WASHINGTON ELECTRIC COOPERATIVE, INC.

2024 SYSTEM RELIABILITY REPORT

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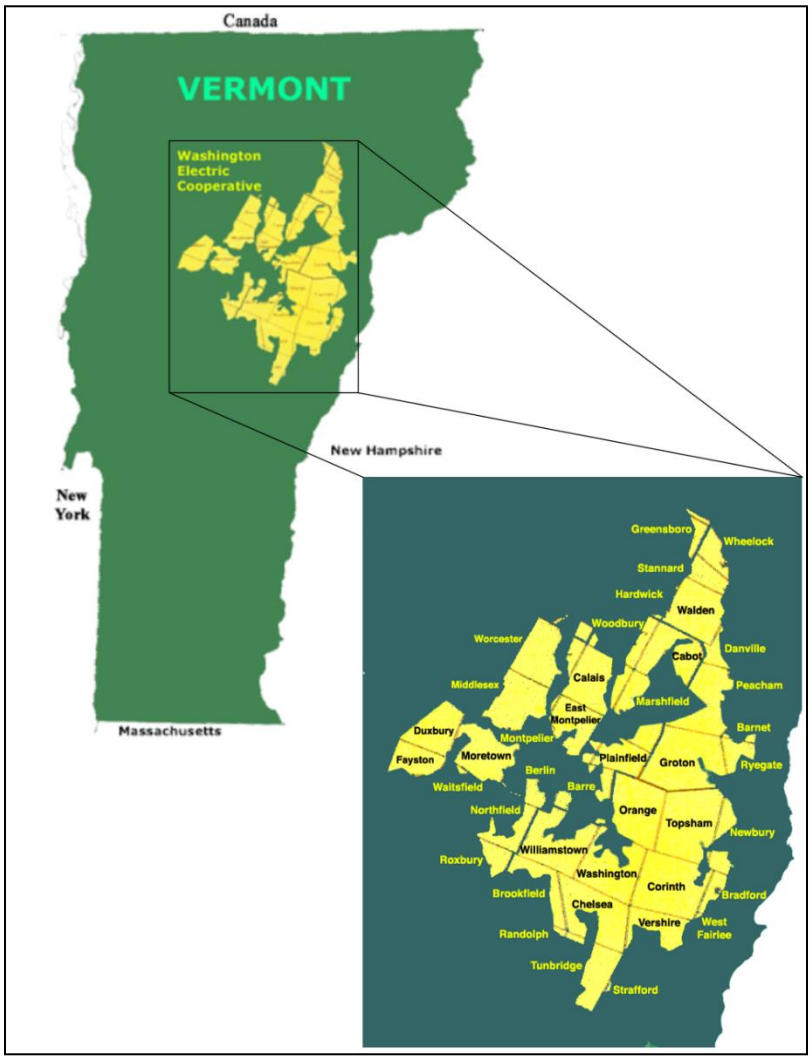
1. Background

Washington Electric Cooperative served an average of 11,579 members in 2024 via an electrical distribution system that includes 26 miles of WEC-owned transmission line and 1,266 miles of distribution line. The system includes eight distribution substations, seven of which depend on third-party transmission provider Green Mountain Power for service. The remaining substation is served via a WEC owned transmission line interconnected to Vermont Electric Power Company's (VELCO) high voltage substation in Chelsea, VT. WEC's distribution lines are located throughout 41 towns in Central Vermont, covering approximately 2,728 square miles and serve remote locations composed of rural homes, small farms and small businesses. There are approximately 8 service locations per mile of line, many of which are located on unpaved roads in small valleys within the 41 towns.

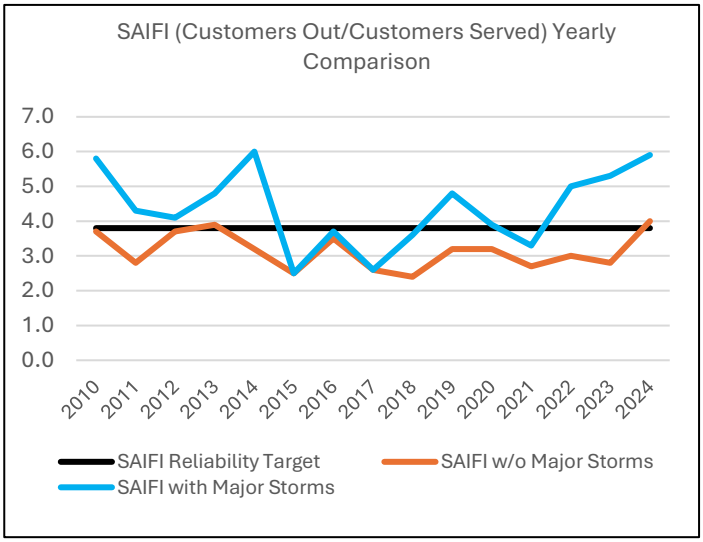


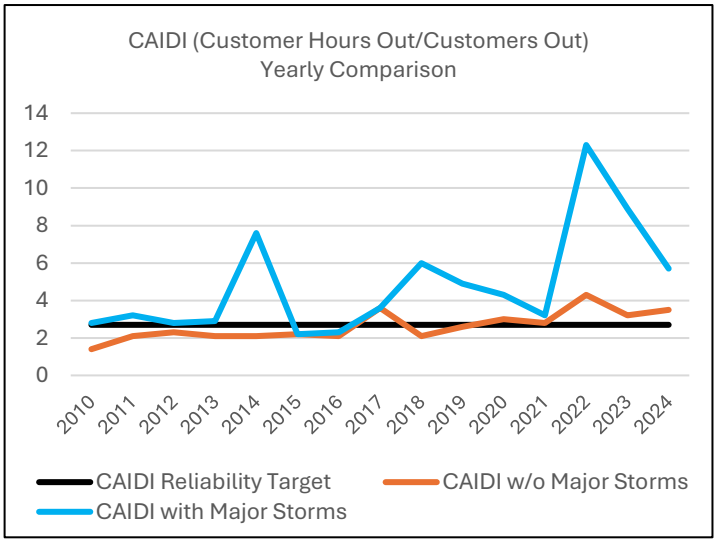
The distribution system was constructed during a time when much of the land in Vermont was open fields and pasture that has since grown in. Vermont lies within a biological transition zone between the northern boreal forest to the southern deciduous forests. The northern hardwood mix of beech, birch, and maple dominates Vermont's forests, accounting for 71% of the forest cover. The remote location of the lines and abundance of fast-growing species such as red maple, poplar and white birch coupled with severe weather events, significantly increases the exposure of the lines to tree-related outages.

WEC records data associated with all power outages occurring over the calendar year and provides this year end Service Reliability Report to the Vermont Public Utilities Commission as required by Rule 4.900. To compare trends more effectively in WEC's reliability performance and associated efforts to make improvements in those performance areas, this report generally excludes those outages associated with severe weather events determined to be "Major Storms" as defined in WEC's Successor Service Quality and Reliability Performance Plan. However, a distinctive increase in frequency and severity of these weather events is significantly contributing to a decline in service reliability across most of WEC's service territory and therefore must be taken into consideration when analyzing service reliability and planning for improvements. While it is true that severe weather events do create conditions that exceed the design capability of the electrical delivery system, it remains obvious that design criteria and maintenance schedules must be improved to counteract the increased severity of these events.

2. Reliability Summary:

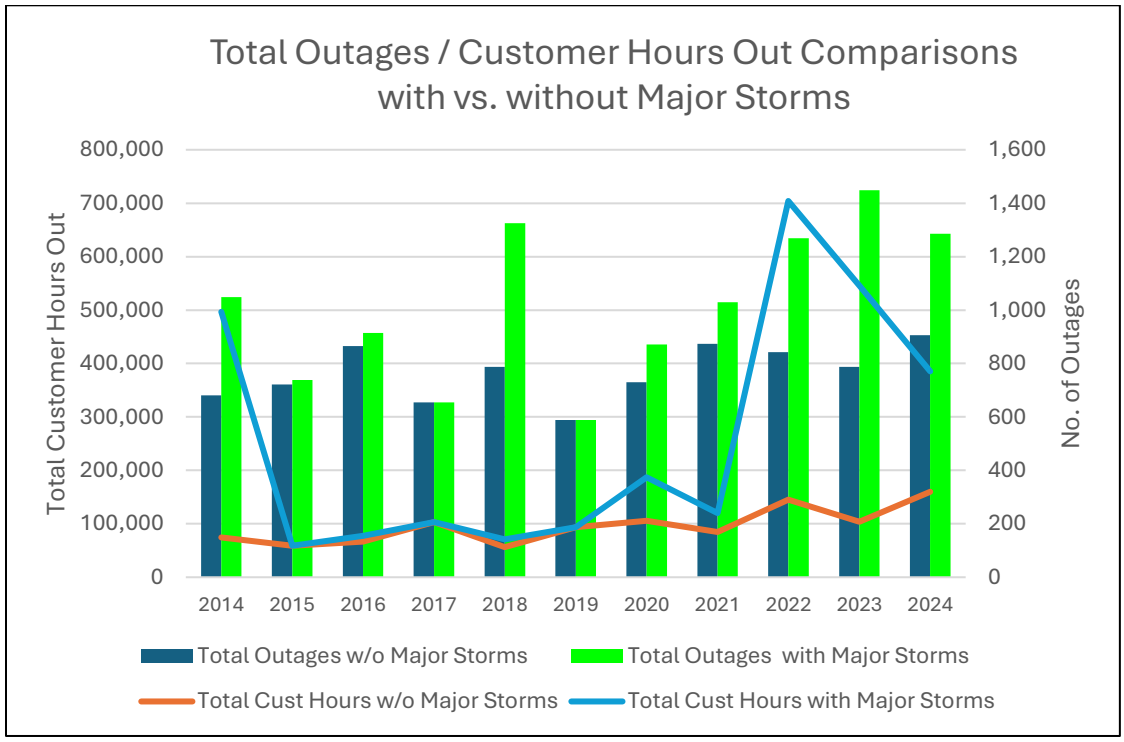
The SAIFI and CAIDI performance measure targets established in WEC's Successor Service Quality and Reliability Plan are **3.8** and **2.7** respectively. The SAIFI and CAIDI indices for 2024**,** exclusive of major storms, were **4.0** and **3.5** respectively. The SAIFI and CAIDI indices**,** exclusive of major storms, have averaged 3.3 and 3.7 over the last three years and the 10-year averages are 3.0 and 2.9 respectively.





3. Outage Totals/Customer Hours Out Summary:

In 2024 WEC experienced 906 separate outages, exclusive of major storms, on the distribution system compared to 787 in 2023. The rolling 3-year average for total number of outages, exclusive of major storms, is 845, and the rolling 10-year average is 776. The total number of consumer-hours-out in 2024, exclusive of major storms, was 159,960 compared to 103,876 in 2023. The rolling 3-year average of consumer-hours-out, exclusive of major storms, is 136,380 and the 10-year rolling average is 97,802.

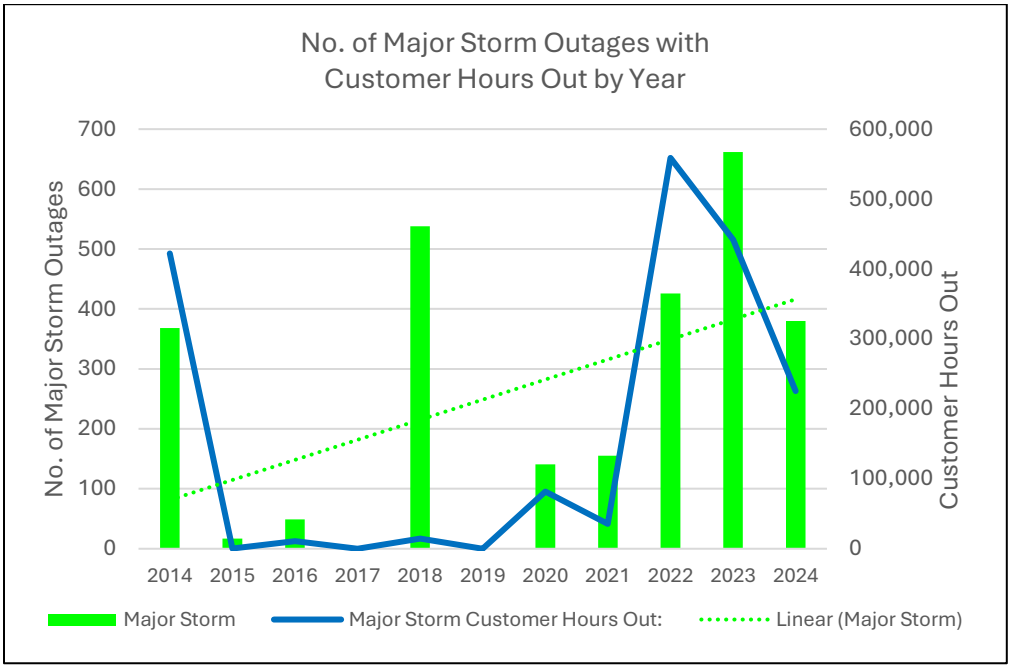


4. Impact of Major Weather Events:

During 2024, WEC experienced three severe weather events that met the criteria for Major Storm. Major Storms are defined in WEC's Successor Service Quality and Reliability Performance Plan as:

1. Extensive mechanical damage to the utility infrastructure has occurred;
2. More than 10% of the customers in a service territory are out of service due to the storm or the storm effects; and
3. At least 1% of the customers in the service territory are out of service for at least 24 hours.

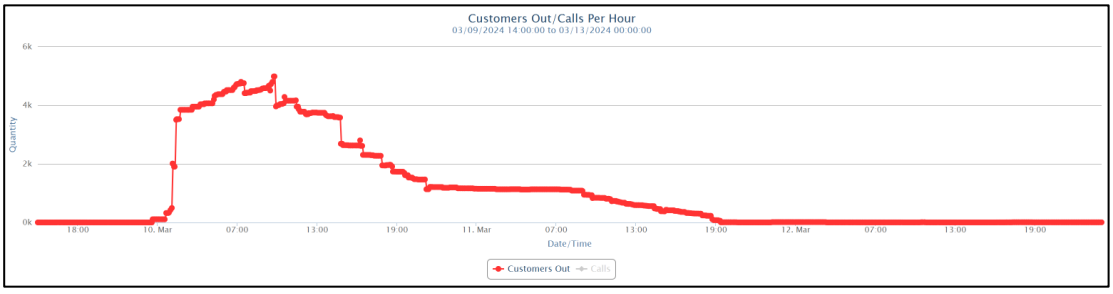
The three major storms contributed an additional 380 outages in 2024 bringing the total number of outages to 1,286. These major storm outage events involved 21,841 customers out with an additional total of 225,505 customer-hours-out.



Major Storm Details:

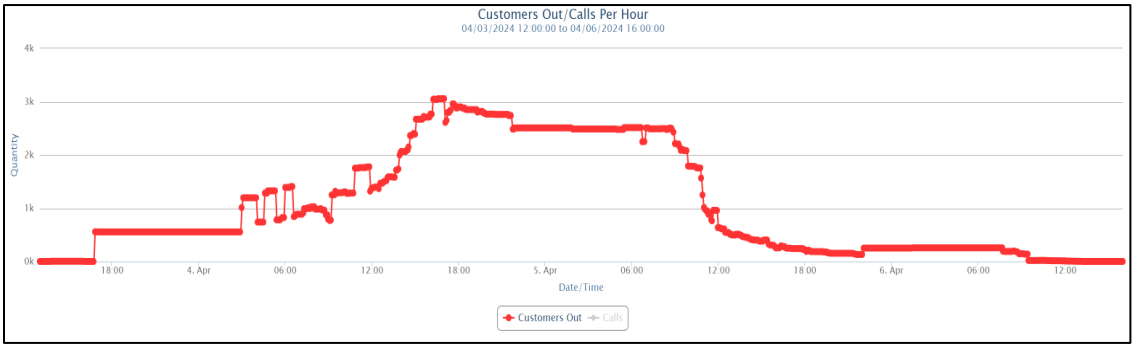
March 10, 2023: This severe weather event produced 5” to 10” of wet heavy snow in much of WEC’s territory and produced wind gusts of 40-55 mph in some areas. Damages included broken poles and wires downed due to heavy snow loading and unloading, winds and falling trees.

Duration: 3/09/24 at 23:40 through 3/11/24 at 20:45
Peak: 4,986 out
Broken poles: 3



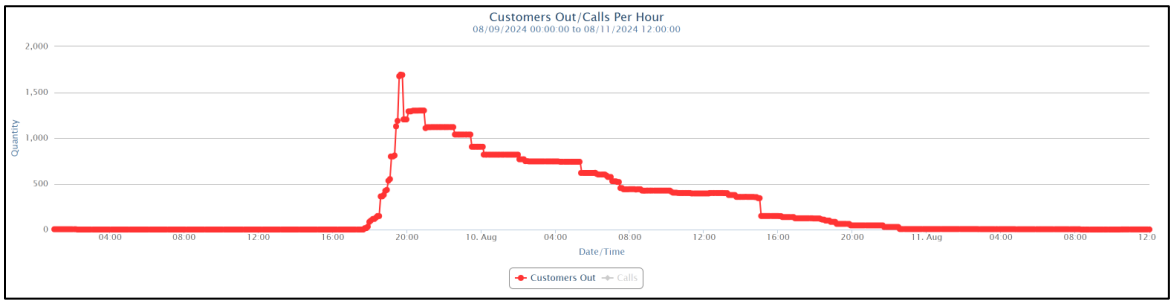
April 4, 2024: This severe weather event included accumulating wet heavy snow and 50+ mph wind gusts in parts of our territory.

Duration: 4/3/24 at 10:50 through 4/6/24 at 13:15
Peak: 3,057 out at 17:00
Broken poles: 4



August 9, 2024: This severe weather event included heavy rains and strong wind gusts. Temperatures that day were in the mid to upper 60s with rain and SSE winds between 6-8 mph for most of the day until around 4:00 pm when wind gusts increased to 37-60 mph as the cold front passed through WEC's territory.

Duration: 8/9/24 at 17:45 through 8/11/24 at 08:20
Peak: 1,689 out at 17:50
Broken poles: 3

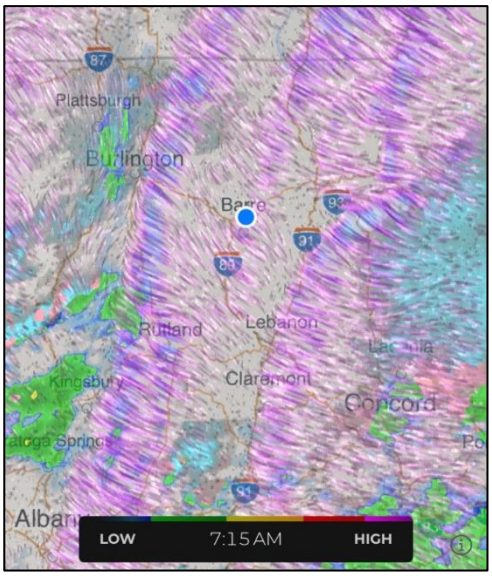


NOTE: Although they did not qualify as Major Storms in 2024, WEC territory would experience an additional seven severe weather events causing major damage and extending the time our members were without power.

In January, 46 outages out of the total 61 occurred during two large back-to-back severe weather events WEC's territory experienced on January 10th and the 13th. Both these events featured very wet and heavy snow across Vermont and winds approaching 70 mph.

The first outage calls started just after midnight on the 10th and by 05:15 that morning our peak number out was 1,086 members out and we completed restoration by 17:30 that evening. We had two broken poles during this event.

Mother nature did not give us much rest time in between events and the first outage calls for the second storm started coming in around 06:20 on Saturday, 1/13. At peak, around 10:40, we had 760 members out. Even though this second severe weather event caused seven broken poles, the WEC team completed full restoration by 19:10 that evening.



The radar image to the right shows the high winds at 07:21 on the 13th and how the 60-70 mph winds surrounded WEC's territory. Note the lighter winds, later estimated to be around 45-50 mph, in our territory above Barre where the winds are concentrated to the north, Plainfield and Marshfield up through to Greensboro. This area is where we experienced most of the outages during both events.

In May WEC experienced 23 tree outages, the majority of which occurred during two severe weather events: May 24th and May 27th. The 5/27 weather event in particular featured thunderstorms and 35-45 mph southeasterly gradient wind gusts. Peak out occurred at 14:55 on the 24th storm with 214 members out and all power was restored by 16:35 that day. Outages during the May 27/28th storm started coming in at 14:00 on the 27th. Peak out occurred at 18:45 with 210 members out and all power was restored at 07:50 on Tuesday, May 28th.

On July 10th, WEC and Vermont experienced another major flooding event which hit parts of WEC's territory hard. Peak out during this flood event occurred at 06:20 on 7/11 with 817 out and WEC crews had restored power to most members by July 12th at 21:00, but we continued to experience small, localized outages throughout the 13th-16th. Several locations required us to rebuild lines in new ROWs and locations that had no accessibility to even rebuild the lines. For example, sections of WEC's three phase line along VT302 (pictured on the right) were washed out and had to be relocated across the road to get the power back on.


VT302

Many sections of WEC's lines on the Brook Road in Plainfield were washed away during the flooding (see photo below) making line relocation/rebuilding difficult. The small stream running along the road washed away a 200' section of the road and WEC's lines the served the last customer on the other side of the washout. This storm required eight pole replacements and was eligible for FEMA funding.

Brook Road, Plainfield

During the month of October, the weather patterns continually fluctuated from low to high and back to low pressure systems. With temperature swings from the high 70°s down to the 40°s and the rapid change in wind direction from the south to the north, these strong weather system changes helped create powerful wind gusts and on October 12th, we experienced a weather event across our territory with peak wind gusts of around 35-45 mph. This two-day outage accounted for 37 tree outage events for the month. The first outage reports started coming in at 05:30 am and by 06:45 we had 1,993 out. Peak occurred at 09:25 with 2,155 out. The WEC team had everyone back on by 1:10 pm on Sunday 10/13. The VT peak of 12,553 occurred at 08:30 am on the 12th.

We experienced two large severe weather events during November. On 11/8 and 11/9 we experienced strong wind gusts of 35-45 mph which hit Vermont as the winds changed direction from the SSW to the NNW and the temperatures dropped from the upper 50's on 8th to the low 30's on the 9th. Initial outage calls started coming in at 16:26 on the 8th with 1,305 out by 16:40. Peak occurred at 6:45 pm with 2,415 out and we experienced a total of 31 events and 18 outages. As the low-pressure system moved out of VT to the northeast, we experienced a second wave of outages at our Mt. Knox substation with 1,457 out at 1:00 am. Our team had everyone back on by 4:35 pm on the 9th.

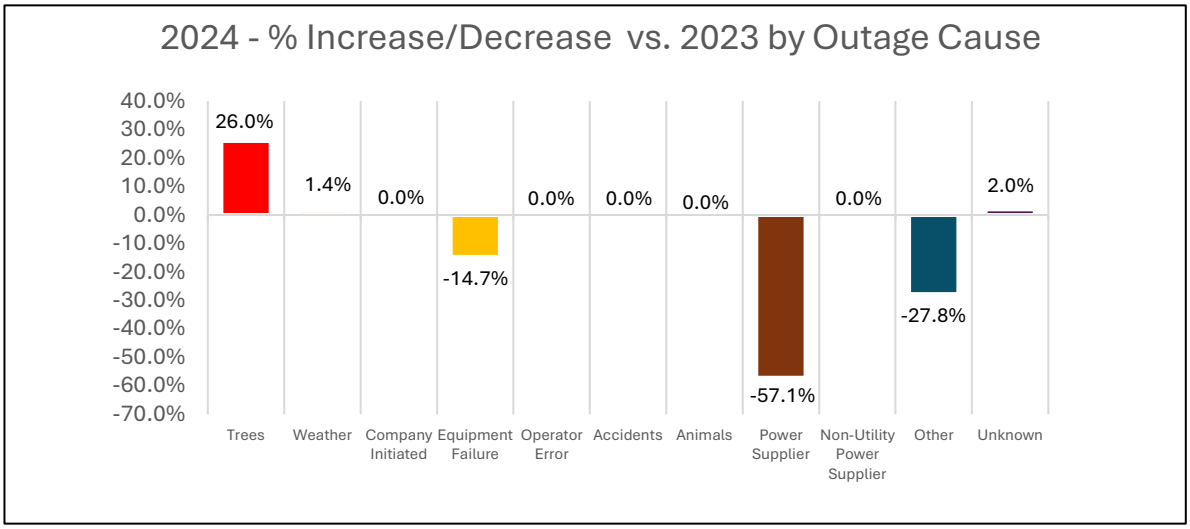
Then on Thanksgiving day we experienced the second severe weather event of the month. Vermont received about 8"-10" of heavy wet snow. Outage calls started coming in at 11:35 on the 28th and although we remained under 500 out for the better part of the day, outages substantially increased around 17:35 that evening. Peak occurred at 21:55 with 1,751 out. We experienced a total of 101 events and 92 separate outages. All power was restored by 20:40 on Nov 29th.

It was because the WEC team was able to restore power to our members so quickly, many of these severe weather events did not qualify as major storms. This forced the outage data,

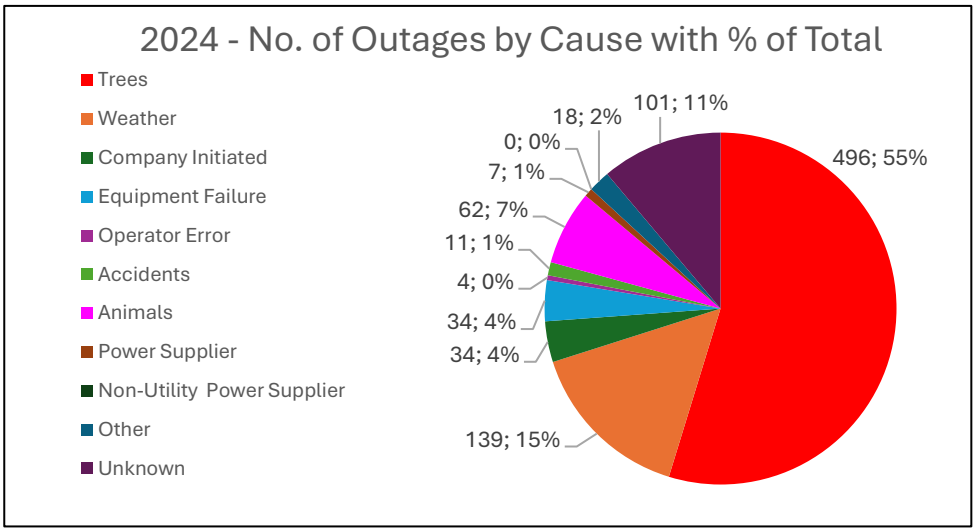
particularly tree outages, to substantially increase in both the number of outages and the member hours out. In total, WEC had to replace 31 poles due to the damage caused by the above severe weather events and major storms.

5. Outage causes and assessments:

Five outage categories in 2024 had no change in the number of outages over 2023. Two categories, Equipment Failure and Other, had small decreases and Power Supplier had a significant decrease. The Weather and Unknown cause categories had slight increases while Tree outages increased 26%. The increase in Tree outages can be attributed to the additional seven severe weather events that had a significant number of outages but did not qualify as Major Storms under WEC's SQRP.



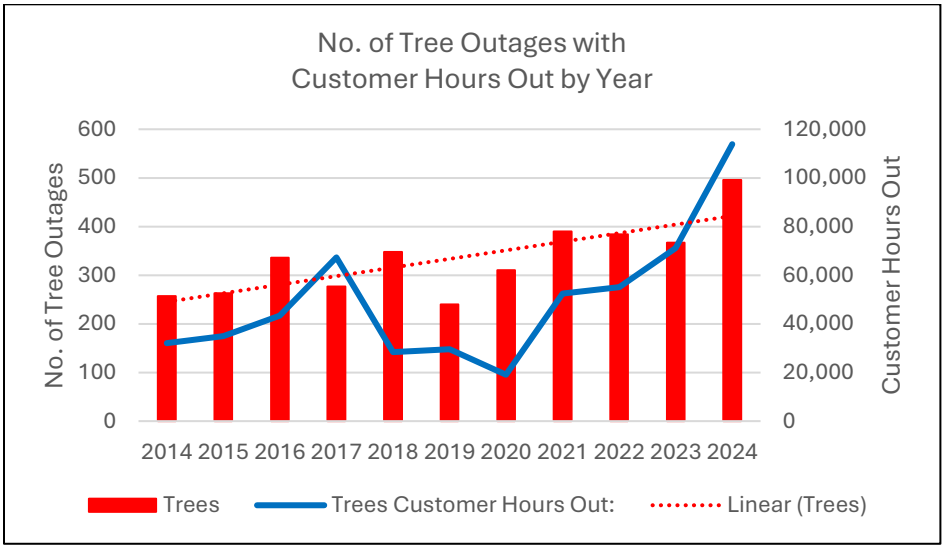
The top three outage categories that WEC experienced most during 2024 are: Trees = 496 outages; Weather = 139 outages; and Unknown = 101 outages. These categories were also the top three in 2023.



6. Outage Category Assessment

6.1 Tree Outages

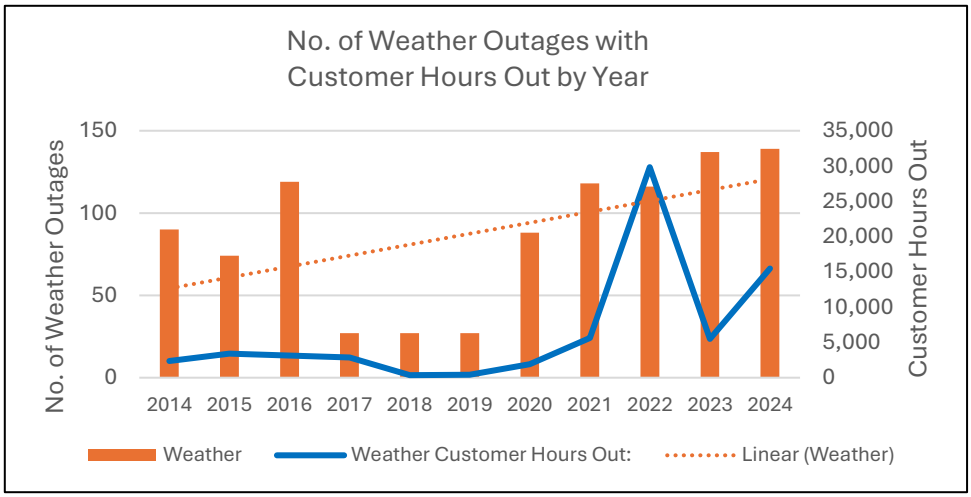
At 55% of total outages, trees were the largest cause of outage events on WEC's distribution system. In 2024, WEC experienced 496 tree outages affecting 32,868 members with 113,859 member hours out compared to 367 and 71,139 member hours out in 2023. The three-year average for tree outages is 416 and 80,010 member hours out and the 10-year average is 341 and 51,506 member hours out.



At 129 more than in 2023, 496 tree outages in 2024, is the highest number that WEC has experienced over the years. During the severe weather events that occurred in 2024, WEC's main goal was to decrease restoration times and WEC decided to request mutual aid as soon as possible in the early stages of outage restoration. In doing so, WEC managed to improve restoration times during major storm events, but many of those are now being assessed as regular outages triggering a 26% increase in the Tree cause category.

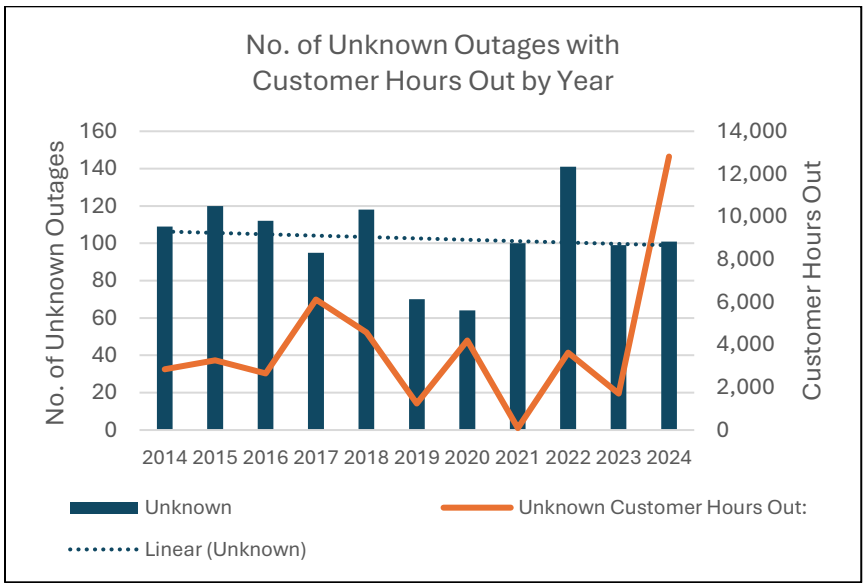
6.2 Weather Outages

At 15% of total outages, weather was the second highest cause of outage events on WEC's distribution system in 2024. WEC experienced 139 weather related outages affecting 1,873 members with 15,489 member hours out compared to 137 events with 5,474 member hours out in 2023. The three-year average for weather outages is 131 and 16,935 member hours out and the 10-year average is 87 and 6,850 member hours out. Although there was not a significant increase in weather outages, most of the total occurred during the severe weather and major storm events. Particularly snow unloading from those with wet heavy snow loading.



6.3 Unknown Outages

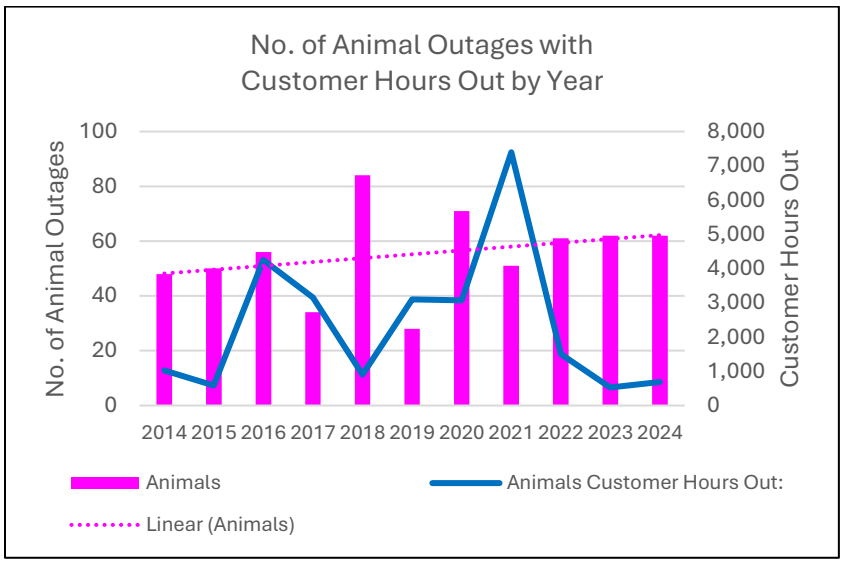
Unknown outages ranked 3rd in 2024 at 11% of total outages. In 2024, WEC experienced 101 unknown outages with 12,816 member hours out compared to 99 and 1,705 member hours out in 2023. The three-year average for unknown outages is 114 and 6,048 member hours out and the 10-year average is 102 and 4,026 member hours out.



When the line crews are unable to determine the cause of outages, many are accounted for in the unknown cause category. There is some overlap with trees and major storms, which most likely accounts for the bulk of the unknown category.

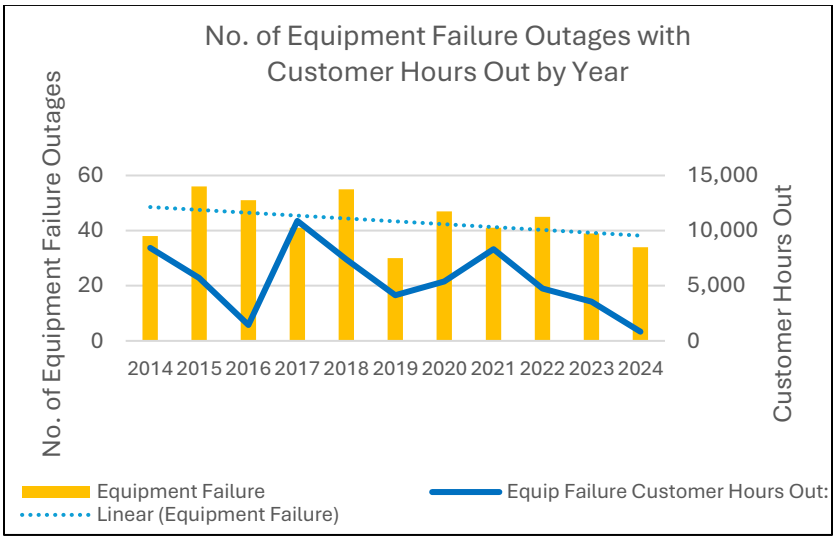
6.4 Animal Outages

Ranked 4th, animal outages were 7% of total outages. In 2024, WEC experienced 62 animal outages with 684 member hours out compared to 62 outages and 525 member hours out in 2023. The three-year average for animal outages is 62 and 903 member hours out and the 10-year average is 56 and 2,516 member hours out.



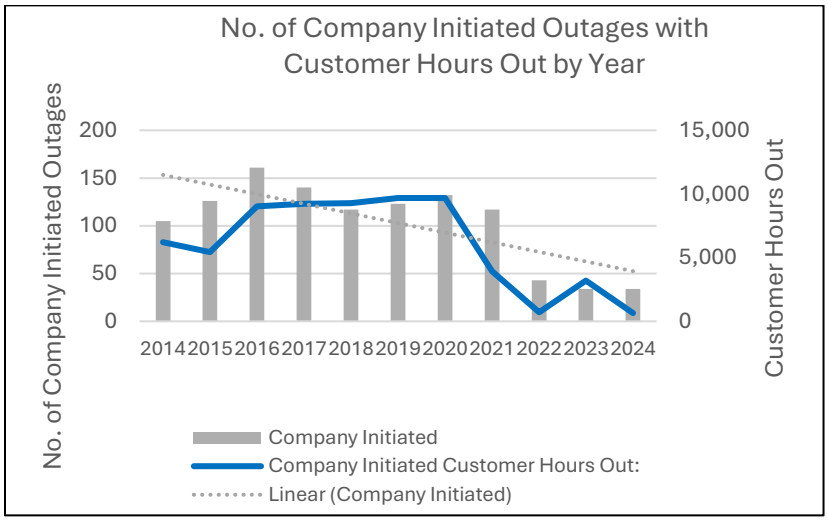
6.5 Equipment Failure

At 5% of total outages, equipment failure outages ranked 5th in terms of number of outages. WEC experienced 34 equipment failure outages with 833 member hours out compared to 34 and 3,198 member hours out in 2023. The three-year average for equipment failure outages is 39 and 3,050 member hours out and the 10-year average is 44 and 5,240 member hours out.



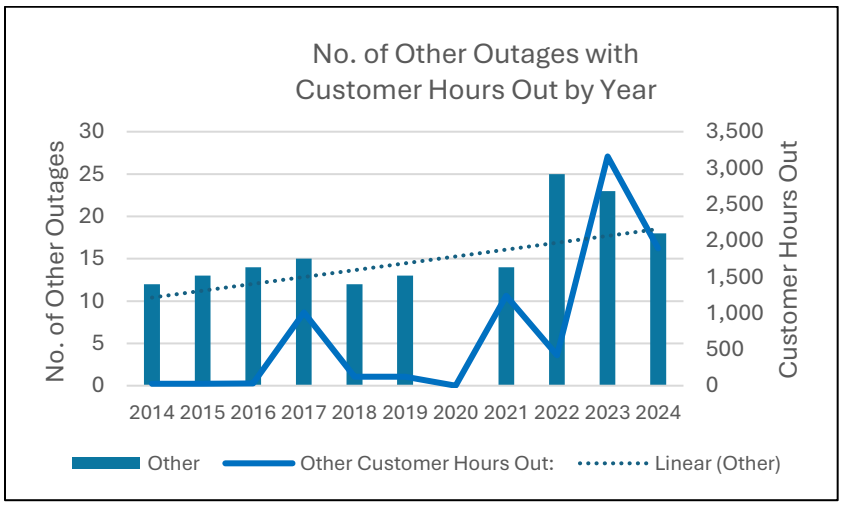
6.6 Company Initiated Outages

Ranked at 6th, company-initiated outages made up 4% of the total outages in 2024. WEC experienced 34 company-initiated outages with 648 member hours out compared to 34 outages and 3,198 member hours out in 2023. The three-year average for company-initiated outages is 37 and 1,519 member hours out and the 10-year average is 103 and 6,085 member hours out.



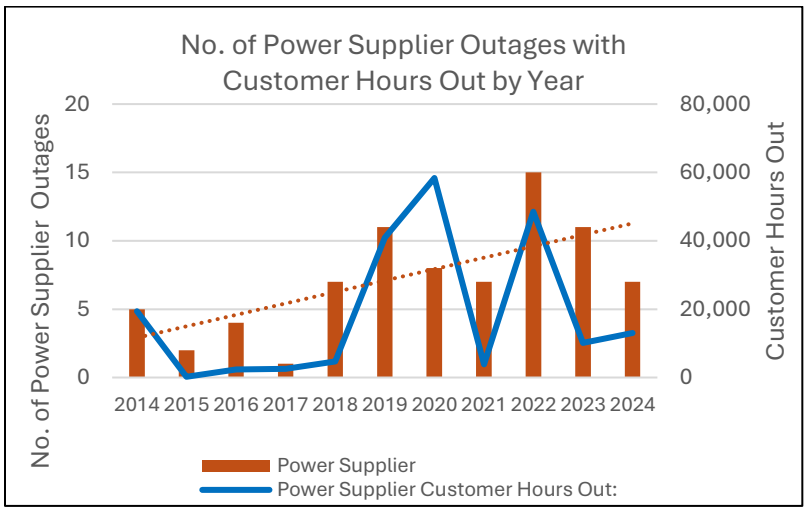
6.1 Other Outages

At 2% of total outages, other outages ranked 7th. In 2024, WEC experienced 18 Other outages with 1,894 member hours out compared to 23 and 3,159 member hours out in 2023. The three-year average for other outages is 22 and 1,824 member hours out and the 10-year average is 15 and 803 member hours out.



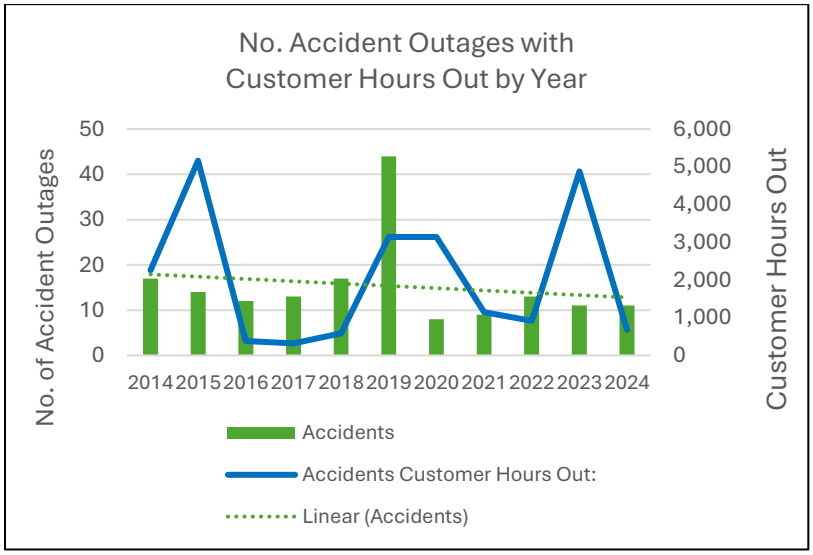
6.1 Power Supplier Outages

At 1% of total outages, power supplier outages ranked 8th. In 2024, WEC experienced 7 outages with 13,056 member hours out compared to 11 and 10,113 member hours out in 2023. The three-year average for power supplier outages is 11 and 23,895 member hours out and the 10-year average is 7 and 18,474 member hours out.



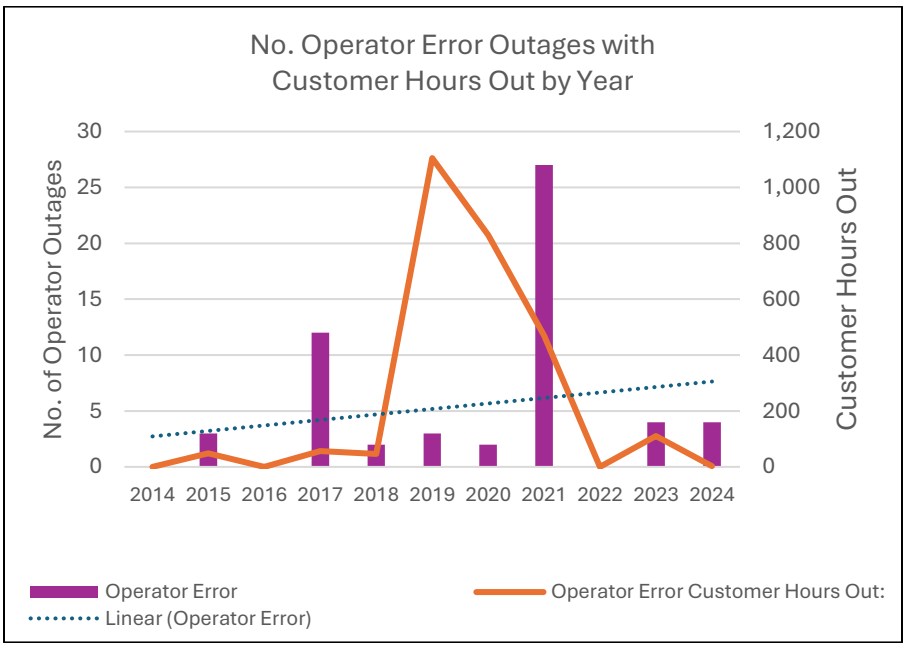
6.1 Accidents

At 1.2% of total outages, Accident outages ranked 9th with 11 outages and 678 member hours out compared to 11 Accident outages and 4,879 member hours out in 2023. The three-year average for Accident outages is 12 and 2,158 member hours out and the 10-year average is 15 and 2,035 member hours out.



6.9 Operator Error

At <1% of total outages and ranked 10th (last), Operator Error outages accounted for 4 outages in 2024 with 3 member hours out compared to 4 outages in 2022. The three-year average for Operator Error outages is 10 and 193 member hours out and the 10-year average is 5 and 267 member hours out.



7. Action Plan:

WEC has been adhering to USDA Rural Utility Services (RUS) construction standards that help harden the distribution system from the effects of increased severe weather events and storm severity. These practices are funded through the RUS approved Construction Work Plan (CWP) process. The four-year CWP is focused on continued improvement and enhanced reliability of WEC's transmission and distribution system.

Each year WEC is required to inspect 10% of our pole plant and all condemned poles are replaced as required. The results of these inspections are used to assess the current condition of WEC's pole plant to maximize their life cycle value. The inspection data is crucial in determining pole condition and the results are fully integrated into the WEC's four-year CWP. During the 2019-22 CWP work period, WEC replaced and/or installed a total of 1,071 poles. Also in 2022, WEC moved away from using Class 3 pole sizes and started replacing poles with a stronger, thicker Class 2 pole to provide added protection against falling trees.

WEC also inspects our five sub-transmission lines, approximately 25 miles total, every year and carries out any ROW cutting, pole replacements, and/or repairs that may be needed. An

infrared hot spot scan of equipment and equipment connections within the substations is also completed as well as annual substation transformer oil sampling and testing.

The new 2024-2027 CWP calls for approximately 75% of the dollars being spent on reconstruction and upgrades on circuits in WEC's service territory. The CWP also outlines system-hardening improvements including, but not limited to, the following: replacement of small and aged conductors, installation of capacitors to reduce line loss, the replacement of deteriorated poles, the addition of mid-span poles to reduce conductor span lengths and the reconstruction of approximately 14 miles of line.

Upgrades and system enhancements in the new 2024-2027 CWP include a complete AMI system replacement, installation of Transmission Ground Fault Over Voltage (TGFOV) protection at six substations, installation and/or upgrades of 24 new reclosers, installation and/or replacement of approximately 750 distribution transformers, installation of new voltage regulators and capacitors, upgrades at two substations and the complete replacement of two other substations.

In addition to the above CWP projects, 14 line rehabilitation projects were identified and added to the new plan and also a FEMA mitigation project. Two of the rehabs will extend three-phase conductors on two feeders beyond their current end points to help with phase balancing, voltage control and outage management by further segmenting long, single-phase lines.

The mitigation plan will replace 46 old class 4, 5, and 6 poles with taller class 2 poles, relocate an off-road section of the line to the road and replaces the older, smaller conductors with the stronger Cable Spacer System. The Cable Spacer System's compact design shrinks the strike zone from falling trees and uses a support messenger to support the insulated conductors. This system is better suited to keeping the conductors in the air and energized when struck by a falling tree. It will be used for all applicable three-phase upgrade projects in the future for added reliability. WEC also reviews all single-phase upgrade projects to determine if they should be upgraded in place or moved to the road or if it should be converted to underground.

For the last five years and again for 2025, WEC's Board of Directors has approved significant funding for ROW clearing. The funding will be used to target clearing those lines directly affected by tree contact, wet snow loading and danger trees outside the ROW. During 2024, ROW clearing crews maintained approximately 51 miles of distribution line and 1.7 miles of transmission line. A total of 5,484 danger trees were cut during ROW operations.

For 2025 WEC has contracted with a ROW software company to conduct a 250 mile trial project for ROW services. The company uses satellite imagery and artificial intelligence to assess vegetation growth in WEC ROWs and, based on past outage data and certain risk factors, creates a cutting plan for our ROW crews to follow. The software includes a work manager module to send cutting jobs directly to the contract crews and keeps track of the status of each project and provide cutting data for evaluation. If successful, WEC hopes to use this pilot project develop a complete system-wide cutting plan, increase annual cutting footage, and improve reliability.

Outage Management: In 2023 WEC made several changes internally to the way outages are managed. Working with our OMS software vendor WEC changed the way our online outage map displays outage information. Members can now see if their general location is affected by an outage or is part of a larger outage. By hovering over the outage point on the map, information regarding the outage i.e., when reported, when crews are assigned, cause and estimated restoration time, can be displayed. Also in 2023, WEC deployed tablets to our line crews who now have the ability to view all outage information including any information regarding the outage called in by members.

Storm Response: WEC monitors the weather on a daily basis and when notification of an approaching severe weather event is received from the VELCO weather forecasters, WEC participates in the VELCO emergency prep conference calls for these events. WEC personnel are then put on alert ahead of the pending situation and preparations are made ahead of the event to coordinate deployment of resources and restoration. WEC also utilizes the NEPPA Mutual Aid program for Major Storm restoration and depending on the type and amount of damage that occurs, WEC will request any needed resources from NEPPA, WEC Line Contractors and other Vermont utilities to expedite restoration.

This 2024 Reliability Report is being submitted to the Board via ePUC.

Respectfully submitted,

Dave Kresock
Director of Operations & Engineering

Washington Electric Cooperative

2024
w/o Major Storms

This report is pursuant to PSB Rule 4.903B. It is to be submitted to the Public Service Board and the Department of Public Service no later than 30 days after the end of the calendar year.

Electricity Outage Report -- PSB Rule 4.900

Name of company	Washington Electric Cooperative
Calendar year report covers	2024
Contact person	Dave Kresock
Phone number	802-223-5245
Number of customers	11,579

System average interruption frequency index (SAIFI) =	**4.0**
Customers Out / Customers Served	
Customer average interruption duration index (CAIDI) =	**3.5**
Customer Hours Out / Customers Out	

		Number of Outages	Total customer hours out	Total customers interrupted
1	**Trees**	496	113,859	32,868
2	**Weather**	139	15,489	1,873
3	**Company initiated outage**	34	648	860
4	**Equipment failure**	34	833	339
5	**Operator error**	4	3	4
6	**Accidents**	11	678	1,061
7	**Animals**	62	684	438
8	**Power supplier**	7	13,056	5,855
9	**Non-utility power supplier**	0	0	0
10	**Other**	18	1,894	60
11	**Unknown**	101	12,816	2,753
	Total	906	159,961	46,111

Washington Electric Cooperative

2024 w/Major Storms

This report is pursuant to PSB Rule 4.903B. It is to be submitted to the Public Service Board and the Department of Public Service no later than 30 days after the end of the calendar year.

Electricity Outage Report -- PSB Rule 4.900

Name of company	Washington Electric Cooperative
Calendar year report covers	2024
Contact person	Dave Kresock
Phone number	802-223-5245
Number of customers	11,579

System average interruption frequency index (SAIFI) =	**5.9**
Customers Out / Customers Served	
Customer average interruption duration index (CAIDI) =	**5.7**
Customer Hours Out / Customers Out	

		Number of Outages	Total customer hours out	Total customers interrupted
1	**Trees**	496	113,859	32,868
2	**Weather**	139	15,489	1,873
3	**Company initiated outage**	34	648	860
4	**Equipment failure**	34	833	339
5	**Operator error**	4	3	4
6	**Accidents**	11	678	1,061
7	**Animals**	62	684	438
8	**Power supplier**	7	13,056	5,855
9	**Non-utility power supplier**	0	0	0
10	**Other**	18	1,894	60
11	**Unknown**	101	12,816	2,753
12	**Storm**	380	225,505	21,841
	Total	1,286	385,466	46,111