



Sho-Me Power  
Electric Cooperative

A Touchstone Energy® Cooperative 

*The Art of Service*  
*Annual Report 2020*





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## STRUCTURE

The Missouri Cooperative Structure consists of four levels: Generation, Transmission, Distribution and the ultimate consumer, or member. The Generation Cooperative creates the power, the Transmission Cooperative delivers the power to a distribution substation, and the Distribution Cooperative then provides the power to the member-owner for final use.

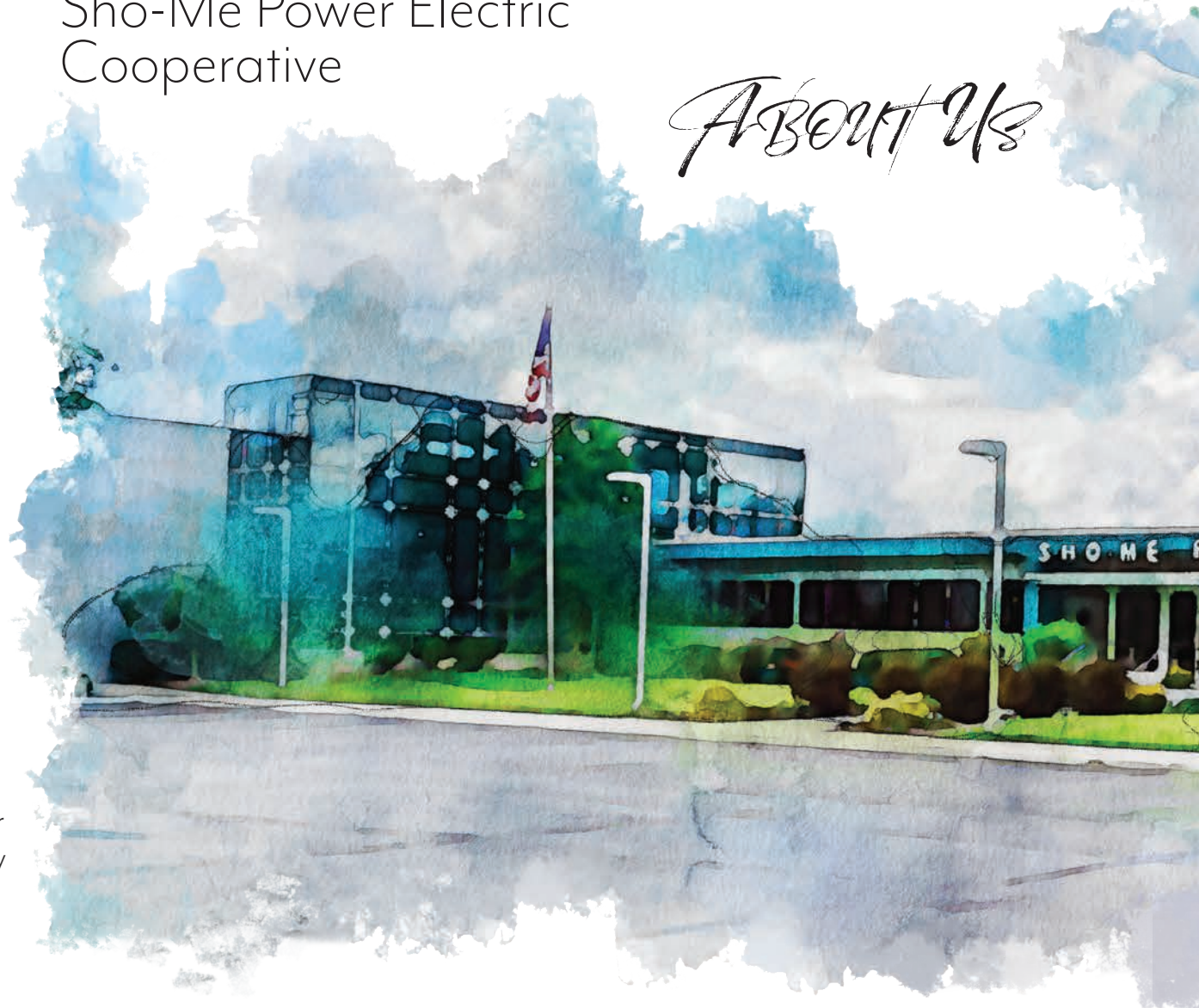
The rural residents of Missouri came together in the 1930's to form local distribution cooperatives. Transmission cooperatives like Sho-Me Power were formed by their distribution cooperative owners in the 1940's to connect to various power sources. In the 1960's the transmission cooperatives banded together to create a generation cooperative, Associated Electric Cooperative, Inc.

## ORGANIZATION

The predecessors of Sho-Me Power Electric Cooperative were Sho-Me Power Cooperative, formed in 1941 as an agriculture cooperative, followed by Sho-Me Power Corporation, incorporated in 1947 as a public utility. This corporate entity, fully regulated by the Missouri Public Service Commission (MoPSC), provided wholesale electric service to its nine member distribution cooperatives as well as retail electric service to many communities until 1984, when the remaining facilities serving retail consumers were sold to four rural electric cooperatives. In 1992 the Missouri Secretary of State allowed Sho-Me Power to be converted pursuant to the provisions of the Rural Electric Cooperative Act, Chapter 394, specifically §394.070 of the Revised Statutes of Missouri, 1989, as amended, and since February 27, 1992 the name has been Sho-Me Power Electric Cooperative. In September 1993 the MoPSC released Sho-Me Power from its rate regulation, leaving it free to be regulated by its nine REC member-owners.

# Sho-Me Power Electric Cooperative

*ABOUT US*



Our Mission





## TRANSMISSION

Sho-Me Power provides service to 157 member delivery points served by 159 distribution and transmission substations through 1,033 miles of 69 kV, 10 miles of 138 kV, and 419 miles of 161 kV electrical transmission line. Additionally, Sho-Me operates and maintains 139 miles of 161 kV transmission line owned by Central Electric Cooperative, headquartered in Jefferson City, Missouri, and approximately 227 miles of 345 kV line and three 345/161 kV substations with a combined capacity of 1,440,000 kVA owned by AECL, headquartered in Springfield, Missouri.

## Sho-Me Technologies

Sho-Me Technologies is a subsidiary of Sho-Me Power Electric Cooperative in Marshfield, Missouri. Sho-Me Technologies operates an advanced optical network spanning electric transmission lines in Missouri. What began as an upgrade to the extensive internal communications network has now grown to encompass over 8,000 miles of fiber optic connectivity. With 138 communities served, Sho-Me Technologies boasts the highest coverage of optical bandwidth in the area.

Sho-Me Power is an equal opportunity provider and employer.

Sho-Me Power and its employees are dedicated to providing safe, reliable, low cost power and communication service to the members we serve which improves the quality of life for their members.



# Our Board of Directors



*Member control of Sho-Me is assured by a board of nine Directors and Managers from the Member Electric Cooperatives we serve.*



**James White**  
President  
Intercounty Electric  
Cooperative Association  
Licking, Missouri



**Carmen Hartwell**  
Vice President  
Gascosage Electric  
Cooperative  
Dixon, Missouri



**John Campbell**  
Secretary  
Se-Ma-No Electric  
Cooperative  
Mansfield, Missouri



THE ART OF SERVICE



**James Cottrell**  
Crawford Electric  
Cooperative, Inc.  
Bourbon, Missouri



**Dan Singletary**  
Howell-Oregon Electric  
Cooperative, Inc.  
West Plains, Missouri



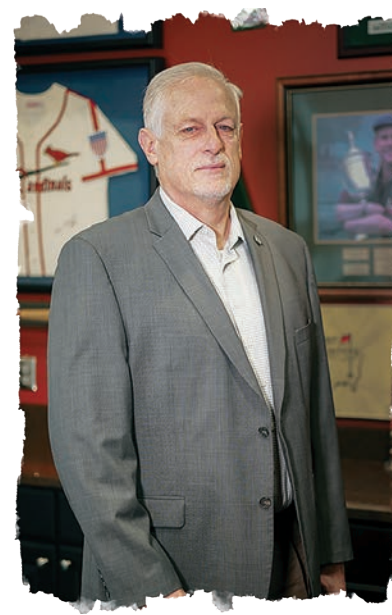
**Marc Roecker**  
Laclede Electric  
Cooperative  
Lebanon, Missouri



**Jack Bybee**  
Southwest Electric  
Cooperative  
Bolivar, Missouri



**Tom Houston**  
Webster Electric  
Cooperative  
Marshfield, Missouri



**Chris Hamon**  
White River Valley  
Electric Cooperative, Inc.  
Branson, Missouri





# Our Member Managers

SHO-NE POWER



**Tony Mallory CEO/  
General Manager**  
Crawford Electric  
Cooperative, Inc.  
Bourbon, Missouri



**Carmen Hartwell  
General Manager**  
Gascoage Electric  
Cooperative  
Dixon, Missouri



**Dan Singletary CEO/  
General Manager**  
Howell-Oregon Electric  
Cooperative, Inc.  
West Plains, Missouri



**Doug Lane  
CEO**  
Intercounty Electric  
Cooperative Association  
Licking, Missouri



**Marc Roecker  
General Manager**  
Laclede Electric  
Cooperative  
Lebanon, Missouri



**Dan Sisco  
General Manager**  
Se-Ma-No Electric  
Cooperative  
Mansfield, Missouri





James Ashworth CEO/  
General Manager  
Southwest Electric  
Cooperative  
Bolivar, Missouri

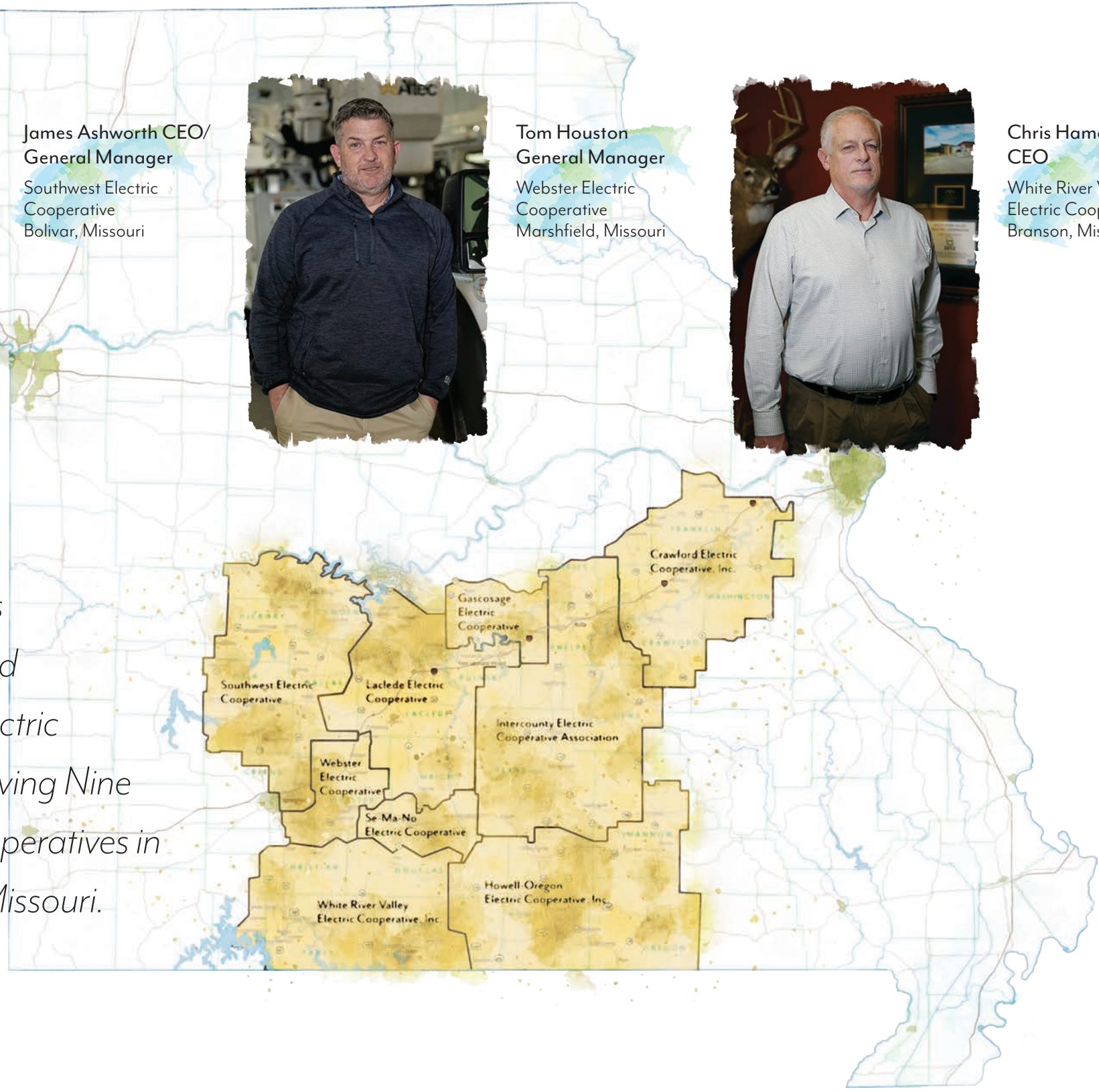


Tom Houston  
General Manager  
Webster Electric  
Cooperative  
Marshfield, Missouri



Chris Hamon  
CEO  
White River Valley  
Electric Cooperative, Inc.  
Branson, Missouri

*Sho-Me Power is a Generation and Transmission Electric Cooperative Serving Nine Distribution Cooperatives in South-Central Missouri.*





# Sho-Me Power Senior Staff



John T. Richards  
CEO & General  
Manager



Cindy Keeler  
Executive Assistant



Chris Bolick  
Chief Operating  
Officer



Peter Dawson  
Chief Compliance  
Officer





Rebecca Gunn  
Human Resources  
Director



Micah Johnson  
Chief Information  
Officer



Mark Keeling  
Chief Technology  
Officer



Tim Lewis  
Member Service/  
Corporate  
Communications  
Director



Denise Stevens  
Chief Financial  
Officer

*“The true test of leadership is how well you function in a crisis”*

Brian Tracy



## Message to Our Members



The year of 2020 will be remembered as a year of frustration, fear and heartache for many. While many people that we know and love have been adversely affected by the pandemic, we are happy to report that Sho-Me Power has adapted, persevered, and demonstrated how we can personify “The Art of Service” under some very adverse circumstances.

Operating and maintaining an electrical transmission system and a robust middle-mile fiber-optic network requires some creativity to be successful in a pandemic. We are proud of our employees and Board of Directors as they have excelled in performing the very necessary activities related to the management and reliability of our electrical and telecommunications networks.

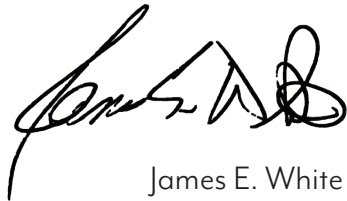
In the pages that follow you will read a great deal of how most of the headquarters personnel utilized remote communications to continue performing their tasks during much of the pandemic, but the electrical workers, security and telecom technicians continued to perform the necessary tasks to ensure the ultimate consumers of our products were inconvenienced as little as possible, as many of those consumers were forced to isolate in their homes due to the pandemic.

Sho-Me Technologies strategized on how best they could help their customers get through 2020. Some needed more bandwidth, while others needed less, and we were able to respond to their needs in a responsible way, boosting bandwidth economically and extending contract terms to many in the tourism industry that saw their business revenue decline. Most of our customers already knew before this pandemic that they could rely on Sho-Me Technologies because they are owned by cooperatives and cooperatives take care of their member-owners. Sho-Me Power is proud of the service that Sho-Me Technologies provides to cooperatives and those cooperatives’ members.




2020 saw construction activities continue, debt management produce low cost financing, and replacement strategies implemented and continued for aging infrastructure, while getting creative on how to operate our business under social distancing guidelines. We like to think of it as being able to multi-task under extreme conditions.

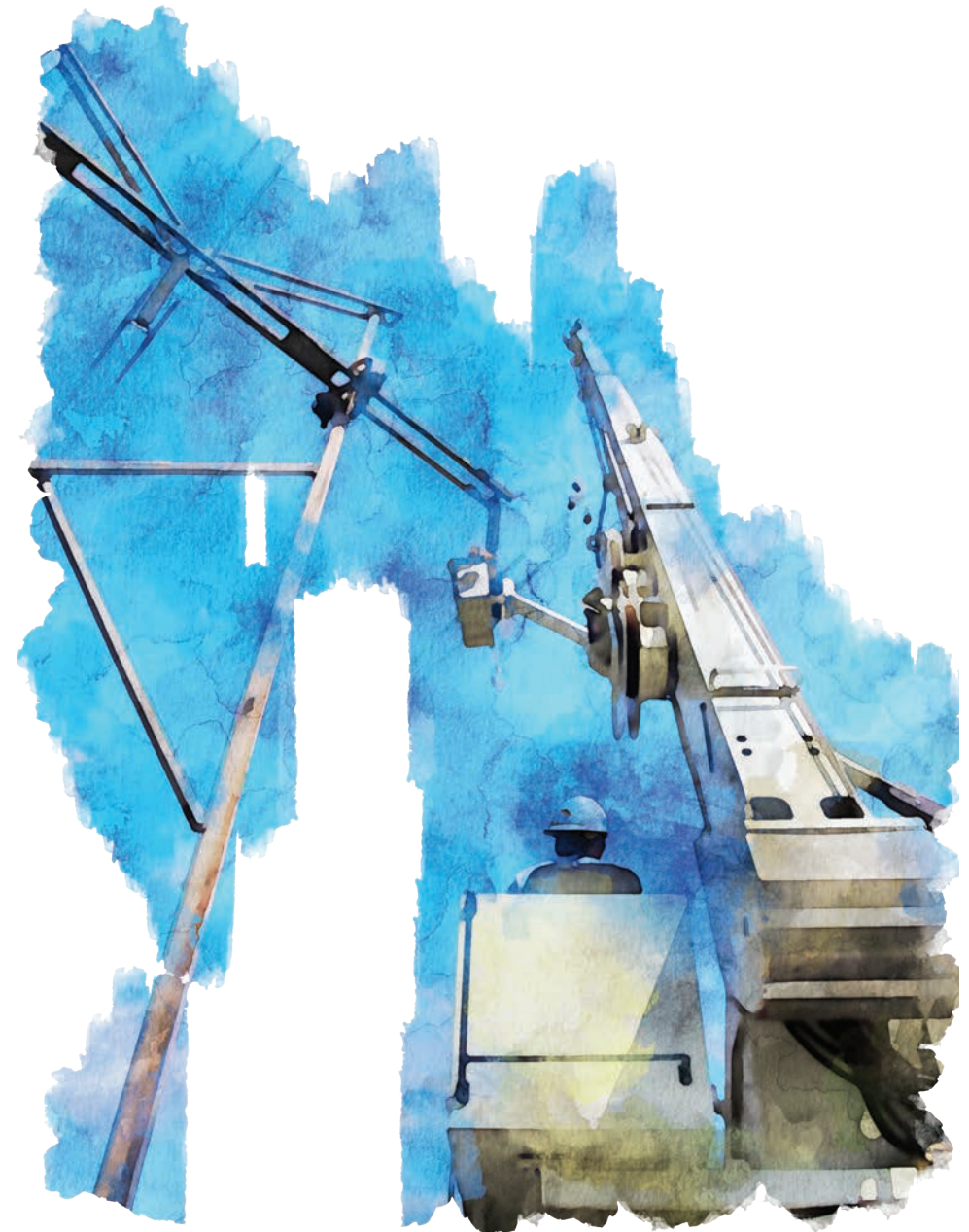
The Art of Service really is an appropriate theme for this year's Annual Report and video. Serving others is an art that we have developed and perfected over time. Thank you to our Board of Directors for allowing us to use a great many financial resources to acquire state of the art tools and equipment, and for planning for future decades by allowing us to invest in new facilities. Thanks also to all of our employees, who recognize their tasks are critical for hundreds of thousands of individuals to be able to enjoy their lives to the fullest extent possible by providing safe, reliable electric and telecommunications service at the lowest possible cost.



James E. White  
President



John T. Richards  
CEO & General Manager







Electric Revenue in 2020 totaled \$171.8 million and was below the budgeted amount of \$179.1 million. This is because \$6.2 million of 2020 revenue was deferred to future years. Sho-Me Power had a profitable year due mainly to Purchased Power discounts provided to Sho-Me Power by its wholesale power provider: Associated Electric Cooperative, Inc. (AECI). These discounts totaled \$4.3 million in 2020 and created an opportunity to defer revenue into future years in order to help stabilize future electric rates for Sho-Me Power's members.

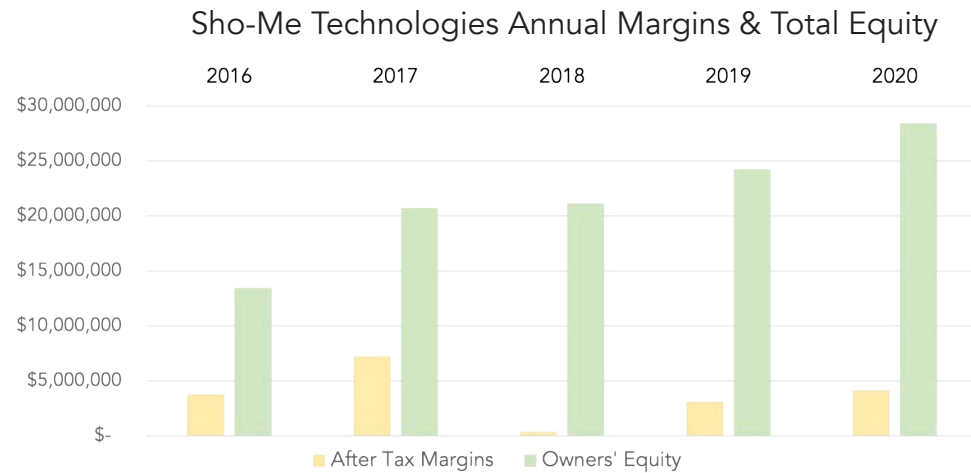
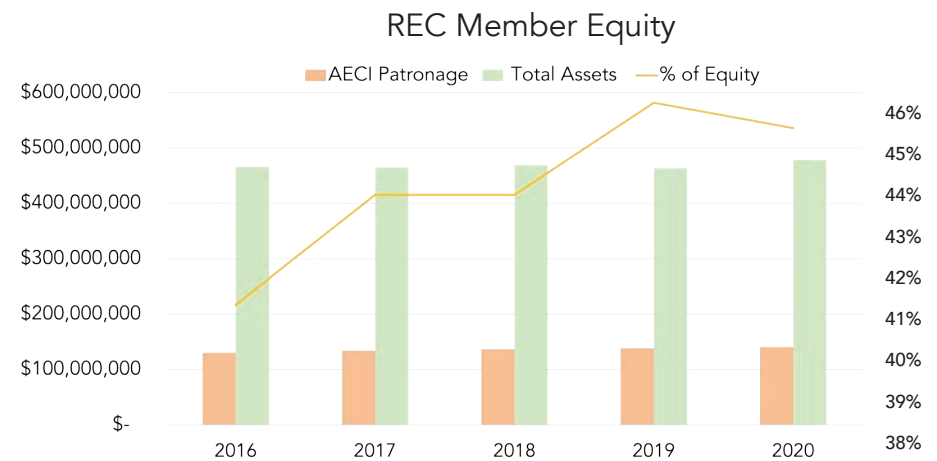
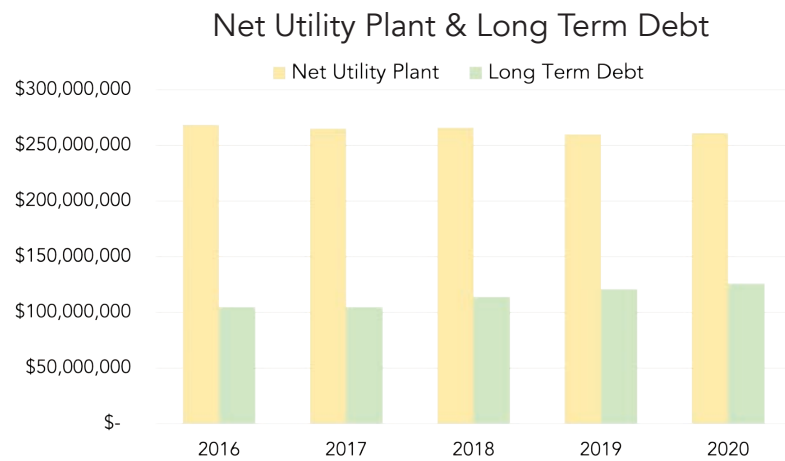
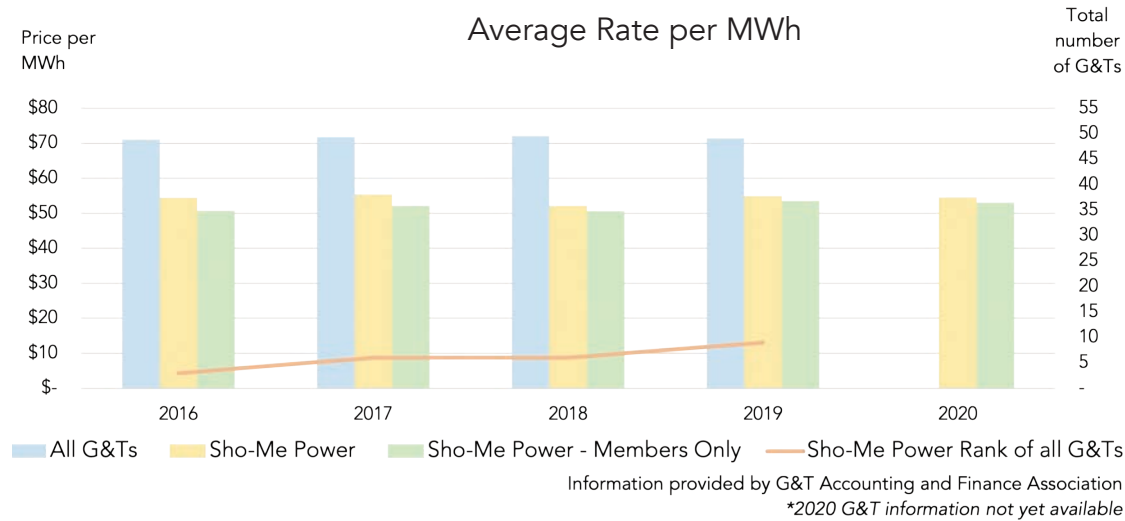
Telecommunications Revenue in 2020 was slightly above budget at \$36.1 million compared to the budget of \$35.4 million. Increases in Dark Fiber Revenue and Internet Revenue were the main drivers of the increase compared to budget. While revenues were up, so too were Operating Expenses as more General and Administrative labor hours were charged to Sho-Me Technologies than anticipated in 2020. An adjustment to reduce deferred income taxes was beneficial to Sho-Me Technologies' bottom line and helped 2020's net margins increase to \$4.2 million, exceeding the \$3.5 million 2020 budget.

2020 ended with consolidated Net Margins of \$10.5 million. The 2020 Net Margins were higher than the budgeted Net Margins of \$7.5 million. Higher Net Margins were primarily due to the rate discount provided by AECI to Sho-Me Power and a reduction to future anticipated income tax expense.

At the end of 2020, total assets on a consolidated basis were \$478.5 million and the consolidated equity ratio was solid at 45.15%. Approximately \$20.6 million of plant additions were capitalized on the consolidated books of Sho-Me Power and Sho-Me Technologies during the year.

Overall, 2020 was another financially successful year for Sho-Me Power and Sho-Me Technologies as the companies continue to focus on providing safe, reliable, low cost power and communications services to the members they serve. As a result, at year-end 2020, Sho-Me Power is pleased to report that the financial performance met Sho-Me's indenture requirements.







# Five Year Financial Comparison

CONSOLIDATED SUMMARY OF OPERATIONS	2016	2017	2018	2019	2020
<b>Operating Revenue:</b>					
Electric Revenue	\$ 181,634	\$ 176,868	\$ 190,613	\$ 185,134	\$ 171,836
Telecom Revenue	33,896	33,627	34,564	35,135	36,119
<b>Total Operating Revenue</b>	<b>215,530</b>	<b>210,495</b>	<b>225,177</b>	<b>220,269</b>	<b>207,955</b>
<b>Operating Expenses:</b>					
Purchased Power, Net of Pooling Credits	148,444	143,751	157,128	145,772	137,734
Other Operating Expenses	63,734	66,011	73,350	72,868	72,158
<b>Total Operating Expenses</b>	<b>212,178</b>	<b>209,762</b>	<b>230,478</b>	<b>218,640</b>	<b>209,892</b>
<b>Operating Margins</b>	<b>3,352</b>	<b>733</b>	<b>(5,301)</b>	<b>1,629</b>	<b>(1,937)</b>
<b>Non-Operating Margins</b>	<b>2,663</b>	<b>2,025</b>	<b>2,095</b>	<b>2,080</b>	<b>1,348</b>
<b>Margins Before G&amp;T Capital Credits</b>	<b>6,015</b>	<b>2,758</b>	<b>(3,206)</b>	<b>3,709</b>	<b>(589)</b>
G&T Capital Credits	7,455	7,531	8,871	8,337	8,560
<b>Margins Before Income Taxes</b>	<b>13,470</b>	<b>10,289</b>	<b>5,665</b>	<b>12,046</b>	<b>7,971</b>
Income Tax Expense	6,884	(5,567)	179	(1,808)	(2,529)
<b>Net Margins</b>	<b>\$ 6,586</b>	<b>\$ 15,856</b>	<b>\$ 5,486</b>	<b>\$ 13,854</b>	<b>\$ 10,500</b>

CONSOLIDATED BALANCE SHEET SUMMARY	2016	2017	2018	2019	2020
<b>Assets</b>					
Net Utility Plant	\$ 268,489	\$ 265,167	\$ 265,917	\$ 259,980	\$ 261,063
Investments	153,484	156,258	158,038	159,897	177,215
Other Assets	43,888	43,931	45,164	43,764	40,260
<b>Total Assets</b>	<b>\$ 465,861</b>	<b>\$ 465,356</b>	<b>\$ 469,119</b>	<b>\$ 463,641</b>	<b>\$ 478,538</b>
<b>Liabilities and Equity</b>					
Members' Equity	\$ 190,520	\$ 202,616	\$ 204,252	\$ 212,144	\$ 216,054
Long Term Debt	104,893	104,905	113,853	120,980	125,936
Other Liabilities	170,448	157,835	151,014	130,517	136,548
<b>Total Liabilities and Equity</b>	<b>\$ 465,861</b>	<b>\$ 465,356</b>	<b>\$ 469,119</b>	<b>\$ 463,641</b>	<b>\$ 478,538</b>

CONSOLIDATED CASH FLOWS SUMMARY	2016	2017	2018	2019	2020
Net Cash					
Provided By Operating Activities	\$ 21,424	\$ 3,513	\$ 2,062	\$ 26,790	\$ 28,591
Used In Investing Activities	(15,856)	(11,068)	(12,510)	(6,874)	(29,500)
Provided By (Used In) Financing Activities	(5,601)	7,576	11,308	(18,067)	(105)
Net Increase (Decrease) In Cash and Cash Equivalents	(33)	21	860	1,849	(1,014)
Cash and Cash Equivalents At Beginning of Year	447	414	435	1,295	3,144
Cash and Cash Equivalents At End of Year	\$ 414	\$ 435	\$ 1,295	\$ 3,144	\$ 2,130

ADDITIONAL INFORMATION	2016	2017	2018	2019	2020
Margins for Interest - MFI (Required 1.10)*	2.73	2.21	1.64	3.25	2.40
Debt Service Coverage - DSC (Required 1.00)*	2.89	3.14	1.96	3.75	3.61
Energy Sales - MWh					
Member REC Sales	2,836,588	2,718,070	3,066,455	2,948,336	2,859,040
Other	290,555	277,160	254,388	252,139	246,148
Total Energy Sales	3,127,143	2,995,230	3,320,843	3,200,475	3,105,188
Systems Peaks - MW					
Winter	768	797	874	783	755
Summer	658	680	659	643	647

Year Ending December 31st, 2020

\*Ratios are calculated per Sho-Me Power's Indenture requirements



## Continued Service...Uncharted Territory

COVID-19 forced Sho-Me Power to chart a new course in 2020, and much of the year's story revolves around how employees adapted and rose to the challenge.

Sho-Me has had a Pandemic Preparedness and Response Plan in place for the past decade, but implementation of that plan over the space of only a few days required hard work, willingness to change, and resourcefulness. While anchors on the nightly news spoke of a "new" normal, personnel at Sho-Me endeavored to bring the customary normal of high-quality service into an uncharted setting.

Once the decision was made to temporarily close the corporate office, the Information Technologies group was suddenly tasked with supporting a remote workforce. The majority of Sho-Me's corporate employees had never worked remote, and there were multiple challenges to overcome. The current licenses for Two Factor Authentication and the virtual private network (VPN) server supported 25 concurrent users, but there were at least 80 remote employees. Many of these employees only had desktop computers, needed fast access to network resources, and didn't have sufficient broadband at their homes. The company phone system had no remote capabilities. Some support staff needed access to Air-Gapped systems that were not accessible from the Internet.

While IT worked to accommodate office personnel, Warehouse staff began revamping their procedures to keep foot traffic to a minimum. An online order form was created to alleviate the need for outside crewmembers to enter the warehouse. Warehouse employees filled the online orders and placed the product outside in a designated area where the crews could pull through to pick up their supplies, requiring zero face-to-face interaction. Following CDC guidelines also meant vehicles would be limited to a driver and no passengers, so the Shop worked to get all of the fleet to employees in the field and spent extra time on the road servicing vehicles and equipment.

Meanwhile, the Purchasing group went into motion acquiring personal protective equipment (PPE) to keep employees safe as they served our members. Basic bleach wipes, hand sanitizer, and masks were difficult to come by, but Sho-Me's Purchasing group joined with other G&Ts to pool their resources and share information on supply chains.

With two days of preparation, the corporate office closed and the new mode of doing business began in earnest. After gathering as many spare laptops and tablets as they could find and staging them to be used by employees as needed, the IT department succeeded in enabling most people to work from home with limited disruption. A method of remote access to critical Air-Gapped systems maintained the level of security intended by isolation. IT members kept equipment at their homes to be picked up or delivered if necessary, and many vendors provided grace product licenses to assist with additional remote worker capacities. Group chats in Microsoft Teams ensured everyone would stay in sync with the latest needs, while more frequent meetings were held to guarantee everything was going as planned.

Sho-Me was in a fortunate position at the onset of the COVID-19 outbreak with the Pandemic Preparedness and Response Plan already in place. The plan was tailored to address the particulars of the current situation as knowledge about the virus increased. Regulatory Services worked with Human Resources, subject matter experts, and front-line leaders through the establishment of a COVID-19 Task Force that met regularly to discuss recalibrating the pandemic response strategy.

As the pandemic continued, almost all typical Member Service activities had to undergo alteration, with the February annual legislative dinner in Jefferson City serving as the last in-person event of the year. Other usual events were canceled or held virtually. Sho-Me's annual meeting was a hybrid of a small in-person group with the event streamed online. Member annual meetings were virtual, drive in, or drive through, and Sho-Me's Member Service personnel produced videos and filmed meetings so they could be posted online. Board Meetings were hybrid as well, with some people attending in person while some attended remotely. Cameras and microphones were installed in the boardroom, and video production software was used to integrate audio and visual aspects and stream to Zoom.

The annual fall legislative fish fry was still held in October, but due to the risk of inclement weather, it was held indoors at Laclede Electric's garage facility instead of at Bennett Springs State Park. The larger area helped with distancing, fish meals were prepared in advance to eliminate close quarters cooking under the tent, and pre-recorded messages from legislators were shown on a video wall.

In person safety education programs were halted for the second half of the 2019-20 school year and greatly reduced for the first half of the 2020-21 school year. In order to get the programs out to school children who were attending school virtually, the educators' programs were recorded and the videos were distributed to the schools. Some schools wanted the programs on DVD for kids who didn't have Internet, so several hundred DVDs were distributed.

During this tough time, staff and employees stepped up to the plate and showed resolve and leadership. Even though mentions of COVID-19 will appear elsewhere in this report, this brief overview shows that Sho-Me's reaction to change was rapid, transparent, and steadfast. Due to employing innovative technologies and improved tools to allow socially distant collaboration, Sho-Me did not experience the struggle with response that may have impacted some organizations. As a result of the changes during the year, many employees now work from home frequently, providing more flexibility in their lives. Board meetings and other gatherings have a virtual presence, even when there are people meeting in person. The processes put in place to adapt to working remotely, providing additional support, and maintaining safety have created new opportunities to improve efficiency. Trying to find a "new" normal offered improved options for accomplishing the tasks Sho-Me already performed, enabling us to continue our commitment to safety, reliability, and the highest level of service.







The security team accomplished a multitude of projects in 2020, exceeding their goal of 27 installations by completing 30 new sites with two expansions. In addition to these installations, routine maintenance, and camera upgrades, the group also worked on member-requested projects, one example of which is a Howell-Oregon Electric security proposal. This member cooperative requested physical security deployments at their crew facilities in Couch and Birch Tree, along with their headquarters facility in West Plains. Sho-Me's security team designed a system with access control, video surveillance, and burglar systems while leveraging technologies Howell-Oregon already had in use. Because the arrangement will hang off Sho-Me's corporate security platform, Howell-Oregon will not need to purchase a Video Management System. Sho-Me will maintain and service the equipment and potentially serve as a back-up for facility monitoring. Approval has been given for this project, with installation set to begin in 2021.

Large substation projects have long been a topic of concern for the security team. After a lot of deliberation and conversations with existing customers, Sho-Me started a pilot project with Observation Without Limits (O.W.L.) technologies at its Willow Springs location. This large substation and campus offer an ideal opportunity for evaluation and testing of what has initially shown to be a suitable technology, providing enormous coverage that integrates well into the Genetec Security platform. In traditional scanning radars, slower targets require longer dwell time, leading to reduced revisit time and surveillance volume. This could mean a loss of valuable lead time and accuracy in threat detection. O.W.L. uses radar-based solutions built on all new digital radar technology to remotely monitor and respond to physical security threats in real time at critical sites. This system, called GroundAware, facilitates an event-based, layered security approach for perimeter security to track intruders from long ranges and instantly trigger pre-determined steps for visual verification, deterrence, and interdiction. It is fully integrated with other security systems, including cameras and access control, Video Management Software, and Physical Security Information Management systems. If the results of this pilot project keep trending in a positive direction, this could prove a valuable platform for other large sites in the Sho-Me network.

While the world was dealing with the COVID-19 virus, Sho-Me Power's IT group was dealing with an entirely different type of virus in the form of a cyber threat. Sho-Me and Gasco Electric share the same antivirus platform, creating an environment where Sho-Me is alerted whenever there is a potential cyber security issue on the member co-op's network. The software alerted IT personnel of a possible virus which was creating Phishing emails from actual Gasco Electric email messages. Sho-Me and Gasco Electric worked together to identify the malware cybercrime virus strain, EMOTET, and requested assistance from AECI, who used security tooling via specialized software to interrogate Gasco Electric's network and look for further evidence of infection. As a lingering result, ransomware file encryption occurred.

Damage done from the virus infection was repaired and files that had been compromised by ransomware were restored from backup. The incident provided an excellent learning opportunity by creating a heightened level of security awareness across the Missouri cooperative footprint. Testimony of the malware event has been shared at multiple statewide and G&T IT meetings as an example of cooperation among cooperatives and the success of the multi-tiered incident response process. The effectiveness of the software used by AECI convinced both Gasco Electric and Sho-Me that it was a worthwhile investment, and now both run the same antivirus tools. More importantly, however, the cooperation and communication methods involved were integrated into a model for the Security Operation Center (SOC) Pilot project, hosted by AECI. This "Operation Iron Dome" pilot is a 24x7 security monitoring service hosted by AECI as a managed service to G&Ts and their members, with Gasco Electric and Sho-Me serving as pilot participants.







Sho-Me's Engineering and Operations personnel constructed a 6.6 mile 69kV line from Protem west to interconnect with KAMO Power's new transmission line from Cedar Creek. The new 69kV line was identified by AECL as a solution to potential reliability issues in Taney County and was an alternative to building another interconnection with Empire District Electric (now Liberty). Line design was performed in house, taking into consideration the topography of the area. Because rocky soil conditions along the line route can cause issues with grounding, ground enhancement material was used to provide adequate lightning performance and reduce installation costs. By "looping in" radial loads at Theodosia, Protem, and Cedar Creek, the line offers increased reliability for White River Valley Electric members.

In March of 2020, Sho-Me's Board approved a 7-year program to replace 71 reclosers on the Sho-Me system. Reclosers identified as having unacceptable reliability issues were broken into two groups, the first comprising reclosers over 40 years old (there were 27 of them on the system), and the second consisting of newer reclosers (manufactured between 2003 and 2013) with a history of multiple failures. This program involves a combination of engineering, meter and relay, and substation personnel working in coordination with Sho-Me's member cooperatives regarding their preference of reclosers and timing of replacements. COVID-19 slowed down some equipment deliveries during the year, but new combinations of reclosers and controls from different manufacturers are on order for Intercounty Electric and will involve other cooperatives in the near future. These new reclosers should have fewer equipment issues and only require periodic testing, resulting in less callout time and increased safety.



Many hours went into the design and implementation of a new substation at Clover Bottom. The existing substation's connection at the tap of the AmerenUE 138kV line meant that a line outage could result in a lengthy outage for the substation. The spare transformer was on site but de-energized, so if a failure of the main transformer were to occur, it would have taken hours to energize the spare. Added to the obstacles was the location, with the site facing constraints in each direction. The highway bordered to the west, transmission lines to the north, and tower to the south. Elevation changes from north to south necessitated a great deal of dirt work.

Motor operated line switches were added on both AmerenUE 138kV lines that feed the substation. A new control building was constructed, equipped with state of the art metering and relaying equipment. AECL stepped in to help on this project, negotiating with AmerenUE for the installation of two dead end towers for line terminals at no cost to Sho-Me. The substation's design accommodates the new 138kV bus and the AmerenUE dead end towers, and energizes both the main and spare transformer. The added Clover Bottom reliability came at a low cost for Sho-Me, with AmerenUE's assistance providing a savings of several hundred thousand dollars.



## The Art of Technology

Associated Electric's Dell Power Plant is a 580-megawatt combined-cycle, natural gas-based plant located on 100 acres near the town of Dell, Arkansas, approximately nine miles south of the Arkansas-Missouri border. AECl began placing energy generated by the Dell Plant into the Midwest Independent System Operator (MISO) regional transmission organization energy market in 2018. As AECl increased Dell's operating time and profitability with nonmember energy sales into MISO, the plant needed improved data communication and reliability to AECl operations in Springfield, MO, beyond what was available in the area. Sho-Me Technologies was chosen to provide upgraded services to benefit Dell's operations and increase the opportunity for nonmember revenue.

The total project spanned approximately 23 miles, from the Denton Substation near Steele, Missouri, to the Dell Power plant, and involved placing 1.5-inch buried fiber optic duct at a depth of at least 36 inches and with splice vaults positioned within the state provided right of way. During the first phase of this project, Sho-Me Technologies leased approximately 23 miles of aerial fiber from M&A Electric Cooperative's Kennett substation to their Arbyrd substation, as well as 28.5 miles of aerial fiber from Ritter Communications spanning from the Arbyrd substation to the Dell Plant. During the second phase, permits were requested from the Missouri Department of Transportation, the Arkansas Department of Transportation, the Army Corps of Engineers, and the Elk Chute Levee Drainage District.





The biggest obstacle along the Missouri route was acquiring permits to cross four federal ditches and two levees. The Corps of Engineers would not allow Sho-Me Tech to bore below the levees, instead requiring crossings to be laid on top of the levee grade and then covered with 24 inches of fill compacted at a 95% compaction rate. The fill also had to be 10 feet wide, tapering down to a 20 to 1 grade. Once the levees had been crossed, the challenge became acquiring enough topsoil to cover the duct, since Southeast Missouri is mainly farmland with not much dirt to spare. Sho-Me Tech requested use of spoils across from the levee, dredged from the bottom of the waterway. The Corps of Engineers first denied the use of the spoils due to contamination by pesticides, but later confirmed that Sho-Me Tech could use the spoils from Elk Chute Ditch #9 East Levee to cover ducts crossing both levees. The decision to wait on this approval eliminated additional costs on the project.

Completion of the Dell Power Plant fiber optic project in June of 2020 improved reliability, enabling AECL to continue to meet its federal regulations for communicating operational data.



## Highlights from 2020

Sho-Me Tech began improvements to member cooperatives' Internet service in 2020, upgrading to diverse gigabit Internet connections. The service is delivered via two different networks, similar to a critical power load being served by two separate substations. Not only will this new Internet delivery be diverse, with one circuit provided via the Telco Systems Ethernet network and the other via the Nokia Ethernet network, but a few cooperatives have decided to enhance that diversity by delivering their second Internet circuits to branch offices rather than main locations. Laclede Electric, for example, has one connection in Lebanon and the other in Camdenton. This Internet is provided at no cost and will help ensure that the member cooperatives experience no outages to critical Internet services.



Sho-Me, its members, and AECl participated in a regional economic development study conducted by Ady Advantage from Madison, Wisconsin. The goals of the study were to develop a strategy and work plan for attracting new business, aid in the retention and expansion of existing business, and enhance community development in order to grow load and improve quality of life for members. The study included three major phases: First, collect information necessary to formulate an early business case of the service areas and create a foundational understanding of the region's economy. Second, analyze the data to provide initial recommendations and direction, resulting in a more tailored and focused business case. Third, develop a series of strategies to drive overall load growth within the Sho-Me Power system. The study was delivered to Sho-Me and its members in March of 2020. During the summer, Sho-Me's member co-ops formed an Economic Development Action Committee to implement the first steps of the plan, and work on deepening relationships with existing businesses and local municipalities began in earnest.

A challenging year found many people relying on Internet coverage where they hadn't before, and Sho-Me Tech assisted Verizon Wireless in meeting the need for more coverage in South Central Missouri. Verizon planned several new towers in rural areas lacking coverage, and Sho-Me Tech's Sales Engineering, Network Operations, and Fiber Infrastructure groups were all heavily involved in completing these tower sites by the deadline. Cooperation was key in this venture. When Sho-Me Tech ran into COVID-19 shipping delays with its fiber cable supplier, Verizon was able to buy reels of fiber to be used for these projects, which helped meet the target date. Residents of Sho-Me's member service area are now enjoying increased connectivity, and Sho-Me Tech was able to further strengthen its longstanding relationship with Verizon Wireless.



After researching and following the evolution of HyperConverged Infrastructure (HCI), the Information Technologies group made the move away from standard virtualization infrastructure in 2020. With HCI, the computer power, memory, networking, and storage are all consolidated into single server appliances, which are then “clustered” together for redundancy. This model has a higher yearly operational software cost, but capital costs of hardware are reduced significantly. A Nutanix HCI solution was deployed, along with migration from Microsoft Hyper-V to VMWare for added stability. The new HCI has proved efficient enough to allow additional storage capacity, enabling all Video storage to be moved. In addition, the capital cost savings assisted in the purchase of further HCI hardware to replace the disaster recovery site, which had not been part of the originally budgeted project.



Sho-Me Tech’s Contract Administration team processes, executes, and records permanent Fiber Easements for both new builds and customers renewing Service Contracts. Designed to secure significant long-term protection of Sho-Me Tech’s investment in its growing infrastructure on private properties, Fiber Easements also establish Sho-Me Tech’s presence in member cooperatives’ communities. When social distancing became the expectation during 2020, the Contract Administration team improved efficiencies and cut costs by adopting new technology. Online county recording has reduced recording costs by eliminating delay, travel, hand delivery, and lost mail. An application for instant landowner and parcel boundary searches affords safe acquisition of current data without travel or contact at public courthouses. These changes have reduced the delay of cumbersome search and retrieval by county recorders, and have greatly increased the productivity of the Contract Administration team.







# KEEP IN TOUCH



## TELEPHONE

417.859.2615



## WEBSITE

[ShoMePower.com](http://ShoMePower.com)  
[ShoMeTech.com](http://ShoMeTech.com)



## ADDRESS

PO Box D  
Marshfield, MO 65706

*"The Art of Service"*  
Original painting created by  
Alicia Farris, NWS  
[www.afarric.com](http://www.afarric.com)