot work and confined-space permits. All safety procedures at simple-cycle gas plants were updated.

Associated's 2021 OSHA Recordable Incident Rate was 1.75, down from 2020 rate of 2.36, and leadership and employees continue to work together toward zero injuries.

Target: Zero injuries



Maintained for members

Associated does its homework when it comes to caring for members' generating assets safely, ensuring it passes the reliability exam. In 2021, Associated maintained and improved reliability and flexibility of those units to better serve members and meet changing industry conditions.

For example, prior to the early 2021 winter storm, Associated had upgraded controls at the Dell Power Plant, enabling those units to operate at lower minimum load values, as well as provide market tracking data and duct burner control. During the storm, the units could operate at minimum load to ensure reliability.

Reliability requires maintenance outages, which are orchestrated events planned in advance to ensure safety and needed contract labor, parts and materials to meet tight schedules and budgets. Coordination crosses departments and extends to the G&Ts for transmission operations.

Along with day-to-day preventive maintenance, and diligently mitigating COVID-19 exposures, the 2021 fleetwide operations and maintenance and capital program in 2021 included New Madrid Unit 1 (see photo, right) and:

- At Dell Power Plant, a new distributed control system improved unit ramp rate to 20 megawatts per minute. A fall maintenance outage restored the plant's ability to operate on fuel oil.
- On Thomas Hill Unit 2, a maintenance outage included inspection and repair of the high-pressure turbine nozzles and blocks, refractory repairs and tube shield installation on the leading primary superheat tubes in the boiler, all without significant safety or operational issues. The unit had its second-best year for net unit heat rate.
- Staff continued efforts to improve flexibility and output of gas turbines.

Mechanical maintenance technician Lonnie Kisner is part of a team ensuring reliability of the Dell Power Plant.

Spring maintenance outage on New Madrid Unit 1 included boiler repairs and system controls; a new system for handling bottom ash; replacing generator step-up transformer; turbine and valve inspections; and other work orders. The outage finished under budget, and no significant safety or operational issues occurred. To help lower costs, maintenance on this outage was partly funded by a loan from the USDA Rural Utilities Service.

Independent, interconnected stance fosters reliability

Associated is an independent balancing authority in control of its members' generating and transmission assets for members' benefit. Its self-reliant approach was thoroughly evaluated during its Long-term Strategic Plan process and continually monitored as industry conditions change. It is a position that has proven to be the most reliable, low-cost approach for member-owners.

During the 2021 winter storm, Associated and neighboring entities' systems were all stressed, reinforcing Associated's strategy of being self-reliant and focused on reliability for member systems.

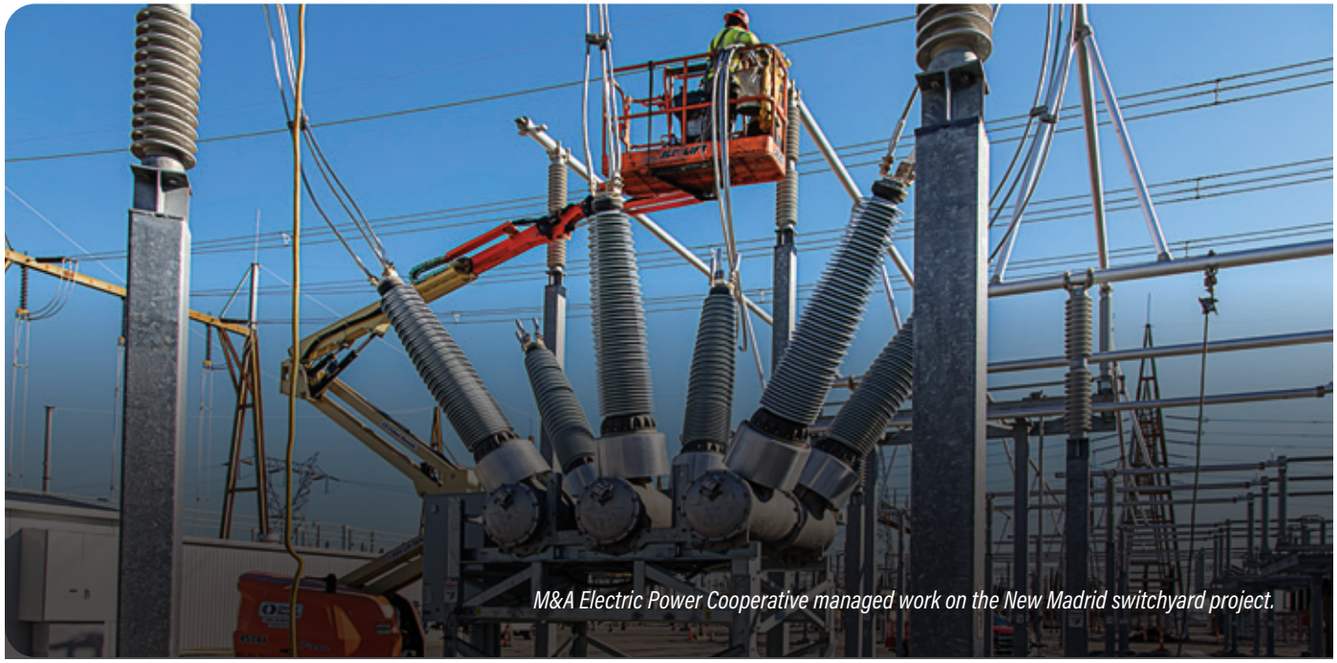
Key to this position is Associated and its member-owners' integrated high-voltage system, which is operated, constructed and maintained by the six transmission owners.

Associated's position is strengthened by:

- Good working, strategic relationships with neighboring RTOs (MISO, PJM and SPP).
- Its geographic location with more than 230 interconnections, enabling Associated to buy and sell power with neighboring RTOs, other independent balancing and marketing firms.
- Reserve-sharing with the Southwest Power Pool.
- Tennessee Valley Authority serving as its reliability coordinator.
- Proactive culture of compliance with federal reliability standards and requirements.
- Active member and leadership in North American Transmission Forum.

In 2021, to further ensure reliability and resilience:

- Staff completed 10-year long-range transmission plan in coordination with six owners and neighboring entities. Completed every two years, the plan guides development of transmission facilities to meet required reliability for future loads. Total improvements for 2021-2031 are estimated at $158 million.
- In addition, staff undertook a strategic transmission study of multiple scenarios, such as extreme weather events; changing resource mix, including higher renewable energy; and high transfers across Associated's system. The study will lead to additional infrastructure investments estimated at $175 million.
- Staff continued to work with RTOs to limit impact of transfers across Associated and its owners' high-voltage system.
- In balancing Associated's portfolio, staff mitigated risk and impact of increased renewables from neighboring RTOs.
- With owners, reviewed and improved stock of critical spare equipment needed on transmission system.
- Addressed long lag time in RTOs' studies of transmission projects, leading them to update their processes and procedures so that queue position is determined by date of the project being ready to study versus date of entry.
- Associated also updated its own generation interconnection process for queue streamlining.



M&A Electric Power Cooperative managed work on the New Madrid switchyard project.

Cohesive strategy defends against cyberthreats

Defend, detect and respond to elements that threaten cybersecurity, and thus the reliability of the three-tiered system. Those are the key concepts of Cyber Dome, launched in 2021 by Associated for its owners and their member systems. This united response to the rising number of cyberthreats is stronger and costs less than individual system response.

A pilot project in early 2021, Cyber Dome was ultimately approved to be offered to all member G&Ts and their member distribution cooperatives. By year-end 2021, 31 member systems were brought under Cyber Dome with additional cooperatives scheduled for 2022.

The centralized cybersecurity monitoring and response system mitigated several significant threats in 2021, and staff continues to develop playbooks on how to handle threats in the future.

Also in 2021, Information Services staff:

- Continued core information technology infrastructure upgrades throughout the organization, like Associated's computer data storage infrastructure and core network switches. Cutovers were seamless – a quiet success story that keeps daily operations rolling.
- Partnered with Power Production on power plant control upgrades, as well as network design and cybersecurity for operations networks.
- Proceeded to implement and fine-tune major software systems, part of a software evaluation and modernization effort initiated in 2018 and continuing through 2022. In 2021, staff hardened new enterprise asset and human capital management systems.
- Continued to leverage the cloud infrastructure that allows infrastructure to be created on demand.

Drew Ivie, journeyman instrumentation technician, works on temperature sensors for the New Madrid Unit 1 boiler.

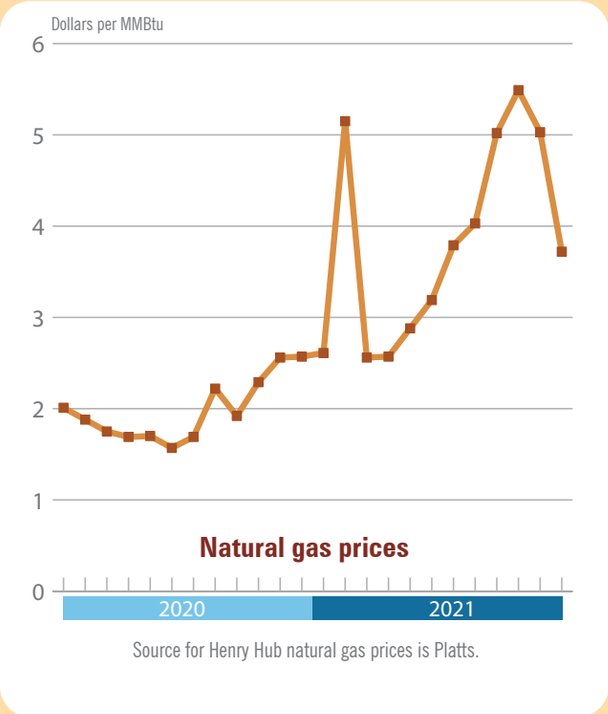
Proactively identify and manage the risks

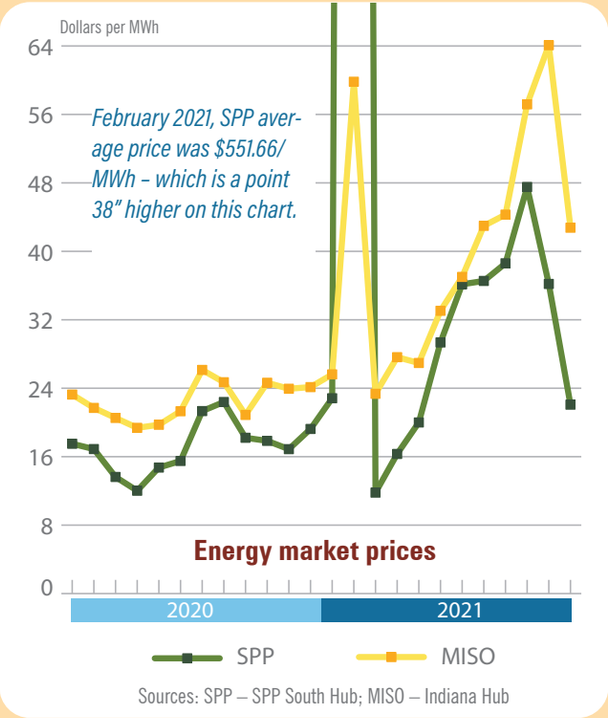
Conservative risk management is an essential part of Associated's strategy, and its Energy Risk Management Division works to protect members' assets.

"If you don't have the right infrastructure to manage risk, your organization will have to forgo many opportunities," said Scott Thompson, senior vice president and chief risk officer. "That is why ERM is proactively maturing its infrastructure so when we identify an opportunity, our commercial team can pursue it rather than forgoing it."

In 2021, ERM staff was vital as the storm event stressed the limits previously set by board policy for energy trading – a proactive policy staff had researched, developed and implemented in recent years. Their work after the storm to reconcile and settle with trading counterparties helped reduce costs.

Staff continued to mature the cooperative's "Enterprise Risk Process" to include mitigation plan development and reviewed and began implementation of new software as a tool to better manage Associated's key risks.





Associated cares for environment on which members depend

Associated completed its first Environmental, Social & Governance Report in 2021, available on its website, but the content and data are not new.

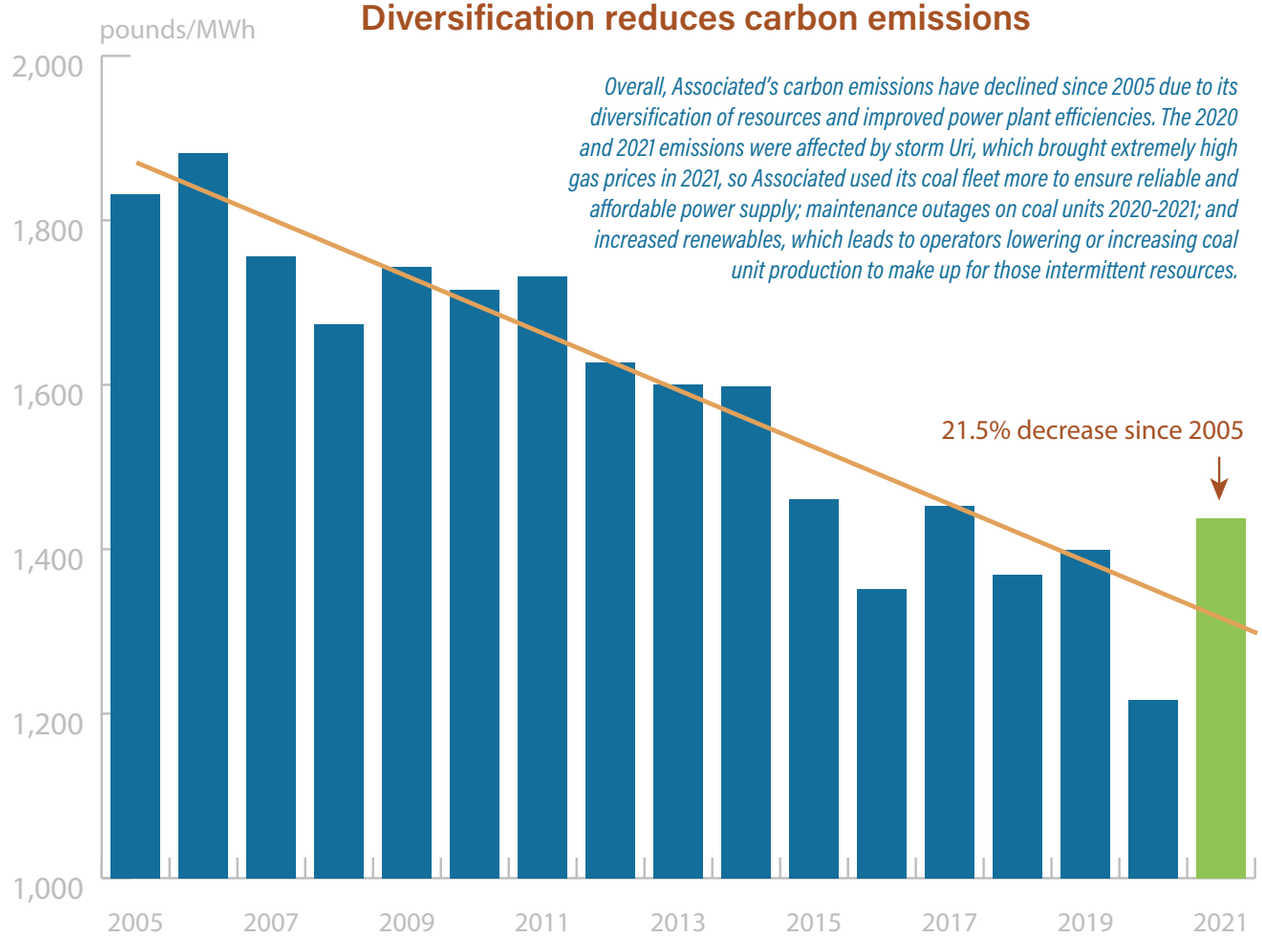
The cooperative has a long history of proactive, cost-effective environmental stewardship – one of the first in the country to reduce sulfur dioxide emissions with conversion to low-sulfur coal, to reduce mercury with technology 10 years earlier than required, to support research to make green bricks from coal ash, and the list goes on.

That practice continued in 2021. Associated completed more projects to comply with coal ash-handling and water rules to protect the environment and ensure compliance – the dominant projects of the year. Associated and its members have invested $100 million in the last two years to meet Coal Combustion Residuals and Effluent Limitation Guidelines issued by EPA. Its work is transparent, posted on the website.

"Given that clean air, water and land resources mean so much to the rural electric cooperative members we serve, our commitment to environmental, social and governance responsibilities is characterized not only in words but also in deeds. Significant investments to protect these resources, as we generate electricity for 2.1 million people, are delivering meaningful environmental results."

***Buster Geisendorfer**, president*
Associated Electric Cooperative Board of Directors

Diversification reduces carbon emissions



Overall, Associated's carbon emissions have declined since 2005 due to its diversification of resources and improved power plant efficiencies. The 2020 and 2021 emissions were affected by storm Uri, which brought extremely high gas prices in 2021, so Associated used its coal fleet more to ensure reliable and affordable power supply; maintenance outages on coal units 2020-2021; and increased renewables, which leads to operators lowering or increasing coal unit production to make up for those intermittent resources.

Work includes completion of a multiyear $50 million project to construct a submerged flight conveyor for both New Madrid units to remove bottom ash from the plant for recycling. Other ash and water quality projects included pond closures, improved water runoff systems, pollinator habitat and groundwater quality monitoring.

Land resource projects also included working with member systems to develop additional pollinator habitat, completing shoreline erosion repairs and improving soil quality.

All this is in addition to continual control of air emissions, land management, permitting, reporting, compliance and research.

Among the projects constructed in 2021 to meet Effluent Limitation Guidelines on water usage is a submerged flight conveyor to remove bottom ash from New Madrid Power Plant.

Preparedness and flexibility ensure reliable generation

Being prepared for extreme conditions, as well as the everyday, is common practice at Associated, which has been hardening its generating units for cold weather operations since 2014. In the last few years, Associated has invested $8 million to enable its gas fleet to operate at -20 F.

And even before a new NERC requirement, Associated had implemented site-specific winterization plans at all its power plants. These typically are in place by November, depending on the weather.

Ahead of storm Uri, all five coal units were online, and staff managed weather-related equipment challenges, including wet coal derates and significant water makeup.

All available gas units were started and kept online at low loads, ready to ramp up if needed. Staffing was increased to 24/7 at the gas plants.

During storm Uri, Associated's dual fuel, 321-MW Holden Power Plant set an all-time run record – and did it on fuel oil. As gas prices rose and pipeline issues developed, staff scheduled additional fuel oil deliveries. Three days later, when the dispatch price for using gas at Holden reached $2,650/MWh, staff switched to fuel oil at a cost of about $200/MWh. It was the first time the unit had run on fuel oil to serve member load since it was built in 2002. But in subzero temperatures, staff safely unloaded 185 fuel oil tankers. The plant ran for 203 hours on fuel oil, burning 1.3 million gallons.

Joel Wilhite, principal combustion turbine specialist, works at the Holden Plant. A 20-year employee, he was nominated by peers and selected to receive an Excel award: Employee of the Year, gas plant operations. Excel is an annual employee recognition program to highlight employees who go above and beyond in their service to Associated and its members.

Member satisfaction remains strong

The three-tiered system served by Associated continues to rank among the nation's best in overall member satisfaction, according to the American Customer Satisfaction Index and results from a survey conducted by Associated and member systems every three years.

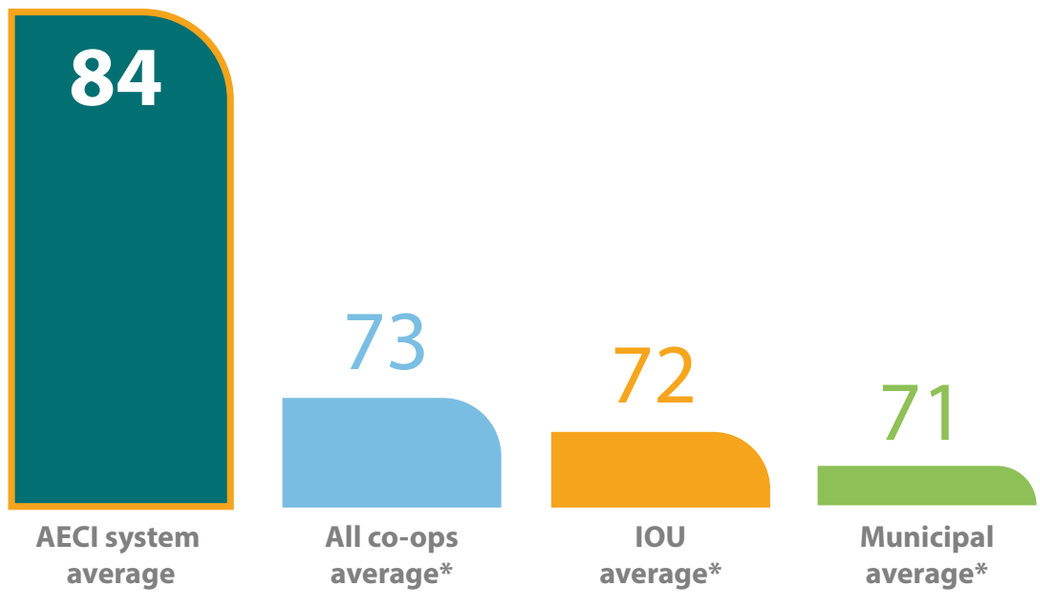
2021 survey results show the system's overall ACSI score remained at 84 – the same as the 2019 survey score. That is slightly higher than the average for the National Survey on the Cooperative Difference and a good 10 points higher than the average for all cooperatives, investor-owned and municipal utilities.

Fifty of the member distribution cooperatives participated in last year's survey and received their individual system results. Associated receives systemwide results.

The survey is one more way for cooperatives to assess member satisfaction and includes questions on key drivers of satisfaction and loyalty; age of homes and heating and air conditioning sources; attitudes on various issues, including balanced generation, electric cars, service and costs; the best way for them to receive cooperative news; and demographics.

A sampling of survey results, systemwide:

- Associated's member identity metric, which correlates to higher satisfaction levels, outscored the national average and was up two points from 2019 survey.
- Participants (64%) supported a balanced mix of resources to meet their electricity needs, and this agreement was fairly even across all age groups.
- Member participants did not support legislation that moves their co-op quickly to carbon-free power, possibly raising rates. Only 16% said yes, 17% were in the middle, but 67% said no.
- Member cooperatives scored high for providing reliable service, handling problems quickly, being a trusted name, providing good value for the money, capital credits and other categories surveyed.



Collective responses from a member survey gave the three-tiered system served by Associated one of the highest American Customer Satisfaction Index (ACSI) scores among energy providers in the nation. The ACSI is considered the gold standard of consumer satisfaction measurement. Associated conducts its member survey every three years, just another way to ensure it's in touch with members' needs.

**Source: 2021 ACSI Utility Sector Report*

Strategy: Attract, recruit and retain the best workforce for members

Associated's strategies are carried out by an engaged, effective workforce, which is supported behind the scenes by the cooperative's human resource partners. They provide proactive business solutions, including performance management, wage and salary toolkits, labor relations, recruitment, training, development, succession planning and ways to enhance employee engagement.

In addition to continual improvement in these areas, in 2021 division staff:

- Successfully extended Associated's collective bargaining agreement with employees represented by the International Brotherhood of Electrical Workers for three years (July 2021-June 2024).
- Kept employees and leadership informed on COVID-19 pandemic and conducted vaccination clinics, booster clinics and rapid testing for employees and their families to ensure the safety of the workforce.
- Enhanced assimilation of employees into the three-tiered system with three new programs: a Cooperative Exchange Program pilot, Associated 101 and Class of 2021.
- Enhanced employee leave benefits to address changing employee demographics.
- Along with a consortium of agencies, Associated helped add Energy Industry Fundamentals as a stackable credential in the state's education curriculum. This puts Missouri a step closer to making energy a career cluster. In a field where competition for talent is fierce, this cluster would help teachers, school administrators and students learn more about the energy industry, skills needed and opportunities available, and would enhance Associated's ability to attract, recruit and retain qualified candidates.

Associated Electric Cooperative was certified by the Great Place to Work organization based on employee engagement surveys showing an 83% favorable response rate. Among employees working on employee engagement was Lauren Gandy, organizational development business partner, who received Associated's peer-nominated Rising Star Excel award for her work on a number of initiatives.

Open communication lines strengthen cohesion

Communication remains strong throughout the three-tiered system, creating a cohesion that enables the system to manage challenges and capture opportunities in an industry of changing technology, economics and member-consumer expectations.

Communication flows throughout the organization, from board meetings to collaborating on transmission with the six transmission owners to meeting one-on-one with distribution cooperative managers, state and federal legislators and officials.

Associated's member services and corporate communications staff coordinates much of this communication.

In 2021, staff:

- Developed and implemented a "Balanced Generation" campaign on the direct relationship of diverse resources and reliability, including articles in statewide publications, videos, social media posts and written pieces member systems could use, as well as meeting with legislators on the issues.
- Keeping pandemic safety in mind, staff held a half-day virtual annual meeting, including live business meeting interactions with remote G&T locations, recorded segments, live presentations and virtual keynote speaker.
- As part of its member-led Power for Progress economic development program, staff led an Economic Development Work Plan initiative for member systems of KAMO Power and continued to support Northeast Missouri Electric Power Cooperative, NW Electric Power Cooperative and Sho-Me Power Electric Cooperative on implementation of their studies. Staff also met with member systems on recommended changes to Power for Progress by an independent consultant's study.
- As part of its Take Control & Save energy efficiency program for member systems, Associated began to implement an option for electronic rebate forms. Take Control & Save was launched in 2008 and continues to help member-consumers save on their electric bills.

Associated never forgets for whom they work and invites member systems to learn more about their wholesale power supply. In this photo, the Howell-Oregon Electric Cooperative board tours the control room of New Madrid Power Plant. From left are Shannon Sprouse, Associated's plant training specialist and tour guide, and Howell-Oregon board members Larry Pendergrass, Brandon Huffman, Glen Johnson and Jim Lawrence.

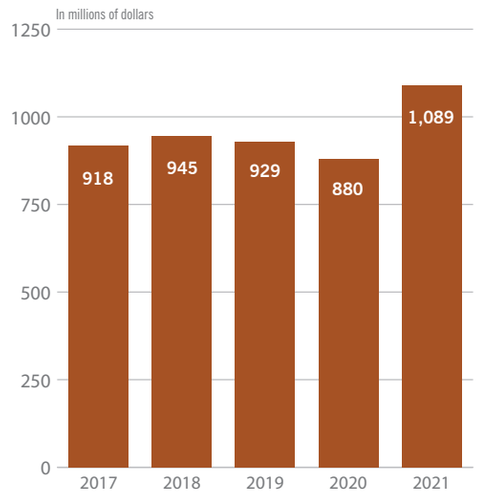
Ten-year statistical summary

Year (calendar year basis)	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Operating revenue (in thousands)	**$1,484,439**	$1,135,982	$1,247,298	$1,209,881	$1,082,700	$1,093,545	$1,090,790	$1,142,320	$1,129,752	$1,081,899
Sales (kWh in thousands)	**28,025,964**	27,762,367	29,724,096	27,297,687	22,372,148	22,978,917	22,519,981	22,794,455	24,122,178	23,257,842
Total member sales	**19,454,686**	18,734,107	19,284,984	19,956,358	17,832,428	17,879,974	17,924,012	18,688,056	18,330,147	18,078,911
Central Electric Power Cooperative	**3,819,710**	3,734,710	3,835,648	3,973,673	3,560,201	3,636,158	3,572,374	3,755,050	3,680,320	3,522,610
KAMO Power	**7,432,573**	6,978,652	7,185,095	7,323,329	6,423,812	6,351,957	6,537,387	6,792,200	6,528,534	6,201,160
M&A Electric Power Cooperative	**1,787,267**	1,732,893	1,764,990	1,857,174	1,666,063	1,723,722	1,706,742	1,795,459	1,737,674	1,716,541
Northeast Missouri Electric Power Cooperative	**1,487,095**	1,460,073	1,514,516	1,566,811	1,462,436	1,299,942	1,256,184	1,305,431	1,321,433	1,255,265
NW Electric Power Cooperative Inc.	**1,755,055**	1,723,436	1,782,683	1,912,603	1,722,509	1,739,503	1,730,879	1,774,683	1,780,568	1,778,823
Sho-Me Power Electric Cooperative	**3,172,986**	3,104,343	3,202,052	3,322,768	2,997,407	3,128,692	3,120,446	3,265,233	3,281,618	3,604,512
Total nonmember sales	**8,571,278**	9,028,260	10,439,112	7,341,329	4,539,720	5,098,943	4,595,969	4,106,399	5,792,031	5,178,931
Peak hour member demand (MW)	**5,549**	4,369	4,539	5,104	4,374	4,379	4,506	4,598	3,905	4,354
Member load factor (%)	**39.7**	48.2	47.8	44.0	46.3	46.1	44.7	45.8	53.1	46.7
Member load growth (%)										
Energy	**3.8**	(2.9)	(3.4)	11.9	(0.3)	(0.2)	(4.1)	2.0	1.4	(2.8)
Demand	**27.0**	(3.7)	(11.1)	16.7	(0.1)	(2.8)	(2.0)	17.7	(10.3)	(2.0)
Investment in facilities (original cost in thousands)	**$4,724,656**	$4,555,644	$4,358,235	$4,263,476	$3,985,538	$3,934,751	$3,852,543	$3,737,915	$3,672,637	$3,610,868
Total assets (in thousands)	**$3,042,828**	$3,028,804	$2,928,229	$3,147,763	$3,083,454	$3,047,369	$2,989,865	$2,956,254	$2,988,262	$2,972,181
Long-term debt (in thousands, excluding current maturities)	**$1,617,411**	$1,551,646	$1,520,968	$1,824,856	$1,842,560	$1,858,115	$1,849,795	$1,812,663	$1,849,113	$1,830,572
Total capacity (MW) (see capacity notes, back cover)	**5,584**	5,703	5,657	5,655	5,700	5,700	5,891	5,827	5,787	5,895
Revenue from members (mills per kWh)	**55.97**	46.98	48.19	47.33	51.48	51.57	51.16	49.94	48.93	49.21

2021 financial highlights

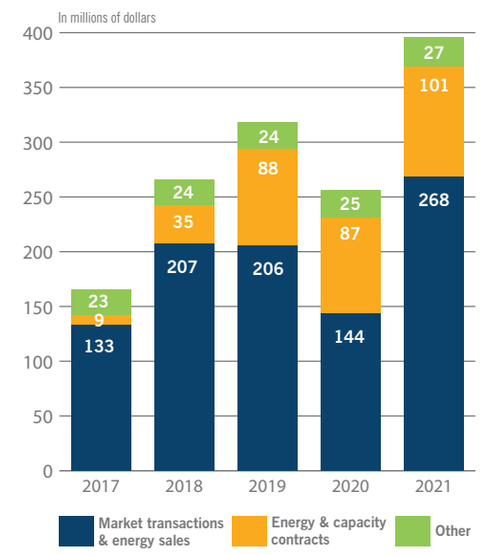
Member revenues – $

Member revenue was $1.1 billion for the year ended Dec. 31, 2021, an increase of $208.7 million from the prior year. The change was primarily attributed to the recognition of $130 million of previously deferred revenue in response to winter storm Uri compared to $27 million that was deferred in 2020. In addition, member rate discounts were lower in 2021 compared to 2020 as rate discounts were suspended in March and April 2021 in response to the winter storm. Overall, rate discounts totaled $36.5 million in 2021 compared to $84.4 million in 2020.



Nonmember sales revenue – $

Nonmember sales increased $139.8 million from the prior year, primarily related to higher market prices that continued through 2021 after the winter storm.



*Other nonmember revenue consists of transmission and gas sales.

The past year brought the continuing challenges of the COVID-19 pandemic, as well as the significant winter weather event in February 2021, winter storm Uri. Throughout this challenging time, Associated remained focused on its mission to provide an economical and reliable power supply and support services to its members.

Associated used financial tools, such as the recognition of $130 million of previously deferred revenue and suspension of member rate discounts for two months, to manage most of the financial impact of winter storm Uri.

Available cash balances and lines of credit provided ample liquidity to meet the significant financial costs of the storm.

Associated also maintained its excellent credit ratings from all three rating agencies.

Net margin for 2021 was $51.9 million compared to $51.4 million for 2020.

Financial position

Associated's financial position as of Dec. 31, 2021, was strong with a diversified portfolio of assets, ample working capital and a strong liquidity position.

Total assets were $3 billion, an increase of $14 million from 2020. Utility plant assets increased $169 million in 2021, which included upgrades to the transmission system, boiler maintenance and investments in other projects across Associated's generating fleet to ensure a diverse resource portfolio and reliability.

In 2021, Associated returned $24.5 million in capital credits to members, which included an additional $10 million for the fourth consecutive year. This is in addition to the 2% of equity the board annually has returned. Since 1993, Associated has returned $295.3 million of allocated patronage capital.

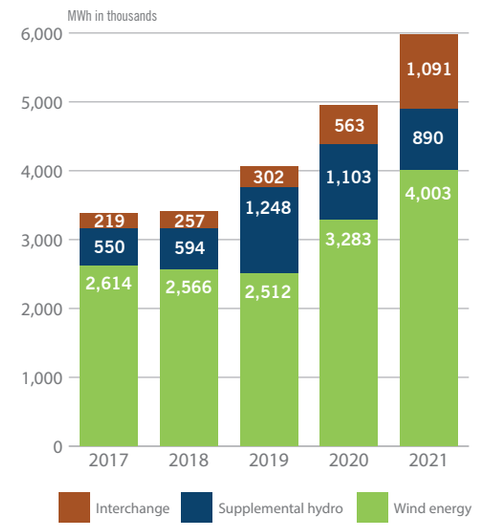
Working capital was $249 million at year-end 2021. Associated's current ratio was 1.70 and 2.17 at Dec. 31, 2021 and 2020, respectively.

Associated works well with the USDA Rural Utilities Service to secure lower-cost funding for projects that ensure reliable electricity for rural cooperative members.

The cooperative borrowed $150.2 million total from RUS in four separate advances on loans at an average rate of 1.88% for environmental control, generation maintenance, transmission and other work projects.

Purchased power – MWh

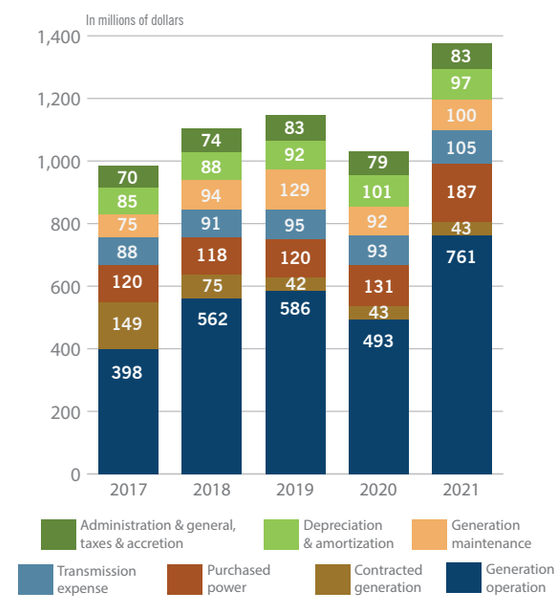
Purchased power increased in 2021 for several reasons. The impact of winter storm Uri resulted in a significant increase in purchase volume and market prices. In addition, a planned outage made it necessary for Associated to purchase larger volumes in the market during the higher load summer months and at higher prices due to the increase in natural gas prices. Purchased power also increased due to the addition of two new wind farms that became commercial in May and December 2020.



Operating expenses – $

Operating expenses, including fuel, operation and maintenance expenses, transmission and purchased power, were $1.4 billion, an increase of $343.8 million from the prior year. The increased expense was primarily due to the impacts of the winter storm.

During the first quarter of 2021, increased costs of about $175 million were incurred to ensure that reliable power was preserved during the extreme weather.



Total equities and margins & equity-to-capitalization ratio

Patronage capital and other equities were $754.9 million, up $30.4 million from 2020. At the end of 2021, equity represented 30.9% of Associated's total capitalization.

In addition, as of Dec. 31, 2021, Associated had an equity-to-asset ratio of 24.8%.

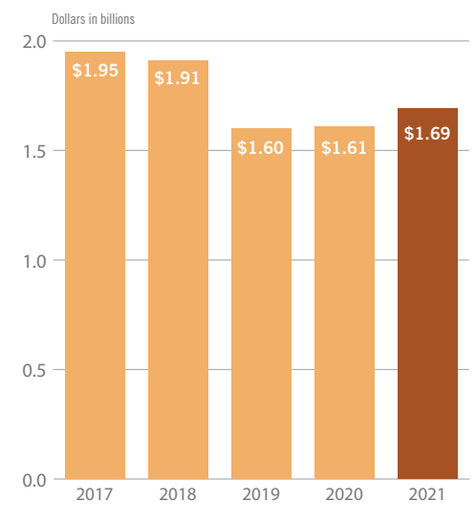
Liquidity through credit facilities – $

Unrestricted available liquidity was $1.1 billion, which was comprised of cash and cash equivalents of $184.2 million, designated cash and cash equivalents of $130.5 million and unused available funds on existing unsecured credit facilities of $800 million.

In 2021, Associated expanded its line of credit facilities. While the year-end credit amount was $800 million, staff planned for $50 million expiring in January 2022, bringing the amount from $600 million to the targeted $750 million.

Total long-term debt

Long-term debt, including current maturities, was $1.69 billion at an average interest rate of 3.45%. In the last five years, the long-term debt balance decreased from its 2017 level of $1.95 billion, and the average interest rate on total debt also has been reduced from 4.29% in 2017.



1997: KAMO Power selects Associated as the power supplier for its nine electric cooperatives in northeast Oklahoma, effective July 1998. KAMO's eight Missouri cooperatives already were being served by Associated.

1999: The first units of a 1,633-MW construction phase of gas-based generation come on line to meet members' peak demand needs. Intermediate and peaking power plants beginning operations in the next four years are:

- Essex (107 MW) and Nodaway (182 MW) simple-cycle power plants, June 1999;
- Combined-cycle 250-MW St. Francis Unit 1, September 1999;
- 522-MW combined-cycle Chouteau Power Plant I, June 2000;
- St. Francis Unit 2 (251 MW), March 2001; and
- 321-MW Holden Power Plant, May 2002.

2000 - 2002: Associated builds selective catalytic reduction equipment on both units at New Madrid Power Plant. The SCRs, designed to reduce emissions of nitrogen oxides by about 93%, make New Madrid one of the cleanest coal-based plants in the nation with cyclone burners.

2006: Associated, Wind Capital Group and John Deere Wind Energy announce construction of Missouri's first utility-scale wind farms. Associated agrees to purchase all energy produced by three wind farms for the next 20 years. Praised for its bold leadership in renewable energy development in Missouri, Associated is awarded "2006 Wind Co-op of the Year" by the U.S. Department of Energy.

2007: About 475 member-owners, state and federal legislators and officials attend dedication Sept. 17 of Bluegrass Ridge Wind Farm, Missouri's first utility-scale wind farm.

2007: Associated receives 2007 Kenes C. Bowling National Mine Reclamation Award for reclamation of Bee Veer mine in Macon County, Missouri, which is part of Thomas Hill Energy Center. Associated also receives U.S. Department of Interior's highest award for its innovative reclamation of the Bee Veer Mine.

2007: Associated's Dell Power Plant, a 580-megawatt combined-cycle natural gas plant, begins operations.

2008: Cow Branch and Conception wind farms in northwest Missouri begin producing power.

2008: Associated's "Take Control and Save" energy efficiency program debuts and builds on cooperatives' longtime energy efficiency efforts.

2008: Associated completes construction of environmental controls (SCRs) on all three units at Thomas Hill Energy Center, enabling a 90% systemwide reduction of nitrogen oxides (NOx) emissions by Jan. 1, 2009, to meet the CAIR deadline.

2009: Associated and Wind Capital Group announce fourth and largest wind farm in Missouri: the 150-MW Lost Creek project in DeKalb County, declared commercial in 2010.

2009: Longtime board president O.B. Clark retires. Emery O. Geisendorfer selected as board president.

2011: Associated celebrates its 50th anniversary.

2011: 540-MW Chouteau 2 combined-cycle gas plant declared commercial.

2011: Associated signs additional long-term power purchase agreements for 450 MW of wind power, which includes 300-MW Flat Ridge 2 Wind Farm in Kansas, operational in 2012, and 150-MW Osage farm in Oklahoma, operational in 2015.

2016: With longtime CEO James Jura retiring, board hires David Tudor as next CEO.

2018: Associated completes comprehensive long-term strategic planning process to prepare it for continued success.

2020: In northwest Missouri, the 235-MW Clear Creek wind energy project comes online in May, followed by the 236-MW White Cloud wind project in December, bringing Associated's contracted wind energy to more than 1,240 MW.

Learn more in Associated's two history books at **www.aeci.org.**

Associated relies on diverse power resources

	MW capacity
Associated's coal-based power plants:	
New Madrid Power Plant	1,200
Thomas Hill Energy Center	1,153
Associated's combined-cycle, gas-based power plants:	
Chouteau Power Plant	1,062
Dell Power Plant (dual fuel)	580
St. Francis Power Plant	501
Associated's peaking gas-based power plants:	
Essex Power Plant	107
Holden Power Plant (dual fuel)	321
Nodaway Power Plant	182
Contracted power sources:	
Hydroelectric peaking power, Southwestern Power Administration	478
Wind energy *	0
Total	**5,584**

*Associated contracts with eight wind farms totaling 1,240 MW of nameplate capacity. In 2020, Associated calculated 6% to 10% of that for peak planning purposes. Following recent board action, Associated no longer includes wind generating capacity for peak planning purposes.

Associated Electric Cooperative Inc.

A Touchstone Energy® Cooperative

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417-881-1204, www.aeci.org

An equal opportunity employer and provider/disability/veteran.

ASSOCIATED ELECTRIC COOPERATIVE INC.

Independent Auditor's Report

and

Consolidated Financial Statements

December 31, 2021 and 2020

BKD
CPAs & Advisors

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Independent Auditor's Report

Board of Directors and Members
Associated Electric Cooperative, Inc.
Springfield, Missouri

Report on the Audit of Consolidated Financial Statements

Opinion

We have audited the consolidated financial statements of Associated Electric Cooperative, Inc. and its wholly owned subsidiaries (Associated), which comprise the consolidated balance sheets as of December 31, 2021 and 2020, and the related consolidated statements of revenues and expenses, comprehensive income, patronage capital and other equities, and cash flows for the years then ended, and the related notes to the consolidated financial statements.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Associated as of December 31, 2021 and 2020, and the results of its operations, changes in patronage capital, and other equities and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements" section of our report. We are required to be independent of Associated and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about Associated's ability to continue as a going concern within one year after the date that the consolidated financial statements are available to be issued.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgement made by a reasonable user based on the consolidated financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Associated's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about Associated's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated February 11, 2022, on our consideration of Associated's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Associated's internal control over financial reporting and compliance.

BKD, LLP

Springfield, Missouri
February 11, 2022

Associated Electric Cooperative, Inc.

Consolidated Balance Sheets
December 31, 2021 and 2020
(In Thousands of Dollars)

Assets

	2021	2020
Utility Plant		
Electric plant in service	$ 4,598,450	$ 4,373,761
Construction work in progress	126,206	181,883
	4,724,656	4,555,644
Less accumulated depreciation	(2,468,284)	(2,377,722)
Total utility plant	2,256,372	2,177,922
Other Property and Investments		
Member construction advances, net	16,919	18,102
Nonutility property	31,379	31,663
Net investment in direct financing leases	2,594	2,951
Total other property and investments	50,892	52,716
Restricted and Designated Long-Term Assets		
Other restricted and designated assets	25,967	25,070
Investments in associated organizations	27,828	27,764
Total restricted and designated long-term assets	53,795	52,834
Other Long-Term Assets		
Deferred regulatory debits	38,788	40,913
Other deferred assets	40,299	23,496
Total other long-term assets	79,087	64,409
Current Assets		
Cash and cash equivalents	184,172	132,588
Designated cash and cash equivalents	130,482	260,482
Accounts receivable	99,359	113,922
Materials and supplies inventory	88,396	86,680
Fuel inventory	51,291	54,728
Other current assets	44,762	23,032
Current portion of deferred regulatory debits	4,220	9,491
Total current assets	602,682	680,923
Total assets	$ 3,042,828	$ 3,028,804

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Balance Sheets, continued

December 31, 2021 and 2020

(In Thousands of Dollars)

Capitalization and Liabilities

	2021	2020
Patronage Capital and Other Equities		
Memberships	$ 12	$ 12
Patronage capital	715,512	688,052
Other equities	55,543	55,543
Accumulated other comprehensive loss	(16,200)	(19,122)
Total patronage capital and other equities	754,867	724,485
Long-Term Debt, Excluding Current Maturities		
Federal Financing Bank	935,195	814,396
CoBank	134,223	169,321
National Rural Utilities Cooperative Finance Corporation	23,333	26,667
Private placement notes	524,660	541,262
Total long-term debt, excluding current maturities	1,617,411	1,551,646
Other Long-Term Liabilities		
Deferred regulatory credits	190,801	303,812
Other deferred liabilities	41,671	45,957
Asset retirement obligations	49,005	49,083
Accumulated provision for postretirement benefits	35,398	39,519
Total other long-term liabilities	316,875	438,371
Current Liabilities		
Accounts payable	144,281	160,278
Current maturities of long-term debt	69,850	59,366
Payable to member cooperatives	46,817	38,521
Other current and accrued liabilities	52,078	42,268
Current portion of asset retirement obligations	15,160	7,636
Current portion of deferred regulatory credits	25,489	6,233
Total current liabilities	353,675	314,302
Total capitalization and liabilities	$ 3,042,828	$ 3,028,804

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Statements of Revenues and Expenses

Years Ended December 31, 2021 and 2020

(In Thousands of Dollars)

	2021	2020
Operating Revenues		
Members	$ 1,088,786	$ 880,093
Nonmembers	395,653	255,889
Total operating revenues	1,484,439	1,135,982
Operating Expenses		
Generation operation	760,688	492,856
Generation maintenance	99,800	91,790
Power purchased	186,930	130,872
Transmission	104,745	92,892
Depreciation and amortization	97,458	101,520
Contracted generation	42,742	43,070
Administrative and general	75,898	69,897
Taxes	5,758	5,651
Accretion of asset retirement obligations	1,667	3,310
Total operating expenses	1,375,686	1,031,858
Operating Margin Before Interest Expense	108,753	104,124
Interest on Long-Term Debt	62,613	66,631
Less interest capitalized	(3,106)	(2,862)
	59,507	63,769
Operating Margin	49,246	40,355
Nonoperating		
Interest and dividend income	3,570	11,872
Other nonoperating income	1,948	2,321
Postretirement benefit expense	(2,560)	(2,624)
Interest expense	(254)	(561)
Total nonoperating	2,704	11,008
Net Margin	$ 51,950	$ 51,363

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Statements of Comprehensive Income
Years Ended December 31, 2021 and 2020
(In Thousands of Dollars)

	2021	2020
Net Margin	$ 51,950	$ 51,363
Other Comprehensive Income		
Actuarial income	2,922	750
Comprehensive Income	$ 54,872	$ 52,113

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Statements of Patronage Capital and Other Equities

Years Ended December 31, 2021 and 2020

(In Thousands of Dollars)

	Memberships	Patronage Capital	Other Equities	Other Comprehensive Loss	Total
Balance, January 1, 2020	$ 12	$ 660,615	$ 55,543	$ (19,872)	$ 696,298
2020 net margin	-	51,363	-	-	51,363
Other comprehensive income	-	-	-	750	750
Patronage capital retirements	-	(23,926)	-	-	(23,926)
Balance, December 31, 2020	12	688,052	55,543	(19,122)	724,485
2021 net margin	-	51,950	-	-	51,950
Other comprehensive income	-	-	-	2,922	2,922
Patronage capital retirements	-	(24,490)	-	-	(24,490)
Balance, December 31, 2021	$ 12	$ 715,512	$ 55,543	$ (16,200)	$ 754,867

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Statements of Cash Flows
Years Ended December 31, 2021 and 2020
(In Thousands of Dollars)

	2021	2020
Operating Activities		
Net margin	$ 51,950	$ 51,363
Reconciliation of net margin to net cash provided by (used in) operating activities		
Depreciation and amortization	103,542	106,301
Accretion of asset retirement obligations	1,667	-
Net gain on sale of property, plant, and equipment	(491)	(266)
Amortization of loan costs and member contribution advances	1,572	1,571
Changes in deferred regulatory debits	2,871	(615)
Changes in asset retirement obligations	(2,861)	(10,285)
Changes in deferred regulatory credits	(131,350)	25,650
Changes in current assets and liabilities		
Accounts receivable	14,599	14,629
Fuel inventory	3,437	(10,476)
Materials and supplies inventory	(1,716)	1,756
Accounts payable	10,513	(19)
Other current and accrued liabilities	13,952	5,260
Other operating activities, net	(3,933)	(867)
Net cash provided by operating activities	63,752	184,002
Investing Activities		
Capital expenditures	(204,715)	(165,452)
Reimbursement of capital expenditures	334	361
Proceeds from sale of property, plant, and equipment	812	147
Purchases of available-for-sale investments	(1,892)	(1,758)
Purchases of held-to-maturity investments	(2)	(8,624)
Sales of available-for-sale investments	1,573	1,225
Proceeds from held-to-maturity investments	77	262,956
Maturity of investments in associated organizations, net	1,410	2,982
Other investing activities, net	627	627
Net cash provided by (used in) investing activities	(201,776)	92,464
Financing Activities		
Net investments (withdrawals) from member cooperatives	8,296	(8,178)
Issuance of long-term debt	315,168	344,612
Retirement of long-term debt	(239,366)	(328,915)
Retirement of patronage capital	(24,490)	(23,926)
Net cash provided by (used in) financing activities	59,608	(16,407)

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Consolidated Statements of Cash Flows, continued

Years Ended December 31, 2021 and 2020

(In Thousands of Dollars)

	2021	2020
Net Change in Cash and Cash Equivalents and Designated Cash and Cash Equivalents	$ (78,416)	$ 260,059
Cash and Cash Equivalents and Designated Cash and Cash Equivalents, Beginning of Year	393,070	133,011
Cash and Cash Equivalents and Designated Cash and Cash Equivalents, End of Year	$ 314,654	$ 393,070
Cash and Cash Equivalents	$ 184,172	$ 132,588
Designated Cash and Cash Equivalents	130,482	260,482
Cash and Cash Equivalents and Designated Cash and Cash Equivalents	$ 314,654	$ 393,070
Supplemental Cash Flows Information		
Cash paid for interest (net of amount capitalized)	$ 52,971	$ 62,702
Supplemental Noncash Activities		
Change in capital expenditures included in accounts payable	$ 26,509	$ 37,544

See notes to consolidated financial statements.

Associated Electric Cooperative, Inc.

Notes to Consolidated Financial Statements
December 31, 2021 and 2020
(In Thousands of Dollars)

Note 1: Summary of Significant Accounting Policies

Associated Electric Cooperative, Inc. (Associated) is an electric generation and transmission cooperative that provides wholesale service to six members, all of which are generation and transmission cooperatives. Each of the members in turn provides wholesale electric power to their member distribution cooperatives located in Missouri, Iowa, and Oklahoma.

Associated maintains its accounting records in accordance with the U.S. Department of Agriculture Rural Utilities Services (RUS) Uniform System of Accounts. The accompanying consolidated financial statements and the related notes have been prepared on the basis of U.S. generally accepted accounting principles (GAAP).

Principles of Consolidation

Associated's wholly owned subsidiaries include AECI Land, LLC (Land), AECI Land 2, LLC (Land 2) and St. Jude Industrial Park Services, Inc. (SJIPS). Land holds property not used for utility purposes. Land 2 owns the water and wastewater treatment facilities that serve the St. Jude Industrial Park in New Madrid, Missouri. SJIPS provides contracted services for management of the St. Jude Industrial Park. For purposes of these consolidated financial statements, the activity of all of these entities is consolidated and all intercompany balances have been eliminated.

Utility Plant, Property, and Equipment

Utility plant, property and equipment are stated at cost. Generally, ordinary utility plant asset retirements and disposals are charged against accumulated depreciation with no gain or loss recognized. Gains and losses are recorded for retirements of general plant assets and entire asset groups. Maintenance and repairs are charged to expense as incurred.

The cost of utility plant is generally depreciated on a straight-line basis over the estimated economic useful lives:

	Estimated Useful Life	Composite Depreciation Rate
Generation plant	32–33 years	3.00%–3.10%
Transmission plant	36 years	3.00%
General plant	3–42 years	2.40%–33.33%

Upon indication of possible impairment, Associated evaluates the recoverability of long-lived assets by comparing the carrying amount of the relevant asset group against the related estimated undiscounted future cash flows expected over the remaining useful life of the asset group. When an evaluation indicates the future undiscounted cash flows are not sufficient to recover the carrying value of the asset group, the carrying value of the asset group is reduced to its estimated fair value. No impairment was recognized in 2021 or 2020.

Nonutility Property

Nonutility property consists of land not currently used for utility purposes. In 2021 and 2020, there were no material purchases or sales of nonutility property.

Asset Retirement Obligations

Associated has asset retirement obligations arising from regulatory requirements to perform asset retirement activities at the time certain property is disposed. A liability is initially measured at fair value and is subsequently adjusted for accretion expense and changes in the amount and timing of the estimated cash flows. The corresponding asset retirement costs are capitalized as part of the carrying amount of the long-lived asset and depreciated over the asset's useful life. Associated's asset retirement obligations include the costs associated with asbestos removal and disposal, reclamation of ash disposal areas, reclamation of landfill sites, reclamation of a biosolids lagoon site, removal of fuel oil tanks, and removal of certain water lines contained in Associated's generating plants (see *Note 4*).

Capitalized Interest

Interest incurred in connection with the construction of capital assets is capitalized and totaled $3,106 and $2,862 in 2021 and 2020, respectively. The average capitalization rates for 2021 and 2020 were 2.941% and 3.325%, respectively, which is based on Associated's cost of financing. Associated calculates capitalized interest based on a formula prescribed by RUS.

Restricted and Designated Assets

Restricted and designated assets consist of assets pledged for specific purposes including investments in patronage allocations from various membership cooperatives, deferred compensation, support of borrowings and to satisfy various contractual requirements. The classification between current and noncurrent assets is determined by the maturity of the underlying asset.

Investments

Debt securities held by Associated are classified and recorded in the accompanying consolidated financial statements as follows:

Classified as	Description	Recorded at
Held to maturity (HTM)	Certain debt securities that management has the positive intent and ability to hold to maturity	Amortized cost
Available for sale	Securities not classified as HTM or trading	Fair value, with changes in fair value, including earnings, except deferred compensation funds, which are adjusted through the liability

All Associated's equity securities are classified as available for sale. Associated measures equity securities held in trust for deferred compensation benefits at fair value with changes recognized as part of the accrued deferred compensation benefit and are included in other restricted and designated assets and other deferred liabilities on the accompanying consolidated balance sheets. Associated measures other equity securities at fair value with changes recognized in net margin. Realized gains and losses are computed based on the difference between amortized costs and proceeds received on a specific security identification basis.

Cash and Cash Equivalents

All unrestricted investments with an original maturity of three months or less are considered to be cash equivalents and are stated at cost, which approximates fair value. At December 31, 2021 and 2020, Associated's cash and cash equivalents balance was $184,172 and $132,588, respectively.

Designated Cash and Cash Equivalents

When the Board designates certain cash and cash equivalents for specific purposes, Associated considers the amounts to be designated. The Board may undesignate the amounts in the future. All designated investments with an original maturity of three months or less are considered to be cash equivalents and are stated at cost, which approximates fair value. Designated cash and cash equivalents consist of funds reserved for the Generation, Environmental and Insurance Reserve Fund and member revenue subject to refund. At December 31, 2021 and 2020, Associated's designated cash and cash equivalents balance was $130,482 and $260,482, respectively.

Member Construction

Associated has advanced funds for the construction of various member primary transmission projects. These advances are subsequently amortized over the life of the asset as transmission expense. The balance of these advances, net of amortization, totaled $16,919 and $18,102 at December 31, 2021 and 2020, respectively, with related amortization of $1,183 and $1,186 in 2021 and 2020, respectively.

Materials and Supplies Inventory

Materials and supplies are valued using the average-cost method. Materials and supplies that are obsolete are written down to estimated disposal value which approximates net realizable value.

Fuel Inventory

Fuel inventory is valued using the average-cost method. Associated purchases NOx allowances that are recorded in fuel inventory and expensed when used or when they no longer have value.

Payable to Member Cooperatives

Associated provides a short-term investment program to its member cooperatives and their cooperative members. The funds invested with Associated earn interest at rates established by Associated. The average rate was 0.13% and 0.55% in 2021 and 2020, respectively. The interest expense is reflected as nonoperating interest expense. At December 31, 2021 and 2020, the members had invested $46,817 and $38,251, respectively, classified as payable to member cooperatives.

Regulatory Matters

Associated is subject to the authoritative accounting guidance applicable to rate-regulated organizations. The Board of Directors has full authority to establish electric rates. Certain items collected in rates have been recorded as regulatory liabilities. These amounts will be recognized as revenue in future periods as costs for which the amounts have been collected are incurred, or when authorized by the Board of Directors (see *Note 13*). Certain expenses have been recorded as regulatory assets, and management believes these amounts are probable of future rate recovery (see *Note 10*). Associated has received RUS approval for its revenue deferral plans in place.

Revenues

Associated's revenues are primarily derived from the sale of electric power to member cooperatives pursuant to long-term wholesale electric service contracts. In addition to member revenue, Associated also has nonmember revenue that is derived from capacity sales, market transactions, energy sales with nonmembers, transmission sales and gas sales.

Member Revenue

Each member contract extends through 2075 and obligates Associated to sell and deliver to the member cooperatives and obligates the member cooperatives to purchase and receive from Associated all power that they require for the operations of the cooperative system. Pursuant to the contracts, Associated provides two services, energy and demand. Associated's rate structure has three components, an energy rate, a base levelized billing demand (LBD) rate and a peak LBD rate. The billing demand determinants are calculated according to board-approved policy and rates are set as part of the annual Cost of Service Study that is approved by the Board of Directors.

Energy and demand are distinct and separate performance obligations that have the same pattern of transfer to members and are both measurements of the electric power provided to members. Associated transfers control of the electric power to members over time and members simultaneously receive and consume the benefits of the electric power. The progress toward the completion of performance obligations is measured using the output method which is based on monthly meter readings at member substations. Member power bills are calculated monthly based on meter readings and the different components and rates as set forth in the wholesale power agreements. Payments from members are received in accordance with each contract's terms, which is by the end of the following month. Member electric sales revenue is recorded as member revenue on Associated's consolidated statements of revenues and expenses.

Nonmember Revenue

	2021	2020
Energy and capacity contracts		
Market transactions with RTOs	$ 212,758	$ 115,512
Energy and capacity revenue	100,539	87,052
Other energy revenue	54,993	28,376
Other nonmember revenue	27,363	24,949
Total nonmember revenue	$ 395,653	$ 255,889

Energy and Capacity Contracts

Market transactions consist of point-of-sale contracts with regional transmission organizations (RTO). Associated does not have a performance obligation to provide future electric power to an RTO beyond the point-of-sale and only sells excess energy if it is available. Customers in this category are PJM, Midcontinent Independent System Operator, Inc. (MISO), and Southwest Power Pool, Inc. (SPP). The RTOs simultaneously receive and consume the benefits of the electric power and Associated recognizes revenue at the point-of-sale based on the prevailing market rate and the quantity of energy transferred.

Associated also enters into capacity contracts with nonmembers that bundle electric power. Energy and capacity revenue in these contracts are distinct performance obligations whose benefits are simultaneously received and consumed by the customer. Associated's obligation to provide energy is a stand-ready performance obligation that is satisfied over time. Progress toward completion of

the energy performance obligation is based on the output method of energy transferred to the customer. Revenue is recognized based on the energy price in the contract and the quantity of energy provided to the customer. Progress toward completion of the capacity performance obligation is measured by the passage of time. Revenue is recognized monthly based on stated capacity rates in the contract.

Other energy revenue consists of electric power sales through bi-lateral contracts with nonmembers. Revenue is recognized as energy is transferred to the customer and amounts are based on the energy price in the contract and the quantity of energy provided to the customer.

Other Nonmember Revenue

Other nonmember revenue consists of transmission and gas revenue. Transmission revenue is recognized as customers use Associated's transmission facilities. Gas revenue is the sale of excess gas to third parties netted with the cost of gas sold. Revenue from the sale of gas is recognized at the point-of-sale.

Nonoperating Income

For the years ended December 31, interest and dividend income consisted of the following:

	2021	2020
Investments	$ 1,384	$ 9,190
Patronage capital allocations	1,916	2,385
Leasing of transmission lines/equipment	270	297
	$ 3,570	$ 11,872

Credit Risk

Concentration of credit risk with respect to total accounts receivable is due to Associated's customer base. Approximately 73% of accounts receivable at December 31, 2021, is due from Associated's six members. The credit risk for accounts receivable is controlled through management monitoring procedures.

Contracted Generation

Contracted generation is the expense of generating units for which Associated has energy and capacity contracts in excess of one year (see *Note 5*).

Patronage Capital and Other Equities

In accordance with Associated's bylaws, taxable member margins are allocated to members based on their patronage. For the years ended December 31, 2021 and 2020, taxable margins of $63,968 and $175,984, respectively, were allocated to members. Cumulatively, $2,780,603 and $2,716,635 has been allocated and $2,485,288 and $2,445,810 is unpaid at December 31, 2021 and 2020, respectively. For financial reporting, book net margins are allocated to patronage capital.

Accumulated Other Comprehensive Loss

The following table provides the component of accumulated other comprehensive loss at December 31:

Component	2021	2020
Postretirement benefits actuarial losses	$ (16,200)	$ (19,122)

Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Litigation

In the normal course of business, Associated is involved in legal proceedings. In accordance with GAAP, Associated accrues a liability for such matters when it is probable that a liability has been incurred and the amount can be reasonably estimated. When only a range of possible losses can be established, the most probable amount in the range is accrued. If no amount within this range is a better estimate than any other amount within the range, the minimum amount in the range is accrued.

Renewable Energy Credits

Associated is allocated renewable energy credits (REC) as part of its contracts for renewable energy. Proceeds from sales of RECs in excess of cost and fees are recorded as a reduction to purchased power expense within the accompanying consolidated financial statements.

Note 2: New Accounting Pronouncements

Upon issuance of exposure drafts or final pronouncements, Associated reviews new accounting literature to determine the relevance, if any, to its business. The following represents a summary of pronouncements Associated has determined relate to its operations:

Leases

Accounting Standards Update 2016-02, *Leases* (Topic 842), was issued in February 2016 and is effective for fiscal years beginning after December 15, 2021. The Financial Accounting Standards Board decided on a dual approach for lessee accounting, with lease classification determined in accordance with the principle in existing lease requirements. The new lessee accounting model retains two types of leases, financing and operating. Financing leases will be accounted for in substantially the same manner as capital leases are today. Operating leases will be accounted for in a manner consistent with today's operating leases. Both finance and operating leases result in the lessee and lessor recognizing both an asset and liability related to the lease. Associated will record the required assets and liabilities for leases that qualify under ASC 842 as of January 1, 2022. At this time, the implementation of ASC 842 is not expected to have a material impact on the financial statements of Associated.

Government Assistance

Accounting Standards Update 2021-10, *Government Assistance* (Topic 832), was issued in November 2021 and is effective for all entities for fiscal years beginning after December 15, 2021. This Financial Accounting Standards Board update requires entities to disclose information about the types of government assistance received, the accounting for the assistance, and the effect of the assistance on the entity's financial statements. Business entities should also disclose information about the significant terms and conditions of a government assistance transaction. This update will require additional disclosures but will not have any impact on the financial statements of Associated.

Note 3: Utility Plant

Utility plant, at original cost, at December 31, 2021, consisted of the following:

	Generation Plant	Transmission Plant	General Plant	Water and Wastewater Facilities	Total
December 31, 2020	$ 3,856,873	$ 398,579	$ 112,201	$ 6,108	$ 4,373,761
Additions	215,724	12,496	4,138	1,316	233,674
Retirements	(15,839)	-	(952)	-	(16,791)
Contribution in aid of construction	-	7,805	-	-	7,805
December 31, 2021	4,056,759	418,880	115,387	7,424	4,598,450
Construction work in progress	85,229	39,864	1,113	-	126,206
Accumulated depreciation	(2,210,397)	(185,973)	(71,324)	(590)	(2,468,284)
Total utility plant	$ 1,931,591	$ 272,771	$ 45,176	$ 6,834	$ 2,256,372

Depreciation and amortization for the year ended December 31, 2021, was $103,542, of which $97,458 was charged to depreciation and amortization expense and $6,084 was included in contracted generation, transmission, and generation operation expense. Depreciation and amortization expense was decreased by $3,636 which was charged to deferred regulatory debits (see *Note 10*).

Utility plant, at original cost, at December 31, 2020, consisted of the following:

	Generation Plant	Transmission Plant	General Plant	Water and Wastewater Facilities	Total
December 31, 2019	$ 3,791,208	$ 349,445	$ 94,316	$ 5,073	$ 4,240,042
Additions	71,723	27,900	18,254	1,035	118,912
Retirements	(6,058)	-	(369)	-	(6,427)
Contribution in aid of construction	-	21,234	-	-	21,234
December 31, 2020	3,856,873	398,579	112,201	6,108	4,373,761
Construction work in progress	162,548	18,435	900	-	181,883
Accumulated depreciation	(2,136,071)	(176,342)	(64,951)	(358)	(2,377,722)
Total utility plant	$ 1,883,350	$ 240,672	$ 48,150	$ 5,750	$ 2,177,922

Depreciation and amortization for the year ended December 31, 2020, was $106,301, of which $101,520 was charged to depreciation and amortization expense and $4,781 was included in contracted generation, transmission, and generation operation expense. Included in depreciation and amortization expense was $8,372 of previously deferred depreciation and amortization that the

Board approved to be recognized in 2020. Depreciation and amortization expense was decreased by $3,369 which was charged to deferred regulatory debits (see *Note 10).*

Note 4: Asset Retirement Obligations

Associated has accounted for the asset retirement costs associated with certain tangible long-lived assets. Associated has recorded obligations for the removal and disposal of asbestos in Associated's Thomas Hill and New Madrid power plants; reclamation of the landfill site at the New Madrid power plant; reclamation of ash ponds at the New Madrid and Thomas Hill facilities; removal of fuel oil tanks at the Dell and Holden power plants; reclamation of a biosolids lagoon at St. Jude facilities; and removal of certain water lines contained in Associated's generating plants.

Costs incurred upon the adoption of the asset retirement obligation accounting guidance were recorded as a regulatory asset to be recovered in future rates (see *Note 10*). Additionally, Associated's Board has established a policy for the deferral of depreciation and accretion expense associated with coal combustion residual storage facilities that require remediation prior to the end of the plant's assumed useful life (see *Note 10*).

The following is a reconciliation of the beginning and ending aggregate carrying amount of asset retirement obligations for the year ended December 31, 2021:

	Thomas Hill	New Madrid	Holden	Dell	Water and Wastewater Facilities	Total
December 31, 2020	$ 30,768	$ 24,503	$ 494	$ 700	$ 254	$ 56,719
Less current retirement obligations	(2,541)	(5,095)	-	-	-	(7,636)
Long-term retirement obligations	28,227	19,408	494	700	254	49,083
Current period settlements	(1,839)	(775)	-	-	-	(2,614)
Additions	-	1,872	-	-	-	1,872
Accretion expense	1,537	1,111	33	52	15	2,748
Cash flow revisions	-	5,440	-	-	-	5,440
December 31, 2021	30,466	32,151	527	752	269	64,165
Less current retirement obligations	(8,900)	(6,260)	-	-	-	(15,160)
Long-term retirement obligations	$ 21,566	$ 25,891	$ 527	$ 752	$ 269	$ 49,005

Accretion for the year ended December 31, 2021, was $2,748, of which $1,353 was charged to deferred regulatory debits. The 2021 cash flow revisions are due to the closure of the slag dewatering pond and changes in the estimates for closing the landfill and unlined ash pond at New Madrid. The 2021 current period settlements are primarily related to the closure of the coal combustion residual storage facilities at New Madrid and Thomas Hill, along with the remediation of asbestos at both Thomas Hill and New Madrid.

The following is a reconciliation of the beginning and ending aggregate carrying amount of asset retirement obligations for the year ended December 31, 2020:

	Thomas Hill	New Madrid	Holden	Dell	Water and Wastewater Facilities	Total
December 31, 2019	$ 26,987	$ 36,305	$ 463	$ 651	$ 240	$ 64,646
Less current retirement obligations	(520)	(17,136)	-	-	-	(17,656)
Long-term retirement obligations	26,467	19,169	463	651	240	46,990
Current period settlements	(50)	(11,119)	-	-	-	(11,169)
Accretion expense	1,473	1,184	31	49	14	2,751
Cash flow revisions	2,358	(1,867)	-	-	-	491
December 31, 2020	30,768	24,503	494	700	254	56,719
Less current retirement obligations	(2,541)	(5,095)	-	-	-	(7,636)
Long-term retirement obligations	$ 28,227	$ 19,408	$ 494	$ 700	$ 254	$ 49,083

Accretion for the year ended December 31, 2020, was $2,751, of which $1,407 was charged to deferred regulatory debits. The 2020 cash flow revisions are primarily due to changes in the estimates of the amounts and timing of retirement costs related to coal combustion residual storage facilities at Thomas Hill and New Madrid. The 2020 current period settlements are primarily due to the closure of the lined ash pond and slag dewatering pond at New Madrid along with the remediation of asbestos at both Thomas Hill and New Madrid. In 2020, the Board approved the accelerated recovery of $1,700 in previously deferred accretion expenses related to coal combustion residual storage facilities (see *Note 10).*

Note 5: Contracted Generation

Contracted generation consists of firm capacity received from Associated's hydropower contract and generating units that Associated has contracted to dispatch up to a given quantity of power for at least one year and for which Associated has operating expense responsibility.

Associated has a contract with Southwestern Power Administration (SWPA) effective through April 2031 that entitles Associated to purchase a fixed amount of firm capacity and energy. In 2021 and 2020, Associated's cost of firm power purchased from SWPA was $34,744 and $35,570, respectively.

Under the terms of an agreement with one of its members, Associated is required to reimburse costs associated with the member's ownership interest in the Grand River Dam Authority (GRDA) Unit 2 coal facility, which was terminated in May 2016. Associated will continue to reimburse its member for a deferred loss associated with the termination of this agreement (see *Note 18).* In 2021 and 2020, Associated's cost related to GRDA Unit 2 was $5,626 and $5,923, respectively.

Associated Electric Cooperative, Inc.

Notes to Consolidated Financial Statements

December 31, 2021 and 2020

(In Thousands of Dollars)

Note 6: Investments

Investments at December 31 consisted of the following:

	Available for Sale				Held to Maturity	
	Cost	Unrealized Gains	Unrealized Losses	Fair Value	Amortized Cost	Total
2021						
Other restricted and designated assets						
Mutual funds	$ 9,953	$ -	$ -	$ 9,953	$ -	$ 9,953
Pension reinvestment	7,929	-	-	7,929	-	7,929
Bank deposits	-	-	-	-	1	1
Certificate of deposit	-	-	-	-	697	697
U.S. government treasury bills	-	-	-	-	7,387	7,387
	$ 17,882	$ -	$ -	$ 17,882	$ 8,085	$ 25,967

	Available for Sale				Held to Maturity	
	Cost	Unrealized Gains	Unrealized Losses	Fair Value	Amortized Cost	Total
2020						
Other restricted and designated assets						
Mutual funds	$ 9,109	$ -	$ -	$ 9,109	$ -	$ 9,109
Pension reinvestment	7,801	-	-	7,801	-	7,801
Bank deposits	-	-	-	-	6,876	6,876
Certificate of deposit	-	-	-	-	774	774
U.S. government treasury bills	-	-	-	-	510	510
	$ 16,910	$ -	$ -	$ 16,910	$ 8,160	$ 25,070

All investments held at December 31, 2021, mature within one year.

Note 7: Designated Cash and Cash Equivalents

For the years ended December 31, designated cash and cash equivalents consisted of the following:

	2021	2020
Member revenue subject to refund	$ 17,561	$ 147,561
Generation, Environmental and Insurance Reserve Fund	112,921	112,921
	$ 130,482	$ 260,482

Note 8: Investments in Associated Organizations

Associated conducts business with various cooperatives, including National Rural Utilities Cooperative Finance Corporation (NRUCFC) and CoBank. As a result of these business relationships, Associated holds membership rights in these organizations, which include the right to receive patronage allocations.

Investments in associated organizations at December 31 consisted of the following:

	2021	2020
CoBank patronage capital equity	$ 21,648	$ 21,053
NRUCFC patronage capital equity	4,182	4,171
NRUCFC held-to-maturity securities	1,562	1,695
Other	436	845
	$ 27,828	$ 27,764

Investments in patronage capital equity are considered equity securities without a readily determinable fair value. Patronage capital equity is increased as patronage is allocated to Associated and decreased as patronage is retired and cash received. There were no impairments of patronage capital equity in 2021 or 2020.

At December 31, 2021, future maturities of NRUCFC held-to-maturity securities at amortized cost are as follows: after 1 through 5 years, $666; after 5 through 10 years, $400; and after 10 years, $496. The remaining investments in associated organizations do not have a stated maturity.

Note 9: Leases

Net Investment in Direct Financing Leases

Associated's leasing activities consist of the leasing of a transmission line and related equipment. The construction of these facilities was completed in 1992 with all costs incurred by Associated. The Construction and Financing Agreement related to the transmission line leases expires in 2028. The leases are classified as direct financing leases as follows:

	2021	2020
Total minimum lease payments receivable	$ 4,145	$ 4,772
Less unearned income	(924)	(1,194)
Less current portion	(627)	(627)
Net investment in direct financing leases	$ 2,594	$ 2,951

At December 31, 2021, future minimum lease receipts related to direct financing leases for the next five years and thereafter will be as follows:

2022	$ 627
2023	627
2024	627
2025	627
2026	627
Thereafter	1,010
	$ 4,145

Operating Leases

Associated leases railcars used in the delivery of coal to the New Madrid and Thomas Hill power plants through leases that expire between the end of 2022 and 2024. Rental expense for these cars was $2,324 and $2,597 for the years ended December 31, 2021 and 2020, respectively. Future minimum lease payments for these cars are as follows:

2022	$ 2,854
2023	979
2024	483
	$ 4,316

Note 10: Deferred Regulatory Debits

Regulatory assets are recorded for expenses that are deferred and will be recovered through rates charged to members in future periods. Such deferrals are made at the discretion of Associated's Board of Directors. Associated does not earn a return on these regulatory assets.

At December 31, deferred regulatory debits consisted of the following regulatory assets:

	2021	2020
Unrealized loss on hedging activities	$ 24,120	$ 36,226
Asset retirement obligations	18,888	14,178
	43,008	50,404
Less current portion of deferred regulatory debits	(4,220)	(9,491)
Long-term deferred regulatory debits	$ 38,788	$ 40,913

Associated's Board of Directors has established a policy to defer unrealized fair value gains and losses associated with hedging activities and recognize in earnings only at the settlement of these instruments (see *Note 17*). The current portion of the deferred loss is included as a current asset on the accompanying consolidated balance sheets.

The costs recognized upon the adoption of the accounting guidance for asset retirement obligations were deferred as a regulatory asset. Associated's Board has also approved a policy for the deferral of depreciation and accretion associated with asset retirement obligations related to coal combustion residual storage facilities (see *Note 4*). These costs are being amortized over the life of the underlying asset. In 2021 and 2020, $5,653 and $5,883, respectively, was deferred under this policy. In 2020, the deferred costs were reduced by $1,867 due to a cash flow revision related to the coal combustion residual storage facilities. In 2020, the deferred cost was reduced by $10,051 following the approval of Associated's Board of Directors to accelerate the recovery of previously deferred expenses. In 2021 and 2020, $943 and $1,189, respectively, of amortization was recognized.

Note 11: Other Deferred Assets

Other deferred assets are long-term assets that are not otherwise classified as other property and investments or restricted and designated long-term assets.

At December 31, other deferred assets consisted of the following:

	2021	2020
Long-term receivable on New Madrid substation	$ 7,491	$ 7,762
NRECA pension prepayment	-	3,709
Preliminary surveys	6,856	4,915
Prepayment of payment in lieu of taxes	1,671	2,148
Receivable associated with derivative assets	21,619	3,281
Other	2,662	1,681
Other deferred assets	$ 40,299	$ 23,496

In February 2013, Associated made a prepayment of $37,087 to the National Rural Electric Cooperative Association (NRECA) Retirement Security Plan (the RS Plan) (see *Note 14*). Associated is amortizing this amount over 10 years. Amortization of $3,709 was recognized in both 2021 and 2020. The long-term portion of the prepayment was $0 and $3,709 as of December 31, 2021 and 2020, respectively.

Associated entered into an agreement to engineer, construct, own, operate and maintain a 345/500 kV 750 MVA transformer at a greenfield site adjacent to the New Madrid substation in which two other parties shared equally in the cost of construction. The total construction cost of the substation was $26,947. One party elected to pay its one-third share of the construction cost in 2014. The other party will pay its share of the construction costs over 20 years. The long-term receivable associated with this project was $7,491 and $7,762 at December 31, 2021 and 2020, respectively.

Associated has engaged engineers to perform preliminary surveys on various projects that could result in capital additions. If a capital addition results from the surveys, the costs are included in the capital project costs; otherwise, the survey costs are expensed. Preliminary survey costs were $6,856 and $4,915 at December 31, 2021 and 2020, respectively.

Associated entered into an agreement to make a prepayment of $5,729 for a payment in lieu of taxes. The long-term portion of this payment as of December 31, 2021 and 2020, was $1,671 and $2,148, respectively. The prepayment will be amortized into expense from 2014 through 2026. Amortization of $478 was recognized in both 2021 and 2020.

Associated has derivative assets related to long-term diesel fuel, natural gas and power swap agreements (*see Note 17*). The long-term receivable associated with these derivative assets was $21,619 and $3,281 at December 31, 2021 and 2020, respectively.

Note 12: Long-Term Debt

Long-term debt consists of mortgage notes payable to the United States of America acting through the FFB, NRUCFC, and CoBank, as well as others. Substantially all of Associated's assets are pledged as collateral for the borrowings noted in the table below, except those noted as unsecured.

The terms of the notes are as follows:

	2021	2020
FFB mortgage notes with various maturities, due quarterly through 2052, at a weighted-average rate of 2.66%	$ 966,619	$ 835,251
Private placement notes with various maturities, due quarterly through 2050, at a weighted-average rate of 3.75%	541,849	557,933
CoBank notes with various maturities, due quarterly through 2031, at a weighted-average rate of 6.28%	154,816	175,965
CoBank revolving line of credit due in 2026, at a variable rate of 1.23%	-	15,000
NRUCFC notes payable due annually through 2029, at a weighted-average rate of 6.65%	26,667	30,000
	1,689,951	1,614,149
Less unamortized debt issuance costs	(2,690)	(3,137)
Less current maturities	(69,850)	(59,366)
	$ 1,617,411	$ 1,551,646

In 2020 Associated prepaid $261,236 in FFB debt utilizing funds invested in the RUS cushion of credit. The FFB prepayment was made under provisions that affected the cushion of credit program pursuant to the *Agriculture Improvement Act of 2018* (the 2018 Farm Bill). This provision allowed prepayment of RUS direct or guaranteed loans without penalty. As a result of this provision, Associated was able to prepay older, higher interest rate FFB debt with an average rate of 3.93% in 2020.

In 2020, Associated issued new borrowings in the form of four private placements as follows:

Loan Designation	Loan Amount	Loan Maturity
Series 2020A	$ 100,000	April 30, 2050
Series 2020B	35,000	January 31, 2050
Series 2020C	17,000	April 30, 2050
Series 2020D	98,000	April 30, 2050
	$ 250,000	

In 2021 and 2020, Associated entered into various construction loans with RUS through FFB as follows:

RUS Loan Designation	Origination Year	Loan Amount	Advances 2021	Advances 2020	Available Balance 2021
AE48	2021	$ 78,000	$ 20,798	$ -	$ 57,202
AD48	2020	$ 52,000	34,090	-	17,910
AC48	2019	$ 140,000	72,806	54,960	12,234
AA48	2018	$ 29,220	-	5,431	6,820
Z8	2016	$ 190,836	22,474	19,221	-
			$ 150,168	$ 79,612	$ 94,166

As of December 31, 2021, Associated had $800,000 of committed lines of credit with scheduled expirations of $50,000 in 2022, $150,000 in 2023, $50,000 in 2024 and $550,000 in 2026. As of December 31, 2021 and 2020, Associated had $0 and $15,000, respectively, outstanding on the lines of credit. The interest rate is a variable rate with several reset options.

At December 31, unamortized debt issuance costs consisted of the following:

	2021	2020
RUS loans through FFB	$ 1,954	$ 2,055
CoBank loans and line of credit agreements	183	495
Private placement notes	553	587
Total unamortized debt issuance costs	$ 2,690	$ 3,137

Annual maturities of long-term debt for the next five years and thereafter are as follows:

2022	$ 69,850
2023	74,293
2024	83,160
2025	69,641
2026	72,170
Thereafter	1,320,837
	$ 1,689,951

The terms of these debt agreements contain, among other provisions, requirements to maintain a minimum level of total margins and equities, current ratio and margin for interest ratio, and other financial ratios. Associated is in compliance with the terms of these agreements.

Note 13: Deferred Regulatory Credits

Regulatory credits are established for obligations to Associated's members based on actions of Associated's Board of Directors. These amounts will be included in income in the year they are applied to future costs or otherwise returned to members.

At December 31, deferred regulatory credits consisted of the following:

	2021	2020
Generation, Environmental and Insurance Reserve Fund	$ 152,971	$ 154,321
Member revenue subject to refund	17,561	147,561
Deferred unrealized gain on hedging activities	45,758	8,163
	216,290	310,045
Less current portion of deferred regulatory credits	(25,489)	(6,233)
Long-term deferred regulatory credits	$ 190,801	$ 303,812

Associated's Board of Directors established a fund for costs to comply with federal environmental legislation, future generation expenditures, uninsured losses, and unplanned power supply cost. This fund is referred to as the Generation, Environmental and Insurance Reserve Fund (GEIF). Between 2013 and 2018, Associated's Board of Directors designated $45,000 of this fund to be used for the purchase of City of New Madrid's power plant. This amount will be amortized into income over the depreciable life of the asset. In both 2021 and 2020, Associated amortized $1,350 into income, which is included in member revenue in the accompanying consolidated financial statements. Cash or investments are segregated for this fund until a designated use has been identified by Associated's Board of Directors (see *Note 7*). The current portion of this fund was $1,350 at December 31, 2021 and 2020.

A regulatory credit has been established by Associated's Board of Directors for member revenue designated as subject to future refund in the form of lower rate requirements. In 2021, Associated's Board of Directors directed the recognition of $130,000 of previously deferred revenue in response to the expenses related to Winter Storm Uri. In 2020, $27,000 of member revenue was deferred. Cash or investments are segregated for this purpose until a designated use has been identified by Associated's Board of Directors (see *Note 7*).

Associated's Board of Directors has established a policy to defer unrealized fair value gains and losses associated with hedging activities and recognize in rates only the current period settlement of these instruments (see *Note 17*). The current portion of the deferred gain is included in other current and accrued liabilities in the accompanying consolidated balance sheets and was $24,139 and $4,883 at December 31, 2021 and 2020, respectively.

Note 14: Pension and Other Postretirement Benefits

Defined Benefit Plan

Associated participates in the RS Plan. The legal name of the plan is the NRECA Retirement Security Plan; the employer identification number is 53-0116145, and the RS Plan number is 333. Plan information is available publicly through the annual Form 5500. The RS Plan year is January 1 through December 31. The RS Plan is a defined benefit pension plan qualified under Section 401 and tax-exempt under Section 501(a) of the Internal Revenue Code. Contributions are required by a collective bargaining agreement that expires on June 30, 2024. Employees hired on or after January 1, 2014, are not eligible to participate in the RS Plan.

In February 2013, Associated elected to make a prepayment of $37,087 to the RS Plan. Associated is amortizing this amount over 10 years. Associated's total contributions to the RS Plan in 2021 and 2020 represented less than 5% of the total contributions made to the RS Plan by all participating employers. Associated's total contribution to the RS Plan was $10,746 and $10,490 in 2021 and 2020, respectively.

For the RS Plan, a "zone status" determination is not required and, therefore, not determined under the *Pension Protection Act of 2006* (PPA). In addition, the accumulated benefit obligations and plan assets are not determined or allocated separately by individual employer. In total, the RS Plan was more than 80% funded on January 1, 2021 and 2020, based on the PPA funding target and PPA actuarial value of assets on those dates. Because the provisions of PPA do not apply to the RS Plan, funding improvement plans and surcharges are not applicable. Future contribution requirements are determined each year as part of the actuarial valuation of the RS Plan and may change as a result of plan experience.

Defined Contribution Plan

Substantially all of the employees of Associated participate in the NRECA Select RE Plan 401(k) Plan (the 401(k) Plan). For employees hired before January 1, 2014, Associated contributes amounts not to exceed 2.5% of the employee's full salary for nonrepresented employees and base pay for International Brotherhood of Electrical Workers members, dependent on the employee's level of participation. For employees hired on or after January 1, 2014, Associated contributes amounts ranging from 6.0% to 13.0% depending on the employee's contribution to the 401(k) Plan and date of hire. Associated contributed $4,582 and $4,186 to the 401(k) Plan in 2021 and 2020, respectively.

Deferred Compensation Plan

Associated has a deferred compensation plan that permits directors and certain employees to defer a portion of their compensation and accrue earnings on the deferred amounts. The assets of the plan are held in a rabbi trust and are included in other restricted assets and other deferred liabilities.

Health Care Plan

Associated provides noncontributory health care benefits to its retired United Mine Workers of America (UMWA) employees and their eligible dependents (UMWA Plan). These employees became eligible for benefits upon reaching age 55 while working for Associated and having 20 years of credited service at retirement. Also eligible were UMWA retirees who had 10 years of credited service and were age 55 or older at termination from Associated. The UMWA Plan is funded as benefit payments are made.

The UMWA Plan qualifies for the federal subsidy for prescription drug coverage under the *Medicare Prescription Drug, Improvement and Modernization Act of 2003*. As such, an assumption regarding the subsidy is included in the actuarial valuation of the UMWA Plan. The effect of the subsidy on the accumulated postretirement benefit obligation as of December 31, 2021 and 2020, was a decrease of $2,283 and $2,411, respectively, which serves to reduce the net periodic cost by $77 and $81, respectively, annually.

	2021	2020
Change in accumulated benefit obligation		
Accumulated benefit obligation, beginning of year	$ 41,902	$ 42,275
Interest cost	920	1,276
Actuarial loss	(2,953)	598
Benefit payments	(2,268)	(2,409)
Medicare subsidy	114	162
Accumulated benefit obligation, end of year	$ 37,715	$ 41,902
Funded status		
Accumulated benefit obligation	$ (37,715)	$ (41,902)
Net liability recognized	$ (37,715)	$ (41,902)
Net periodic benefit cost		
Interest cost	$ 920	$ 1,276
Amortization of actuarial loss	1,370	1,348
Total net periodic benefit cost	$ 2,290	$ 2,624

	2021	2020
Amounts recognized in the accompanying consolidated balance sheets consist of		
Other current and accrued liabilities	$ (2,317)	$ (2,383)
Other deferred liabilities	(35,398)	(39,519)
	$ (37,715)	$ (41,902)
Amounts recognized in accumulated other comprehensive loss		
Net actuarial loss	$ 19,122	$ 19,872
Weighted-average assumptions used to determine benefit obligation at December 31		
Discount rate	2.50%	2.26%
Weighted-average assumptions used to determine net periodic benefit cost for the year ended December 1		
Discount rate	2.26%	3.11%

For measurement purposes, a 6.0% annual rate of increase in medical and prescription cost trend rates was assumed for 2022 and 2023. The annual medical trend rate decreases over time to the ultimate trend rate after 2075 of 3.94%. The annual trend rate for vision expense was assumed to increase 3.0% per year through 2075. A 1.0% increase in assumed health care cost trend rates would increase total service and interest costs by $149 and increase the postretirement benefit obligation by $4,056. A 1.0% decrease in assumed health care cost trend rates would decrease total service and interest costs by $126 and decrease the postretirement benefit obligation by $3,551.

Associated expects $1,031 of the actuarial loss to be recognized as a component of net periodic benefit cost in 2021.

Associated contributed $2,268 and $2,409 in 2021 and 2020, respectively, to the postretirement benefit plan. Based on actuarial projections, Associated expects to contribute $2,317 to the postretirement benefit plan in 2022. No discretionary contributions are planned in 2022.

Estimated future benefit payments and subsidy receipts, which reflect expected future service, as appropriate, for each of the next five years and thereafter are as follows:

	Benefit Payments	Subsidy Receipts
2022	$ 2,494	$ (177)
2023	2,515	(174)
2024	2,535	(169)
2025	2,541	(164)
2026	2,523	(159)
2027-2031	12,031	(710)
	$ 24,639	$ (1,553)

Executive Benefit Restoration Plan

The executive benefit restoration plan (EBR plan) was adopted by Associated effective January 1, 2016. The plan is an unfunded and unsecured plan sponsored and maintained by Associated primarily for the purpose of providing deferred compensation for a select group of management or highly compensated employees of Associated. The plan is a 'top hat' plan under the *Employee Retirement Income Security Act of 1974* (ERISA) and therefore exempt from the participation, vesting, funding and fiduciary responsibility rules of ERISA. The plan year is January 1 through December 31.

Eligibility in the plan is limited to the chief executive officer of Associated, management reporting directly to the chief executive officer and any other key employee recommended by the chief executive officer for participation in the plan and approved by the Board, subject to certain exclusions.

The Board, at its sole discretion, may amend any or all provisions of the plan at any time by written instrument identified as an amendment effective as of a specified date. The plan may be terminated in whole or in part at any time at the sole discretion of the Board, so long as such termination is consistent with the requirements of section 409(A) of the Internal Revenue Code.

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(In Thousands of Dollars)

	2021
Change in accumulated benefit obligation	
Accumulated benefit obligation, beginning of year	$ 1,228
Service cost	129
Interest cost	56
Actuarial gain	(135)
Impact of amendments on projected benefit obligation	769
Accumulated benefit obligation, end of year	$ 2,047
Funded status	
Accumulated benefit obligation	$ (2,047)
Net liability recognized	$ (2,047)
Net periodic benefit cost	
Service cost	$ 129
Interest cost	56
Amortization of prior service cost	53
Amortization of actuarial loss	32
Total net periodic benefit cost	$ 270
Amounts recognized in the accompanying consolidated balance sheets consist of	
Other deferred liabilities	$ (2,047)
	$ (2,047)
Amounts recognized in accumulated other comprehensive loss	
Net actuarial loss	$ 1,401
Weighted-average assumptions used to determine benefit obligation at December 31	
Discount rate	2.93%
Weighted-average assumptions used to determine net periodic benefit cost for the year ended December 1	
Discount rate	2.73%

In 2021, Associated recorded a liability for the projected benefit obligation at December 31, 2021. Prior to 2021, Associated recorded annual service expense for the EBR plan.

Note 15: Income Taxes

Associated is subject to federal and state income taxes on nonpatronage-sourced taxable income. A detail of the provision for income taxes in 2021 and 2020 is as follows:

	2021		2020	
	Current	Deferred	Current	Deferred
Federal	$ -	$ 27,787	$ -	$ 24,777
State	-	4,935	-	(20,427)
Change in valuation allowance	-	(32,722)	-	(4,350)
Income taxes credited	$ -	$ -	$ -	$ -

Deferred income taxes reflect the net tax effect of temporary differences between the financial statement and tax bases of assets and liabilities. Associated's temporary differences relate primarily to operating loss carryforwards, accelerated depreciation for tax purposes and other reserves deductible for tax purposes only when paid. The tax rate for Missouri decreased from 6.25% to 4% in 2020, which resulted in a decrease in the state portion of the deferred income taxes.

The components of the net deferred income tax asset at December 31 are as follows:

	2021	2020
Deferred tax asset		
Net operating loss carryforwards	$ 368,635	$ 338,298
Mine reserves	1,829	1,947
Postretirement benefits	1,671	1,766
Interest expense carryforward	8,807	6,024
Other	3,890	3,950
Total deferred tax asset	384,832	351,985
Deferred tax liability		
Utility plant	(22,651)	(22,526)
Total deferred tax liability	(22,651)	(22,526)
Valuation allowance	(362,181)	(329,459)
Net deferred tax asset	$ -	$ -

Associated has federal net operating loss carryforwards for income tax purposes of $1,082,740, incurred prior to January 1, 2018, which are available to offset future taxable income. If not utilized, these loss carryforwards expire between 2022 and 2037. In 2021, $21,701 of the loss carryforwards expired.

Associated has federal net operating loss carryforwards for income tax purposes of $314,587, incurred between January 1, 2018 and December 31, 2020, which are available indefinitely to offset future taxable income up to 100% under the *Coronavirus Aid, Relief, and Economic Security Act* (the CARES Act).

Associated has federal net operating loss carryforwards for income tax purposes of $148,951 incurred subsequent to January 1, 2021, which are available indefinitely to offset future taxable income up to 80%.

A valuation allowance of $362,181 has been established primarily to reflect net operating loss carryforwards estimated to expire before utilization or not be used. The valuation allowance had a net increase of $32,722 in 2021.

Associated evaluates and accounts for uncertainty in income taxes in accordance with the authoritative accounting guidance for income taxes. This guidance outlines the requirements for the recognition and measurement of uncertainty in income tax positions. At December 31, 2021 and 2020, Associated did not have any unrecognized tax benefits.

Associated is subject to taxation in the U.S. and various states based on taxable income. As of December 31, 2021, tax years 2018, 2019, and 2020 are subject to examination by the tax authorities. With few exceptions, as of December 31, 2021, Associated is no longer subject to federal and state examinations by tax authorities for years before 2018. There are no ongoing audits at this time.

Note 16: Fair Value Measurements

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value measurements must maximize the use of observable inputs and minimize the use of unobservable inputs. There is a hierarchy of three levels of inputs that may be used to measure fair value. Level 1 inputs include observable inputs, such as unadjusted quoted prices in an active market for identical assets or liabilities. Level 2 inputs are unadjusted quoted prices in an active market for similar assets and liabilities that are either directly or indirectly observable. Level 3 inputs are unobservable inputs for the assets and liabilities for which little or no market data exist, therefore requiring Associated to develop its own estimates of fair value.

Associated measures certain assets and liabilities at fair value on a recurring basis. The following tables present information regarding the method of valuation for assets and liabilities as of December 31:

		Fair Value Measurements Using		
	Fair Value	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
2021				
Assets				
Other restricted and designated assets	$ 17,882	$ 17,882	$ -	$ -
Derivative assets	45,758	-	45,758	-
Liabilities				
Derivative liabilities	24,198	-	24,198	-
2020				
Assets				
Other restricted and designated assets	16,910	16,910	-	-
Derivative assets	8,163	-	8,163	-
Liabilities	-			
Derivative liabilities	33,441	-	33,473	-

Available-for-sale securities reflected in Level 1 of the valuation hierarchy are measured at fair value each reporting period using quoted market prices on listed exchanges. The derivative instruments reflected in Level 2 of the valuation hierarchy include fixed-to-floating commodity swaps, a floating-to-fixed interest rate swap and financial energy transactions on futures and exchange-traded options conducted within the Intercontinental Exchange (ICE) platform which are valued based on published indexes for the respective contracts. There were no transfers between Level 1 and Level 2 in 2021 or 2020.

The estimated fair values of Associated's financial instruments were as follows at December 31:

	2021		2020	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Other restricted and designated assets	$ 17,882	$ 17,882	$ 16,910	$ 16,910
Derivative assets	45,758	45,758	8,163	8,163
Derivative liabilities	24,198	24,198	33,441	33,441

The method used to estimate the fair value of Associated's long-term debt and investments is based on quoted market prices for the same or similar instruments or on the current rates offered to Associated for the debt of the same maturity. The carrying amounts of cash and cash equivalents, accounts receivable and accounts payable approximate fair value at December 31, 2021.

Note 17: Derivative Instruments and Hedging Activities

Associated uses derivative instruments to manage the risks associated with changes in interest rates and the price of diesel fuel and natural gas used in the operation of its generating resources. Contracts are evaluated under the guidelines of the accounting guidance for derivatives and hedging activities. All contracts that meet the definition of derivative instruments are recorded at fair value as an asset or liability. Fair value is determined based on indexes outlined in the derivative contracts or readily available equivalents.

In November 2007, Associated entered into a floating-to-fixed interest rate swap. Changes in fair value were deferred by action of the Board of Directors as a regulatory item to be recovered through future rates. Only current period settlements of this instrument are included in earnings, which resulted in charges to interest expense of $2,478 and $2,218 in 2021 and 2020, respectively. An asset that represents the amount to be recovered through future rates is included in deferred regulatory debits (see *Note 10*).

In 2009, the Board established a policy to defer changes in fair value of derivative instruments as a regulatory item to be recovered through future rates. Associated has entered into a series of diesel fuel swap agreements that are designed to manage the fuel price risk related to Associated's coal delivery costs through 2024 and a series of natural gas and energy swap agreements that are designed to limit exposure to fluctuation in natural gas prices through 2026. Realized gains and losses on settled derivatives are recognized in fuel costs. In 2021, current period settlements decreased fuel costs by $68,611. In 2020, current period settlements increased fuel costs by $15,369. Unrealized fair value gains and losses are recorded in deferred regulatory debits (*see Note 10*) and deferred regulatory credits (*see Note 13*).

The classification of derivative instruments is as follows at December 31:

		2021	2020
Derivative Assets	Balance Sheet Location		
Gas and power hedges - long term	Other deferred assets	$ 19,408	$ 3,257
Diesel hedges - long term	Other deferred assets	2,211	23
Gas and power hedges - current	Other current assets	20,499	4,877
Diesel hedges - current	Other current assets	3,640	6
	Total derivative assets	$ 45,758	$ 8,163
Derivative Liabilities			
Interest rate swap - long term	Other deferred liabilities	$ (19,801)	$ (25,356)
Gas and power hedges - long term	Other deferred liabilities	(1,513)	(1,285)
Diesel hedges - long term	Other deferred liabilities	(70)	(1,222)
Interest rate swap - current	Other current and accrued liabilities	(2,160)	(2,160)
Gas and power hedges - current	Other current and accrued liabilities	(518)	(103)
Diesel hedges - current	Other current and accrued liabilities	(136)	(3,315)
	Total derivative liabilities	$ (24,198)	$ (33,441)

Note 18: Commitments and Contingencies

Associated has pledged investments classified as held to maturity for mine reclamation and self-insured workers' compensation purposes. These securities are included in other restricted and designated assets. At December 31, 2021 and 2020, these securities amounted to $8,085 and $8,160, respectively.

As of December 31, 2021, Associated has a commitment to purchase all of its coal requirements through 2025 from one coal supplier using an agreed-upon rate calculation mechanism that adjusts with market prices. Associated also has contracts with certain rail companies whose contracts expire in 2030 to deliver this coal at agreed-upon rates.

Associated has a commitment to pay a base transportation fee to the transporters of gas for the Dell power plant through 2026 and the Chouteau power plant through 2041. Associated paid transportation fees of $9,155 and $8,069 in 2021 and 2020, respectively. Associated's commitment to the transporters of gas at the Dell and Chouteau power plants will be $10,965 for 2022, $10,965 annually for 2023 through 2025, $10,004 for 2026, $5,216 annually for 2027 through 2030, and an average of $7,026 annually for 2031 through 2041.

Associated has entered into various fixed price, physically settled natural gas contracts through 2022. The commitments for the Chouteau power plant are $46,113 in 2022.

The long-term wholesale electric service contracts with its members require Associated to reimburse each member for the costs of their qualified transmission facilities, including depreciation, interest, and operations and maintenance. Expenses for these contracts in 2021 and 2020 totaled $74,241 and $72,383, respectively. Additionally, Associated is required to reimburse one of its members for deferred costs associated with the member's previous ownership interest in the GRDA Unit 2 coal facility which terminated in May 2016. Expenses related to this agreement were $5,626 and $5,923 for 2021 and 2020, respectively (see *Note 5*).

Projected payments to members for the next five years are:

	Transmission	Generation
2022	$ 73,148	$ 5,668
2023	79,078	5,519
2024	79,172	5,369
2025	87,387	5,220
2026	91,881	5,070

Associated has a commitment to purchase the output from eight wind farms. In 2020, two new wind farms were declared commercial with Clear Creek wind farm in May and White Cloud wind farm in December. Associated does not have fixed cost obligations and pays only for the energy produced. These purchases are set at a contracted price for 20 and 25 years from inception of the contract. These contracts expire at various dates between 2027 and 2045. Associated purchased wind power at a cost of $134,795 and $116,942 in 2021 and 2020, respectively.

Associated has a contract with SWPA, effective through April 2031, that entitles Associated to purchase a fixed amount of firm capacity and energy, plus supplemental energy when available. Capacity payments totaled $25,812 for both 2021 and 2020. Energy payments, including supplemental energy, totaled $17,302 and $20,125 for 2021 and 2020, respectively.

Capacity payments for these contracts for the next five years are projected to be as follows:

2022	$ 29,592
2023	26,006
2024	26,786
2025	27,589
2026	28,417

Note 19: Subsequent Events

Associated evaluates events that occur after the balance sheet date but before the issuance of financial statements to determine if recognition or disclosure of the financial impact of such events is required. There were no events occurring after December 31, 2021, and before February 11, 2022, which is the date the consolidated financial statements were available to be issued, that required recognition or disclosure.

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Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

Independent Auditor's Report

Board of Directors and Members
Associated Electric Cooperative, Inc.
Springfield, Missouri

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the consolidated financial statements of Associated Electric Cooperative, Inc. and its wholly owned subsidiaries (Associated), which comprise the consolidated balance sheet as of December 31, 2021, and the related consolidated statements of revenues and expenses, comprehensive income, patronage capital and other equities, and cash flows for the year then ended, and the related notes to the consolidated financial statements, and have issued our report thereon dated February 11, 2022.

Report on Internal Control over Financial Reporting

In planning and performing our audit of the consolidated financial statements, we considered Associated's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the consolidated financial statements, but not for the purpose of expressing an opinion on the effectiveness of Associated's internal control. Accordingly, we do not express an opinion on the effectiveness of Associated's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's consolidated financial statements will not be prevented or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Board of Directors and Members
Associated Electric Cooperative, Inc.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether Associated's consolidated financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of consolidated financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of This Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

BKD, LLP

Springfield, Missouri
February 11, 2022

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