

**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
DIVISION OF PUBLIC UTILITY REGULATION**



**PREPARATION FOR AND RESPONSE TO
FEBRUARY 2021 ICE STORM**

**SPECIAL REPORT OF THE DIVISION OF
PUBLIC UTILITY REGULATION**

September 16, 2021

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EXECUTIVE SUMMARY

This report presents the results of an analysis by the Virginia State Corporation Commission Staff ("Staff") of the preparedness and responsiveness of Virginia Electric and Power Company ("Dominion" or "DEV" or "Dominion Energy"), Mecklenburg Electric Cooperative ("MEC" or "Mecklenburg"), and Southside Electric Cooperative ("SEC" or "Southside") relative to power outages and service restoration following the February 2021 winter ice storm ("Ice Storm" or "Storm"). Through this report, the Staff:

- analyzes the responses of Dominion, MEC, and SEC (collectively, "Companies") to the storm;
- identifies the Companies' plans for improved response to future storms;
- presents the Companies' planned corrective actions to make their electric power systems less vulnerable to future storms;
- addresses the adequacy of the Companies' overall system reliabilities and pole and right-of-way ("ROW") maintenance programs; and
- presents a summary of the Staff's conclusions and recommendations.

The Companies vary greatly relative to the size of their service territories and the number of customers served. Dominion serves 2,556,050 customers in its Virginia service territory, MEC and SEC serve 34,864 and 57,667 customers respectively, in Virginia.

The Storm significantly impacted the Companies' electric infrastructure and customers; some factors driving Storm-related outages appear to have been beyond the Companies' control. The largest contributing factor to outages appears to have been

damage caused by trees impacting distribution systems, particularly those located outside the Companies' ROW. The Companies have a limited ability to trim such trees. For example, of the 2,136 outage events experienced by SEC, the Cooperative reports that 1,544, or 72.3%, were caused by tree-related damage; 1,480, or 95.9%, of these trees were located outside the ROW. Similarly, MEC states that of the 939 outages experienced, 895, or 95.31%, were caused by tree-related damage; 889, or 99.3% of those trees were located outside the ROW.

With respect to Dominion, the Company reports that 54% of the outage events, or 2,619 outages across DEV's Virginia and North Carolina service territories, were caused by tree-related damage. Staff's investigation relative to Dominion did not reveal (i) evidence of service restoration issues associated with personnel resources, equipment availability, or inventory levels; or (ii) deficiencies in the design of DEV's distribution system that compromised the ability of utility infrastructure to withstand the Storm.

Staff's investigation of the weather events during the Storm determined that Southside's service territory experienced the greatest ice precipitation, followed by Mecklenburg. Much of the service territories of MEC and SEC are in remote, rural and heavily wooded areas with terrain that presented outage restoration challenges, i.e., access difficulty and the need for heavy equipment. Staff did not find any issues associated with service restoration efforts, i.e., availability of materials or personnel. Staff's investigation nevertheless uncovered issues related to ROW and system maintenance practices that likely contributed to the extensive system damage and restoration time, particularly for SEC. In particular, SEC's tree-trimming programs seemed unable to keep pace with tree growth in

SEC's distribution system ROW, and this overgrowth contributed to the service outage and restoration problems that resulted from the Storm.

Finally, Staff investigated the Companies' Storm service restoration practices in light of the Virginia Environmental Justice Act ("EJ Act").¹ Staff did not find evidence that any of the Companies' Storm service restoration practices violated the goals of the EJ Act.

As a result of its analysis, the Staff makes several recommendations for the Companies. These are described in full in the "Conclusions and Recommendations" section. In general, the recommendations address the following topics, among others:

- Pole inspections;
- Tree-trimming cycles and vegetation management practices;
- Conductor-related concerns;
- Accessibility to remote locations for outage restoration;
- Communications and coordination with state agencies;
- Communications with customers and communications center performance;
- Issues with MEC's and SEC's use of the SmartHub app;
- Tracking of storm-related costs; and
- Environmental Justice and Equity issues.

¹ Code § 2.2-234 *et seq.*

The Staff recommends that Dominion, Mecklenburg, and Southside provide written responses to all Staff's recommendations found in this report by November 1, 2021. Responses should be directed to david.essah@scc.virginia.gov.

INTRODUCTION

Storm Timeline

The Ice Storm resulted in freezing rain, sleet and snow from Texas to the mid-Atlantic region. The Storm travelled up the East Coast and impacted Virginia on the evening of Friday, February 12, 2021.²

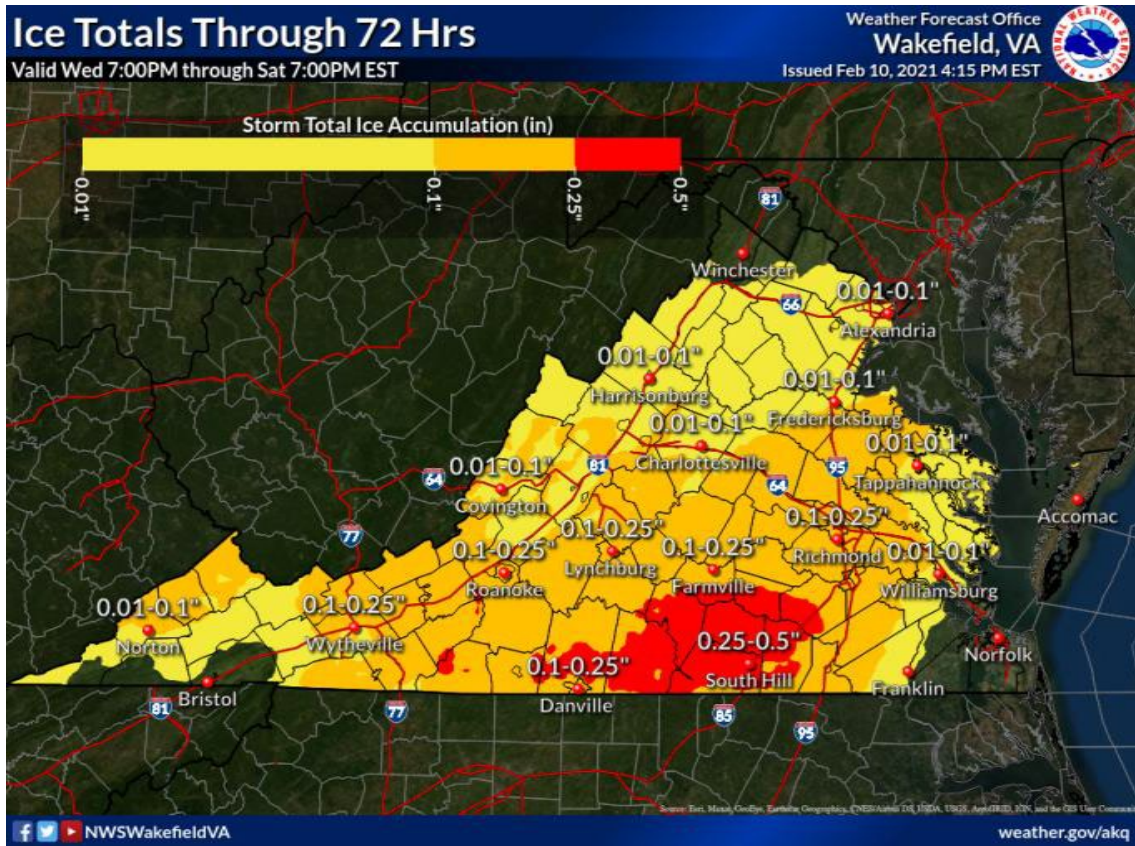
Weather Forecast Analysis

The February 10, 2021 weather forecast indicated an approximate 50% chance for ice accumulations greater than a quarter inch during the Storm; however, a forecast the next day increased this potential to nearly 80%. A February 10, 2021 forecast for the ice totals in Virginia is presented in Figure 1 below.³

² The main storm event was followed by a second, smaller storm. The Companies used different names for the Ice Storm in their responses to Staff's informal information requests, such as "Valentine's Weekend Ice Storm" (Dominion), and February 13 and February 18 storms (Southside).

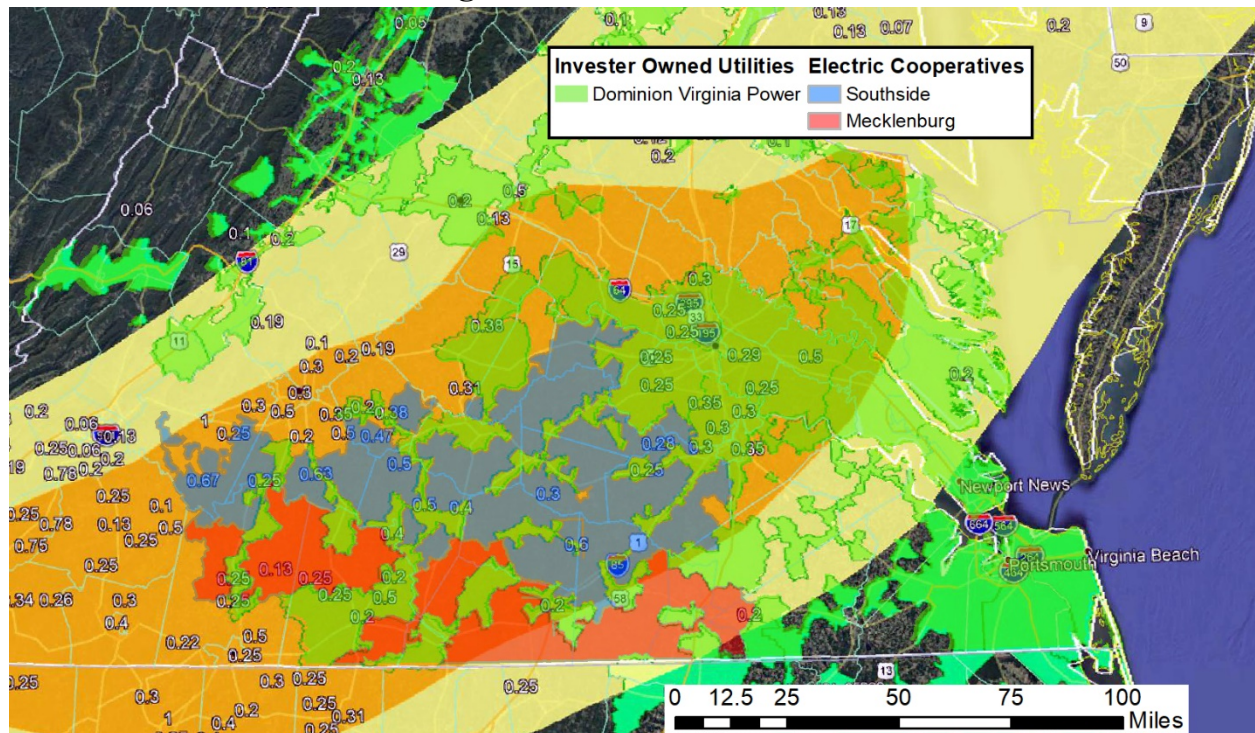
³ Staff was unable to obtain a weather forecast map for February 11, 2021.

Figure 1. February 10, 2021 Ice Accumulation Forecast



As can be seen in Figure 1, the February 10, 2021 forecast for the south-central region of Virginia indicated that the region was likely to receive 0.25 – 0.5 inch of ice accumulation from the Storm. Figure 2 depicts the February 13, 2021 ice accumulation forecast for the service territories of DEV, MEC and SEC in this south-central region.

Figure 2. February 13, 2021 Ice Accumulation Forecast for Dominion, Mecklenburg, and Southside Service Territories



As illustrated in Figure 2, although significant portions of Dominion's and MEC's service territories were within the orange band (areas with up to 0.5 inch of predicted ice accumulation), Southside's service territory was almost entirely within this band of greatest predicted accumulation.

On Friday, February 12, 2021 at approximately 11:00 AM, SEC experienced its first Ice Storm related outage, followed by MEC and Dominion on February 13, 2021 at 1:37 AM and 5:00 AM respectively.

Storm Restoration Timeline

Figure 3, below, presents the restoration curves for all of the Virginia utilities impacted by the Storm, while Figure 4 shows the restoration curves specifically for the Companies.

Figure 3. 2021 Virginia Ice Storm Restoration Curves

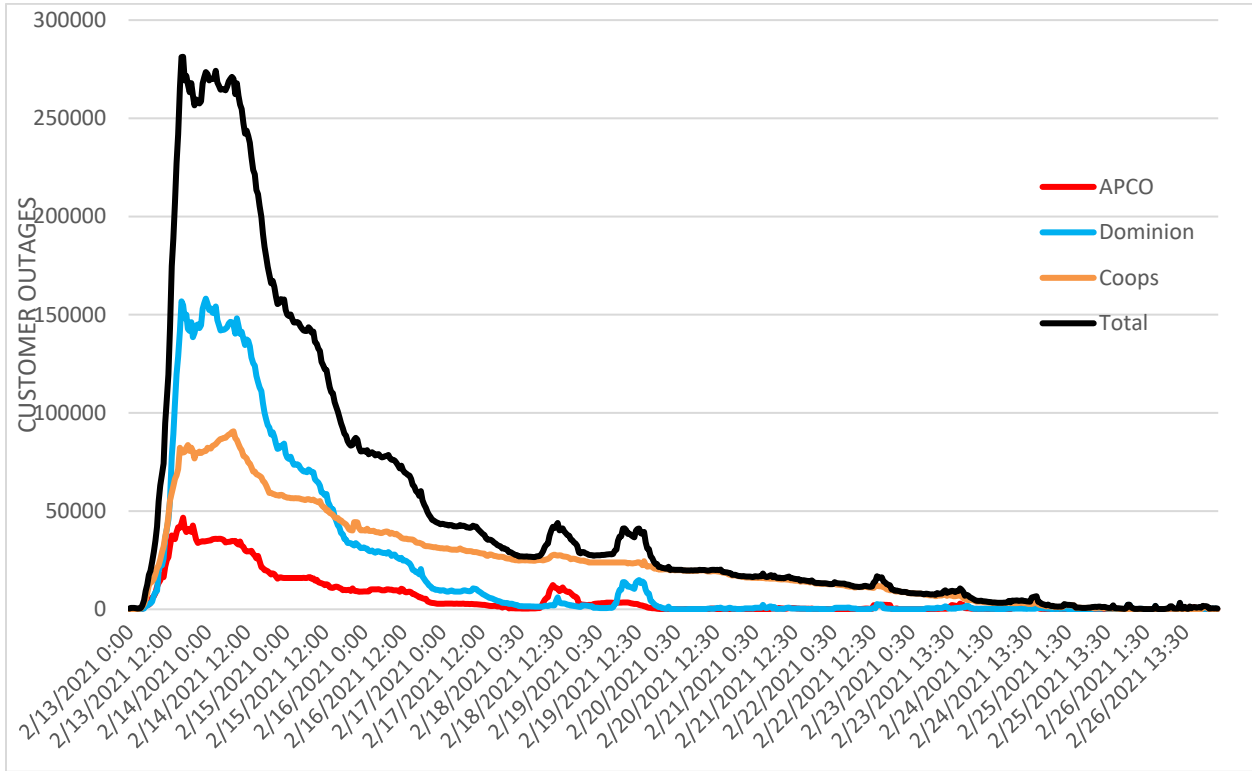
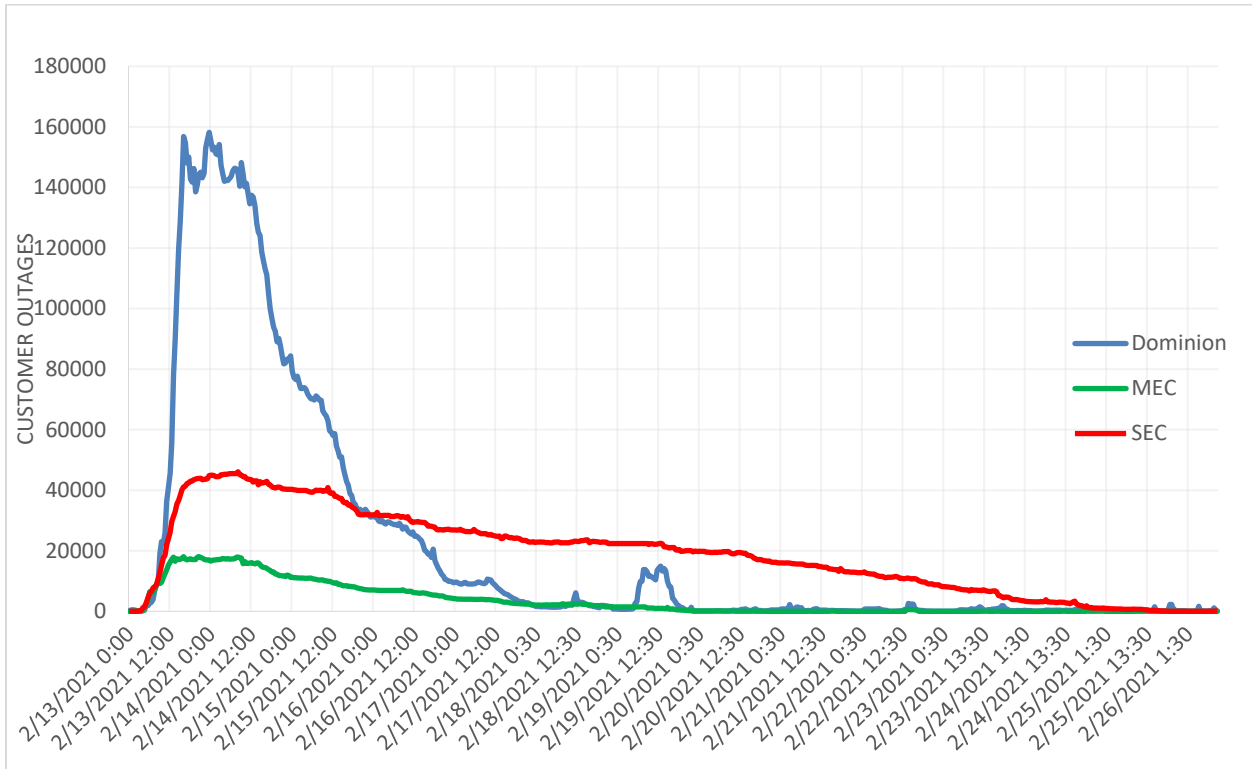


Figure 4. 2021 DEV / MEC / SEC Ice Storm Restoration Curves



On February 13, 2021 at 4:30 PM, the aggregate number of statewide outages peaked at approximately 281,323 customers.

UTILITY PREPARATIONS PRIOR TO THE STORM

Dominion Energy

According to Dominion, it began developing a resource plan for the Storm on February 10, 2021, well in advance of expected impacts. Dominion states that its meteorological team internally distributes a daily and seven-day weather forecast. In these forecasts, impacts are categorized into four "threat levels:" minimal, moderate, significant, and catastrophic. A matrix is also included that provides the probability of the storm improving or worsening. If the forecasted weather is considered significant or catastrophic, the forecast is then provided to state and municipal partners. DEV's forecast for this Storm indicated that the Central Region would have the highest probability of significant impacts. The meteorological team also expected that the impacts would continue for an extended period of time once the storm commenced.

Dominion advised that its media relations team also develops a comprehensive staffing plan to support storm restoration efforts, including making staffing assignments; and assessing staff availability, expected storm duration, and backup personnel needs; and content messaging ideas. The plan is flexible so that DEV can adapt it to a storm depending on its ultimate impact. This plan team, working in conjunction with Dominion's Emergency Preparedness Center team, is responsible for providing information to the media, including press releases before, during, and after the storm.

During the week of February 8, 2021, the Dominion Energy Supply Chain team received continuous updates on potential winter weather threats from the DEV meteorological team. On February 11, 2021, when an updated forecast projected a significant weekend threat, the Supply Chain team began issuing daily reports relative to the inventory status of commonly used storm items. These reports were shared with local field offices to validate any potential need for materials. These needs were filled via expedited shipments or inventory transfers from offices that were not expecting weather impact. The local field offices then validated levels of non-inventory materials and requested any backfill needs from DEV's integrated supplier (Wesco) for delivery prior to the weekend. Dominion expedited wood pole shipments to certain local offices and ensured that they had several truckloads of poles staged at the supplier's transportation hub. Additionally, pre-packaged storm kits containing Dominion Energy specific pole hardware to be provided to off-system crews (if requested) were staged and ready for delivery on February 12, 2021. Prior to the weekend of February 13, 2021, the Supply Chain organization met with Wesco to ensure that they would be on notice and prepared to provide storm service over the weekend. Additionally, Wesco provided a report of a planned delivery for the following week; prioritization was given to local offices that were expected to be most affected by the weather. For critical storm material items (i.e. wood poles, wire/cable and transformers), Dominion requested inventory counts from suppliers and put the suppliers on notice that emergency deliveries would likely be needed depending on the Storm's impact.

DEV's Incident Commander and Section Chiefs transitioned from the "awareness" mode to "planning and preparation" mode on Wednesday, February 10, 2021. Daily updates on impending weather and resource and process calls (e.g. calls to confirm truck and/or equipment availability) were conducted. The next day, a formal review and status check of responsibilities and assignments was conducted; DEV's System Storm Center opened on Friday, February 12, 2021.

According to Dominion, its Customer Service Organization is tasked with preparing resources in advance of every storm event. For the Ice Storm, these employees completed a comprehensive pre-staffing plan in anticipation of potential weather impact to DEV's system. During this time, the priority was responding to customers and ensuring reduced wait times. As such, beginning on February 13, 2021, all customer service staff were put on 12-hour rotating shifts for 24/7 coverage to respond to customer calls and social media inquiries throughout the restoration event.

On-system contractors (i.e., line workers) are used to supplement Dominion's workforce for daily work; these crews are available for assignment to outage restoration efforts. Accordingly, on-system contractors were pre-staged and reallocated throughout the Ice Storm restoration event. Dominion Energy South Carolina also held crews in anticipation of sending them to Virginia and North Carolina to support restoration efforts.⁴

⁴ DEV advised that it can request that Dominion Energy South Carolina hold crews and their on-system contractors for possible deployment to the Dominion Energy Virginia / Dominion Energy North Carolina territories. (The reverse is also true). Deployment would depend on Dominion Energy South Carolina's service territory not being impacted by the same or another storm event.

By February 12, 2021, nearly all Eastern Region on-system contractors were deployed to the Central Region and all Central Region contractors remained at their assigned posts. In addition, Dominion Energy bucket trucks, supporting equipment, and personnel from the Eastern Region were deployed to the Central Region on February 13, 2021, prior to operational impacts to ensure that travel would not be hindered. Due to the initial forecast, crews in the Northwest Region initially remained at their respective posts; however, they were reassigned to the Central Region on February 13 and 14, 2021, once the impacts were known and rectified in the Northwest Region. The Company reallocated on-system tree crews in a similar manner.

Dominion relies on Regional Mutual Assistance Groups ("RMAG") to secure resources such as personnel and material from other members. On February 14, 2021, Dominion requested such assistance from RMAG and was granted a first wave of support. The Company acquired line contractors from other investor-owned utilities ("IOUs") and non-IOUs (i.e. cooperatives). Ultimately, crews from 19 states, Washington D.C. and Canada supported Dominion Energy's restoration effort.

Mecklenburg Electric Cooperative

According to MEC, it relies on a wide range of weather reporting sources to monitor weather events and gather information that will allow its employees to formulate projections regarding storm severity and potential impact on the Mecklenburg's distribution system. In addition to the Dominion Energy Weather Center, MEC monitors the National Weather Service (NWS), Weather.com, National Oceanic and Atmospheric Administration (NOAA) reports, Accuweather, and several local television weather

reports. Additionally, MEC shares weather data with the Virginia, Maryland, and Delaware Association of Electric Cooperatives ("VMDAEC") in daily conference calls that are held in advance of, and during, major storm events. These conference calls allow cooperatives to collectively evaluate a wide variety of meteorological resources and discuss potential mutual aid scenarios in advance of an event.

On Thursday, February 11, 2021, Mecklenburg began posting Public Service Announcements ("PSAs") via Facebook, with additional posts being made several times a day throughout the restoration process. MEC believes this approach allowed them to reach a significantly greater number of members before the Storm than the use of more traditional communication alternatives. Initially, the PSAs: advised that a potential winter storm would impact MEC's territory; provided information on preparing for an extended power outage; and included instructions on how to report an outage. Once service outages began, PSAs were issued several times a day updating the areas affected by outages and providing general estimates for complete system restoration times. In accordance with its Storm and Restoration Communication Plan, MEC continuously provided local government stakeholders with regular reports regarding restoration progress. The list of stakeholder contacts included county administrators, emergency coordinators, and members of the board of supervisors for each county MEC serves. Ongoing conversations continued with emergency coordinators on a daily basis to establish and confirm the restoration priority of warming shelters and other critical accounts. Prior to the storm, consumers with up-to-date serious medical condition certifications were contacted by telephone advising them to make preparations for potential extended outages.

Material suppliers were contacted throughout the week prior to the Ice Storm to determine which manufacturers could supply materials, if needed, and to determine alternative suppliers if availabilities were inadequate through the originally contacted sources. Mecklenburg asserts that it maintains an adequate supply of materials, (i.e. poles, splices, cross arms, fuses, etc.) to handle most outage events. In addition, MEC's pole manufacturer maintains an inventory supply of approximately 300 poles that can be, and were, delivered within 24 hours of notice. As other repair materials were removed from inventory throughout the week, MEC was able to replace those supplies in a timely manner. Mecklenburg states that it experienced no materials shortages throughout the event.

Preparations for opening and staffing MEC's storm center began on Friday, February 12, 2021. All employees, both operational and administrative, were put on notice for potential call-in, crews were assigned, and customer service and call centers were staffed. The storm center was fully operational at approximately 10:00 AM on Saturday, February 13, 2021.

MEC states that it contacted line construction and tree contractors on February 10, 2021, providing them the authority, if needed, to begin to mobilize additional crews. The eight line construction crews and four tree contract crews that were then working on MEC's system were notified that they were to remain at MEC and were ineligible for deployment elsewhere. Mutual aid assignments were coordinated through the VMDAEC early on February 13, 2021 after an initial assessment of damages was made.

Southside Electric Cooperative

SEC advised that it does not have an internal meteorology department and uses a number of third-party information sources to make decisions relative to storm preparation. Southside receives weather forecasts from the Dominion Energy Weather Center, the Sperry–Piltz Ice Accumulation (SPIA) Index, AccuWeather, WeatherBug, MyRadar, Storm Radar, Ventusky, and other local weather forecasts. In addition, SEC also collaborates with other electric cooperatives and the VMDAEC to predict weather impact.

According to SEC, much of its print media are in weekly newspapers with Wednesday/Thursday publications; therefore, Southside primarily relied on social media to inform its membership of the approaching storm. SEC made four weather warning posts on Facebook from February 10, 2021 to February 12, 2021. Press releases were posted on social media and sent to local, state, and federal government representatives, as well as Chamber of Commerce representatives. Beginning on February 13, 2021, press releases were sent via a distribution outlet of 24 newsprint media resources. In addition to sending out news releases to the newspapers and radio stations, SEC's communications department communicated regularly with reporters as information was available, including arranging requested interviews and accompanying reporters into the field.

In accordance with SEC's Emergency Response Plan ("ERP"), the Vice President of Operations, working in the role of Storm Manager, enacted the ERP response on February 10, 2021 at 11:00 AM. Once the ERP was activated, multiple actions were taken; each task's completion was confirmed by departmental Vice-Presidents and reported back to the Storm Manager. These actions included:

- All SEC personnel including line crew and ROW contractors were placed on stand-by.
- On-system line & ROW contractors were placed on stand-by.
- Office and field generators were fueled and functional.
- Microwave system generators fueled and functional.
- Fuel supplies were brought to full capacity.
- Inventory stocking levels were brought to storm levels (poles, crossarms, etc.)
- All line vehicles were determined to be functional.
- Preparations were made for pre-disaster reporting to the State Corporation Commission and other organizations.
- Available food services for field crews were evaluated.
- Initial contacts for housing (hotel rooms) were made.
- Major Storm damage reporting procedures were confirmed.
- Old Dominion Electric Cooperative ("ODEC") was contacted to confirm operation of Ponton Diesel generators.
- The VMDAEC was contacted to confirm mutual aid (make pre-staging requests).
- Information Technology ("IT") Data backups were confirmed to be in place.
- Communications systems were confirmed to be functional and backups were tested.
- Staffing assignments (including Storm assignments and vacation/leave cancellations) were reviewed.

The table below summarizes the staffing assignments by number of employees following the activation of the ERP.

Table 1. SEC Staffing Assignments Following Activation of the ERP

Utility	Utility Support	Storm Center	Operations Center	Call Center	Total
86	24	7	6	17	140

Following activation of Southside's ERP on February 10, 2021, all on-system line construction and tree contractors were placed on stand-by and were instructed to report to their district offices on February 11-12, 2021. Crews were informed that they may be called earlier as needed by SEC's System Operations Center. These crews included five

Line Construction Crews with 26 personnel and four ROW crews with 18 personnel. SEC also made initial contact with the Tarheel Electric Membership Association ("TEMA") to pursue potential mutual aid assistance from other cooperatives, in adherence with the established mutual aid agreements in place with that organization.

The SEC warehouse and purchasing teams began preparations for the Ice Storm on February 8, 2021. Inventory items were assessed, and the purchasing agent began issuing purchase orders on the same day to replenish inventory as necessary. In addition, the purchasing agent contacted major materials suppliers and confirmed that adequate stock was available. Throughout the week prior to the storm, SEC monitored the weather forecast and warehouse teams adjusted plans and stock levels based on the projected forecast. In total, SEC had 287 poles on hand immediately prior to the Storm. Some of the major preparations SEC indicates it initiated and the dates those occurred are as follows:

- Confirmed stock was at storm levels (2/8);
- Checked fuel levels and ordered fuel for all districts (2/8);
- Coordinated emptying of all metal and wood refuse dumpsters (2/8);
- Called all major materials suppliers to confirm adequate materials on hand (2/8);
- Formulated resource and logistics plan for warehouse team during restoration (2/9);
- Determined ideal drop zones for poles in the event of a large-scale restoration (2/9);
- Assigned responsibilities to run materials to crews if needed (2/9);
- Inventoried and restocked crew scout storm boxes (2/9);
- Inspected all warehouse trucks and forklifts for operability (2/10);
- Called all major materials suppliers to confirm adequate materials were on hand and able to be delivered within 24 hours if needed (2/10);
- Checked inventory levels and fuel levels for the third time (2/11);

- Contacted pole supplier to confirm they had sufficient inventory on hand and were able to deliver inventory on the same day as requested (2/12);
- Contacted other materials suppliers to coordinate deliveries every two days during the restoration and more frequently if needed (2/12);

On the morning of February 12, 2021, SEC activated the Storm Center⁵ by assigning a Storm Manager, a System Operations Center ("SOC") Manager, and a Resource Manager, and arranged for employee support throughout the storm. On February 20, 2021, a Dominion Energy employee joined the SEC Storm Center, acting as a liaison with Dominion's field personnel.

UTILITY-SPECIFIC IMPACTS FROM THE STORM

Dominion Energy

Dominion recorded the first storm related outages on February 13, 2021 at approximately 5:00 AM in the Central Region; 8:00 AM in the Eastern Region; and 10:00 AM in the Northwest Region. Of the 2,556,050 customers in Dominion's service territory, 293,612 customers were impacted by the Storm, with 6,178,611 total customer-outage hours. The height of the reported outages occurred during the overnight hours of February 13, 2021 and into the early morning hours of February 14, 2021 with approximately 160,000 customers out at once.

The restoration effort lasted 6.75 days for the Central Region, 1.46 days for the Eastern Region, and 1.50 days for the Northwest Region. Dominion reported 325 broken poles; 875 broken cross-arms; and 577,000 conductor feet restrung for a total of 11,004

⁵ For SEC, the Storm Center represents all personnel (SEC and non-SEC) involved with outage restoration at its headquarters, with the exception of the Operations Center personnel.

work orders. The majority of the work orders were in the Central Region (9,621) and the remaining work orders were split between the Eastern and Northwest Regions.

According to DEV, there were 2,619 outages caused by trees. This represents 54% of the 4,823 total outage events across Dominion's Virginia and North Carolina service territory. DEV does not collect data relative to whether tree-related outages are caused by trees located within the ROW or outside the ROW.

In terms of delays encountered during restoration, Dominion Energy states that at the time operational impacts began increasing, some crews had to remove themselves from harm's way temporarily as trees began falling around them; this practice was in adherence with DEV's safety policy. On Thursday, February 18, 2021, ice accumulation resulted in treacherous roads and deteriorating field conditions. As a result, DEV temporarily suspended travel for crews that were lodged an hour or more from their work assignments; crews that were lodged closer to their work assignments continued restoration. Conditions improved significantly within hours and the temporarily suspended crews immediately re-engaged.⁶ Figure 5 below presents Dominion's restoration curve, while Table 2 presents Dominion's work order progression by day for each of its affected regions.

⁶ The number of such occurrences was not tracked by the Company.

Figure 5. Dominion Ice Storm Restoration Curve

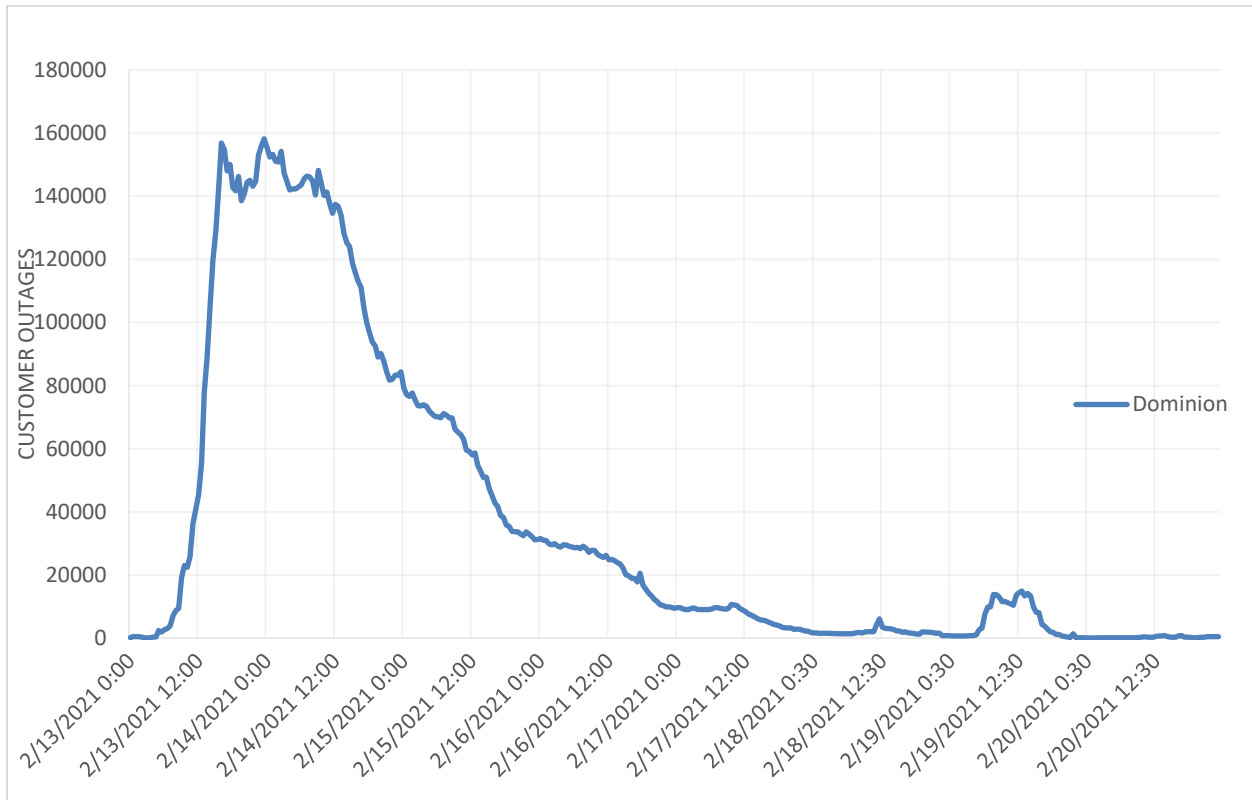


Table 2. Work Order Progression by Affected Region

Central Region

Date	Work Orders Completed	Customers Impacted	% Restored Daily	% Cumulative Restored
2/13/2021	637	224,724	26%	26%
2/14/2021	1,827	63,374	36%	61%
2/15/2021	2,522	14,497	17%	78%
2/16/2021	2,066	7,560	6%	84%
2/17/2021	1,348	4,550	3%	87%
2/18/2021	52	6,345	2%	90%
2/19/2021	1,136	26,549	10%	100%

Eastern Region

Date	Work Orders Completed	Customers Impacted	% Restored Daily	% Cumulative Restored
2/13/2021	168	8,051	93%	93%
2/14/2021	152	1,528	7%	100%

Northwest Region

Date	Work Orders Completed	Customers Impacted	% Restored Daily	% Cumulative Restored
2/13/2021	102	3,525	42%	42%
2/14/2021	135	3,833	58%	100%

Mecklenburg Electric Cooperative

Of MEC's 34,864 customers, 22,755 customers, or 67%, were impacted by the Storm. Mecklenburg reported 939 outages which resulted in 986,152 customer outage hours and 939 work orders. The time for total restoration for all members was 7 days and 16 hours. The first reported outage occurred on February 13, 2021 and total restoration was completed on February 20, 2021.

On February 13, 2021, line and tree contractors and mutual aid crews from Community Electric Cooperative arrived to assist MEC. As outages progressed to the west, previously staged line and tree contractors were deployed to assist in service restoration repairs, and MEC mobilized additional line construction, tree contractors, and mutual aid personnel. By the end of the first day of the storm, MEC had 86 utility workers on site; these included utility line employees and support personnel as well as storm center and operations center employees.

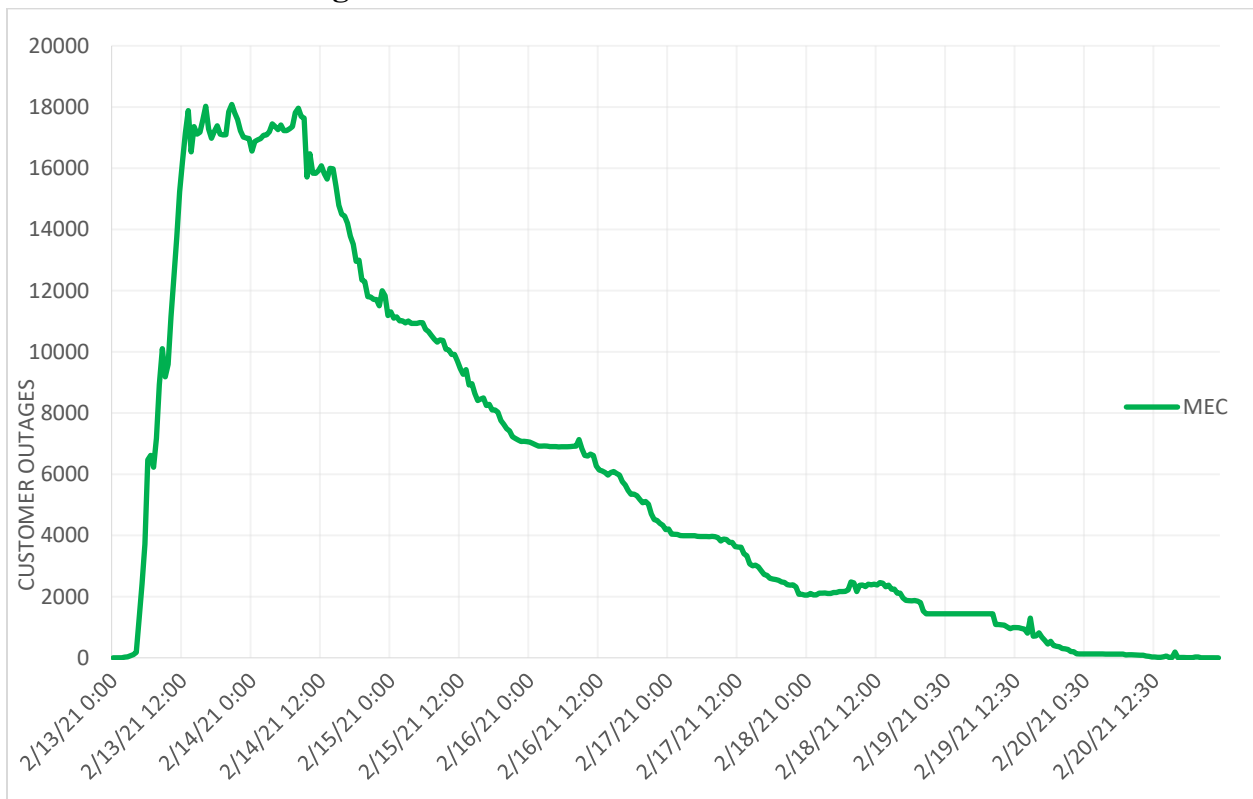
The additional storms that occurred following the initial storm had minimal impact on MEC's system. However, some mutual aid cooperative crews, along with their respective line contractor crews that were assisting MEC, had to return to their own service territories prior to the arrival of the subsequent winter storms. Total mutual aid and line contractors on MEC's system decreased from 187 on February 16, 2021, to 154 on February

17, 2021, and 122 on February 18, 2021. On February 19, 2021, the total count of mutual aid and line contractor workers increased to 226 as those crews were able to return to assist MEC after securing power for their own service territories.

MEC reported 169 broken poles and 18 broken cross-arms; there were also multiple locations where cable splices were required. Mecklenburg advised that restringing of conductor was seldom necessary since the conductors at most locations could be spliced, repaired, and returned to service. Of the 939 total outages on the system, MEC states that 883 outages, or approximately 95%, were caused by trees outside of the ROW.

The following graph presents MEC's Ice Storm restoration curve.

Figure 6. MEC Ice Storm Restoration Curve



MEC indicates that its system is designed to withstand 0.25 inch of ice; this is the typical level of forecasted accumulation at which MEC prepares for ice related conductor

failures, downed trees, and broken limbs. MEC advised that the severity of the damage in northern Halifax and Pittsylvania Counties was worse than expected. MEC states it immediately recognized that storm restoration would be hampered by the large numbers of damaged and downed trees. Mecklenburg noted that downed trees were primarily located outside both its 30-foot-wide single-phase and its 50-foot-wide three-phase ROWs. MEC also reported that saturated ground conditions made access to many facilities initially impossible and that some were inaccessible for days. After initial assessments were conducted and areas of significant damage identified, Mecklenburg determined that the Storm had damaged or affected over 65% of its system.

MEC states that it primarily relied on pure manpower such as pole-climbing in order to make repairs, as opposed to utilizing equipment such as bucket trucks, because many areas were inaccessible by traditional equipment due to remote locations and adverse terrain. The large number of broken poles also slowed restoration efforts, as it generally takes two to four hours to change a pole, depending on the framing specifications and whether the circuit is single-phase or three-phase.

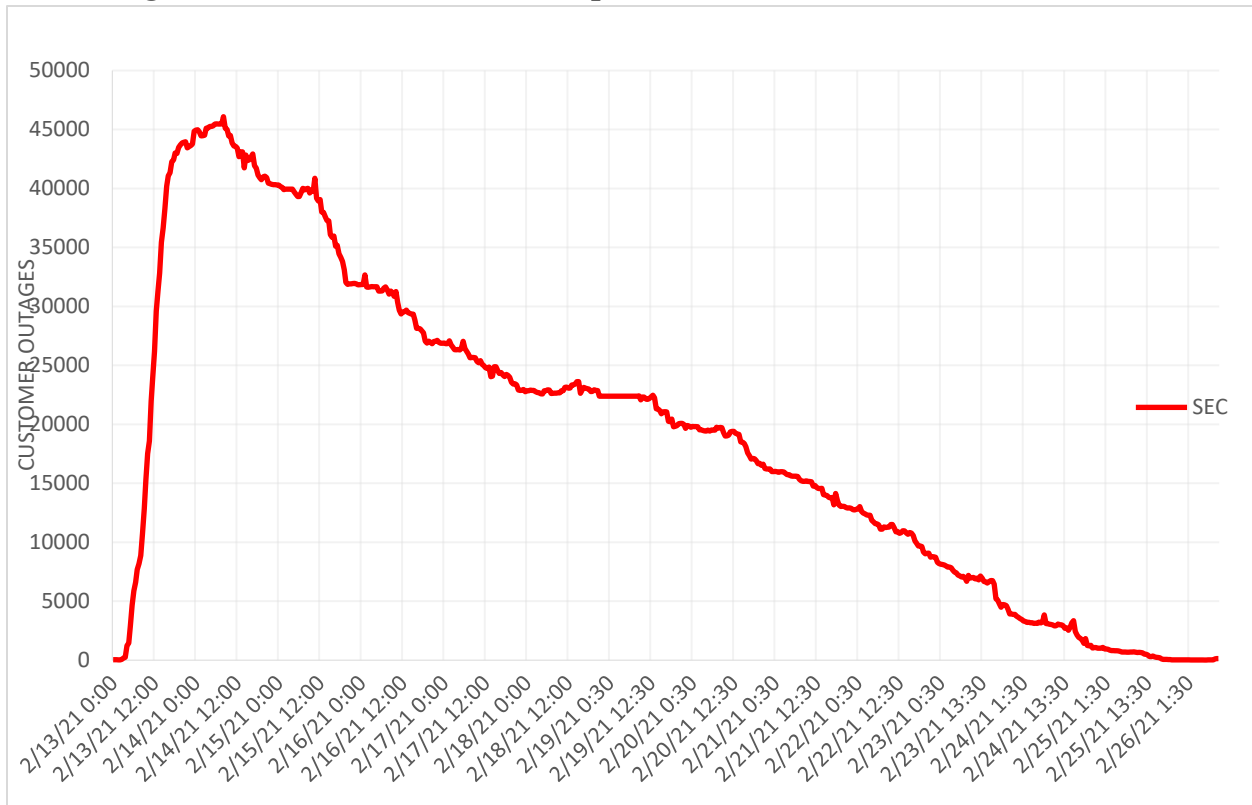
Additionally, MEC noted that the utilization of tracked digger machines was a substantial factor in restoration efforts during this event. Six of these machines were utilized across the Cooperative's service territory to facilitate pole replacement in areas that conventional trucks could not access due to the extremely wet conditions.

Southside Electric Cooperative

Of SEC's 57,667 customers, 46,508 or 81% of SEC's members experienced an outage. There were 2,136 outage locations that resulted in 5,399,801 customer outage

hours. According to Southside, the first reported storm related outage occurred on February 12, 2021 at 11:00 PM; the final outage restoration was performed on February 26, 2021 at 9:00 AM. The total restoration time was 13.42 days. The graph below presents a restoration curve for SEC subsequent to the Storm. It shows that in the early days of the restoration, larger outages were being cleared but smaller nested outages⁷ were revealed as larger sections of the system were restored. As such, the number of outage events continued to climb as crews discovered more localized damage (manifest in the small upward spikes observed in Figure 7).

Figure 7. Southside Electric Cooperative Ice Storm Restoration Curve



⁷ An outage experienced by a customer may have multiple causes, not all of which are initially known. As the utility begins to restore power on "upstream" circuits (for instance mainfeeders located closer to the substation), "downstream" circuits such as tap-lines may then be found to be without power ("nested outages").

SEC executed 2,136 work orders during the storm restoration to address 866 broken poles and 277 broken cross-arms; 486,000 feet of conductor were restrung. Of the total 2,136 outages on its system, Southside attributed 1,544 outages, or 72.3%, to trees. Of those 1,544 tree-related outages, SEC calculated that 1,480, or 95.9%, were attributed to trees located outside the ROW. The high percentage of tree-related outages and the resultant significant distribution infrastructure damage experienced during this Ice Storm is due in part to the densely wooded nature of SEC's service territory.

Staff understands that relocating large numbers of distribution facilities away from such terrain in order to minimize potential tree-caused damage could be very costly. However, Staff recommends that Southside investigate areas of its service territory that are most likely to experience tree-related power outages (e.g. areas with double-sided ROWs⁸) and consider options to address these vulnerable distribution facilities. Such options could include relocating facilities from overhead to underground, widening ROWs, or relocating facilities to less densely wooded locations. Staff also recommends that, where feasible and cost-effective, SEC consider implementing these options when constructing new distribution facilities to make them more resistant to tree-related damage during storms.

Staff's investigation also determined that the rural and remote nature of SEC's service territory prevented conventional line maintenance equipment from accessing

⁸ Double-sided ROWs are ROWs lined on either side by trees.

damage locations to effect repair. Southside acknowledges that during severe storms, the use of tracked vehicles is the most effective way to access many locations within its service territory; however, SEC reports that it owns only one such vehicle. Southside stated it has access to tracked vehicles through mutual aid agreements, but that depending on storm location and severity, the availability of such vehicles through mutual aid can be greatly diminished.

While Staff realizes that it can be costly for a cooperative to own tracked vehicles, Staff believes that during major storms, these vehicles can significantly reduce restoration times by allowing repair materials and personnel to reach locations that are difficult to access. For example, the photographs in Figures 8 and 9 below, taken by Staff during a post-Storm visit, show some areas in SEC's service territory that were difficult to access during the Storm because of their remote locations and because of deep mud created by melting ice. Accordingly, the need for tracked vehicles for storm restoration is amplified by the nature of the terrain in SEC's service territory. SEC advised that it is planning to investigate adding more tracked vehicles to its fleet in 2022. Staff supports such an analysis.

Figure 8. An Area Where A Tracked Vehicle Was Needed



Figure 9. An Additional Area Where a Tracked Vehicle Was Needed



Table 3 below shows the number of outages by cause and the percentage of the total outages for each cause as reported by SEC.

Table 3. SEC Outages by Cause

<i>Cause Code</i>	<i># of Outages</i>	<i>% of Total</i>
000 Power Supply - DVP	6	0.28%
002 Power Supply - SEC	3	0.14%
110 Maintenance - Line Technician	3	0.14%
111 Maintenance - Apparatus Technician	1	0.05%
114 Maintenance - Other	1	0.05%
190 Other Planned Outage	8	0.37%
300 Material or Equipment Fault/Failure	40	1.87%
310 Installation Fault	2	0.09%
340 Overload	4	0.19%
360 Other Equipment Installation/Design	7	0.33%
400 Decay/Age of material/equipment	13	0.61%
410 Corrosion/abrasion of Material/Equipment	3	0.14%
430 Live Deciduous Tree	122	5.71%
431 Dead Deciduous Tree	29	1.36%
432 Live Coniferous Tree	1205	56.41%
433 Dead Coniferous Tree	27	1.26%
434 Tree Limb (Broken Off)	159	7.44%
435 Tree Limb (Not Broken Off)	1	0.05%
480 Maintenance - Vine Growth	1	0.05%
520 Ice, Sleet, Frost, Not Trees	211	9.88%
600 Squirrel	2	0.09%
700 Customer-caused	15	0.70%
701 SEC Caused	1	0.05%
710 Car or Pickup Truck Caused	3	0.14%
730 Fire	1	0.05%
790 Public, Other	1	0.05%
799 TWACS Verified Power On ⁹	146	6.84%
800 Other	5	0.23%
999 Cause Unknown	116	5.43%

2,136

⁹ This category represents a Two-Way Automatic Communication System (i.e., meter) reporting an outage; upon dispatch to the site, personnel found the power to be on.

SEC reports several outages that were attributed to the loss of 34.5 kilovolt ("kV") feeds from Dominion. This loss affected four SEC substations; the total duration of these 34.5 kV feeder-related outages was 3.54 days.

UTILITY-SPECIFIC RESTORATION COSTS

Dominion Energy

Dominion has identified \$66.5 million¹⁰ of storm restoration costs resulting from the Ice Storm.¹¹ Based on information as of June 2021, the table below identifies the types of costs incurred related to Ice Storm restoration:

Table 4. Dominion Restoration Costs as of June 30, 2021 (\$ in millions)

<u>Restoration Cost Type</u>	<u>Total Costs</u>
Line Contractor	\$34.7
Overheads & Surcharges	11.1
Tree Contractor	6.2
Vehicles & Miscellaneous	6.0
Utility Labor	5.1
Mutual Aid	2.3
Materials & Supplies	1.1
Grand Total	\$66.5

¹⁰ The restoration cost of \$66.5 million is approximately 1.5% of Dominion's total generation and distribution revenues. The majority of these costs were expensed with the remainder capitalized. Dominion expenses the costs initially until a capitalization analysis is performed, which is completed twice a year. Dominion stated that the capitalization analysis was completed in the time between February and June. As of June 30, 2021, Dominion capitalized approximately \$3.3 million out of the total \$66.5 million. These capitalized costs include, but are not limited to, overhead & underground transformers, overhead switches, complete spans of conductor, reclosing & sectionalizing devices, and poles. The \$3.3 million is the cumulative amount of the averaged costs incurred under the various categories listed in this table since the beginning of the Ice Storm. Staff received informal discovery from Dominion on July 26, 2021. *See also* Responses to Dominion Staff Data Request Nos. 3-28 and 3-29.

¹¹ Based on the timing of this report, Staff has not conducted an audit of the actual storm costs or reviewed the storm-related invoices for Dominion, MEC, and SEC.

As of the time of this report, Dominion has not applied to the Federal Emergency Management Administration ("FEMA") for disaster relief related to the Ice Storm.¹²

Mecklenburg Electric Cooperative

MEC has identified \$3.84 million¹³ of storm restoration costs resulting from the Ice Storm and has indicated that it is still identifying additional costs related to the storm restoration effort.¹⁴ Based on information as of June, the table below identifies the types of costs incurred related to storm restoration:

Table 5. MEC Restoration Costs to Date as of June 30, 2021 (\$ in millions)

Restoration Cost Type	Total Costs
Mutual Aid/Contractors	\$2.42
Labor/Overhead	0.90
Miscellaneous	0.24
Materials	0.15
Transportation	0.14
Grand Total	<u><u>\$3.84</u></u>

¹² Staff received informal discovery from Dominion on August 11, 2021. Dominion stated that it is not aware of any FEMA programs from which an investor owned utility would qualify for disaster relief assistance for storm restoration efforts. *See also* Response to Dominion Staff Data Request No. 3-17.

¹³ Staff received informal discovery from MEC on July 15, 2021. As of June 30, 2021, MEC capitalized approximately \$2.99 million of the total \$3.84 million storm restoration costs. The total costs to date of \$3.84 million is approximately 6% of MEC's 2020 Sales of Electric Energy.

¹⁴ MEC categorizes the costs as capitalized or expense based on Rural Utilities Service ("RUS") 7CFR 1767. *See* Response to MEC Staff Data Request No. 3-31.

MEC – FEMA reimbursement

MEC applied for FEMA reimbursement of restoration costs resulting from the Ice Storm. MEC anticipates that it will receive some FEMA reimbursements.¹⁵

Southside Electric Cooperative

SEC has identified \$19.6 million¹⁶ of storm restoration costs resulting from the Ice Storm and has indicated that it is still identifying additional costs related to the Storm restoration effort.¹⁷ Based on information as of June 2021, the table below identifies the types of costs incurred related to storm restoration:¹⁸

Table 6. SEC Restoration Costs to Date as of June 30, 2021 (\$ in millions)

Restoration Cost Type	Total Costs
Assistance from Third Parties	\$16.65
Labor, Material, Supplies, and Overhead	2.95
Grand Total	\$19.60

Relative to Staff's accounting investigation for this report, Staff requested information from Southside detailing the types of expenditures comprising the total Ice Storm restoration cost amounts provided to Staff; Sec replied that it does not have such detail available at this time. Staff recommends that in the future, SEC track specific storm-

¹⁵ While the initial assessment was submitted to FEMA, MEC is expecting to receive up to 75% reimbursement of the eligible expenses. See Responses to MEC Staff Data Request Nos. 3-18, 3-30, 3-32 and 3-34.

¹⁶ As of June 30, 2021, SEC has not capitalized any of the storm restoration costs. The total restoration costs to date of \$19.60 million is approximately 16% of SEC's 2020 Sales of Electric Energy.

¹⁷ SEC anticipates having a complete picture of the storm restoration costs by the end of 2021.

¹⁸ Staff received informal discovery from SEC on July 23, 2021. See also Response to SEC Staff Data Request No. 4-18.

related restoration costs in a timely manner and make such information available for Staff review upon request.¹⁹

SEC – FEMA reimbursement

SEC initiated FEMA reimbursement on February 24, 2021, as a result of the damages caused by the Ice Storm. SEC stated that it is still in the preliminary stages of applying for a public grant from FEMA for the storm costs.²⁰

RIGHT-OF-WAY MAINTENANCE

Dominion Energy

Dominion states that it trims trees on a scheduled basis, completing the vast majority of its overhead circuit ROWs in four years. The number of circuit ROWs trimmed varies from year to year depending on the circuit length, vegetation density, and vegetation growth. Scheduled trimming focuses on maintaining proper clearance between vegetation and overhead distribution facilities as well as addressing dead, diseased or dying trees that pose a hazard. DEV evaluates multiple factors when determining the circuits to be trimmed

¹⁹ For instance, while SEC collectively tracks costs such as labor, materials, supplies, and overheads, it does not, at this point, isolate these costs individually. Prospectively, SEC should individually track these costs, as well as any other types of costs related to restoration separately.

²⁰ SEC stated that as of April 13, 2021, it was informed that all the counties within its service territory except Chesterfield County had met their federal damage thresholds and that a federal disaster declaration would follow. SEC continued to state that "while no official declaration has been made at the time of this report, we anticipate it happening." *See* Response to Staff Data Request No. 4-21. As of July 23, 2021, SEC stated that its request for public assistance ("RPA"), which being the first step in the FEMA application process, was approved. SEC had its Recovery Scoping Meeting with representatives from FEMA and Virginia Department of Emergency Management ("VDEM") on July 22, 2021. Following this meeting, SEC stated that it has (60) days to submit a damage inventory to FEMA. This damage inventory is a listing of the damages that SEC incurred by location, and it does not include cost information. Upon completion of this damage inventory, SEC stated that it will be required to submit cost information and supporting documentation for FEMA review. SEC continues to expect that it will not know the extent of the costs found eligible for reimbursement by FEMA until closer to the end of the year, but that up to 75% of the eligible costs would be reimbursed by FEMA. *See also* Responses to Staff Data Request Nos. 3-2, 3-7 and 4-18.

each year, including the number of tree-related interruptions, conditions of the ROWs, mid-cycle hotspot trimming that may have occurred, and the amount of time since the last trim. Herbicide is applied to the ground floor of the ROW one year after trimming and mowing during each 4-year tree-trimming cycle.

Additionally, Dominion notes that it is in the second year of a four-year ash tree remediation program focused on identifying and removing ash trees impacted by the emerald ash borer. These trees pose a hazard to overhead distribution facilities should they fall.²¹

Mecklenburg Electric Cooperative

MEC states that it maintains all ROW using an integrated vegetation management approach that combines chemical, mechanical, and manual treatments. MEC's goal is to manage vegetation by balancing the benefits of cost and growth control with environmental quality, public health, and regulatory compliance. MEC stated that its trimming cycle is not derived from a formal standard; it has successfully managed its tree trimming cycle based on the experience and expertise of its responsible personnel.

Side trimming is currently completed on an eight-year cycle. As part of this process, side wall trees are cleared to the ROW boundaries; yard trees (e.g. trees under lines that are planted by property owners) are removed or trimmed as necessary; all identified hazard trees are removed; and ROW floors are mowed as needed. Due to the utilization of an 8-year trimming cycle, MEC's ROW specification requires a minimum of 12 feet of clearance

²¹ The Company utilizes two separate cycles for tree-trimming and herbicide application. The tree-trimming cycle is a 4-year cycle, while the herbicide application is an 8-year cycle. The Company has also implemented an ash tree remediation program which is to be completed in 4 years.

for all trees located beneath primary lines and 15 feet of clearance for all branches that overhang primary lines.

According to Mecklenburg, herbicide application is completed on a four-year cycle and is applied to all undergrowth. Brush clearing is used to remove undergrowth that has exceeded six feet in height prior to herbicide application and is generally done by hand or with a bush hog rotary mower. Brush clearing is primarily used in environmentally sensitive areas where members have agricultural or operational issues that restrict the use of herbicide.

Other tree trimming activities occur on a regular basis as issues are identified by MEC's ROW coordinators, operational personnel, members, or from its annual system patrol. MEC's vegetation management program is overseen by a staffed system arborist along with two ROW coordinators who provide ROW inspection, patrol, and oversight of contract resources utilized in its ROW program.

Due to the significant damage incurred during the Ice Storm, Staff recommends that MEC revisit the current tree trimming program and consider a more aggressive trimming schedule that would better serve the members by controlling tree growth. The tree damage reported as a result of the Ice Storm suggests that Mecklenburg's current schedule may not be sufficient to maintain the ROW vegetation. MEC reported that 95.31% of all storm related outages were caused by trees, and of those outages, 99.33% were reported to be located outside of the ROWs. Staff recognizes that MEC cannot mitigate all potential damage from trees outside of the ROW; however, Staff recommends

that they utilize a ground-to-sky approach²² for trimming inside the ROW; such a practice would alleviate the overhanging branches that often cause issues when they fall across distribution infrastructure.

Many of Mecklenburg's circuits are located in remote areas with trees on both sides of the ROW (i.e., double-sided ROWs). In responses to Staff's inquiries, MEC explained some line location practices that have become standard at MEC include moving distribution lines away from double-sided ROWs and, whenever feasible, placing them underground and/or moving them to the roadside; this work generally occurs during facility upgrades or relocations. Another alternative, although cost prohibitive, is to increase the widths of the ROWs; this could potentially mitigate the damage from trees coming into contact with utility structures. Staff recommends that MEC continually assess cost-effective alternatives. Either undergrounding these facilities or relocating them to new ROW away from densely wooded areas may be evaluated as well to determine if feasible. Such practices will help mitigate future tree-related damage. When constructing new lines, Staff also strongly recommends that MEC consider, where cost-effective, undergrounding facilities when such facilities are located within or near wooded areas. A summary of all Staff's recommendations is provided later in the Conclusions and Recommendations section of this report.

Table 7, below, represents the last time side trimming activities were performed on each of the Cooperative's substation areas:

²² A "ground-to-sky" approach refers to the practice of side-trimming the entire height of the vegetation in the ROW.

Table 7. MEC Substation Area - Year of Last Side Trimming

Substation	Last Year Trimmed
Beechwood	2015
Belfield	2015
Black Branch	2020
Boydton	2020
Brink	2020
Clarksville	2017
Climax	2016
Crystal Hill East	2020
Crystal Hill West	2014
DC Jackson	2013
Ebony	2019
Emporia	2015
Freeman	2016
Gasburg	2018
Gretna	2017
Grit	2019
Hickory Grove	2014
Island Creek	2017
Jones Store	2014
Northview	2018
Mt. Airy	2019
Omega	2016
Shockoe	2018

Southside Electric Cooperative

SEC reported that side-trimming of trees is currently completed on an approximate 7-year cycle and involves clearing all side walls to the ROW limits; mowing all undergrowth over 6 feet in height; removing all hazard trees noted by the utility foresters; and removing or trimming all yard trees. Aerial trimming with a helicopter is used to supplement the typical ground crews used for side-trimming and is focused strategically

along hard to reach sections of the 3-phase system or in locations where overhanging limbs cannot be easily removed from the ground.

Herbicide application is currently performed on an approximate 3.5-year cycle and involves an initial application of herbicide to all undergrowth less than six feet tall. For each circuit, this herbicide application is performed after side-trimming has occurred. A subsequent application of herbicide is generally performed in years three or four, thus restarting the cycle. While SEC also performs brush clearing, that work is not performed on a specified cycle.

Hazard tree removal is performed on an approximate three to four year cycle and focuses on off-cycle tree removals identified by Cooperative members, operations personnel, utility foresters, and various system and vegetation patrols. Assuming expected performance, a hazard tree patrol would be scheduled along a feeder in years three or four following the last side-trimming activity. A Davey Resources vegetation audit from December 2015²³ estimated that SEC had approximately 6,500 hazard trees needing mitigation. Most of those were located in the Central District where the Ice Storm was centered. In its report, Davey Resources recommended that SEC inspect all 3-phase lines bi-annually or annually. Staff recommends that SEC give serious consideration to Davey

²³ SEC hired Davey Resources Group to perform a System Assessment and Vegetation Management Program Audit, and the report was submitted to SEC in December 2015.

Resources' guidance to alleviate the danger to distribution infrastructure posed by hazard trees.

The following pictures, taken by Staff during a post-Storm visit to Southside's service territory, provide some examples of hazard trees that Staff identified. In Figures 10 and 11, the hazard tree was dead before the Storm occurred (even though it still remained upright before the Storm), thereby increasing its likelihood of falling across the distribution infrastructure during the Storm conditions.

Figure 10. Hazard Tree Example



Figure 11. Hazard Tree Example



Figure 12. Hazard Trees along and in the ROW



Vegetation management is provided by Southside's contractor administrator who supervises a Vegetation Management Supervisor and two utility foresters. These

personnel provide ROW inspection, patrols and oversight of the various contract resources used to complete the ROW programs detailed above. Vegetation schedules for side-trimming, herbicide application and hazard tree removals were provided in response to Staff inquiry and are summarized in the tables below.

Table 8. Proposed Side Trim Schedule

Year	Primary Miles	Secondary Miles	Total Miles
2020	926.2	173.6	1099.8
2021	924.5	204	1128.5
2022	934.7	191.9	1126.6
2023	926.3	169.6	1095.9
2024	928.3	164.6	1092.9
2025	935.8	204	1139.8
2026	950.39	176.86	1127.3

Table 9. Proposed Herbicide Schedule

Year	Primary Miles
2020	1588.73
2021	2196.61
2022	1549.07
2023	1670.25
2024	1664.9
2025	1908.51
2026	1211.29

Table 10. Proposed Hazard Tree Removal Schedule

Year	Primary Miles
2020	412.48
2021	363.42
2022	392.1
2023	352.2
2024	321.9
2025	367.99
2026	356.3

According to SEC, these schedules are adjusted annually as required based on growth, reliability trends, and budget requirements. SEC indicated that the cycles are based

on the available budget for such tree trimming, with a focus on the greatest possible reliability performance for those expenditures.

SEC engaged Environmental Consulting Inc. ("ECI") in 2010 to perform a vegetation assessment, and subsequently entered into a vegetation management agreement with ECI in 2011. Before that time, SEC was on an approximate 7–8-year trim cycle. ECI was unable to produce the results as contracted, and the relationship was terminated in 2012.

In 2013, SEC re-established its own side-trimming program with a target cycle of six years, which continued until 2016 when, according to Southside, lower revenue margins required a reduction in trimming mileage. As a result, SEC missed its six-year goal and reduced trimming continued in 2017-2019. In 2020, SEC reestablished a seven-year side-trim cycle with adjustments to hazard tree and herbicide programs to complement its trim cycle objectives. Costs for a seven-year cycle trim cycle also were included in SEC's approved rate filing in 2020, Case No. PUR-2019-00090.

Southside notes that ten circuits trimmed in the 2020 and 2021 timeframe still experienced outages from tree damage caused by the Ice Storm. As a result, SEC maintains that the date of last side-trim does not necessarily provide an accurate reflection as to which circuits performed well during the Ice Storm. SEC believes that side-trimming would not have eliminated the damage caused since 95.8% of outages for the Ice Storm were reportedly caused by trees located outside the maintained ROW and were not hazard trees. During its visit to SEC's service territory, Staff observed that many of the areas that were already cleared and rebuilt from the Ice Storm still had overhanging branches from trees

located outside the ROW. Some examples of such locations are provided in the photographs shown in Figures 13-15 below that were taken during Staff's post-Storm visit to SEC's service territory. Based on these observations, Staff recommends that Southside revise its side trimming program to include ground-to-sky trimming to mitigate outages caused by limbs on outside-ROW-located trees breaking over conductors.

Figure 13. Limbs Overhanging Previously Cleared ROW



Figure 14. Limbs Overhanging Previously Cleared ROW



Figure 15. Limbs Overhanging Previously Cleared ROW



As previously mentioned, Southside performs side trimming on a seven-year cycle; however, this pace appears inadequate to stay ahead of new growth on SEC's system. Staff recommends that SEC accelerate this schedule along with increased brush clearing and the use of herbicide. In support of this recommendation, Staff notes its observation during the aforementioned post-Storm visit: one particular location was significantly overgrown with brush and appeared not to have been maintained for an extended period of time (See Figure 16 and 17).

Figure 16. Example of Densely Overgrown ROW



Figure 17. Overgrown ROW



Staff is concerned that overgrowth such as this may not be uncommon, and that SEC's current trimming cycle appears to be more reactive than proactive relative to tree trimming and hazard tree removal. According to SEC, the last vegetation management audit was performed in December 2015 by Davey Resources. That audit noted that many aspects of SEC's tree trimming, hazard tree, and herbicide programs needed improvement. Unfortunately, Staff's inspection of multiple outage locations revealed that the recommendations from Davey Resources had not been implemented six years later. Staff

recommends that the Cooperative perform a vegetation audit every 5 years and adhere to the recommendations included in the Davey Resources audit, providing such can be accomplished at a reasonable cost, in order to get the maximum benefit from this effort and to ultimately improve service reliability to its members.

To provide additional information relative to the impact of the Ice Storm and its relation to side trimming, the following table provides the year that side-trimming was last performed on each feeder in Southside's territory. Those feeders highlighted in yellow were trimmed within SEC's seven-year side trimming cycle, but still experienced faults. These faults resulted in automatic circuit disruption leading to outages during the storm. This analysis leads to Staff's recommendations to accelerate the trimming schedule and incorporate ground-to-sky trimming.

Table 11. SEC Side Last Side-Trim Summary by Feeder

Substation	Circuit	Last Side-Trim	Substation	Circuit	Last Side-Trim
01 RedHouse	01 Chap	2018	22 Amelia	02 Claysville	2018
01 RedHouse	02 Rolling Hills	2020	22 Amelia	03 Amelia	2017
01 RedHouse	03 Old Well	2020	22 Amelia	04 Morven	2018
01 RedHouse	04 Sugar Hill	2020	23 Ponton	01 Amelia	2014*
01 RedHouse	05 Union Hill	2018	23 Ponton	02 Blackstone	2015*
03 LoneGum	01 Otter River	2020	25 FortPickett	01 Amelia	2015
03 LoneGum	02 Leesville	2020	25 FortPickett	02 Dinwiddie	2015
03 LoneGum	03 Whitehouse	2020	25 FortPickett	03 Jonesboro	2015
03 LoneGum	04 Body Camp	2020	25 FortPickett	04 Crewe	2015
03 LoneGum	05 APCO	2020	25 FortPickett	05 Arbortech	2015
04 White House	01 Shady Grove	2020	26 Danieltown	01 Bryant Rock	2016
04 White House	02 Palestine Church	2020	26 Danieltown	02 Warfield	2016
04 White House	03 Mitchels Marina	2018	26 Danieltown	03 Meredithville	2016
04 White House	04 Saunders Marina	2018	26 Danieltown	04 South Hill	2016
04 White House	05 High Point	2018	26 Danieltown	05 Kenbridge	2016
04 White House	06 Chamblissburg	2020	27 Victoria	01 Prison	2015
05 Evington	01 Bedford Springs	2014*	27 Victoria	02 Kenbridge	2015
05 Evington	02 Antony Store	2021	27 Victoria	03 Nutbush	2015
05 Evington	03 Waltons	2020	27 Victoria	04 Falls	2015
05 Evington	04 Hicks Town	2020	28 SugarHill	01 Red House	2021
07 Gladys	02 Mitchels Corner	2016	28 SugarHill	02 Bethel	2013*
07 Gladys	03 Mitchels Mill	2016	28 SugarHill	03 Patrick Henry	2013*
07 Gladys	04 Seneca	2016	28 SugarHill	04 Perth	2013*
08 Lynch	02 Timken	2015*	30 Gill	01 Sawmill	2015
08 Lynch	03 Otter River	2015*	30 Gill	02 Hickory Road	2015

08 Lynch	04 Walmart	2015*
09 Evergreen	01 Hixsburg	2020
09 Evergreen	04 Red House	2020
10 Madisonville	01 Five Forks	2019
10 Madisonville	02 Aspen	2019
10 Madisonville	03 Red House	2019
10 Madisonville	04 Redd Shop	2019
11 Stoddart	01 Angola	2019
11 Stoddart	02 Farmville	2014*
11 Stoddart	03 Buckingham	2014*
12 Reams	01 Battlefield	2017
12 Reams	02 Halifax	2017
12 Reams	03 Dinwiddie	2017
13 DrakesBranch	01 Keysville	2018
13 DrakesBranch	02 Crafton Gate	2018
13 DrakesBranch	03 Saxe	2020
14 CherryHill	01 Butterworth	2016
14 CherryHill	02 Sussex	2017
14 CherryHill	03 Cherry Hill	2017
15 Gary	01 Bishops Corner	2015
15 Gary	02 Red Level	2015
15 Gary	03 Loves Mill	2015
15 Gary	00 Oral Oaks	2014
16 Moran	02 Cumberland	2019
16 Moran	03 Crewe	2020
16 Moran	04 Redd Shop	2020
17 Hooper	01 Fergusonville	2015
17 Hooper	02 St Marks	2015
17 Hooper	03 Dutchtown	2015
17 Hooper	04 SEC Office	2015
18 Nutbush	01 Rubbermont	2014*
18 Nutbush	02 Victoria	2015*
18 Nutbush	03 Ontario	2021*
21 Powhatan	01 Maidens Road	2016
21 Powhatan	02 Ballsville	2017
21 Powhatan	03 St Emma	2016
21 Powhatan	04 Branch	Open at buss
21 Powhatan	05 Worsham Road	2016
22 Amelia	01 Macon	2016

* feeder will be trimmed in 2021

30 Gill	03 Matoaca	2015
30 Gill	04 Center	Open at buss
30 Gill	05 Beach Road	2015
31 CenterStar	01 Five Forks	2017
31 CenterStar	02 Dinwiddie	2017
31 CenterStar	03 Dewitt	2017
31 CenterStar	04 Chesterfield	Open at buss
33 FineCreek	01 Judes Ferry	2016
33 FineCreek	02 Spencerwood	2016
33 FineCreek	03 Maple Grove	2016
33 FineCreek	04 Jefferson	2016
34 Briery	01 Abilene	2019
34 Briery	02 Cabbage Patch	2019
35 Bellvue	01 West	Underground
35 Bellvue	02 Meade	Underground
35 Bellvue	03 Owens Market	2020
36 Sycamore	01 Brights	2015*
36 Sycamore	02 Gallows Rd	2015*
36 Sycamore	03 Blue Ridge	2015*
36 Sycamore	04 Country Club	2015*
36 Sycamore	05 Gretna	2015*
37 Meads Store	01 Dickerson Mill	2012*
37 Meads Store	02 Thaxton	2013*
37 Meads Store	03 Diamond Hill	2012*
38 Brunswick	01 Alberta	2016
38 Brunswick	02 Hines Grocery	2016
38 Brunswick	03 Diamond Grove	2016
42 Wellville	01 Ammon	2015
42 Wellville	02 Baltimore Corner	2015
42 Wellville	03 Southeastern Lumber	2015
42 Wellville	04 Yellow Bird Road	2015
46 Lake Chesdin	01 Chesterfield	2016
46 Lake Chesdin	02 Mannboro	2017
46 Lake Chesdin	03 Chesdin Landing	2016
46 Lake Chesdin	04 Ivey Mill	2016
46 Lake Chesdin	05 Whippernock	2017
99 Military	01 Ranges 1-16	2020
99 Military	02 Headquarters	2014*
99 Military	03 Town Blackstone	2014*

RIGHT-OF-WAY MAINTENANCE COSTS AND COST RECOVERY

Cost Recovery Through Rates

Utilities recover the cost of maintaining system reliability, whether ROW maintenance, pole replacement programs or other programs, through customer rates. Staff evaluated recent rate requests made by Dominion, MEC, and SEC. This section provides information on these requests and provides data on the three utilities' ROW maintenance actual and budgeted costs.

Dominion Energy

Dominion has included ROW maintenance costs in its filed rate case applications, biennial review applications and triennial review applications since 2009.²⁴ Dominion budgets for costs to maintain its ROW and tracks the actual costs incurred. The following table provides the actual ROW maintenance costs from 2011 through 2020 and the budgeted costs from 2021 through 2023.²⁵

²⁴ Dominion's Triennial Review application for years 2017-2020 is currently pending before the Commission. The costs identified in the table for 2017-2020 are reflected in the earnings test portion of the current Triennial Review. *Virginia Electric and Power Company, For a 2021 triennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to §56-585.1 A of the Code of Virginia*, Case No. PUR-2021-00058, Doc.Con.Cen. No. 210340152 (Mar. 31, 2021).

²⁵ See Responses to Dominion Staff Data Request Nos. 3-26 and 3-30.

Table 12. Dominion ROW Maintenance Costs (\$ millions)

Year	Actual
2011	\$43.34
2012	39.38
2013	37.50
2014	41.07
2015	38.03
2016	37.40
2017	36.90
2018	38.00
2019	39.90
2020	59.30

	Budget
2021	\$61.5
2022	60.8
2023	60.4

Mecklenburg and Southside

Cooperatives generally have historically increased base rates through either a traditional rate case before the Commission or, in limited instances, through a Board of Directors'-approved increase outside of Commission review.²⁶ Regarding the latter, pursuant to §56-585.3 of the Code of Virginia, cooperatives such as MEC and SEC have an opportunity to receive a Board-approved administrative increase of up to five percent within a three-year period instead of requesting a revenue increase through a formal proceeding with the Commission. As will be seen in the following discussion, in the past decade SEC has requested and been granted two traditional base rate increases from the

²⁶ A streamlined rate case is another manner in which a Cooperative may request a revenue increase.

Commission, while MEC has had two Board-approved rate increases. One of MEC's Board-approved administrative increases has been implemented within the last ten years.

With regard to traditional rate cases, SEC filed rate cases in the last decade in 2013 and 2019, MEC's most recent base rate case was filed in 2009. As shown in the table below, the Commission approved the revenue requirement requested by SEC and MEC in each application.

Table 13. Cooperative Rate Cases Since 2009

Cooperative	Case Number	Cooperative Revenue Requirement Requested (000s)	Cooperative TIER requested	Includes Going Level ROW Maintenance Costs?	Commission Percentage Approved
SEC	PUR-2019-00090 ²⁷	\$8,019	2.35	yes	100%
SEC	PUE-2013-00079 ²⁸	\$7,484	2.00	yes	100%
MEC	PUE-2009-00006 ²⁹	\$7,126	2.18	Yes	100%

MEC

In 2009, the Commission approved 100% of Mecklenburg's requested base rate increase, which included a total ROW maintenance cost of approximately \$969,000. While MEC has not filed a formal base rate increase with the Commission since 2009,

²⁷ *Application of Southside Electric Cooperative, For a general increase in electric rates*, Case No. PUR-2019-00090, Doc. Con. Cen. No. 200420234, Final Order (Apr. 22, 2020) ("2019 SEC Rate Case").

²⁸ *Application of Southside Electric Cooperative, For a general increase in electric rates and for approval of Schedule PCA-1 and a voluntary PrePaid Electric Service tariff (Schedule A-P)*, Case No. PUE-2013-00079, 2013 S.C.C. Ann. Rept. 297, Final Order (Jun. 27, 2014). ("2013 SEC Rate Case").

²⁹ *Application of Mecklenburg Electric Cooperative, For a general increase in electric rates*, Case No. PUE-2009-00006, 2009 S.C.C. Ann. Rept. 387, Final Order (Sep. 17, 2009).

MEC's Board of Directors has approved two administrative increases as allowed by Code § 56-585.3.

Specifically, in 2016 MEC requested its Board approve a five percent increase to revenue, which became effective on August 1, 2016. The increase raised MEC's distribution sales revenue of \$25.83 million by approximately \$1.29 million.

In 2019, MEC requested a similar five percent increase to revenue, which was approved and became effective on January 1, 2020. This increase raised MEC's distribution sales revenue of approximately \$26.18 million by approximately \$1.31 million.

Table 14. MEC's Administrative 5% Increases within the last decade

Effective Date	Percent Requested	Beginning Distribution Revenue \$(millions)	Distribution Revenue Increase due to 5% \$(millions)	Projected Distribution Revenues after 5% increase \$(millions)
August 1, 2016	5%	\$25.8	\$1.3	\$27.1
January 1, 2020	5%	\$26.2	\$1.3	\$27.5

The following table reports Mecklenburg's actual and budgeted ROW maintenance costs as provided to Staff. The table reflects ROW maintenance actual costs from 2015 through 2020 and budgeted ROW maintenance costs for 2021.³⁰

³⁰ MEC indicated that it does not have access to budgeted or actual ROW maintenance costs prior to 2015 using its current accounting information system. In addition, MEC stated that it budgeted only through 2021. See Responses to MEC Staff Data Request Nos. 2-3 and 3-33.

Table 15. MEC ROW Maintenance Costs (\$ millions)

Year	Actual
2015	\$2.4
2016	2.3
2017	2.6
2018	2.4
2019	2.7
2020	2.8
	Budget
2021	\$3.4

SEC

While SEC has not implemented an administrative revenue increase pursuant to Code § 56-585.3, it has filed two base rate case applications with the Commission within the last decade. Each time, the Commission approved 100% of Southside's rate increase request.

Specifically, in 2013, SEC filed a general rate case³¹ wherein the Commission approved a revenue requirement increase of approximately \$7.48 million. This revenue requirement included ROW maintenance cost of approximately \$3.9 million, with new rates effective January 1, 2014.

In 2019, SEC filed a general rate case³² in which the Commission approved the entire requested increase to the revenue requirement of approximately \$8.02 million. This

³¹ See 2013 SEC Rate Case.

³² See 2019 SEC Rate Case.

revenue requirement included SEC's proposed ROW maintenance cost of approximately \$5.1 million, with new rates effective January 1, 2020.

The following table reports Southside's ROW maintenance actual costs from 2011 through 2020, which includes the amount approved for ROW maintenance costs in the 2013 and 2019 base rate cases. The table also shows the budgeted ROW maintenance costs from 2021 through 2023.

Table 16. SEC ROW Maintenance Costs (\$ millions)

Year	Amount approved in Base Rate Case	Actual
2011		\$3.6
2012		3.6
2013		4.0
2014	\$3.9	4.7
2015		5.3
2016		3.8
2017		3.6
2018		3.3
2019		3.7
2020	\$5.1	5.3
		Budget
2021		\$7.5
2022		5.0
2023		5.3

WOOD POLE MAINTENANCE

Dominion Energy

As of 2020, Dominion maintains 1,065,616 wood distribution poles within its service territory. DEV's creosote treated wood poles are inspected on a 12-year cycle as

part of Dominion's Groundline Pole Inspection program; a sampling of chromated copper arsenate ("CCA") treated poles are also inspected annually. In 2020 this pole inspection process resulted in the rejection of 1,809 of the 46,531 poles inspected, or approximately 3.9%. Rejected poles were categorized as: Restorable, Non-restorable (to be scheduled for replacement), and Priority Non-restorable (to be checked by local operations personnel for a determination on immediate replacement or to be scheduled for replacement). Of the 1,809 rejected poles in 2020, Dominion determined that 1,275 of the poles were Restorable; 401 poles were Non-restorable; and 133 poles were considered Priority Non-restorable.

Table 17, below, presents the number and percentage of distribution poles replaced due to age and condition as part of DEV's Groundline Pole Inspection Program over the last five years.

Table 17. Distribution Poles Replaced Due to Age and Condition

Year	Total Inspected	Quantity Replaced	Percentage Replaced
2016	85,047	1,066	1.30%
2017	109,673	1,026	0.90%
2018	118,503	788	0.70%
2019	37,125	507	1.30%
2020	46,531	354	0.80%

DEV's goal is to inspect 35,000-40,000 poles each year,³³ on average, these inspections lead to replacement of approximately 1% of inspected poles annually. Staff realizes that Dominion has a large number of poles (approximately 1,000,000) on its system. Inspecting only 3.5% of these poles each year may not allow Dominion to keep up with aging infrastructure and wildlife damage over the entire distribution service area.

³³ As shown in the table, in 2016-2018, Dominion performed an increased number of pole inspections. This was done in order to complete the inspection of all of Dominion's poles by the end of the pole inspection cycle ending in 2018.

Accordingly, Staff recommends that DEV investigate cost-effective ways of expediting the inspection process, removing aging infrastructure, and rectifying damaged poles where possible. These actions should improve storm resiliency and in-turn reduce future storm related outages.

Dominion was unable to determine whether any of the poles replaced as a result of the Ice Storm were overdue for replacement as part of the Groundline Pole Inspection Program because DEV's Outage Management System does not capture specific pole locations. Those poles identified for replacement as part of Dominion's Groundline Pole Inspection Program are managed in the Company's Work Management System ("WMS"), and the identification of those poles repaired due to Ice Storm damage may not be recorded in that system until a pre-inspection of planned work related to the pole inspection program is scheduled.

Dominion Energy acquired additional poles during the storm, with the average time to receive ordered poles from manufacturers being approximately 12 hours. Dominion utilized pre-staged poles at the Stella-Jones' shipper's yard in Wilson, North Carolina, as well as direct shipments from Stella-Jones Corporation in Whitmire, South Carolina, and Koppers Utility and Industrial Products in Newsoms, Virginia.

Table 18 below details the type and quantity of distribution poles in DEV's service territory along with the quantity of each type requiring replacement as a result of the Ice Storm.

Table 18. Dominion's Distribution Pole Totals and Replacements by Type

Pole Type	Total as of January 31, 2021	Poles Replaced during Ice Storm
Aluminum	8,960	0
Concrete	85,874	0
Fiberglass	81,224	0
Steel	7,406	0
Wood	1,065,365	412
Total	1,248,829	412

Mecklenburg Electric Cooperative

As of 2020, MEC maintained 78,013 poles in its service territory; they are inspected on an approximate eight to ten-year schedule. Table 19 below presents the number and percentage of distribution poles replaced annually due to age and condition as a result of MEC's Pole Inspection Program.

Table 19. Distribution Poles Replaced Due to Age and Condition

Year	Total Inspected	Quantity Replaced	Percentage Replaced
2016	7,771	423	5.44%
2017	6,418	144	2.24%
2018	8,451	81	0.96%
2019	7,318	121	1.65%
2020*	8,313		

* Poles identified for inspection are still under field review by MEC

According to Mecklenburg, all of the 169 broken poles replaced during the Ice Storm were wood poles. Additionally, MEC advised that none of those replaced poles were overdue for replacement based on MEC's pole inspection results; however, Staff notes that the latest inspection results provided by the Cooperative indicate that the poles identified in 2020 for replacement were still being reviewed by MEC staff at the time of the Storm.

Based on responses to Staff's inquiries it appears that MEC's pole inspection program may need to be streamlined. Specifically, Staff recommends that MEC revisit this program and make adjustments to expedite the inspection process and the replacement of rejected poles. Staff also recommends that a "pole reject report" be conveyed to the proper MEC staff each day so that work orders can be assigned in a timely manner.

MEC maintains an inventory of poles and cross arms at each of its three district offices; Inventory is maintained at various geographic locations to ensure availability as needed across the service area. Additional poles were delivered to the Cooperative during the Storm. MEC states the delivery was executed within 24 hours and that timing of such deliveries did not negatively impact storm restoration efforts.

Southside Electric Cooperative

As of 2020, SEC maintained 125,246 poles within its service territory. SEC partners with OSMOSE Utilities Service for system pole inspections, which currently occurs over a ten-year cycle.

Southside states that it does not replace poles based on age. Poles are replaced based on other factors: as a result of capacity upgrades to support service or system improvements; storm or other mechanical damage; and pole inspections. Table 20, below, presents the number and percentage of distribution poles replaced by year due to each of the noted causes.

Table 20. Distribution Poles Replaced and Cause of Replacement

Year	Total Inspected**	Capacity Upgrades	Storm/Mechanical Damage	Pole Inspection Replacement	Total Replacements	Percentage Replaced
2016		1,622	247	239	2,108	1.68%
2017		875	242	547	1,664	1.33%
2018		245	282	195	722	0.58%
2019		360	419	13	792	0.63%
2020	13,809	636	261	395	1,292	1.03%

* This summary is compiled from closed work orders and is a summary of when (the year) the projects are closed (capitalized) into plant.

** Total inspected poles for 2016-2019 were not provided.

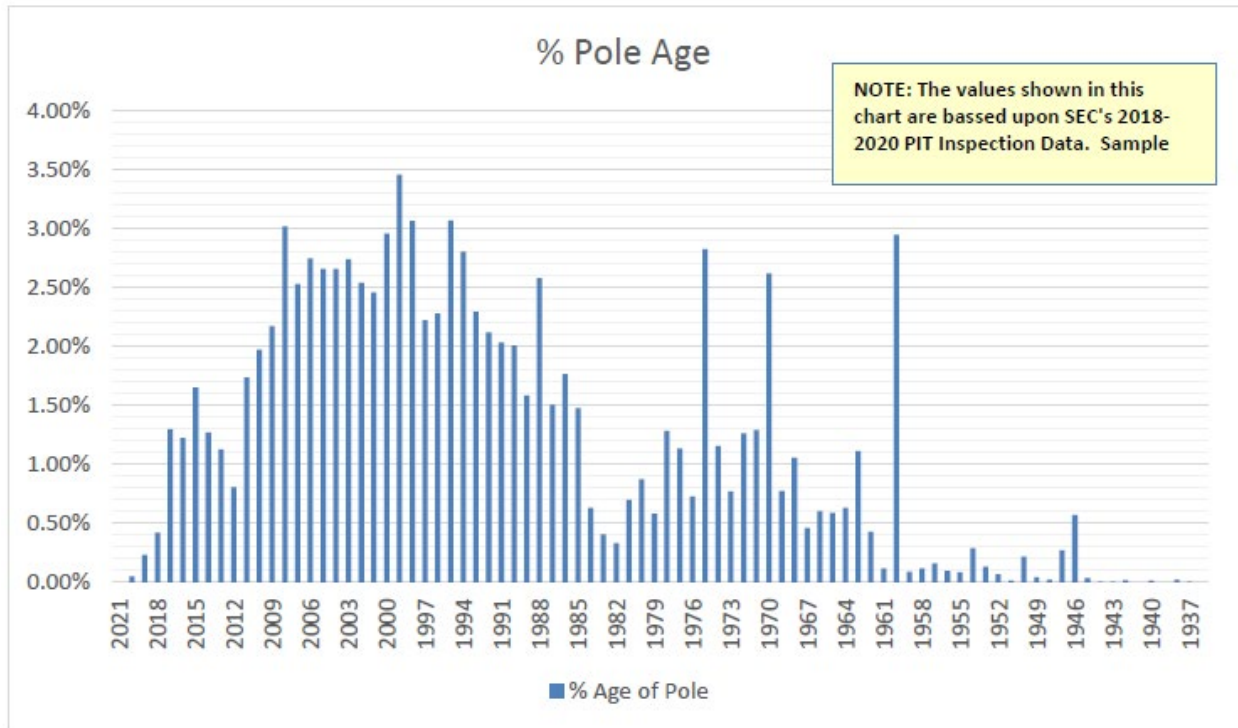
SEC's Pole Inspection and Treatment Program reviews the current estimated strength of each pole inspected. If a pole fails such an inspection, it is reinforced or replaced. Poles identified as rejects are replaced as part of Southside's construction work plan activity by either SEC's operations personnel or by contract line personnel. Those poles identified as priority rejects are replaced immediately by the Cooperative's Operations personnel. As can be seen in Table 20, SEC also replaces a significant number of other poles as part of its capacity upgrade process. During such upgrades, an existing pole's available capacity is reviewed and modified as needed in compliance with Rural Utility Service ("RUS") assembly design specifications.

According to Southside, of the 866 poles replaced as a result of the Ice Storm, none were overdue for replacement; however, 32 poles (3.7%) were known rejects based on the 2020 Pole Inspection & Treatment Program but had not yet been replaced.

As previously mentioned, SEC does not use age as a determining factor in deciding when to replace poles and therefore does not maintain the age of each pole in its system. Southside does, however, have pole age data for a small percentage of its poles as part of

its Pole Inspection & Treatment Program. Using this limited data for 2018-2020, SEC extrapolates the age distribution of its approximately 128,000 total pole population as shown below.

Figure 18. SEC Estimated Distribution Pole Age



Using the same limited data set, the poles that were broken during the Ice Storm are classified by age below. While Staff recognizes that pole age is one of many factors that determine pole condition, Table 21 reveals that 276 poles broken during the Ice Storm were 40-50 years old, and 57 poles were 60-80 years old, indicating that SEC's service territory is characterized by aging infrastructure and reinforcing the need for an accelerated pole inspection and replacement program.

Table 21. SEC Estimated Vintage of Poles Broken During Ice Storm

Vintage	Estimated Number of Poles Broken
1938-1949	33
1950-1959	24
1960-1969	120
1970-1979	156
1980-1989	58
1990-1999	43
2000-2009	33
2010-2019	14
2020-2030	0
Unknown	385
Total	866

According to SEC, the number of poles in inventory will vary throughout the year depending on planned work, but it keeps a minimum inventory of 124 poles. In advance of the Storm, SEC had 287 poles on hand which it states was a sufficient number for this restoration since pole inventory levels did not hinder restoration efforts. As Southside was receiving assessments of damage from the field, inventory levels were evaluated, and orders for materials were placed as needed. As a result, poles were being delivered within three hours of the orders being placed. As such, SEC did not run out of poles during the restoration event and no storm restoration efforts had to be extended due to lack of pole inventory.

Table 22 below details the type and quantity of distribution poles in Southside's service territory, along with the quantity of each type requiring replacement as a result of the Ice Storm.

Table 22. SEC Distribution Pole Total and Replacements by Type

Pole Type	Type Count as of January 31, 2021	Type Count Replaced during Ice Storm
Wood	125,247	866
Concrete	1	0
Steel	0	0
Composite	0	0

As previously noted, SEC indicates that no poles were overdue for replacement prior to the Storm and that 3.7% of poles broken during the Storm were known rejects from the 2020 Pole Inspection and Treatment program. During Staff's post-Storm field visit to SEC, Staff observed poles in several locations that appeared to require replacement. For example, Staff observed poles with shell-rot, cracks, and wildlife damage (see photograph in Figure 19 below). Staff concludes that SEC's Pole Inspection and Treatment Program is not keeping pace with the aging infrastructure. As such, Staff recommends that SEC consider reviewing and possibly modifying criteria for pole rejection as well as accelerating pole inspections and replacement of rejected poles.

Figure 19. Pole with Wildlife Damage and Shellrot



SEC also states that it utilizes RUS guidelines for the construction of distribution system infrastructure. Those guidelines include conductor tension considerations, because excess tension on a conductor can result in an elevated number of poles broken by a single falling tree or tree-limb as the effect is propagated from pole to pole. During Staff's post-Storm visit to SEC's service area, Staff observed several locations where SEC's distribution system had received extensive storm damage.

Based on Staff's inspection of the repaired sections, it appeared that some conductors observed were under an unusually high tension. Some examples of those are provided in the photographs shown in Figures 20 and 21.

Figure 20. Corner Pole with High Tension



Figure 21. Corner Pole with High Tension



While this was a visual observation, Staff brings it to the attention of SEC for future investigation to verify compliance with RUS standards. Where appropriate, SEC should consider using shorter span lengths to maintain required safety clearances while alleviating the need for higher tension on conductors.

Staff recognizes that SEC's distribution system is designed using the "Heavy Ice Loading Zone" criteria, as per National Electric Safety Code ("NESC") requirements, to allow the system to withstand heavier ice accumulation. Staff encourages SEC construction personnel to verify that these requirements are being implemented and documented in the field during construction and maintenance activities.

Finally, Staff observed during its post-Storm visit that SEC, like many other cooperatives, uses a considerable amount of copper conductor in use. These conductors are known to become brittle over time. This situation is concerning to Staff because copper conductors are more likely to break under less loading (such as ice loading) than aluminum conductors, resulting in more outage locations and longer duration outages. Staff recognizes that replacement of this once widely used conductor is an ongoing effort and encourages the Cooperative to consider accelerating the removal and replacement of copper conductor from its system.

COMMUNICATIONS

Dominion Energy

During the Storm, DEV's Central Region Incident Commander hosted four update calls with local emergency operations centers in the Region. One update was conducted prior to Storm impact, and three were conducted post-impact.

Dominion designates a liaison employee dedicated to communications with VDEM. Due to efforts to mitigate the spread of COVID-19, this work was performed virtually for the Ice Storm; however, the liaison was available for assistance each day and

responded to approximately twelve inquiries by phone, email, and text during the event. Prior to the Storm, Dominion's Deputy Incident Commander contacted the Virginia Emergency Support Team (VEST) Coordinator and provided an update on preparations; ad-hoc communications continued post-impact. Ad-hoc communications also occurred with VDEM's Transportation Emergency Support Function ("ESF").³⁴ The Deputy Incident Commander also attended a WebEx Meeting with the State Infrastructure Branch³⁵ on Wednesday, February 17, 2021 and the Company's Central Region Incident Commander provided updates on four VDEM Region 1 calls throughout the event. Daily updates were also provided to Commission Staff.

Dominion sent an email to all members of the General Assembly on Saturday, February 13, 2021 with a message that focused on DEV's preparations; this email also contained information that is provided to customers in the event of an outage. From February 9 – 19, 2021, Dominion representatives communicated with local officials regarding storm preparations and outage recovery updates. According to Dominion, these communications included approximately 60 email updates to local officials and their staffs in all regions of the Company's service territory; most of the communications focused on areas in Western and Central Virginia, including the southside region. These were the areas that sustained the most significant Ice Storm damage and outages.

³⁴ This ESF is the Virginia Department of Transportation.

³⁵ The State Infrastructure Branch consists of members from ESF-12 (Energy), ESF-2 (Communications), and ESF-3 (Public Works).

Mecklenburg Electric Cooperative

MEC largely relied on its Facebook page to communicate with the public and to distribute news relative to its ongoing restoration efforts. Mecklenburg provided updates approximately every twelve hours, around 7:00 AM and 7:00 PM. After electric service outages began, public service announcements ("PSAs") continued via Facebook every morning and evening with county specific restoration information. MEC also posted safety messages regarding downed lines; information on order of restoration; and safety information related to connecting generators. Other information was provided as necessary.

Additionally, Facebook photos featured crews making repairs throughout MEC's system; MEC's President and Chief Executive Officer ("CEO") also corresponded regularly with members via Facebook. Mecklenburg Member Service staff also worked in shifts, monitored social media posts 24 hours a day, and responded to individual messages and inquiries.

On Saturday, February 13, 2021, MEC's President and CEO strongly encouraged members to prepare for an extended multi-day outage. During a noon update, MEC informed members that power would not be fully restored until Monday, February 15, 2021. On the morning of Sunday, February 14, 2021, as crews consistently reported finding multiple downed trees and conductor breaks at each work location, MEC realized that this outage event was atypical; members were then informed that no specific timeframes for restoration in any area could be provided with any degree of accuracy at that time.

Following nearly 40 hours of work and ongoing assessments, on the evening of February 14, 2021, MEC's President and CEO communicated that it might be the night of Thursday, February 18, 2021 before all power was restored. On the morning of February 16, 2021, the public update advised that repair times varied greatly by location, and that MEC was still unable to provide specific restoration times for a given area or individual address.

With the approach of a second winter storm, PSAs were again issued via Facebook reminding members, particularly those with serious medical conditions, to prepare for a repeat of the Ice Storm.

By the evening of February 16, 2021, PSAs provided information relative to where substantial repairs had been made and stated that crews would be concentrating on the hardest hit areas of Halifax and Pittsylvania Counties. A following post on February 18, 2021 indicated that substantially all restoration efforts had been completed with the exception of Halifax and Pittsylvania, and that most of those services would be substantially restored by Friday night. On the evening of February 20, 2021, a PSA was provided informing members that all known outages had been repaired and requesting that anyone in MEC's membership without power contact Mecklenburg immediately.

MEC advised that its call center was overwhelmed during this Storm, and that the Cooperative is currently researching the potential to increase call center capabilities. Mecklenburg is researching cloud-based resources as a way to expand capacity and offer redundancy so that MEC is not limited if communication in one area is down. Staff agrees

with this plan and encourages MEC to continue evaluating options for expanding capacity and improving customer communication capabilities.

As previously described above, MEC primarily relied on Facebook to inform members of ongoing restoration efforts during the Storm. While Staff agrees that Facebook is an effective tool for providing information to a large number of members, not all members may be Facebook subscribers. Cell phones and computers used to connect to Facebook also may lose their charge during multi-day outages, preventing members from accessing information MEC provides through this venue. Furthermore, MEC provides service to many rural areas where reliable access to the internet can be limited, especially during power outage situations. Staff recommends that Mecklenburg consider additional ways to communicate with members during extended outages.

MEC has also realized that its "SmartHub" application was confusing members. This application, which is used to provide members with energy management tools and energy usage information, continued to show energy usage during the Storm even when the affected member's power was out leading some members to believe that they were being billed for usage during the outage. Widespread concern and confusion resulted. MEC has advised that this energy projection feature, which does not reflect actual real-time usage information, will be disabled during future large multiday outages. Staff concurs with this plan.

Southside Electric Cooperative

In advance of the initial Ice Storm, SEC provided four messages on Facebook warning members of the possible severity of the storm. Immediately following the impact of the Storm on SEC's service area, Southside posted on social media and provided multiple media releases to local leadership and media outlets (print, broadcast, and radio). In addition, SEC states that it regularly informs members of the importance of being prepared for storms through social media and the *Cooperative Living* magazine.

Due to the severity of the Ice Storm event, SEC advised customers on February 16, 2021 that "[w]hile SEC remains on track to have power restored to all members by early to mid-week, of next week, we are warning all members to brace for another equally powerful ice storm event similar to the one we are still recovering from with current ice storm damage."

While the impact of the February 18, 2021 storm was not as severe as the February 13, 2021 storm, SEC states that the second storm did cause additional outages that extended its restoration efforts. Southside provided daily updates regarding the number of outages and the number of members affected by those outages by Facebook and in press releases; however, no estimated restoration times were provided to members until Wednesday, February 24, 2021.

On Tuesday, February 23, 2021, Southside issued a press release indicating that more than 90% of impacted SEC members had power restored. In a subsequent press release on February 24, 2021, SEC stated that they were on track to achieve 99% restoration

by Friday, February 26, 2021. On February 25, 2021, SEC announced that more than 98% of members had power restored, and on February 26, 2021, SEC achieved full restoration.

SEC frequently communicates with the newspapers and radio stations that report in its 18-county service territory. SEC advised that media releases are often provided to newspapers and radio stations to be used as sources of information. Local media outlets are also aware of SEC's social media postings and often get their information from those postings. According to Southside, most of the utility's print media are weekly newspapers with Wednesday or Thursday publications; therefore, SEC leveraged all other means of communication opportunities (primarily through social media) to ensure that members were advised of the approaching storms.

In addition to sending out news releases to the newspapers and radio stations, the communications department regularly contacted broadcast media from the Richmond, Lynchburg, and Roanoke areas. These efforts included arranging requested interviews and when necessary, accompanying reporters into the field.

SEC determined that it had a very limited working relationship with broadcast media prior to the Ice Storm. While press releases were previously sent, they did not often result in coverage. Following the initial Ice Storm, SEC states that it initiated an active relationship with broadcast media. As a result, in addition to sending out press releases, Southside has subsequently worked with multiple reporters to provide accurate information in a timely manner, and when possible, to arrange interviews both in the field and at Southside's office. In total, SEC states that it provided the following information to the media during the Storm:

- 14 Press Releases were distributed to SEC's media list of 24 outlets, which included area print media and radio contacts. Beginning on February 22, 2021, all media releases were issued through Virginia Press Services.
- Approximately 80 Facebook posts were made over a two-and-a-half-week period, including four storm warning posts.
- Information was supplied to area stations in Richmond, Lynchburg and Roanoke through media releases, telephone conversations, and/or live interviews.
- Multiple Instagram and Twitter posts were made.
- Numerous press releases were posted to SEC's website.
- Southside's communications team worked with Member Services representatives to address customer concerns in a responsive and timely manner. SEC states that it responded to member comments through private messaging or, when possible, direct communications. Some of the issues SEC members experienced were related to: SEC's SmartHub mobile app, meter status updates for members with multiple accounts, outage processing for nested outages, call center miscommunication; and confusion with SEC's online outage map. Those issues are discussed later in this report.

SEC also reported a few instances of a disconnect in communications with the Virginia Department of Transportation ("VDOT"). In certain instances, SEC contract crews were not able to access work locations due to downed trees in roadways that required

clearing by VDOT; this lack of access hindered restoration progress. Staff recommends that SEC establish single points of contact in emergency situations or establish an on-call rotation for coordination with VDOT. This will expedite restoration efforts in the future by establishing clearer lines of communication.

Staff recognizes that a storm of the magnitude and outage impact of the Ice Storm is likely to reveal potential operational deficiencies in a number of areas. SEC is encouraged to continue investigating the issues associated with the interface between the outage management system and the call center as outlined in its response to Staff's data requests. Staff also recommends that Southside evaluate the training that call center employees receive so that issues identified can be addressed and corrected.

SmartHub Mobile Application

SEC was made aware through social media and telephone calls that daily billing usage was being displayed on the SmartHub mobile app for times when the members were out of power during the first few days of the Storm. SmartHub is the information and payment app created by National Information Solutions Cooperative ("NISC"), the organization that provides SEC's Customer Information System ("CIS"). The app allows members to: see estimated daily usage information; set contact information; and make payments on their accounts.

In response to the complaints, SEC informed members via email and with alert messages posted on SmartHub that SmartHub does not recognize power outages and that it estimates the usage by assuming that customers remain in service. Members were also

advised that SmartHub data is not used to generate member bills; specifically, members would not be billed based upon the energy usage estimates from SmartHub.

Working with NISC, SEC disabled the usage estimation feature on SmartHub on February 18, 2021 and notified the State Corporation Commission's Division of Public Utility Regulation of this change.

Members with Multiple Accounts

If a member had multiple accounts, meters, or locations, there was sometimes confusion as to which meter or location was subject to an outage. There were multiple instances of outage reporting for the wrong account. The responsibility for this type of error could reside with the SEC Member Service Representative (MSR) reviewing the specific outage. The Cooperative is reviewing this issue to prevent it from occurring in the future.

Outage Processing

Once an outage ticket was restored in the Outage Management System (OMS), initiation of a callback would begin if a callback was requested. If the member was part of a nested outage, it would appear as though the member's power had been restored when it had not. Due to the extreme volume of data being processed, SEC states it is investigating such instances.

MSR/CRC Miscommunications

MSRs utilize Calls Manager, an outage management system application, to process outage tickets, retrieve updates on outage tickets, and to contact specific meters. This application interacts with SEC's outage management system. SEC Cooperative Response Center ("CRC") employees also provide input to SEC's outage management system. There

were instances in which data was interpreted incorrectly and communications to the member were inaccurate; however, SEC states that such issues were eventually corrected.

Confusion with the Outage Map

SEC's outage viewer displays a rough polygon that identifies the location of each outage. Since these polygons only depict the approximate geographic locations of outages, they led to some confusion with members as to where outages were located; some members were concerned that the outage they were experiencing was not being reported.

ENVIRONMENTAL JUSTICE AND EQUITY CONCERNS

Dominion Energy

Policy

Dominion states that in November 2018 it adopted an Environmental Justice ("EJ") Policy to "affirm its commitment to ensuring the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income as it continues efforts to provide clean reliable, modern and affordable energy to [Dominion's] customers."

Equity in Restoration Policy and Practice

Dominion states that its restoration program is applied uniformly for all customers, regardless of where they live, with a primary focus on customer safety. During an event, work is focused on restoring power for all communities to ensure access to critical services such as hospitals, 911 centers, and police and fire services. Once critical services are restored, the restoration program follows a hierarchal approach focused on restoring large groups of customers regardless of where the outages occur.

Physical damages and impacts from a storm will vary from community to community, and DEV asserts that its restoration program is designed and executed with consistency following each storm, regardless of the location impacted, and that the program is scalable and adaptable so additional restoration resources can quickly converge into areas that incurred more damages and outages.

Equity in Right-of-Way Maintenance and Pole Replacement

Dominion views the planning of its ROW maintenance and pole replacement programs (described previously) in a manner similar to its restoration program for environmental justice considerations under the EJ Act. As such, DEV advises that these programs apply equally throughout its service territory, and any one community is not prioritized over another.

Equity in Planning Reliability Work

According to Dominion, most reliability infrastructure work focuses on replacing equipment and facilities that are reaching their end of life, or as a result of poor performance, require upgrades or reconfiguring. Communities impacted by this work directly benefit with improved reliability. DEV also states that when new infrastructure is contemplated, it conducts an environmental justice review to ensure fair treatment and meaningful involvement for both the proposed facilities and alternatives considered.

Equity During the Ice Storm Restoration Effort

Staff has reviewed the information provided by DEV and found no evidence that its Ice Storm restoration process is inconsistent with the principles of equity and the EJ Act.

Staff urges Dominion to continually review and ensure implementation of its EJ Act and equity-related policies.

Cooperatives

Policy

Neither MEC nor SEC has a formal Environmental Justice Policy; however, they participate in an environmental justice working group ("EJWG") facilitated by VMDAEC. The EJWG plans to monitor and research environmental justice, diversity, equity, and inclusion issues, and will work to evaluate and coordinate environmental justice policies with MEC and SEC.

Equity in Restoration Policy and Practice

According to Mecklenburg and Southside, their restoration processes prioritize damaged areas, with a focus on the safety of the workers restoring electric service. Furthermore, MEC and SEC report that their policies and practices follow industry standard guidance, with the following order for facility restoration: (i) transmission infrastructure; (ii) substations, main supply lines and critical community infrastructure (such as hospitals); and (iii) tap lines and individual service connections, prioritized by the potential for the highest number of restorations per work assignment.

MEC and SEC state that their restoration processes do not consider the identity of any member-consumer and, as such, details about the populations of communities, or the makeup of those communities, do not influence prioritization for restoration. Neither MEC or SEC maintains a database or other repository of information identifying low-income communities, fenceline communities, and/or communities of color in their service

territories; however, each of MEC and SEC's Customer Information Systems (CIS) has the capability to document the ethnicity of members. According to MEC, this capability is neither active nor populated with data. SEC stated that its system is able to track ethnic demographics in the event that Southside participates in a government loan program that requires SEC to collect such data. At the present time, SEC advises that it is not participating in such a program.

Equity in Right-of-Way Maintenance and Pole Replacement

MEC and SEC assert that their ROW maintenance, vegetation management, and pole replacement programs are prioritized based on infrastructure needs and are not based on the characteristics of any community or customer.

Environmental Justice in Planning Reliability Work

Both MEC and SEC state that most of their construction activities are need-based, such as the need for construction of a new substation; in such instances the site location may be dictated by engineering imperatives, permitting requirements, or by feedback received from the community. Other construction activities may be driven by member requests, such as requests for new line extensions. MEC and SEC aver that they strive to be supportive of community and member inputs during their planning and siting activities; they believe these practices are consistent with the Commonwealth's Environmental Justice principles.

Equity During the Ice Storm Restoration Effort

Staff has reviewed the information provided by MEC and SEC and found no evidence that their Ice Storm restoration process is inconsistent with the principles of equity

and the EJ Act. Staff supports the cooperatives' EJWG initiative to identify and address environmental justice-related topics in cooperative service areas.

Equity During the Ice Storm Restoration Effort

Staff has reviewed the information provided by MEC and SEC and found no evidence that their Ice Storm restoration process is inconsistent with the principles of equity and the EJ Act. As noted previously, Staff supports the cooperatives' EJWG initiative. Staff further encourages the EJWG to develop a formal EJ Act policy. Staff urges Mecklenburg and Southside to continue to both define and implement EJ Act and equity-related policies.

UTILITY-IDENTIFIED LESSONS LEARNED

Electric utilities typically perform post storm critiques and implement corrective actions for lessons learned in an effort to improve future restoration efforts. Following the Ice Storm, the Staff asked the utilities to provide their lessons learned as a result of any post-Storm critiques or assessments; this includes information obtained from debriefings of the mutual aid crews.³⁶ The following are the responses received from Dominion, Mecklenburg and Southside to the Staff's data requests.

Dominion Energy

DEV utilizes qualified contractor oversight personnel to oversee its on-system contractors on a daily basis. The duties of oversight personnel include, but are not limited

³⁶ Staff's own conclusions and recommendations are provided later in the Conclusions and Recommendations section of this report.

to, overseeing safety, ensuring efficiency, managing workload, securing necessary switching orders, and monitoring performance. When securing mutual assistance resources, Dominion performs these functions by utilizing other personnel who have current or previous field experience, such as individuals within the Power Delivery Group and retirees. Among others, Dominion notes the following take-aways from the Ice Storm restoration:

- a) Clarify storm role assignments for individuals who may be utilized in a Contractor Oversight role during a restoration effort.
- b) Review storm training modules available for individuals who infrequently perform the contractor oversight role (e.g., only during storm restoration).
- c) Review tools available to individuals assigned to contractor oversight roles during storm restoration – including access to electronic circuit maps.
- d) Consider expanding the number of crews assigned to the core contractor oversight team at the beginning of the restoration effort to better leverage their expertise.

Dominion was able to utilize hotels as the sole source for lodging DEV and on-system contractor crews, and mutual assistance crews. Dominion states that during the pandemic, utilizing hotels is the preferred option for mitigating the spread of COVID-19. However, the significant influx and frequent reallocation of crews, patrollers, and support personnel taxed DEV's lodging process, and in a few isolated cases, rooms were not available when personnel attempted to check-in. Additionally, the limited availability of

rooms in some rural areas that were heavily impacted by the Ice Storm required that some crews travel an hour or more from their hotel to their work assignments. Relative to lodging, the Company provides the following takeaways from the Ice Storm restoration:

- a) Accurate entry of personnel data into DEV's Resource Management System (referred to as "RoD") helps to streamline the acquisition of lodging for crews. Dominion will continue to provide RoD training to employees who are responsible for entering the data into the system. Also, additional scrutiny will be placed on rosters provided by mutual assistance crews. Dominion notes that it is currently developing a replacement system for RoD and a robust training program for using the RoD or replacement system.
- b) Inaccuracy of forecasted arrival times of incoming mutual assistance crews can also lead to issues in securing rooms. DEV is developing an electronic tracker program that will increase visibility of incoming mutual assistance crews to improve accuracy in arrival times.
- c) Improvement in advance communications between Dominion's Resource Section and the Regional Logistics Team would provide earlier visibility of plan changes before RoD is updated and would allow the Logistics Team to begin making adjustments earlier.
- d) DEV is working with major hotel companies to provide assistance with availability, pre-booking, and booking of rooms during storm restoration efforts. This alliance will also allow Dominion to be updated when new

hotels are added within its service territory, which can then be entered into RoD (or its successor system) prior to future storms.

Mecklenburg Electric Cooperative

MEC held a number of debriefing meetings following the Storm and, given the magnitude of the event and the fact that MEC continues work to address the damage inflicted on its system, Mecklenburg indicates that its evaluation of its Storm response is ongoing. During these meetings, MEC is undertaking a thorough review of every aspect of the outage and is seeking opportunities to improve in all facets of its restoration efforts. The following are areas or items MEC has identified for additional review and action:

- 1) This storm event marks the first event in which MEC utilized retired employees for mutual aid crew guides, or "bird dogs." MEC has experienced significant retirements over the past five years including a number of line crew members, equipment operators, meter technicians, substation technicians, etc., all of whom have extensive knowledge of MEC's safety practices; its restoration protocol; its service territory; and its system and how it operates. Because of the success of this effort, MEC has initiated a program wherein selected and qualified retirees could serve as bird dogs in major outage events to lead and manage off-system crews during the restoration. Utilizing these retirees also allows MEC to keep its line crews intact and working to restore power. The retirees work through an employment agency as independent contractors and the Cooperative pays them an hourly rate through the agency. MEC expects that this program will have a significant positive

impact on restoration efficiency and will allow MEC to safely accommodate additional crews for future events, if needed.

- 2) MEC learned that for outages of this magnitude, it could use additional call center capacity. During the Storm outage, call capacity limitations were exceeded, forcing some members to call back later. MEC states that it has identified measures for implementation to increase its call center capabilities by adding cloud-based resources that are easily and quickly ramped up and can be served from multiple geographic locations across the region for greater redundancy. The additional redundancy provided from outside MEC's service territory allows for mitigation of interruptions by local communications providers who are experiencing disruptions because of similar circumstances or local weather.
- 3) At the peak of the event, MEC's outage viewer was overwhelmed. The system was originally designed as an outage management system for dispatchers and MEC's own outage management team; however, MEC states it has quickly become a tool used by members to track restoration progress and follow the status of crew assignments. It became obvious during this event that enabling members to visually verify that their outages were being recorded in MEC's system greatly reduced call traffic and gave members the comfort of knowing that MEC was aware of their outage. Mecklenburg will soon be implementing a substantial upgrade to its web-based Outage Viewer package. Those modifications will result in improved functionality, including better geographic and data display capabilities; improvements in a member's ability to track their outage in real time; and an

enhancement and additional option for member communications utilizing an automated texting option.

- 4) The Storm event revealed that when expedient, MEC should undertake line relocations for cross-country facilities located in remote areas that consistently present significant restoration challenges. It also reconfirmed that all future line construction should continue under MEC's current practice of building distribution facilities near the roadside, where they are more accessible. This experience also demonstrated, in many cases, the value of underground installation, especially for long, single-account taps.
- 5) Mecklenburg realized that its SmartHub application, which provides energy management tools, continued to trend energy use even when power was out, leading some members to mistakenly believe that they continued to be billed for use during the outage. MEC will disable this estimated energy projection feature during future large, multiday outages.

Southside Electric Cooperative

Based on the magnitude of the Ice Storm and the extended repair work following restoration on February 26, 2021, the Cooperative states it is still in the process of debriefing and documenting items that went well during the event and those that require further discussion and possible improvement. From the Cooperative's initial discussions, the following items have been noted (as directly quoted from the Cooperative's response):

- 1) Broadcast Media & Social Media –

- a) Need to develop relationships with Broadcast media as we had not seen or prepared for such attention in the past.
 - b) Leverage VMDAEC to help build a relationship with broadcast media.
 - c) Develop and implement staff-level media and communications training.
 - d) Evaluate and revise our practices related to social media posting by the public.
 - e) Based on an overall internal assessment coupled with an external independent third-party communications team audit, revise our Communications Plan so that each of these areas of opportunity for growth and improvement are fully incorporated into the overall plan
- 2) Microsoft Teams meetings with Legislative and Local Officials were held during the storm and were extremely helpful. This concept will be developed for future events as needed based on the size and scope of the storm event.
 - 3) Develop a plan for additional System Operations Center (SOC) support staff and other support staff during large outages to assist with resource planning.
 - 4) Emergency Action Plan Update – Need to add/update the following information:
 - a) Member & Public Relations' Communications plan
 - b) Hotel and meal planning process.
 - c) SOC use of mutual aid personnel.
 - d) Warehouse use of mutual aid personnel.
 - e) System Damage Assessment process for large storms.

- 5) FEMA Data Reporting – Continued use of the Survey123 field collection apps. Use input from the field crews to streamline this data gathering process.
- 6) Downed Conductors / Conductors blocking roadways – Consider a direct liaison/relationship with each VDOT residency office to streamline communications concerning these issues and other emergency roadway services.
- 7) Develop after-event educational articles and posts to help members understand issues from the storm and to better prepare for future events.
- 8) Review broken pole data to determine primary root-cause failure classes. Such data would then be used to consider pole design or pole class selection for future construction.
- 9) Evaluate Vegetation Budgets and determine if any additional program spending is needed or required to further address hazard trees off the rights-of-ways.

CONCLUSIONS AND RECOMMENDATIONS

Based on Staff's analysis of the Companies' preparedness and responsiveness to the February 2021 Ice Storm, Staff provides the following conclusions and recommendations.

Dominion Energy

i. Pole Inspections

Of the approximately 1,000,000 electric distribution poles in use on its system, Dominion currently inspects roughly 3.5% of its poles each year. Staff believes that this pace may not allow DEV to keep up with aging infrastructure and wildlife damage over DEV's entire distribution system. Accordingly, Staff encourages Dominion to investigate

ways of expediting the inspection process, removing aging infrastructure, and rectifying damaged poles.

ii. Environmental Justice and Equity

Based on this investigation, Staff found no evidence that DEV's Ice Storm restoration process is inconsistent with the principles of equity and the EJ Act. Staff urges Dominion to continually review and ensure implementation of its EJ Act and equity-related policies.

Mecklenburg Electric Cooperative

i. Eight Year Tree-Trimming Cycle

Staff recommends that MEC adopt a ground-to-sky approach for trimming inside the ROW and adopt a more aggressive tree trimming schedule.

ii. Remote Locations (cross-country lines, relocate or UG opportunities)

When constructing new facilities or during facility upgrades or relocations, MEC should assess alternatives such as undergrounding or moving ROWs away from densely wooded areas when feasible to mitigate potential tree-related damage.

iii. Pole Inspections (cycle varies by area)

Staff recommends that MEC revisit its pole inspection program and expedite the inspection and replacement of reject poles. Staff also recommends that a reject report be conveyed to the proper MEC staff each day so that the work orders can be assigned in a timely manner.

iv. Communication with Members

Staff recommends that MEC consider additional ways, beyond internet social media, to communicate with members in order to reach a broader audience rather than a primary reliance on Facebook.

v. Communications Center (call volume)

Staff agrees with MEC's plan to investigate cloud-based resources to expand call center capacity and improve redundancy.

vi. SmartHub App Issues

MEC indicated that it will disable the estimated energy projection feature during future large multiday outages so that members do not get the impression they are being billed for usage while their power is out. Staff agrees with MEC's plans in this regard.

vii. Environmental Justice and Equity

Based on this investigation, Staff discovered no equity concerns. Staff supports MEC's communal EJWG effort to identify and address EJ Act-related topics in cooperative service areas and urges Mecklenburg to continue to both define and implement EJ Act and equity-related policies.

Southside Electric Cooperative

i. Seven-Year Trimming Cycle

Staff recommends that SEC revise its side trimming activities to ensure that they include ground-to-sky trimming to mitigate outages caused by overhanging tree limbs

breaking over distribution infrastructure. The seven-year side trimming cycle appears unable to stay ahead of new vegetative growth occurring on Southside's system. Staff recommends that SEC accelerate its trimming schedule and increase brush clearing and herbicide application activities. The trimming cycle currently appears to be more reactive than proactive relative to both tree trimming and hazard tree removal.

ii. Remote Locations (cross-country lines, relocate or UG opportunities)

When constructing new facilities or during facility upgrades or re-locations, SEC should assess alternatives such as undergrounding or moving ROWs away from densely wooded areas and double-sided ROW when feasible, to mitigate tree-caused damage.

iii. VDOT Communication and Coordination

Staff recommends that SEC assign personnel for a single point of contact in emergency situations or establish an on-call rotation for coordination with VDOT.

iv. Communication to Members

Staff recommends that SEC continue investigating the issues associated with the interface between the outage management system and call center that led to miscommunication to members. SEC identified miscommunications related to members' outage status, members with multiple accounts, processing of outage tickets, and confusion with the outage map. Accordingly, Staff recommends that SEC follow up with training of call center employees such that these issues can be addressed and corrected in the future.

v. Hazard Trees

Though SEC hired a vegetation management consultant, Davey Resources, in 2015, SEC has yet to implement the recommendations of that consultant. Staff recommends that SEC follow Davey Resources' guidance to inspect all 3-phase lines every year or every other year to alleviate the danger that hazard trees pose and minimize outages during future weather events.

vi. Tracked Vehicles

Staff supports SEC's plan to investigate the addition of more tracked vehicles to the Cooperative's fleet in the 2022 budget. The investigation should include options to lease available vehicles from local dealerships and partnerships with other utilities, in addition to any purchase options.

vii. Pole Inspections (10-year cycle)

Staff recommends that SEC revisit its pole inspection program and adjust it to expedite the inspection and replacement of the reject poles. Staff also recommends that a reject report be conveyed to the proper SEC staff each day so that work orders can be assigned in a timely manner.

viii. Copper Conductor in Use

Staff recommends that Southside continue to remove and replace existing copper conductors as expeditiously as possible.

ix. Conductor Tension Concerns

Where appropriate, SEC should consider decreasing span lengths as a way to maintain NESC clearances while simultaneously alleviating the need for higher tensions on conductors that can lead to an increased number of poles failing when trees or limbs fall on the conductor. Staff recognizes that SEC uses the Heavy Ice Loading Zone for design per NESC requirements; however, Staff encourages SEC to utilize its construction personnel to verify that these requirements are actually being implemented and documented in the field during construction and maintenance operations.

x. **Vegetation Audit**

Staff recommends that SEC schedule a vegetation audit every 5 years and adhere to the recommendations made by the Company's auditor in order to get the maximum benefit from this effort and to improve service reliability.

xi. **Storm-Related Restoration Cost Tracking**

Staff requested information from SEC detailing the types of expenditures comprising the total storm restoration cost amounts that SEC provided to Staff, SEC indicated it does not have such detail available at this time. Staff recommends that in the future, SEC track specific storm-related restoration costs in a timely manner and make such information available for Staff review upon request.

x. **Environmental Justice and Equity**

In this investigation, Staff discovered no equity concerns. Staff concurs with SEC's EJWG initiative to identify and address EJ Act related topics in the Cooperative service

areas and urges SEC to continue to both define and implement EJ Act and equity-related policies.