



August 4, 2014

104 South Pine Street • P.O. Box 9 • Grantsburg, WI 54840-0009

Dr. Burl W. Haar  
Executive Secretary  
Minnesota Department of Commerce  
121 7<sup>th</sup> Place East, Suite 350  
Saint Paul, Minnesota 55101-2147

Subject: Minnesota Electric Distribution Reliability Report – Chapter 7826  
Docket No. E016/M-14-

Dear Dr. Haar:

As required by Minnesota Statutes 2002,216B.81, Northwestern Wisconsin Electric Company (NVEC) files the following report for 2014.

7826.0400 ANNUAL SAFETY REPORT

- A. NVEC did not file any reports with US OSHA or Occupational Safety and Health Division of Minnesota DLI during 2013.
- B. There were no injuries in Minnesota requiring medical attention or property damage resulting in compensation as a result of downed wires or electrical system failures.

7826.500 RELIABILITY REPORTING FOR 2013

Subpart 1.

- A. SAIDI = 309.36
- B. SAIFI = 2.95
- C. CAIDI = 104.85
- D. There were no major storms in NVEC’s Service Territory that affected Minnesota.
- E. NVEC serves 101 customers in Minnesota.

One 7.2KV line runs from Clam River Dam, Wisconsin through Governor Knowles State Forest (no roads, only trails) for approximately one (1) mile, then crosses the St. Croix River and continues 4 ½ miles into Saint Croix State Park (Minnesota) – few roads. This line services 20 customers in the park. It takes approximately an hour to drive, in the summer time, around on roads from source to end of line when patrolling. This adds unavoidable time to duration time of each outage. All overhead lines in Union Township were cleared to 20 foot clearance in 2007. All the lines in Crosby (St Croix State Park) after crossing the St. Croix River are underground.

All the 9KV lightning Arresters were inspected on March 8, 2010. They all were of the MCOV Type (latest design). The OCR at the Clam Dam Substation was replaced with a 35A Amp Oil Circuit Recloser on February 15, 2012.

The second 7.2KV line comes out from the Tower Road Substation (2½ miles east of Danbury, WI.), and goes along country roads for 12 miles to the Wisconsin-Minnesota border. It then enters Minnesota on Highway 25 and Township Roads, serving 81 customers in Arna Township. NWECC reviewed the sizing of the breaker/fusing and lightning protection appears to be adequately sized and correctly placed in the line. The overhead lines in Arna, Blaine and Swiss Townships were cleared to 20 foot clearance in 2007. Almost all of the line was rebuilt with new poles.

NWECC is committed to providing the best possible service to our customers, while still maintaining reasonable rates. A recent three (3) year study indicated that downed trees and limbs on our power lines cause the majority of our outages. Downed trees on power lines provide a serious forest fire danger, are very costly to repair and usually cause lengthy outages for our customers. In order to insure the safety of our employees and to provide uninterrupted service to our customers, NWECC needs to keep our power lines pruned and cut to proper clearance.

Tree limbs falling on power lines cause most storm-related outages. NWECC's maintenance program includes pruning and removing trees under and near power lines on a six-to-seven year pruning cycle in urban areas and an eight-to-ten year cycle in rural areas.

Each tree species grow differently. We must prune more from fast-growing trees to obtain proper clearance than we do from slow-growing trees. We might have to remove trees that are weak, brittle, damaged or diseased to avoid the risk of their falling on power lines. Fast growing trees, such as silver maple and willow, often are troublesome and should be removed.

The amount of clearance depends on the voltage in the lines and tree re-growth after cutting and pruning. The recommended minimum clearance for Distribution primary lines (measured at top of the pole) that serve many customers, is 10 feet on all sides in urban areas and 20 feet in rural areas. We also remove tree branches that overhang the lines. Recommended clearance for wires serving individual homes (secondary) is three (3) feet.

Studies and our experience have shown what minimum clearance we need to maintain a reliable service on a six-to-seven year trimming cycle. Such clearance should minimize outages and prevent trees from burning when they touch primary lines. Tree cutting and pruning is expensive for NWECC and its customers. The Company prefers to remove trees that require frequent pruning and pose particular hazards to power lines. Fast-growing, tall trees, directly under primary wires are an example. They quickly grow back into the wires and can cause repeated outages. Poplars, Willows, Box Elders, Jack Pine and Silver Maples are some fast-growing trees that need frequent pruning near power lines. These trees should be removed rather than pruned.

An NWECC employee will make a reasonable effort to contact, in person or by certified mail, each property owner, a minimum of 24 hours before starting work.

Generally, we recommend that nothing be planted directly beneath the lines. Certain trees that conflict with overhead lines, as they grow, are not only dangerous, but require regular pruning or even removal. Avoid problems by planting low growing tree species, at least 35 feet from overhead Utility lines. NWECC can recommend appropriate tree species for various locations. In general, plant small trees 30 feet apart, medium trees 40 feet apart, and large trees 50 feet apart.

All pole lines are inspected yearly. Five (5) – seven (7) % of all poles are tested for strength each year. Poles that fail test are replaced in the year they are identified.

A downed power line is extremely dangerous. If you encounter a downed wire, stay back and make sure that children, other adults and pets stay away. Call you local NWECC office immediately. Remember that electric, gas, telephone, cable and water lines might be underground, so before you dig, call Gopher State ONE CALL (1.800.252.1166) for the exact location of the electric service buried underground

F. There were no major Bulk Power Supply Interruptions that affected NWECC's Minnesota and Wisconsin customers in 2013.

G. No Reports filed on 7826.0700

H. NWECC has two (2) single phase 7.2KV Distribution Lines going from Wisconsin to Minnesota, one serves St. Croix State Park (20 customers) and the other serves the community of Markville and surrounding area (81 customers).

1. The Arna Township-Markville Circuit in 2013:

SAIDI = 344.44

SAIFI = 3.40

CAIDI = 101.46

2. Saint Croix State Park Circuit in 2013:

SAIDI = 167.25

SAIFI = 1.15

CAIDI = 145.44

I. There were no instances in which nominal electric service voltages on NWECC's side of meter did not meet ANSI Standards

J. Danbury, Wisconsin 1 Foreman and 3 Linemen  
Frederic, Wisconsin 2 Foreman and 6 Linemen  
Grantsburg, Wisconsin 3 Foreman and 9 Linemen

7826.0600 RELIABILITY STANDARDS

Subpart 1. PROPOSED RELIABILITY STANDARDS FOR 2013  
MPUC ordered in Docket E-016/M-13-379

SAIDI = 197.02

SAIFI = 1.22

CAIDI = 162.13

7826.1400 METER READING PERFORMANCE

- A. 81 Meters – 80% by Utility
- B. 20 Meters – 20% self-read
- C. None
- D. One meter reader reads all of Arna





#	NWEC	TOTAL	MINNESOTA OUTAGES 2013				
OUTAGE	DATE	TIME OFF	DURATION	NO. CUST	LOCATION	REMARKS	CAUSE
1	APR 26TH	8:03 AM	45 MIN	5	ARNA		POLE FIRE
2	MAY 31ST	3:00 PM	150 MIN	20	ST CRX STATE PARK		STORM-DOWN LINE
3	MAY 31ST	4:00 PM	150 MIN	81	ARNA		STORM-DOWN LINE
4	JUNE 21ST	8:00 AM	30 MIN	25	ARNA		TREE ON LINE
5	JUNE 23RD	3:30 PM	120 MIN	1	ARNA		UNKNOWN
6	JUNE 30TH	11:00 AM	75 MIN	1	ARNA		HOMEOWNER MAIN BREAKER TRIPPED
7	AUG 3RD	11:00 AM	120 MIN	81	ARNA		BAD ARRESTOR
8	AUG 26TH	8:00 PM	120 MIN	81	ARNA		TREE ON LINE
9	NOV 19TH	4:35 PM	115 MIN	3	ST CRX STATE PARK		SQUIRREL
				<b>298</b>			

MINNESOTA OUTAGES FOR 12 MONTHS ENDING 12/31/13						ST CROIX STATE PARK		
OUTAGE	DATE	# CUSTOMERS	TIME OFF	TIME RESTORED	OUTAGE TIME	OUTAGE MINUTES	CUSTOMER MIN	
1	5/31/2013	20	3:00 PM	5:30 PM	2:30	150	3000	
1	11/19/2013	3	4:35 PM	6:30 PM	1:55	115	345	
		<b>23</b>			<b>4:25</b>	<b>265</b>	<b>3345</b>	<b>TOTALS</b>

Average # of Customers in St Croix State Park 20

CAIDI 145,435 Total Customer Minutes\*/Total Customers Affected  
 SAIDI 167,250 Total Customer Minutes\*/Total Minnesota Customers  
 SAIFI 1,150 Total Customer Affected\*/Total Minnesota Customers

Calculation check: CAIDI X SAIFI = SAIDI 167,250

MINNESOTA OUTAGES FOR 12 MONTHS ENDING 12/31/2013									
OUTAGE	DATE	# CUSTOMERS	TIME OFF	TIME RESTORED	Ama		MARKVILLE		TOTALS
					OUTAGE TIME	CUSTOMER MIN	OUTAGE MINUTES	CUSTOMER MIN	
1	4/26/2013	5	8:03 AM	8:48 AM	0:45	45	225		
1	5/31/2013	81	4:00 PM	5:30 PM	1:30	90	7290		
1	6/21/2013	25	8:00 AM	8:30 AM	0:30	30	750		
1	6/23/2013	1	3:30 PM	5:30 PM	2:00	120	120		
1	6/30/2013	1	11:00 AM	12:15 AM	1:15	75	75		
1	8/3/2013	81	11:00 AM	1:00 PM	2:00	120	9720		
1	8/26/2013	81	8:00 PM	10:00 PM	2:00	120	9720		
7		275			11:40	600	27900		

AVERAGE # OF CUSTOMERS ON Ama Feeder 81

CAIDI 101.455 Total Customer Minutes\*/ Total Customers Affected  
 SAIDI 344.444 Total Customer Minutes\*/ Total Minnesota Customers  
 SAIFI 3.395 Total Customer Affected\*/ Total Minnesota Customers

Calculation check: CAIDI X SAIFI = SAIDI 344.444

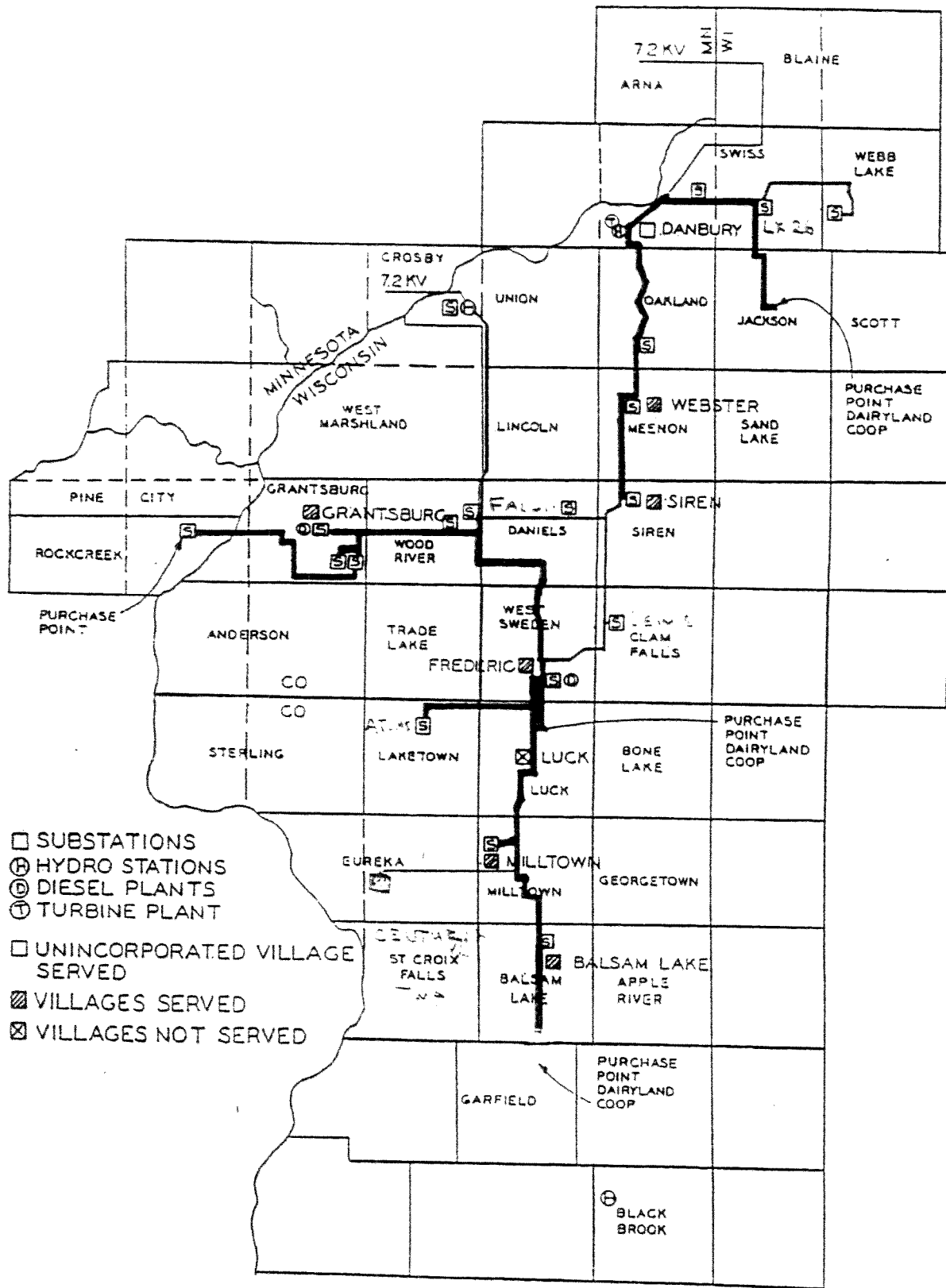
MINNESOTA OUTAGES FOR 12 MONTHS ENDING 12/31/2012 - 12/31/2013									
OUTAGE	DATE	# CUSTOMERS	TIME OFF	TIME RESTORED	Total Minnesota		CAUSE		TOTALS
					OUTAGE TIME	CUSTOMER MIN	OUTAGE MIN	CUSTOMER MIN	
1	4/26/2013	5	8:03 AM	8:48 AM	0:45	45	225		
1	5/31/2013	81	4:00 PM	5:30 PM	1:30	90	7290		
1	5/31/2013	20	3:00 AM	4:30 AM	2:30	150	3000		
1	6/21/2013	25	8:00 AM	8:30 AM	0:30	30	750		
1	6/23/2013	1	3:30 PM	5:30 PM	2:00	120	120		
1	6/30/2013	1	11:00 AM	12:15 AM	1:15	75	75		
1	8/3/2013	81	11:00 AM	1:00 PM	2:00	120	9720		
1	8/26/2013	81	8:00 PM	10:00 PM	2:00	120	9720		
1	11/19/2013	3	4:35 PM	6:30 PM	1:55	115	345		
9		298			16:05	865	31245		

Average # of Customers in MINNESOTA 101

CAIDI 104.849 Total Customer Minutes\*/ Total Customers Affected  
 SAIDI 309.356 Total Customer Minutes\*/ Total Minnesota Customers  
 SAIFI 2.950 Total Customer Affected\*/ Total Minnesota Customers

Calculation check: CAIDI X SAIFI = SAIDI 309.356

# TRANSMISSION LINES NORTHWESTERN WISCONSIN ELECTRIC CO



3-12-09