Touchstone Energy® Cooperatives

BEST PRACTICES

KNOWLEDGEBASE

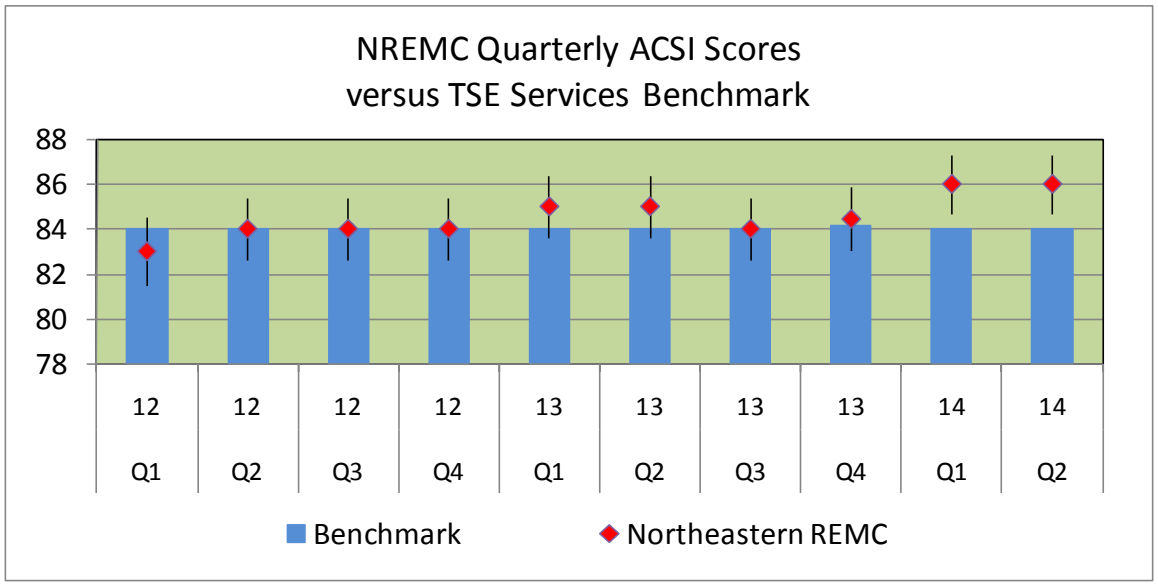
Grid Modernization Leads to Improved Satisfaction

Background

Rural Electric Cooperative: to some, the very name might give the impression of a small and not very sophisticated utility. Yet, the *2012 Assessment of Demand Response and Advanced Metering* from the Federal Energy Regulatory Commission shows cooperatives actually lead the industry in the utilization of advanced technology.

Embrace of technology is allowing cooperatives to improve reliability, speed outage response, generate operational efficiencies and enable a host of value added services for their members. While we might be small and rural, our members are rewarding us with satisfaction scores that not only lead the utility industry, ***but any industry in any sector***.

Northeastern Rural Electric Membership Corp. (NREMC), a cooperative in Indiana, has leveraged technology to earn ever higher scores on the American Customer Satisfaction Index (ACSI). In fact, NREMC's rate of improvement in the ACSI since 2012 outpaces over 50 cooperatives nationally participating in TSE Services' *Member Satisfaction Tracking System.* Its scores are now higher than any investor owned utility (IOU) in the nation and a full 9 points higher than their nearest IOU, American Electric Power (AEP).



Northeastern REMC

NREMC provides electric service to nearly 28,000 members across six counties in northeastern Indiana with 2,148 miles of line. Its service area encompasses the growing suburbs of Fort Wayne as well as the still rural areas west of town. It also serves a significant amount of commercial and industrial load, including a pocket steel mill.

Early Adopter

NREMC has been at the leading edge of technology for decades, installing its first Supervisory Control and Data Acquisition (SCADA) system in 1981. The system now includes 27 operated tie points allowing remote load transfers between substations.

NREMC launched its Geographical Information System (GIS) in 2003 replacing paper maps with ruggedized laptops. It followed with an Outage Management System (OMS) in 2005 and 100% Advanced Metering Infrastructure (AMI) in 2009, which is now fully integrated with the OMS. Automated Vehicle Location (AVL) was deployed in 2009.

These investments have made it possible for NREMC to be much more proactive in its outage response. The AMI system from *Tantilus* monitors power quality and notifies NREMC in real-time when power is lost and verifies that power has been restored. The OMS system facilitates trouble shooting by predicting which devices on the system have operated, allowing crews to go directly to the affected location.

NREMC has also embraced technology that enables value added services to its members. As a member of the National Information Solutions Cooperative (NISC), NREMC has launched the *Smart Hub*, allowing members to view and pay their bills on-line, see their payment history, set-up recurring payments or receive notifications for account milestones, such as an approaching or a missed due date.

If you want to pay online, check out our SmartHub – the easy online tool to analyze your electric bills and usage by the year, month, day or even down to the hour each day!

SmartHub can be found on our website – nremc.com. You can also download a free mobile or tablet app in the Apple App Store or Android Marketplace.

The *Smart Hub* application allows members to monitor and manage their energy usage by viewing monthly, weekly or hourly usage and to set thresholds for changes in usage. Members are also able to sign up for NREMC's *Bank-a-Watt* prepay program and choose to receive low balance alerts by phone, text or email.

Grid Hardening

NREMC has leveraged its technology investments to assist in improving the resiliency of its distribution system. Each year, outage data are analyzed to uncover problem areas requiring maintenance. The three year work plan is then adjusted to place emphasis on those areas providing the highest return on reliability.

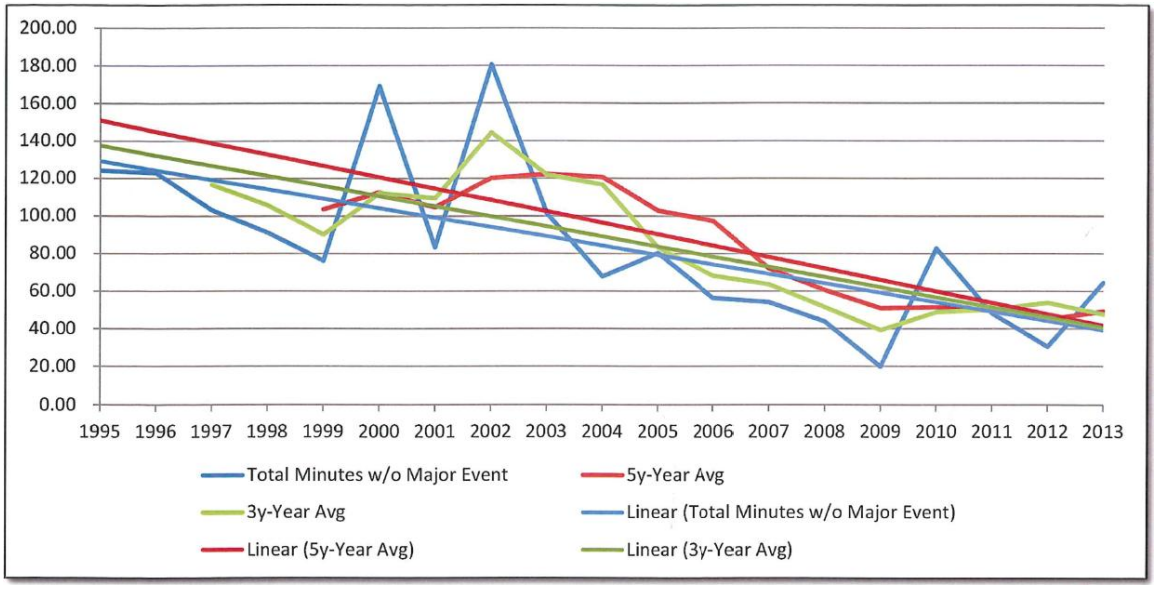
NREMC continues to expand the integration of its distribution system tie points to allow back-feeds and remote switching from SCADA. Its goal is to move to a 'self-healing' grid that can automatically bypass failed equipment or circuit interruptions to minimize the frequency and duration of outages experienced by members.

NREMC proactively tests 10% of its poles every year to identify those in need of replacement. It has also adopted a 3 year cycle on its right-of-way program using contract tree crews who are asked to 'trim, not log' to minimize member complaints.

In its suburban areas, NREMC has been working to convert a significant proportion of the distribution circuits underground to reduce issues caused by trees. Underground circuits now account for 55% of its distribution network.

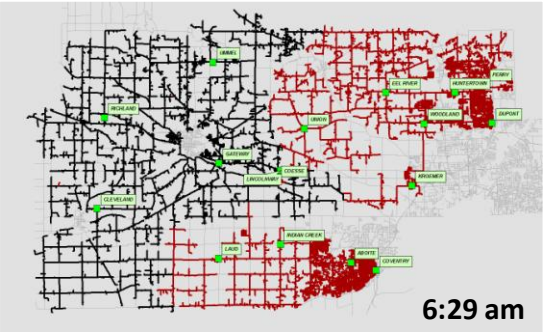
In substations serving commercial areas, NREMC was experiencing a significant number of blinks due to bird contacts. It responded by installing a '*Bird be Gone*' system in six of its substations that plays a continuous audio loop of birds in distress or predators. The system has significantly improved power quality, particularly for large commercial loads.

The combination of grid hardening, technology deployment and flexible work plans has had a dramatic impact on reliability. The chart below shows the steady improvement over the years in NREMC's System Average Interruption Duration Index (SAIDI).

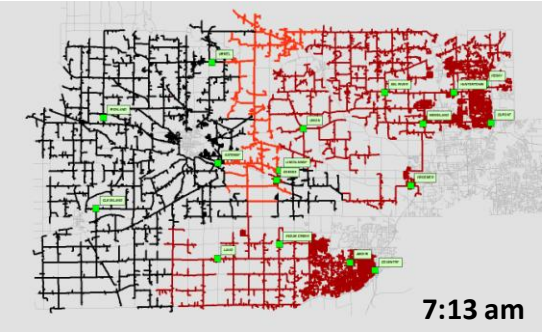


Shining in a Crisis

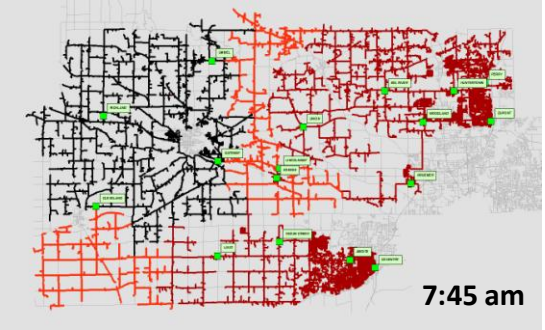
The impact of NREMC's investments in technology became abundantly clear on February 7th, 2014. At 6:29 am that morning, NREMC's power supplier, Indiana Michigan Power, an operating unit of AEP, experienced a transmission outage that cut power to five of NREMC's substations.



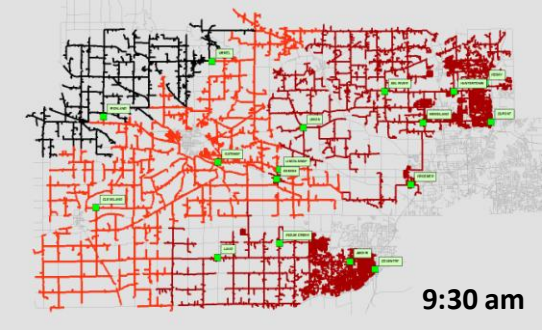
In one second, over 7,000 members were without power (affected areas shown in black). NREMC immediately began rerouting power to serve affected areas remotely using its SCADA system. Within 45 minutes, power was restored to over 1,300 members



Crews were also dispatched to man tie points across the affected areas to perform additional load transfers, restoring power to an additional 700 members by 7:45.

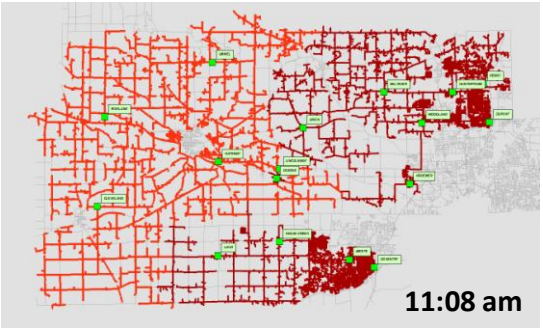


By 9:30, one substation had been re-energized by AEP and additional load transfers were completed by NREMC, restoring power to 5,312 of the original 7,120 who lost power. By 11:08 am, additional load transfers restored power to the remaining members.



In stark contrast to NREMC's response to this crisis, AEP still had two substations in the dark at noon the next day due to their reliance on manual switching, their lack of an AMI system, and their inability to back-feed affected circuits.

During the crisis, NREMC used its website, social media (including Facebook and Twitter) and it took to the airways with radio spots and TV news stations to keep members up-to-date.



Using the tagline "We've Got the Power," NREMC was able to take ownership of the message from AEP and let its members know who was responsible for the speedy recovery.

During outages, NREMC realizes that members want information. Four large monitors displaying the outage map are placed throughout the cooperative allowing all hands to keep up-to-date. The operations group updates an internal blog to keep employees informed about the outage recovery effort so they can respond well to members who call.

Members can use *Smart Hub* to report outages on-line or through their mobile device and monitor the progress of an outage by viewing NREMC's outage maps. During the February transmission outage, 10,000 members visited the NREMC website, representing 40% of the entire membership.

For any outage exceeding 10 members, outbound emails are sent out to keep members informed. NREMC also uses outbound phone calls and emails to proactively reach out to members who are on the disconnect list, greatly reducing the number actually having to be cut off for non-pay.

Plans for the Future

While NREMC has made significant strides, it is not ready to rest on its laurels. In its most recent strategy refresh, NREMC board and staff have embraced Touchstone Energy's Balanced Scorecard and Strategy Execution System.

The following scorecard shows they have met their 'Gold' goals in 4 out of 8 categories and 'Silver' in another 2.

				Gold		Silver		Bronze	
				100% or $125.00		80% or $100.00		60% or $75.00	Actual
				$125.00		$100.00		$75.00	
1	Months w/o Lost Time Accident		1	2012 + 12 months		2012 + 10 to 12 months		2012 + 6 to 9 months	
	Note: 2012 = approx 114 months								
2	Overtime hours/total hours			<1.70%	1	1.70% - 1.90%		1.91% - 2.01%	1.89%
	Excluding major event/billed OT 3 yr avg =1.81% Lowest in 3 yrs = 1.64%								
3	Total outage minutes/meter			<=55		56 - 64	1	65 - 79	64.5
	Excluding major event (reported distribution outages > 12 hrs.) 3yr. avg = 54 2012 = 30								
4	Total operating expense/meter		1	<=$328		$329 - $332		$333 - $335	$320.10
	2013 Budget = $333.24								
5	Customer Satisfaction/ACSI		1	> 84		83 - 84		81 - 82	84.50
	Avg since start = 82.57								
6	Housekeeping			100%	1	99%		98%	99.6
	New Bldg Avg = 99.2								
7	Meters/employee			>=465		463 - 465		461 - 463	454
	3 yr avg = 452; 2013 budget = 462								
8	Performance Reviews		1	100%		97% - 99%		94% - 96%	
	Percent completed on time and correctly								
				Number of "Gold" and Amount		Number of "Silver" and Amount		Number of "Bronze" and Amount	
12.5	Total Payout =	$775.00	4	$500.00	2	$200.00	1	$75.00	

What is their Big Hairy Audacious Goal (BHAG) for the future?

Achieve a 90 on the ACSI by 2018.

KEY WORDS

Communications
Member satisfaction
Outage recovery
Social media
Grid modernization
Reliability

LINKS

National Survey on the Cooperative Difference
American Customer Satisfaction Index (ACSI)
Balanced Scorecard and Strategy Execution System.

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